LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

OCTOBER 11, 2022

COLONEL WILLIAM MARKS II
GARRISON COMMANDER
4488 MARTIN ROAD (ATTN: IMPRE-RED-PWE)
REDSTONE ARSENAL, AL 35898

RE: DRAFT PERMIT
NPDES PERMIT NUMBER AL0000019

Dear Colonel Marks II:

Transmitted herein is a draft of the referenced permit.

We would appreciate your comments on the permit within **30 days** of the date of this letter. Please direct any comments of a technical or administrative nature to the undersigned.

By copy of this letter and the draft permit, we are also requesting comments within the same time frame from EPA.

Our records indicate that have utilized the Department's web-based electronic environmental (E2) reporting system for submittal of discharge monitoring reports (DMRs). The Department transitioned from the E2 Reporting System to the Alabama Environmental Permitting and Compliance System (AEPACS) for the submittal of DMRs on November 15, 2021. AEPACS is an electronic system that allows facilities to apply for and maintain permits as well as submit other required applications, registrations, and certifications. In addition, the system allows facilities to submit required compliance reports or other information to the Department. The Department has used the E2 User account information to set up a similar User Profile in AEPACS based on the following criteria:

1. The user has logged in to E2 since October 1, 2019; and
2. The E2 user account is set up using a unique email address.

E2 users that met the above criteria will only need to establish an ADEM Web Portal account (https://prd.adem.alabama.gov/awp) under the same email address as their E2 account to have the same permissions in AEPACS as they did in E2. They will also automatically be linked to the same facilities they were in E2.

The Alabama Department of Environmental Management encourages you to voluntarily consider pollution prevention practices and alternatives at your facility. Pollution Prevention may assist you in complying with effluent limitations, and possibly reduce or eliminate monitoring requirements.

If you have questions regarding this permit or monitoring requirements, please contact Rachel Lounsberry by e-mail at **restanaland@adem.alabama.gov** or by phone at **(334) 279-3065.**

Sincerely,

Scott Ramsey, Chief
Industrial Section
Industrial/Municipal Branch
Water Division

Enclosure: Draft Permit

pc via website: Montgomery Field Office
EPA Region IV
U.S. Fish & Wildlife Service
AL Historical Commission
Advisory Council on Historic Preservation
Department of Conservation and Natural Resources

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

ADEM
Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

PERMITTEE: U S ARMY

FACILITY: US ARMY REDSTONE ARSENAL
BUILDING 4488
MARTÍN ROAD
REDSTONE ARSENAL, ALABAMA 35898
MADISON COUNTY

PERMIT NUMBER: AL0000019

RECEIVING WATERS: DSN001, DSN020, DSN021, DSN032, DSN034, DSN038, DSN040, DSN042, DSN043, DSN048, DSN064:
UNNAMED TRIBUTARY TO HUNTSVILLE SPRING BRANCH

DSN002, DSN011, DSN015, DSN016, DSN017, DSN027, DSN045, DSN046, DSN047, DSN063, DSN069, DSN071, DSN072:
UNNAMED TRIBUTARY TO TENNESSEE RIVER

DSN003, DSN010, DSN049, DSN060, DSN062, DSN073, DSN074, DSN075, DSN076, DSN077, DSN079:
UNNAMED TRIBUTARY TO INDIAN CREEK

DSN013: HUNTSVILLE SPRING BRANCH

DSN022, DSN033, DSN059, DSN061, DSN078:
UNNAMED TRIBUTARY TO MCDONALD CREEK

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to discharge into the above-named receiving waters.

ISSUANCE DATE:

EFFECTIVE DATE:

EXPIRATION DATE:

Draft

Alabama Department of Environmental Management

INDUSTRIAL SECTION
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

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PART I DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

DSN 001-1 Storm water runoff from DDT remediation area

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 001, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Monthly	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
DDT (39370) Effluent Gross Value	*****	*****	*****	*****	(Report) Maximum Monthly	(Report) Maximum Daily	ug/l	Monthly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Monthly	Measured	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 002-1 Contaminated stormwater runoff and wastewater associated with testing rocket fuels and engines. 5/

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 002, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
BOD, 5-Day (20 Deg. C) (00310) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Once/Discharge Month	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Nitrogen, Total (As N) (00600) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Once/Discharge Month	Instantaneous	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ If no rocket engine test wastewater is discharged, then certification that no discharge occurred during that month shall be provided along with the DMR.

DSN 002-1 (Continued): Contaminated stormwater runoff and wastewater associated with testing rocket fuels and engines. 5/

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 002, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Perchlorate (CL04) (61209) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Once/Discharge Month	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ If no rocket engine test wastewater is discharged, then certification that no discharge occurred during that month shall be provided along with the DMR.

DSN 002-T Contaminated stormwater runoff and wastewater associated with testing rocket fuels and engines. 5/

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 002, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Toxicity, Ceriodaphnia Chronic (61426) Effluent Gross Value	*****	0 Single Sample	pass=0; fail=1	*****	*****	*****	*****	Annually	Composite	All Months
Toxicity, Pimephales Chronic (61428) Effluent Gross Value	*****	0 Single Sample	pass=0; fail=1	*****	*****	*****	*****	Annually	Composite	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.C for Effluent Toxicity Limitations and Biomonitoring Requirements.

5/ If no rocket engine test wastewater is discharged, then certification that no discharge occurred during that month shall be provided along with the DMR.

DSN 003-Q Vehicle wash waters and stormwater runoff from fuel storage and handling areas

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 003, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Quarterly	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Quarterly	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Methyl Tert-Butyl Ether (22417) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	15.54 Maximum Daily	ug/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 003-Q (Continued): Vehicle wash waters and stormwater runoff from fuel storage and handling areas

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 003, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
DDT (39370) 5/ Effluent Gross Value	*****	*****	*****	*****	*****	0.000128 Maximum Daily	ug/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance.

DSN 010-Y Stormwater associated with aircraft facilities (hangars and waste storage areas) and operations (fuel storage and handling).

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 010, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Methyl Tert-Butyl Ether (22417) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
DDT (39370) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 010-Y (Continued): Stormwater associated with aircraft facilities (hangars and waste storage areas) and operations (fuel storage and handling).

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 010, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 011-Q Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 011, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Instantaneous	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 013-S Stormwater runoff from debris landfill, inert landfill and sand storage area.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 013, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
DDT (39370) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 015-Y Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 015, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Nitrite Plus Nitrate Total 1 Det. (As N) (00630) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
1,1,1-Trichloroethane (34506) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
1,1,2-Trichloroethane (34511) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Trichloroethylene (39180) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Perchlorate (CL04) (61209) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Mercury, Total (As Hg) (71900) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 015-Y (Continued): Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 015, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Volatile Compounds, (gc/ms) (78732) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Trinitrotoluene (TNT), Total (81360) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
RDX, Total (81364) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 016-Y Stormwater runoff from former chemical weapons storage (Mustard Gas and Lewisite) demolition areas, hazardous waste storage building and test pad.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 016, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Nitrite Plus Nitrate Total 1 Det. (As N) (00630) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Arsenic (01252) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Chloride (46225) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Perchlorate (CL04) (61209) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 017-Q Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 017, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Instantaneous	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months
Solids, Total Dissolved (70295) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 020-Q Stormwater runoff from former DDT plant site, storage yard for transformers, conductors and hazardous waste, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 020, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Grab	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months
Solids, Total Dissolved (70295) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 020-S Stormwater runoff from former DDT plant site, storage yard for transformers, conductors and hazardous waste, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 020, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Semi-Annually	Grab	All Months
DDT (39370) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 021-Q Stormwater runoff from closed storage impoundments, a former Lewisite manufacturing site and waste accumulation area, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 021, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Instantaneous	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	*****	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months
Solids, Total Dissolved (TDS) (70296) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 021-S Stormwater runoff from closed storage impoundments, a former Lewisite manufacturing site and waste accumulation area, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 021, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Arsenic (01252) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
DDT (39370) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Chloride (46225) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 022-Q Stormwater runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 022, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Instantaneous	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months
Solids, Total Dissolved (70295) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 022-Y Stormwater runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 022, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 022-Y (Continued): Stormwater runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown and non-contact cooling water.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 022, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 027-Q Non-contact cooling water from Building 7120.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 027, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Estimate	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 032-Q, 033-Q, 034-Q, 038-Q, 040-Q, 042-Q, 043-Q, 045-Q, 046-Q, 047Q, 048-Q, 049-Q Potable/Industrial water tank releases.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 032, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Estimate	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 059-Y Stormwater runoff from public service station.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 059, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Methyl Tert-Butyl Ether (22417) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 059-Y (Continued): Stormwater runoff from public service station.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 059, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 060-Y Stormwater runoff from equipment storage yard.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 060, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Zinc Total Recoverable 5/ (01094) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Cadmium, Total Recoverable 5/ (01113) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Lead, Total Recoverable 5/ (01114) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Copper Total Recoverable 5 /(01119) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Mercury Total Recoverable 5/ (71901) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ For the purpose of demonstration of compliance with this parameter, "Total" and "Total Recoverable" shall be considered equivalent.

DSN 061-Y Stormwater runoff from motor pool and maintenance shop.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 061, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 061-Y (Continued): Stormwater runoff from motor pool and maintenance shop.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 061, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 062-Y Stormwater runoff from equipment storage yard.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 062, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Zinc Total Recoverable 5/ (01094) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Cadmium, Total Recoverable 5/ (01113) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Lead, Total Recoverable 5/ (01114) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Copper Total Recoverable 5/ (01119) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Mercury Total Recoverable 5/ (71901) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ For the purpose of demonstration of compliance with this parameter, "Total" and "Total Recoverable" shall be considered equivalent.

DSN 063-S and DSN064-S Stormwater runoff from inert landfill

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 063, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Semi-Annually	Grab	All Months
DDT (39370) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ Sampling requirements only apply at DSN064.

DSN 069-Y Stormwater runoff from equipment storage yard.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 069, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Zinc Total Recoverable 5/ (01094) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Cadmium, Total Recoverable 5/ (01113) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Lead, Total Recoverable 5/ (01114) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Copper Total Recoverable 5/ (01119) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Mercury Total Recoverable 5/ (71901) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ For the purpose of demonstration of compliance with this parameter, "Total" and "Total Recoverable" shall be considered equivalent.

DSN 071-Y Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 071, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Nitrite Plus Nitrate Total 1 Det. (As N) (00630) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
1,1,1-Trichloroethane (34506) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
1,1,2-Trichloroethane (34511) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Trichloroethylene (39180) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months
Perchlorate (CL04) (61209) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Mercury, Total (As Hg) (71900) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 071-Y (Continued): Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 071, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Volatile Compounds, (gc/ms) (78732) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Trinitrotoluene (TNT), Total (81360) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
RDX, Total (81364) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 072-Y Stormwater runoff from maintenance shop, former chemical storage area and the test pad

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 072, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Annually	Grab	All Months
Chloride (As Cl) (00940) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Annually	Estimate	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 072-Y (Continued): Stormwater runoff from maintenance shop, former chemical storage area and the test pad

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 072, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Perchlorate (CL04) (61209) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Annually	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ In lieu of sampling, Annual Certification shall be submitted by January 28th if no open burning or open detonation has occurred during the previous calendar year.

6/ Sample shall be taken during a qualifying storm event following open burning or open detonation.

DSN 073-S Airplane wash water and storm water runoff from the tarmac area

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 073, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	15.54 Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
DDT (39370) 5/ Effluent Gross Value	*****	*****	*****	*****	*****	0.000128 Maximum Daily	ug/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance.

DSN 073-S (Continued): Airplane wash water and storm water runoff from the tarmac area

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 073, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 074-Q Non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 074, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Temperature, Water Deg. Fahrenheit (00011) Effluent Gross Value	*****	*****	*****	*****	*****	86 Maximum Daily	deg F	Quarterly	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Instantaneous	All Months
Chlorine, Total Residual 5/ (50060) Effluent Gross Value	*****	*****	*****	*****	0.011 Monthly Average	0.019 Maximum Daily	mg/l	Quarterly	Grab	All Months
Solids, Total Dissolved (70295) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ To be sampled during a non storm event.

5/ A measurement of Total Residual Chlorine below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B or *B on the discharge monitoring reports.

DSN 074-S Non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 074, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Zinc Total Recoverable 5/ (01094) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Lead, Total Recoverable 5/ (01114) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Copper Total Recoverable 5/ (01119) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ For the purpose of demonstration of compliance with this parameter, "Total" and "Total Recoverable" shall be considered equivalent.

DSN 074-S (Continued): Non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 074, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Estimate	All Months
Mercury Total Recoverable 5/ (71901) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ For the purpose of demonstration of compliance with this parameter, "Total" and "Total Recoverable" shall be considered equivalent

DSN 075-Q Vehicle wash waters and stormwater runoff.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 075, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Quarterly	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Quarterly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	15.54 Maximum Daily	ug/l	Quarterly	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
EDT (39370) 5/ Effluent Gross Value	*****	*****	*****	*****	*****	0.000128 Maximum Daily	ug/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance.

DSN 075-Q (Continued): Vehicle wash waters and stormwater runoff.

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 075, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 076-Q-DSN 078-Q Stormwater runoff from fuel storage and handling areas

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 076, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Quarterly	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Quarterly	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Methyl Tert-Butyl Ether (22417) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	15.54 Maximum Daily	ug/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 076-Q-DSN 078-Q (Continued): Stormwater runoff from fuel storage and handling areas

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 076, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months
DDT (39370) 5/ Effluent Gross Value	*****	*****	*****	*****	*****	0.000128 Maximum Daily	ug/l	Quarterly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Quarterly	Estimate	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Quarterly	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	ug/l	Quarterly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

5/ If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance.

DSN 079-1 Stormwater runoff and wastewater associated with testing of System Controlled Environmental Test Infrastructure

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 079, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
BOD, 5-Day (20 Deg. C) (00310) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	6.0 Minimum Daily	*****	8.5 Maximum Daily	S.U.	Monthly	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15 Maximum Daily	mg/l	Monthly	Grab	All Months
Nitrogen, Total (As N) (00600) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Nitrogen, Ammonia Total (As N) (00610) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Nitrite Plus Nitrate Total 1 Det. (As N) (00630) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Phosphorus, Total (As P) (00665) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Carbon, Tot Organic (TOC) (00680) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

DSN 079-1 (Continued): Stormwater runoff and wastewater associated with testing of System Controlled Environmental Test Infrastructure

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from DSN 079, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
Toluene (34010) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Benzene (34030) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Ethylbenzene (34371) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Naphthalene (34696) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Monthly	Instantaneous	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months
Xylene (81551) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Monthly	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

B. DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge and shall be in accordance with the provisions of this permit.

2. Test Procedures

For the purpose of reporting and compliance, permittees shall use one of the following procedures:

a. For parameters with an EPA established Minimum Level (ML), report the measured value if the analytical result is at or above the ML and report "0" for values below the ML. Test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and guidelines published pursuant to Section 304(h) of the FWPCA, 33 U.S.C. Section 1314(h). If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance; however, should EPA approve a method with a lower minimum level during the term of this permit the permittee shall use the newly approved method.

b. For pollutants parameters without an established ML, an interim ML may be utilized. The interim ML shall be calculated as 3.18 times the Method Detection Level (MDL) calculated pursuant to 40 CFR Part 136, Appendix B.

Permittees may develop an effluent matrix-specific ML, where an effluent matrix prevents attainment of the established ML. However, a matrix specific ML shall be based upon proper laboratory method and technique. Matrix-specific MLs must be approved by the Department, and may be developed by the permittee during permit issuance, reissuance, modification, or during compliance schedule.

In either case the measured value should be reported if the analytical result is at or above the ML and "0" reported for values below the ML.

c. For parameters without an EPA established ML, interim ML, or matrix-specific ML, a report of less than the detection limit shall constitute compliance if the detection limit of all analytical methods is higher than the permit limit using the most sensitive EPA approved method. For the purpose of calculating a monthly average, "0" shall be used for values reported less than the detection limit.

The Minimum Level utilized for procedures A and B above shall be reported on the permittee's DMR. When an EPA approved test procedure for analysis of a pollutant does not exist, the Director shall approve the procedure to be used.

3. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The facility name and location, point source number, date, time and exact place of sampling;

b. The name(s) of person(s) who obtained the samples or measurements;

c. The dates and times the analyses were performed;

d. The name(s) of the person(s) who performed the analyses;

e. The analytical techniques or methods used, including source of method and method number; and

f. The results of all required analyses.

4. Records Retention and Production

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the application for this permit, for a period of at least three years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA and/or the FWPCA, is ongoing which involves any of the above records, the records shall be kept until the litigation is resolved. Upon the written request of the Director or his designee, the permittee shall provide the Director with a copy of any record required to be retained by this paragraph. Copies of these records shall not be submitted unless requested.

All records required to be kept for a period of three years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection.

5. Monitoring Equipment and Instrumentation

All equipment and instrumentation used to determine compliance with the requirements of this permit shall be installed, maintained, and calibrated in accordance with the manufacturer's instructions or, in the absence of manufacturer's instructions, in accordance with accepted practices. The permittee shall develop and maintain quality assurance procedures to ensure proper operation and maintenance of all equipment and instrumentation. The quality assurance procedures shall include the proper use, maintenance, and installation, when appropriate, of monitoring equipment at the plant site.

C. DISCHARGE REPORTING REQUIREMENTS

1. Reporting of Monitoring Requirements

a. The permittee shall conduct the required monitoring in accordance with the following schedule:

MONITORING REQUIRED MORE FREQUENTLY THAN MONTHLY AND MONTHLY shall be conducted during the first full month following the effective date of coverage under this permit and every month thereafter.

QUARTERLY MONITORING shall be conducted at least once during each calendar quarter. Calendar quarters are the periods of January through March, April through June, July through September, and October through December. The permittee shall conduct the quarterly monitoring during the first complete calendar quarter following the effective date of this permit and is then required to monitor once during each quarter thereafter. Quarterly monitoring may be done anytime during the quarter, unless restricted elsewhere in this permit, but it should be submitted with the last DMR due for the quarter, i.e., (March, June, September and December DMR's).

SEMIANNUAL MONITORING shall be conducted at least once during the period of January through June and at least once during the period of July through December. The permittee shall conduct the semiannual monitoring during the first complete calendar semiannual period following the effective date of this permit and is then required to monitor once during each semiannual period thereafter. Semiannual monitoring may be done anytime during the semiannual period, unless restricted elsewhere in this permit, but it should be submitted with the last DMR for the month of the semiannual period, i.e. (June and December DMR's).

ANNUAL MONITORING shall be conducted at least once during the period of January through December. The permittee shall conduct the annual monitoring during the first complete calendar annual period following the effective date of this permit and is then required to monitor once during each annual period thereafter. Annual monitoring may be done anytime during the year, unless restricted elsewhere in this permit, but it should be submitted with the December DMR.

b. The permittee shall submit discharge monitoring reports (DMRs) on the forms provided by the Department and in accordance with the following schedule:

REPORTS OF MORE FREQUENTLY THAN MONTHLY AND MONTHLY TESTING shall be submitted on a **monthly** basis. The first report is due on the **28th day of (MONTH, YEAR).** The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

REPORTS OF QUARTERLY TESTING shall be submitted on a **quarterly** basis. The first report is due on the **28th day of [Month, Year].** The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

REPORTS OF SEMIANNUAL TESTING shall be submitted on a semiannual basis. The reports are due on the 28th day of JANUARY and the 28th day of JULY. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

REPORTS OF ANNUAL TESTING shall be submitted on an annual basis. The first report is due on the 28th day of JANUARY. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

c. Except as allowed by Provision I.C.1.c.(1) or (2), the permittee shall submit all Discharge Monitoring Reports (DMRs) required by Provision I.C.1.b electronically.

(1) If the permittee is unable to complete the electronic submittal of DMR data due to technical problems originating with the Department's electronic system (this could include entry/submittal issues with an entire set of DMRs or individual parameters), the permittee is not relieved of their obligation to submit DMR data to the Department by the date specified in Provision I.C.1.b, unless otherwise directed by the Department.

If the Department's electronic system is down on the 28th day of the month in which the DMR is due or is down for an extended period of time, as determined by the Department, when a DMR is required to be submitted, the permittee may submit the data in an alternate manner and format acceptable to the Department. Preapproved alternate acceptable methods include faxing, e-mailing, mailing, or hand-delivery of data such that they are received by the required reporting date. Within 5 calendar days of the Department's electronic system resuming operation, the permittee shall enter the data into the Department's electronic system, unless an alternate timeframe is approved by the Department. A comment should be included on the electronic DMR submittal verifying the original submittal date (date of the fax, copy of the dated e-mail, or hand-delivery stamped date), if applicable.

(2) The permittee may submit a request to the Department for a temporary electronic reporting waiver for DMR submittals. The waiver request should include the permit number; permittee name; facility/site name; facility address; name, address, and contact information for the responsible official or duly authorized representative; a detailed statement regarding the basis for requesting such a waiver; and the duration for which the waiver is requested. Approved electronic reporting waivers are not transferrable.

Permittees with an approved electronic reporting waiver for DMRs may submit hard copy DMRs for the period that the approved electronic reporting waiver request is effective. The permittee shall submit the Department-approved DMR forms to the address listed in Provision I.C.1.e.

(3) If a permittee is allowed to submit a hard copy DMR, the DMR must be legible and bear an original signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this permit.

(4) If the permittee, using approved analytical methods as specified in Provision I.B.2, monitors any discharge from a point source for a limited substance identified in Provision I.A. of this permit more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of values on the DMR and the increased frequency shall be indicated on the DMR.

(5) In the event no discharge from a point source identified in Provision I.A. of this permit and described more fully in the permittee's application occurs during a monitoring period, the permittee shall report "No Discharge" for such period on the appropriate DMR.

d. All reports and forms required to be submitted by this permit, the AWPCA and the Department's Rules, shall be electronically signed (or, if allowed by the Department, traditionally signed) by a "responsible official" of the permittee as defined in ADEM Administrative Code Rule 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Administrative Code Rule 335-6-6-.09 and shall bear the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

e. Discharge Monitoring Reports required by this permit, the AWPCA, and the Department's Rules that are being submitted in hard copy shall be addressed to:

Alabama Department of Environmental Management
Water Division
Office of Water Services
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail containing Discharge Monitoring Reports shall be addressed to:

Alabama Department of Environmental Management
Water Division
Office of Water Services
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

f. All other correspondence and reports required to be submitted by this permit, the AWPCA, and the Department's Rules shall be addressed to:

Alabama Department of Environmental Management
Water Division

Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail shall be addressed to:

Alabama Department of Environmental Management
Water Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

g. If this permit is a re-issuance, then the permittee shall continue to submit DMRs in accordance with the requirements of their previous permit until such time as DMRs are due as discussed in Part I.C.1.b above.

2. Noncompliance Notification

a. 24-Hour Noncompliance Reporting

The permittee shall report to the Director, within 24-hours of becoming aware of the noncompliance, any noncompliance which may endanger health or the environment. This shall include but is not limited to the following circumstances:

(1) does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Provision I. A. of this permit which is denoted by an "(X)";

(2) threatens human health or welfare, fish or aquatic life, or water quality standards;

(3) does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a);

(4) contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4);

(5) exceeds any discharge limitation for an effluent characteristic as a result of an unanticipated bypass or upset; and

(6) is an unpermitted direct or indirect discharge of a pollutant to a water of the state (unpermitted discharges properly reported to the Department under any other requirement are not required to be reported under this provision).

The permittee shall orally report the occurrence and circumstances of such discharge to the Director within 24-hours after the permittee becomes aware of the occurrence of such discharge. In addition to the oral report, the permittee shall submit to the Director or Designee a written report as provided in Part I.C.2.c no later than five (5) days after becoming aware of the occurrence of such discharge.

b. If for any reason, the permittee's discharge does not comply with any limitation of this permit, the permittee shall submit to the Director or Designee a written report as provided in Part I.C.2.c below, such report shall be submitted with the next Discharge Monitoring Report required to be submitted by Part I.C.I of this permit after becoming aware of the occurrence of such noncompliance.

c. Any written report required to be submitted to the Director or Designee by Part I.C.2 a. or b. shall be submitted using a Noncompliance Notification Form (ADEM Form 421) available on the Department's website (http://adem.alabama.gov/DeptForms/Form421.pdf) and include the following information:

(1) A description of the discharge and cause of noncompliance;

(2) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

(3) A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

D. OTHER REPORTING AND NOTIFICATION REQUIREMENTS

1. Anticipated Noncompliance

The permittee shall give the Director written advance notice of any planned changes or other circumstances regarding a facility which may result in noncompliance with permit requirements.

2. Termination of Discharge

The permittee shall notify the Director, in writing, when all discharges from any point source(s) identified in Provision I. A. of this permit have permanently ceased. This notification shall serve as sufficient cause for instituting procedures for modification or termination of the permit.

3. Updating Information

a. The permittee shall inform the Director of any change in the permittee's mailing address, telephone number or in the permittee's designation of a facility contact or office having the authority and responsibility to prevent and abate violations of the AWPCA, the Department's Rules, and the terms and conditions of this permit, in writing, no later than ten (10) days after such change. Upon request of the Director or his designee, the permittee shall furnish the Director with an update of any information provided in the permit application.

b. If the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information with a written explanation for the mistake and/or omission.

4. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying, revoking and re-issuing, suspending, or terminating this permit, in whole or in part, or to determine compliance with this permit.

5. Cooling Water and Boiler Water Additives

a. The permittee shall notify the Director in writing not later than thirty (30) days prior to instituting the use of any biocide corrosion inhibitor or chemical additive in a cooling or boiler system, not identified in the application for this permit, from which discharge is allowed by this permit. Notification is not required for additives that do not contain a heavy metal(s) as an active ingredient and that pass through a wastewater treatment system prior to discharge nor is notification required for additives that should not reasonably be expected to cause the cooling water or boiler water to exhibit toxicity as determined by analysis of manufacturer's data or testing by the permittee. Such notification shall include:

(1) name and general composition of biocide or chemical;

(2) 96-hour median tolerance limit data for organisms representative of the biota of the waterway into which the discharge will ultimately reach;

(3) quantities to be used;

(4) frequencies of use;

(5) proposed discharge concentrations; and

(6) EPA registration number, if applicable.

b. The use of a biocide or additive containing tributyl tin, tributyl tin oxide, zinc, chromium or related compounds in cooling or boiler system(s), from which a discharge regulated by this permit occurs, is prohibited except as exempted below. The use of a biocide or additive containing zinc, chromium or related compounds may be used in special circumstances if (1) the permit contains limits for these substances, or (2) the applicant demonstrates during the application process that the use of zinc, chromium or related compounds as a biocide or additive will not pose a reasonable potential to violate the applicable State water quality standards for these substances. The use of any additive, not identified in this permit or in the application for this permit or not exempted from notification under this permit is prohibited, prior to a determination by the Department that permit modification to control discharge of the additive is not required or prior to issuance of a permit modification controlling discharge of the additive.

6. Permit Issued Based On Estimated Characteristics

a. If this permit was issued based on estimates of the characteristics of a process discharge reported on an EPA NPDES Application Form 2D (EPA Form 3510-2D), the permittee shall complete and submit an EPA NPDES Application Form 2C (EPA Form 3510-2C) no later than two years after the date that discharge begins. Sampling required for completion of the Form 2C shall occur when a discharge(s) from the process(s) causing the new or increased discharge is occurring. If this permit was issued based on estimates concerning the composition of a stormwater discharge(s), the permittee shall perform the sampling required by EPA NPDES Application Form 2F (EPA Form 3510-2F) no later than one year after the industrial activity generating the stormwater discharge has been fully initiated.

b. This permit shall be reopened if required to address any new information resulting from the completion and submittal of the Form 2C and or 2F.

E. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the discharge limitations specified in Provision I. A. in accordance with the following schedule:

COMPLIANCE SHALL BE ATTAINED ON THE EFFECTIVE DATE OF THIS PERMIT

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

PART II OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES

A. OPERATIONAL AND MANAGEMENT REQUIREMENTS

1. Facilities Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

2. Best Management Practices

a. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

b. The permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 C.F.R. Section 112 if required thereby.

c. The permittee shall prepare, submit for approval and implement a Best Management Practices (BMP) Plan for containment of any or all process liquids or solids, in a manner such that these materials do not present a significant potential for discharge, if so required by the Director or his designee. When submitted and approved, the BMP Plan shall become a part of this permit and all requirements of the BMP Plan shall become requirements of this permit.

3. Spill Prevention, Control, and Management

The permittee shall provide spill prevention, control, and/or management sufficient to prevent any spills of pollutants from entering a water of the state or a publicly or privately owned treatment works. Any containment system used to implement this requirement shall be constructed of materials compatible with the substance(s) contained and which shall prevent the contamination of groundwater and such containment system shall be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided.

B. OTHER RESPONSIBILITIES

1. Duty to Mitigate Adverse Impacts

The permittee shall promptly take all reasonable steps to mitigate and minimize or prevent any adverse impact on human health or the environment resulting from noncompliance with any discharge limitation specified in Provision I. A. of this permit, including such accelerated or additional monitoring of the discharge and/or the receiving waterbody as necessary to determine the nature and impact of the noncomplying discharge.

2. Right of Entry and Inspection

The permittee shall allow the Director, or an authorized representative, upon the presentation of proper credentials and other documents as may be required by law to:

a. enter upon the permittee's premises where a regulated facility or activity or point source is located or conducted, or where records must be kept under the conditions of the permit;

b. have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

c. inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and

d. sample or monitor, for the purposes of assuring permit compliance or as otherwise authorized by the AWPCA, any substances or parameters at any location.

C. BYPASS AND UPSET

1. Bypass

a. Any bypass is prohibited except as provided in b. and c. below:

b. A bypass is not prohibited if:

(1) It does not cause any discharge limitation specified in Provision I. A. of this permit to be exceeded;

(2) It enters the same receiving stream as the permitted outfall; and

(3) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system.

c. A bypass is not prohibited and need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) It is unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and

(3) The permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the permittee is granted such authorization, and the permittee complies with any conditions imposed by the Director to minimize any adverse impact on human health or the environment resulting from the bypass.

d. The permittee has the burden of establishing that each of the conditions of Provision II.C.1.b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in a. and an exemption, where applicable, from the discharge limitations specified in Provision I. A. of this permit.

2. Upset

a. A discharge which results from an upset need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) No later than 24-hours after becoming aware of the occurrence of the upset, the permittee orally reports the occurrence and circumstances of the upset to the Director or his designee; and

(2) No later than five (5) days after becoming aware of the occurrence of the upset, the permittee furnishes the Director with evidence, including properly signed, contemporaneous operating logs, or other relevant evidence, demonstrating that (i) an upset occurred; (ii) the permittee can identify the specific cause(s) of the upset; (iii) the permittee's facility was being properly operated at the time of the upset; and (iv) the permittee promptly took all reasonable steps to minimize any adverse impact on human health or the environment resulting from the upset.

b. The permittee has the burden of establishing that each of the conditions of Provision II. C.2.a. of this permit have been met to qualify for an exemption from the discharge limitations specified in Provision I.A. of this permit.

D. DUTY TO COMPLY WITH PERMIT, RULES, AND STATUTES

1. Duty to Comply

a. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the AWPCA and the FWPCA and is grounds for enforcement action, for permit termination, revocation and reissuance, suspension, modification; or denial of a permit renewal application.

b. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of the permit shall not be a defense for a permittee in an enforcement action.

c. The discharge of a pollutant from a source not specifically identified in the permit application for this permit and not specifically included in the description of an outfall in this permit is not authorized and shall constitute noncompliance with this permit.

d. The permittee shall take all reasonable steps, including cessation of production or other activities, to minimize or prevent any violation of this permit or to minimize or prevent any adverse impact of any permit violation.

e. Nothing in this permit shall be construed to preclude and negate the permittee's responsibility or liability to apply for, obtain, or comply with other ADEM, Federal, State, or Local Government permits, certifications, licenses, or other approvals.

2. Removed Substances

Solids, sludges, filter backwash, or any other pollutant or other waste removed in the course of treatment or control of wastewaters shall be disposed of in a manner that complies with all applicable Department Rules.

3. Loss or Failure of Treatment Facilities

Upon the loss or failure of any treatment facilities, including but not limited to the loss or failure of the primary source of power of the treatment facility, the permittee shall, where necessary to maintain compliance with the discharge limitations specified in Provision I. A. of this permit, or any other terms or conditions of this permit, cease, reduce, or otherwise control production and/or all discharges until treatment is restored. If control of discharge during loss or failure of the primary source of power is to be accomplished by means of alternate power sources, standby generators, or retention of inadequately treated effluent, the permittee must furnish to the Director within six months a certification that such control mechanisms have been installed.

4. Compliance with Statutes and Rules

a. This permit has been issued under ADEM Administrative Code, Chapter 335-6-6. All provisions of this chapter, that are applicable to this permit, are hereby made a part of this permit. A copy of this chapter may be obtained for a small charge from the Office of General Counsel, Alabama Department of Environmental Management, 1400 Coliseum Blvd., Montgomery, AL 36130.

b. This permit does not authorize the noncompliance with or violation of any Laws of the State of Alabama or the United States of America or any regulations or rules implementing such laws. FWPCA, 33 U.S.C. Section 1319, and Code of Alabama 1975, Section 22-22-14.

E. PERMIT TRANSFER, MODIFICATION, SUSPENSION, REVOCATION, AND REISSUANCE

1. Duty to Reapply or Notify of Intent to Cease Discharge

a. If the permittee intends to continue to discharge beyond the expiration date of this permit, the permittee shall file a complete permit application for reissuance of this permit at least 180 days prior to its expiration. If the permittee does not intend to continue discharge beyond the expiration of this permit, the permittee shall submit written notification of this intent which shall be signed by an individual meeting the signatory requirements for a permit application as set forth in ADEM Administrative Code Rule 335-6-6-.09.

b. Failure of the permittee to apply for reissuance at least 180 days prior to permit expiration will void the automatic continuation of the expiring permit provided by ADEM Administrative Code Rule 335-6-6-.06 and should the permit not be reissued for any reason any discharge after expiration of this permit will be an unpermitted discharge.

2. Change in Discharge

a. The permittee shall apply for a permit modification at least 180 days in advance of any facility expansion, production increase, process change, or other action that could result in the discharge of additional pollutants or increase the quantity of a discharged pollutant such that existing permit limitations would be exceeded or that could result in an additional discharge point. This requirement applies to pollutants that are or that are not subject to discharge limitations in this permit. No new or increased discharge may begin until the Director has authorized it by issuance of a permit modification or a reissued permit.

b. The permittee shall notify the Director as soon as it is known or there is reason to believe:

(1) That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(a) one hundred micrograms per liter;

(b) two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dini-trophenol; and one milligram per liter for antimony;

(c) five times the maximum concentration value reported for that pollutant in the permit application; or

(2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(a) five hundred micrograms per liter;

(b) one milligram per liter for antimony;

(c) ten times the maximum concentration value reported for that pollutant in the permit application.

3. Transfer of Permit

This permit may not be transferred or the name of the permittee changed without notice to the Director and subsequent modification or revocation and reissuance of the permit to identify the new permittee and to incorporate any other changes as may be required under the FWPCA or AWPCA. In the case of a change in name, ownership or control of the permittee's premises only, a request for permit modification in a format acceptable to the Director is required at least 30 days prior to the change. In the case of a change in name, ownership or control of the permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete permit application is required to be submitted to the Director at least 180 days prior to the change. Whenever the Director is notified of a change in name, ownership or control, he may decide not to modify the existing permit and require the submission of a new permit application.

4. Permit Modification and Revocation

a. This permit may be modified or revoked and reissued, in whole or in part, during its term for cause, including but not limited to, the following:

(1) If cause for termination under Provision II. E. 5. of this permit exists, the Director may choose to revoke and reissue this permit instead of terminating the permit;

(2) If a request to transfer this permit has been received, the Director may decide to revoke and reissue or to modify the permit; or

(3) If modification or revocation and reissuance is requested by the permittee and cause exists, the Director may grant the request.

b. This permit may be modified during its term for cause, including but not limited to, the following:

(1) If cause for termination under Provision II. E. 5. of this permit exists, the Director may choose to modify this permit instead of terminating this permit;

(2) There are material and substantial alterations or additions to the facility or activity generating wastewater which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;

(3) The Director has received new information that was not available at the time of permit issuance and that would have justified the application of different permit conditions at the time of issuance;

(4) A new or revised requirement(s) of any applicable standard or limitation is promulgated under Sections 301(b)(2)(C), (D), (E), and (F), and 307(a)(2) of the FWPCA;

(5) Errors in calculation of discharge limitations or typographical or clerical errors were made;

(6) To the extent allowed by ADEM Administrative Code, Rule 335-6-6-.17, when the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued;

(7) To the extent allowed by ADEM Administrative Code, Rule 335-6-6-.17, permits may be modified to change compliance schedules;

(8) To agree with a granted variance under 30l(c), 30l(g), 30l(h), 30l(k), or 3l6(a) of the FWPCA or for fundamentally different factors;

(9) To incorporate an applicable 307(a) FWPCA toxic effluent standard or prohibition;

(10) When required by the reopener conditions in this permit;

(11) When required under 40 CFR 403.8(e) (compliance schedule for development of pretreatment program);

(12) Upon failure of the state to notify, as required by Section 402(b)(3) of the FWPCA, another state whose waters may be affected by a discharge permitted by this permit;

(13) When required to correct technical mistakes, such as errors in calculation, or mistaken interpretations of law made in determining permit conditions; or

(14) When requested by the permittee and the Director determines that the modification has cause and will not result in a violation of federal or state law, regulations or rules.

5. Permit Termination

This permit may be terminated during its term for cause, including but not limited to, the following:

a. Violation of any term or condition of this permit;

b. The permittee's misrepresentation or failure to disclose fully all relevant facts in the permit application or during the permit issuance process or the permittee's misrepresentation of any relevant facts at any time;

c. Materially false or inaccurate statements or information in the permit application or the permit;

d. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

e. The permittee's discharge threatens human life or welfare or the maintenance of water quality standards;

f. Permanent closure of the facility generating the wastewater permitted to be discharged by this permit or permanent cessation of wastewater discharge;

g. New or revised requirements of any applicable standard or limitation that is promulgated under Sections 301(b)(2)(C), (D), (E), and (F), and 307(a)(2) of the FWPCA that the Director determines cannot be complied with by the permittee; or

h. Any other cause allowed by the ADEM Administrative Code, Chapter 335-6-6.

6. Permit Suspension

This permit may be suspended during its term for noncompliance until the permittee has taken action(s) necessary to achieve compliance.

7. Request for Permit Action Does Not Stay Any Permit Requirement

The filing of a request by the permittee for modification, suspension or revocation of this permit, in whole or in part, does not stay any permit term or condition.

F. COMPLIANCE WITH TOXIC POLLUTANT STANDARD OR PROHIBITION

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), for a toxic pollutant discharged by the permittee and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Provision I. A. of this permit, or controls a pollutant not limited in Provision I. A. of this permit, this permit shall be modified to conform to the toxic pollutant effluent standard or prohibition and the permittee shall be notified of such modification. If this permit has not been modified to conform to the toxic pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the permittee shall attain compliance with the requirements of the standard or prohibition within the time period required by the standard or prohibition and shall continue to comply with the standard or prohibition until this permit is modified or reissued.

G. DISCHARGE OF WASTEWATER GENERATED BY OTHERS

The discharge of wastewater, generated by any process, facility, or by any other means not under the operational control of the permittee or not identified in the application for this permit or not identified specifically in the description of an outfall in this permit is not authorized by this permit.

PART III OTHER PERMIT CONDITIONS

A. CIVIL AND CRIMINAL LIABILITY

1. Tampering

Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained or performed under the permit shall, upon conviction, be subject to penalties as provided by the AWPCA.

2. False Statements

Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties as provided by the AWPCA.

3. Permit Enforcement

a. Any NPDES permit issued or reissued by the Department is a permit for the purpose of the AWPCA and the FWPCA and as such any terms, conditions, or limitations of the permit are enforceable under state and federal law.

b. Any person required to have a NPDES permit pursuant to ADEM Administrative Code Chapter 335-6-6 and who discharges pollutants without said permit, who violates the conditions of said permit, who discharges pollutants in a manner not authorized by the permit, or who violates applicable orders of the Department or any applicable rule or standard of the Department, is subject to any one or combination of the following enforcement actions under applicable state statutes.

(1) An administrative order requiring abatement, compliance, mitigation, cessation, clean-up, and/or penalties;

(2) An action for damages;

(3) An action for injunctive relief; or

(4) An action for penalties.

c. If the permittee is not in compliance with the conditions of an expiring or expired permit the Director may choose to do any or all of the following provided the permittee has made a timely and complete application for reissuance of the permit:

(1) initiate enforcement action based upon the permit which has been continued;

(2) issue a notice of intent to deny the permit reissuance. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

(3) reissue the new permit with appropriate conditions; or

(4) take other actions authorized by these rules and AWPCA.

4. Relief from Liability

Except as provided in Provision II.C.1 (Bypass) and Provision II.C.2 (Upset), nothing in this permit shall be construed to relieve the permittee of civil or criminal liability under the AWPCA or FWPCA for noncompliance with any term or condition of this permit.

B. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the FWPCA, 33 U.S.C. Section 1321.

C. PROPERTY AND OTHER RIGHTS

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, trespass, or any infringement of federal, state, or local laws or regulations,

nor does it authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any waters of the state or of the United States.

D. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, Section 22-22-9(c), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential.

E. EXPIRATION OF PERMITS FOR NEW OR INCREASED DISCHARGES

1. If this permit was issued for a new discharger or new source, this permit shall expire eighteen months after the issuance date if construction of the facility has not begun during the eighteen-month period.

2. If this permit was issued or modified to allow the discharge of increased quantities of pollutants to accommodate the modification of an existing facility and if construction of this modification has not begun during the eighteen month period after issuance of this permit or permit modification, this permit shall be modified to reduce the quantities of pollutants allowed to be discharged to those levels that would have been allowed if the modification of the facility had not been planned.

3. Construction has begun when the owner or operator has:

   a. begun, or caused to begin as part of a continuous on-site construction program:

      (1) any placement, assembly, or installation of facilities or equipment; or

      (2) significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

   b. entered into a binding contractual obligation for the purpose of placement, assembly, or installation of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under the paragraph. The entering into a lease with the State of Alabama for exploration and production of hydrocarbons shall also be considered beginning construction.

F. COMPLIANCE WITH WATER QUALITY STANDARDS

1. On the basis of the permittee's application, plans, or other available information, the Department has determined that compliance with the terms and conditions of this permit should assure compliance with the applicable water quality standards.

2. Compliance with permit terms and conditions notwithstanding, if the permittee's discharge(s) from point sources identified in Provision I. A. of this permit cause or contribute to a condition in contravention of state water quality standards, the Department may require abatement action to be taken by the permittee in emergency situations or modify the permit pursuant to the Department's Rules, or both.

3. If the Department determines, on the basis of a notice provided pursuant to this permit or any investigation, inspection or sampling, that a modification of this permit is necessary to assure maintenance of water quality standards or compliance with other provisions of the AWPCA or FWPCA, the Department may require such modification and, in cases of emergency, the Director may prohibit the discharge until the permit has been modified.

G. GROUNDWATER

Unless specifically authorized under this permit, this permit does not authorize the discharge of pollutants to groundwater. Should a threat of groundwater contamination occur, the Director may require groundwater monitoring to properly assess the degree of the problem and the Director may require that the Permittee undertake measures to abate any such discharge and/or contamination.

H. DEFINITIONS

1. Average monthly discharge limitation - means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

2. Average weekly discharge limitation - means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges"

measured during that week (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

3. Arithmetic Mean – means the summation of the individual values of any set of values divided by the number of individual values.

4. AWPCA - means the Alabama Water Pollution Control Act.

5. BOD – means the five-day measure of the pollutant parameter biochemical oxygen demand.

6. Bypass - means the intentional diversion of waste streams from any portion of a treatment facility.

7. CBOD – means the five-day measure of the pollutant parameter carbonaceous biochemical oxygen demand.

8. Daily discharge - means the discharge of a pollutant measured during any consecutive 24-hour period in accordance with the sample type and analytical methodology specified by the discharge permit.

9. Daily maximum - means the highest value of any individual sample result obtained during a day.

10. Daily minimum - means the lowest value of any individual sample result obtained during a day.

11. Day - means any consecutive 24-hour period.

12. Department - means the Alabama Department of Environmental Management.

13. Director - means the Director of the Department.

14. Discharge - means "[t]he addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other wastes into waters of the state". Code of Alabama 1975, Section 22-22-1(b)(8).

15. Discharge Monitoring Report (DMR) - means the form approved by the Director to accomplish reporting requirements of an NPDES permit.

16. DO – means dissolved oxygen.

17. 8HC – means 8-hour composite sample, including any of the following:

    a. The mixing of at least 5 equal volume samples collected at constant time intervals of not more than 2 hours over a period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.

    b. A sample continuously collected at a constant rate over period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.

18. EPA - means the United States Environmental Protection Agency.

19. FC – means the pollutant parameter fecal coliform.

20. Flow – means the total volume of discharge in a 24-hour period.

21. FWPCA - means the Federal Water Pollution Control Act.

22. Geometric Mean – means the Nth root of the product of the individual values of any set of values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered one (1).

23. Grab Sample – means a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the discharge.

24. Indirect Discharger – means a nondomestic discharger who discharges pollutants to a publicly owned treatment works or a privately owned treatment facility operated by another person.

25. Industrial User – means those industries identified in the Standard Industrial Classification manual, Bureau of the Budget 1967, as amended and supplemented, under the category "Division D – Manufacturing" and such other classes of significant waste producers as, by regulation, the Director deems appropriate.

26. MGD – means million gallons per day.

27. Monthly Average – means, other than for fecal coliform bacteria, the arithmetic mean of the entire composite or grab samples taken for the daily discharges collected in one month period. The monthly average for fecal coliform bacteria is the geometric mean of daily discharge samples collected in a one month period. The monthly average for flow is the arithmetic mean of all flow measurements taken in a one month period.

28. New Discharger – means a person, owning or operating any building, structure, facility or installation:

    a. from which there is or may be a discharge of pollutants;

    b. that did not commence the discharge of pollutants prior to August 13, 1979, and which is not a new source; and

    c. which has never received a final effective NPDES permit for dischargers at that site.

29. NH3-N – means the pollutant parameter ammonia, measured as nitrogen.

30. Permit application - means forms and additional information that is required by ADEM Administrative Code Rule 335-6-6-.08 and applicable permit fees.

31. Point source - means "any discernible, confined and discrete conveyance, including but not limited to any pipe, channel, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, . . . from which pollutants are or may be discharged." Section 502(14) of the FWPCA, 33 U.S.C. Section 1362(14).

32. Pollutant - includes for purposes of this permit, but is not limited to, those pollutants specified in Code of Alabama 1975, Section 22-22-1(b)(3) and those effluent characteristics specified in Provision I. A. of this permit.

33. Privately Owned Treatment Works – means any devices or system which is used to treat wastes from any facility whose operator is not the operator of the treatment works, and which is not a "POTW".

34. Publicly Owned Treatment Works – means a wastewater collection and treatment facility owned by the State, municipality, regional entity composed of two or more municipalities, or another entity created by the State or local authority for the purpose of collecting and treating municipal wastewater.

35. Receiving Stream – means the "waters" receiving a "discharge" from a "point source".

36. Severe property damage - means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

37. Significant Source – means a source which discharges 0.025 MGD or more to a POTW or greater than five percent of the treatment work's capacity, or a source which is a primary industry as defined by the U.S. EPA or which discharges a priority or toxic pollutant.

38. Solvent – means any virgin, used or spent organic solvent(s) identified in the F-Listed wastes (F001 through F005) specified in 40 CFR 261.31 that is used for the purpose of solubilizing other materials.

39. TKN – means the pollutant parameter Total Kjeldahl Nitrogen.

40. TON – means the pollutant parameter Total Organic Nitrogen.

41. TRC – means Total Residual Chlorine.

42. TSS – means the pollutant parameter Total Suspended Solids.

43. 24HC – means 24-hour composite sample, including any of the following:

    a. the mixing of at least 12 equal volume samples collected at constant time intervals of not more than 2 hours over a period of 24 hours;

b. a sample collected over a consecutive 24-hour period using an automatic sampler composite to one sample. As a minimum, samples shall be collected hourly and each shall be no more than one twenty-fourth (1/24) of the total sample volume collected: or

c. a sample collected over a consecutive 24-hour period using an automatic composite sampler composited proportional to flow.

44. Upset - means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit discharge limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

45. Waters - means "[a]ll waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce." Code of Alabama 1975, Section 22-22-1(b)(2). Waters "include all navigable waters" as defined in Section 502(7) of the FWPCA, 22 U.S.C. Section 1362(7), which are within the State of Alabama.

46. Week - means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

47. Weekly (7-day and calendar week) Average – is the arithmetic mean of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The calendar week is defined as beginning on Sunday and ending on Saturday. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for the calendar week shall be included in the data for the month that contains the Saturday.

I. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART IV ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS

A. BEST MANAGEMENT PRACTICES (BMP) PLAN REQUIREMENTS

1. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) Plan which prevents, or minimizes the potential for, the release of pollutants from ancillary activities, including material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas, to the waters of the State through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

2. Plan Content

The permittee shall prepare and implement a best management practices (BMP) plan, which shall:

a. Establish specific objectives for the control of pollutants:

(1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of pollutants to waters of the State due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g. precipitation), or circumstances to result in significant amounts of pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of pollutants which could be discharged from the facility as a result of each condition or circumstance.

b. Establish specific best management practices to meet the objectives identified under paragraph a. of this section, addressing each component or system capable of causing a release of significant amounts of pollutants to the waters of the State, and identifying specific preventative or remedial measures to be implemented;

c. Establish a program to identify and repair leaking equipment items and damaged containment structures, which may contribute to contaminated stormwater runoff. This program must include regular visual inspections of equipment, containment structures and of the facility in general to ensure that the BMP is continually implemented and effective;

d. Prevent the spillage or loss of fluids, oil, grease, gasoline, etc. from vehicle and equipment maintenance activities and thereby prevent the contamination of stormwater from these substances;

e. Prevent or minimize stormwater contact with material stored on site;

f. Designate by position or name the person or persons responsible for the day to day implementation of the BMP;

g. Provide for routine inspections, on days during which the facility is manned, of any structures that function to prevent stormwater pollution or to remove pollutants from stormwater and of the facility in general to ensure that the BMP is continually implemented and effective;

h. Provide for the use and disposal of any material used to absorb spilled fluids that could contaminate stormwater;

i. Develop a solvent management plan, if solvents are used on site. The solvent management plan shall include as a minimum lists of the solvents on site; the disposal method of solvents used instead of dumping, such as reclamation, contract hauling; and the procedures for assuring that solvents do not routinely spill or leak into the stormwater;

j. Provide for the disposal of all used oils, hydraulic fluids, solvent degreasing material, etc. in accordance with good management practices and any applicable state or federal regulations;

k. Include a diagram of the facility showing the locations where stormwater exits the facility, the locations of any structure or other mechanisms intended to prevent pollution of stormwater or to remove pollutants from stormwater, the locations of any collection and handling systems;

l. Provide control sufficient to prevent or control pollution of stormwater by soil particles to the degree required to maintain compliance with the water quality standard for turbidity applicable to the waterbody(s) receiving discharge(s) under this permit;

m. Provide spill prevention, control, and/or management sufficient to prevent or minimize contaminated stormwater runoff. Any containment system used to implement this requirement shall be constructed of materials compatible with the substance(s) contained and shall prevent the contamination of groundwater. The containment system shall also be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided;

n. Provide and maintain curbing, diking or other means of isolating process areas to the extent necessary to allow segregation and collection for treatment of contaminated stormwater from process areas;

o. Be reviewed by plant engineering staff and the plant manager; and

p. Bear the signature of the plant manager.

3. Compliance Schedule

The permittee shall have reviewed (and revised if necessary) and fully implemented the BMP plan as soon as practicable but no later than six months after the effective date of this permit.

4. Department Review

a. When requested by the Director or his designee, the permittee shall make the BMP available for Department review.

b. The Director or his designee may notify the permittee at any time that the BMP is deficient and require correction of the deficiency.

c. The permittee shall correct any BMP deficiency identified by the Director or his designee within 30 days of receipt of notification and shall certify to the Department that the correction has been made and implemented.

5. Administrative Procedures

a. A copy of the BMP shall be maintained at the facility and shall be available for inspection by representatives of the Department.

b. A log of the routine inspection required above shall be maintained at the facility and shall be available for inspection by representatives of the Department. The log shall contain records of all inspections performed for the last three years and each entry shall be signed by the person performing the inspection.

c. The permittee shall provide training for any personnel required to implement the BMP and shall retain documentation of such training at the facility. This documentation shall be available for inspection by representatives of the Department. Training shall be performed prior to the date that implementation of the BMP is required.

d. BMP Plan Modification. The permittee shall amend the BMP plan whenever there is a change in the facility or change in operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

e. BMP Plan Review. The permittee shall complete a review and evaluation of the BMP plan at least once every three years from the date of preparation of the BMP plan. Documentation of the BMP Plan review and evaluation shall be signed and dated by the Plant Manager.

B. STORMWATER FLOW MEASUREMENT AND SAMPLING REQUIREMENTS

1. Stormwater Flow Measurement

   a. All stormwater samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches.

   b. The total volume of stormwater discharged for the event must be monitored, including the date and duration (in hours) and rainfall (in inches) for storm event(s) sampled. The duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event must be a minimum of 72 hours. This information must be recorded as part of the sampling procedure and records retained according to Part I.B. of this permit.

   c. The volume may be measured using flow measuring devices, or estimated based on a modification of the Rational Method using total depth of rainfall, the size of the drainage area serving a stormwater outfall, and an estimate of the runoff coefficient of the drainage area. This information must be recorded as part of the sampling procedure and records retained according to Part I.B. of this permit.

2. Stormwater Sampling

   a. A grab sample, if required by this permit, shall be taken during the first thirty minutes of the discharge (or as soon thereafter as practicable); and a flow-weighted composite sample, if required by this permit, shall be taken for the entire event or for the first three hours of the event.

   b. All test procedures will be in accordance with part I.B. of this permit.

C. EFFLUENT TOXICITY LIMITATIONS AND BIOMONITORING REQUIREMENTS

1. The permittee shall perform short-term chronic toxicity tests on the wastewater discharges required to be tested for chronic toxicity by Part I of this permit.

   a. Test Requirements, OPTION A (Screening Test)

      (1) The tests shall be performed using undiluted effluent.

      (2) Any test result that shows a statistically significant reduction in survival, growth, or reproduction between the control and the test at the 95% confidence level indicate chronic toxicity and constitute noncompliance with this permit.

   b. General Test Requirements

      (1) A minimum of three (3) 24-hour composite samples shall be obtained for use in the above biomonitoring tests and collected every other day so that the laboratory receives water samples on the first, third, and fifth day of the seven-day test period. The holding time for each composite sample shall not exceed 36 hours. The control water shall be a water prepared in the laboratory in accordance with the EPA procedure described in EPA 821-R-02-013 or the most current edition or another control water selected by the permittee and approved by the Department.

      (2) Effluent toxicity tests in which the control survival is less than 80%, P. promelas dry weight per surviving control organism is less than 0.25 mg, Ceriodaphnia number of young per surviving control organism is less than 15, Ceriodaphnia reproduction where less than 60% of surviving control females produce three broods or in which the other requirements of the EPA Test Procedure are not met shall be unacceptable and the permittee shall rerun the tests as soon as practical within the monitoring period.

      (3) In the event of an invalid test, upon subsequent completion of a valid test, the results of all tests, valid and invalid, are reported with an explanation of the tests performed and results.

   c. Reporting Requirements

(1) The permittee shall notify the Department in writing within 48 hours after toxicity has been demonstrated by the scheduled test(s).

(2) Biomonitoring test results obtained during each monitoring period shall be summarized and reported using the appropriate Discharge Monitoring Report (DMR) form approved by the Department. In accordance with Section 2 of this part, an effluent toxicity report containing the information in Section 2 shall be included with the DMR. Two copies of the test results must be submitted to the Department no later than 28 days after the month in which the tests were performed.

d. Additional Testing Requirements

(1) If chronic toxicity is indicated (noncompliance with permit limit), the permittee shall perform two additional valid chronic toxicity tests in accordance with these procedures to determine the extent and duration of the toxic condition. The toxicity tests shall run consecutively beginning on the first calendar week following the date on which the permittee became aware of the permit noncompliance and the results of these tests shall be submitted no later than 28 days following the month in which the tests were performed.

(2) After evaluation of the results of the follow-up tests, the Department will determine if additional action is appropriate and may require additional testing and/or toxicity reduction measures. The permittee may be required to perform a Toxicity Identification Evaluation (TIE) and/or a Toxicity Reduction Evaluation (TRE). The TIE/TRE shall be performed in accordance with the most recent protocols/guidance outlined by EPA (e.g., EPA/600/2-88/062, EPA/600/R-92/080, EPA/600/R-91-003, EPA/600/R-92/081, EPA/833/B-99/022 and/or EPA/600/6-91/005F, etc.)

e. Test Methods

(1) The tests shall be performed in accordance with the latest edition of the "EPA Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms". The Larval Survival and Growth Test, Methods 1000.0, shall be used for the fathead minnow (*Pimephales promelas*) test and the Survival and Reproduction Test, Method 1002.0, shall be used for the cladoceran (*Ceriodaphnia dubia*) test.

2. Effluent Toxicity Testing Reports

The following information shall be submitted with each discharge monitoring report unless otherwise directed by the Department. The Department may at any time suspend or reinstate these requirements or may decrease or increase the frequency of submittals.

a. Introduction

(1) Facility name, location, and county

(2) Permit number

(3) Toxicity testing requirements of permit

(4) Name of receiving water body

(5) Contract laboratory information (if tests are performed under contract)

(a) Name of firm
(b) Telephone number
(c) Address

(6) Objective of test

b. Plant Operation

(1) Discharge Operating schedule (if other than continuous)

(2) Volume of discharge during sample collection to include Mean daily discharge on sample collection dates (MGD, CFS, GPM)

(3) Design flow of treatment facility at time of sampling

c. Source of Effluent and Dilution Water

(1) Effluent samples

(a) Sampling point
(b) Sample collection dates and times (to include composite sample start and finish times)
(c) Sample collection method
(d) Physical and chemical data of undiluted effluent samples (water temperature, pH, alkalinity, hardness, specific conductance, total residual chlorine (if applicable), etc.)
(e) Lapsed time from sample collection to delivery
(f) Lapsed time from sample collection to test initiation
(g) Sample temperature when received at the laboratory

(2) Dilution Water

(a) Source
(b) Collection/preparation date(s) and time(s)
(c) Pretreatment (if applicable)
(d) Physical and chemical characteristics (water temperature, pH, alkalinity, hardness, specific conductance, etc.)

d. Test Conditions

(1) Toxicity test method utilized

(2) End point(s) of test

(3) Deviations from referenced method, if any, and reason(s)

(4) Date and time test started

(5) Date and time test terminated

(6) Type and volume of test chambers

(7) Volume of solution per chamber

(8) Number of organisms per test chamber

(9) Number of replicate test chambers per treatment

(10) Test temperature, pH, and dissolved oxygen as recommended by the method (to include ranges)

(11) Specify if aeration was needed

(12) Feeding frequency, amount, and type of food

(13) Specify if (and how) pH control measures were implemented

(14) Light intensity (mean)

e. Test Organisms

(1) Scientific name

(2) Life stage and age

(3) Source

(4) Disease(s) treatment (if applicable)

f. Quality Assurance

(1) Reference toxicant utilized and source

(2) Date and time of most recent chronic reference toxicant test(s), raw data and current control chart(s). The most recent chronic reference toxicant test shall be conducted within 30 days of the routine.

(3) Dilution water utilized in reference toxicant test

(4) Results of reference toxicant test(s) (NOEC, IC25, PASS/FAIL, etc.), report concentration response relationship and evaluate test sensitivity

(5) Physical and chemical methods utilized

g. Results

(1) Provide raw toxicity data in tabular form, including daily records of affected organisms in each concentration (including controls) and replicate

(2) Provide table of endpoints: NOECs, IC25s, PASS/FAIL, etc. (as required in the applicable NPDES permit)

(3) Indicate statistical methods used to calculate endpoints

(4) Provide all physical and chemical data required by method

(5) Results of test(s) (NOEC, IC25, PASS/FAIL, etc.), report concentration-response relationship (definitive test only), report percent minimum significant difference (PMSD) calculated for sub-lethal endpoints determined by hypothesis testing.

h. Conclusions and Recommendations

(1) Relationship between test endpoints and permit limits

(2) Actions to be taken

1/ Adapted from "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", Fourth Edition, October 2002 (EPA 821-R-02-013), Section 10, Report Preparation

D. 316(B) REQUIREMENTS

1. The permittee is a public water system in accordance with Section 1401 of the Safe Drinking Water Act or the water used for cooling consists of effluent which would otherwise be discharged, therefore, the permittee is exempt from the requirements of this permit condition.

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

FACT SHEET

APPLICATION FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT TO DISCHARGE POLLUTANTS TO WATERS OF THE STATE OF ALABAMA

Date: September 20, 2022 **Prepared By:** Rachel Lounsberry

NPDES Permit No. AL0000019

1. **Name and Address of Applicant:**

   U S Army
   4488 Martin Rd
   Huntsville, AL 35898

2. **Name and Address of Facility:**

   US Army Redstone Arsenal
   Building 4488
   Martin Road
   Redstone Arsenal, AL 35898

3. **Description of Applicant's Type of Facility and/or Activity Generating the Discharge:**

   Standard

4. **Applicant's Receiving Waters**

Receiving Waters	Classification
Tennessee River	Fish and Wildlife (F&W)
Huntsville Spring Branch	Fish and Wildlife (F&W)
UT to Huntsville Spring Branch	Fish and Wildlife (F&W)
UT to Tennessee River	Fish and Wildlife (F&W)
UT to Indian Creek	Fish and Wildlife (F&W)
UT to McDonald Creek	Fish and Wildlife (F&W)

   For the Outfall latitude and longitude, see the permit application.

5. **Permit Conditions:**

   See attached Rationale and Draft Permit.

6. **PROCEDURES FOR THE FORMULATION OF FINAL DETERMINATIONS**

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

a. Comment Period

The Alabama Department of Environmental Management proposes to issue this NPDES permit subject to the limitations and special conditions outlined above. This determination is tentative.

Interested persons are invited to submit written comments on the draft permit to the following address:

Jeffery W. Kitchens, Chief
ADEM-Water Division
1400 Coliseum Blvd
[Mailing Address: Post Office Box 301463; Zip 36130-1463]
Montgomery, Alabama 36110-2400
(334) 271-7823
water-permits@adem.alabama.gov

All comments received prior to the closure of the public notice period (see public notice for date) will be considered in the formulation of the final determination with regard to this permit.

b. Public Hearing

A written request for a public hearing may be filed within the public notice period and must state the nature of the issues proposed to be raised in the hearing. A request for a hearing should be filed with the Department at the following address:

Jeffery W. Kitchens, Chief
ADEM-Water Division
1400 Coliseum Blvd
[Mailing Address: Post Office Box 301463; Zip 36130-1463]
Montgomery, Alabama 36110-2400
(334) 271-7823
water-permits@adem.alabama.gov

The Director shall hold a public hearing whenever it is found, on the basis of hearing requests, that there exists a significant degree of public interest in a permit application or draft permit. The Director may hold a public hearing whenever such a hearing might clarify one or more issues involved in the permit decision. Public notice of such a hearing will be made in accordance with ADEM Admin. Code r. 335-6-6-.21.

c. Issuance of the Permit

All comments received during the public comment period shall be considered in making the final permit decision. At the time that any final permit decision is issued, the Department shall prepare a response to comments in accordance with ADEM Admin. Code r. 335-6-6-.21. **The permit record, including the response to comments, will be available to the public via the eFile System** http://app.adem.alabama.gov/eFile/ **or an appointment to review the record may be made by writing the Permits and Services Division at the above address.**

Unless a request for a stay of a permit or permit provision is granted by the Environmental Management Commission, the proposed permit contained in the Director's determination shall be issued and effective, and such issuance will be the final administrative action of the Alabama Department of Environmental Management.

d. Appeal Procedures

As allowed under ADEM Admin. Code chap. 335-2-1, any person aggrieved by the Department's final administrative action may file a request for hearing to contest such action. Such requests should be received by the Environmental Management Commission within thirty days of issuance of the permit. Requests should be filed with the Commission at the following address:

Alabama Environmental Management Commission
1400 Coliseum Blvd
[Mailing Address: Post Office Box 301463; Zip 36130-1463]

Montgomery, Alabama 36110-2400

All requests must be in writing and shall contain the information provided in ADEM Admin. Code r. 335-2-1-.04.

ADEM PERMIT RATIONALE

PREPARED DATE: September 20, 2022
PREPARED BY: Rachel Lounsberry

Permittee Name: U.S. Army

Facility Name: U.S. Army Garrison- Redstone Arsenal

Permit Number: AL0000019

PERMIT IS REISSUANCE DUE TO EXPIRATION

DISCHARGE SERIAL NUMBERS & DESCRIPTIONS:

DSN001:	Storm water runoff from DDT remediation area
DSN002:	Contaminated stormwater runoff and wastewater associated with testing rocket fuels and engines.
DSN003:	Vehicle wash waters and stormwater runoff from fuel storage and handling areas
DSN010:	Stormwater associated with aircraft facilities (hangars and waste storage areas) and operations (fuel storage and handling).
DSN011:	Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water.
DSN013:	Stormwater runoff from debris landfill, inert landfill and sand storage area.
DSN015:	Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.
DSN016:	Stormwater runoff from former chemical weapons storage (Mustard Gas and Lewisite) demolition areas, hazardous waste storage building and test pad.
DSN017:	Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water.
DSN020:	Stormwater runoff from former DDT plant site, storage yard for transformers, conductors and hazardous waste, cooling tower blowdown, boiler blowdown and non-contact cooling water.
DSN021:	Stormwater runoff from closed storage impoundments, a former Lewisite manufacturing site and waste accumulation area, cooling tower blowdown, boiler blowdown and non-contact cooling water.
DSN022:	Stormwater runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown and non-contact cooling water.
DSN027:	Non-contact cooling water from Building 7120.
DSN032:	Potable/Industrial water tank releases.
DSN033:	Potable/Industrial water tank releases.
DSN034:	Potable/Industrial water tank releases.
DSN038:	Potable/Industrial water tank releases.
DSN040:	Potable/Industrial water tank releases.
DSN042:	Potable/Industrial water tank releases.
DSN043:	Potable/Industrial water tank releases.
DSN045:	Potable/Industrial water tank releases.
DSN046:	Potable/Industrial water tank releases.
DSN047:	Potable/Industrial water tank releases.
DSN048:	Potable/Industrial water tank releases.
DSN049:	Potable/Industrial water tank releases.
DSN059:	Stormwater runoff from public service station.
DSN060:	Stormwater runoff from equipment storage yard.
DSN061:	Stormwater runoff from motor pool and maintenance shop.
DSN062:	Stormwater runoff from equipment storage yard.
DSN063:	Stormwater runoff from inert landfill
DSN064:	Stormwater runoff from inert landfill
DSN069:	Stormwater runoff from equipment storage yard.
DSN071:	Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.
DSN072:	Stormwater runoff from maintenance shop, former chemical storage area and the test pad

DSN073:	Airplane wash water and storm water runoff from the tarmac area
DSN074:	Non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard
DSN075:	Vehicle wash waters and stormwater runoff
DSN076:	Stormwater runoff from fuel storage and handling areas
DSN077:	Stormwater runoff from fuel storage and handling areas
DSN078:	Stormwater runoff from fuel storage and handling areas
DSN079:	Stormwater and wastewater associated with testing of Systems Controlled Environmental Test Infrastructure

INDUSTRIAL CATEGORY: NON-CATEGORICAL
MAJOR: Y

STREAM INFORMATION:

Receiving Stream:	DSN001, DSN020, DSN021, DSN032, DSN034, DSN038, DSN040, DSN042, DSN043, DSN048, DSN064 discharge into Unnamed Tributary to Huntsville Spring Branch
Classification:	Fish and Wildlife
River Basin:	Tennessee River Basin
7Q10:	0 cfs
303(d) List:	YES
Impairment:	Huntsville Spring Branch is impaired for Metals (Arsenic)
TMDL:	NO

STREAM INFORMATION:

Receiving Stream:	DSN002, DSN011, DSN015, DSN016, DSN017, DSN027, DSN045, DSN046, DSN047, DSN063, DSN069, DSN071, DSN072 discharge into Unnamed Tributary to Tennessee River
Classification:	Fish and Wildlife
River Basin:	Tennessee River Basin
7Q10:	0 cfs
303(d) List:	YES
Impairment:	Tennessee River is impaired for Metals (Mercury) and Nutrients
TMDL:	NO

STREAM INFORMATION:

Receiving Stream:	DSN003, DSN010, DSN049, DSN060, DSN062, DSN073, DSN074, DSN075, DSN076, DSN077, DSN079 discharge to Unnamed Tributary to Indian Creek
Classification:	Fish and Wildlife
River Basin:	Tennessee River Basin
7Q10:	0 cfs
303(d) List:	YES
Impairment:	Indian Creek is impaired for Pathogens (E. coli)
TMDL:	NO

STREAM INFORMATION:

Receiving Stream:	DSN013 discharges to Huntsville Spring Branch
Classification:	Fish and Wildlife
River Basin:	Tennessee River Basin
7Q10:	0 cfs
303(d) List:	YES
Impairment:	Metals (Arsenic)
TMDL:	NO

STREAM INFORMATION:

Receiving Stream:	DSN022, DSN033, DSN059, DSN061, DSN078 discharge to Unnamed Tributary to McDonald Creek
Classification:	Fish and Wildlife
River Basin:	Tennessee River Basin
7Q10:	0 cfs
303(d) List:	NO
Impairment:	None
TMDL:	NO

DISCUSSION:

US Army Garrison – Redstone Arsenal is a federal military facility located on over 38,000 acres in Huntsville providing development, manufacturing and testing of rocket motors and missiles. Conventional and chemical ammunitions and DDT were previously manufactured and stored at this site. In 1981, Redstone Arsenal was designated one of EPA's top priority hazardous waste sites for cleanup authorized by CERCLA and has since received permits for hazardous waste storage and incineration. The facility has numerous process and/or stormwater outfalls as listed above.

ADEM Administrative Rule 335-6-10-.12 requires applicants to new or expanded discharges to Tier II waters demonstrate that the proposed discharge is necessary for important economic or social development in the area in which the waters are located. The application submitted by the facility is not for a discharge to a Tier II water body. Therefore, anti-degradation requirements do not apply.

EPA has not promulgated specific guidelines for the discharges covered under the proposed permit. Proposed permit limits are based on Best Professional Judgment. The proposed frequencies are based on a review of site specific conditions and an evaluation of similar facilities.

011:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Monthly	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
DDT	-	-	-	REPORT ug/l	REPORT ug/l	Monthly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Monthly	Measured	BPJ

021:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
BOD, 5-Day (20 Deg. C)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
pH	-	-	6.0 S.U.	-	8.5 S.U.	Once/Discharge Month	Grab	WQBEL
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Once/Discharge Month	Grab	BPJ
Nitrogen, Total (As N)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Once/Discharge Month	Instantaneous	BPJ
Perchlorate (CL04)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Once/Discharge Month	Grab	BPJ

02T:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Toxicity, Ceriodaphnia Chronic	-	0 pass(0)/fail(1)	-	-	-	Annually	Composite	WQBEL
Toxicity, Pimephales Chronic	-	0 pass(0)/fail(1)	-	-	-	Annually	Composite	WQBEL

03Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Quarterly	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Quarterly	Grab	BPJ
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Methyl Tert-Butyl Ether	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Benzene	-	-	-	-	15.54 ug/l	Quarterly	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
DET	-	-	-	-	0.000128 ug/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ

10Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Methyl Tert-Butyl Ether	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Benzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
DDT	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ

11Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Instantaneous	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL

13S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
DDT	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ

15Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Nitrite Plus Nitrate Total 1 Det. (As N)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
1,1,1-Trichloroethane	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
1,1,2-Trichloroethane	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Trichloroethylene	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Perchlorate (CL04)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Mercury, Total (As Hg)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Volatile Compounds, (gc/ms)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Trinitrotoluene (TNT), Total	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
RDX, Total	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ

16Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH			REPORT S.U.		REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended					REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Nitrite Plus Nitrate Total 1 Det. (As N)					REPORT mg/l	Annually	Grab	BPJ
Arsenic	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Chloride					REPORT mg/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant		REPORT MGD				Annually	Estimate	BPJ
Perchlorate (CL04)					REPORT mg/l	Annually	Grab	BPJ
Chemical Oxygen Demand (COD)					REPORT mg/l	Annually	Grab	BPJ

17Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Instantaneous	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL
Solids, Total Dissolved	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ

20S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Semi-Annually	Grab	BPJ
DDT	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ

20Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Grab	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL
Solids, Total Dissolved	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ

21Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Instantaneous	BPJ
Chlorine, Total Residual	-	-	-	-	0.019 mg/l	Quarterly	Grab	WQBEL
Solids, Total Dissolved (TDS)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ

21S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Arsenic	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
DDT	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Chloride	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ

22Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Instantaneous	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL
Solids, Total Dissolved	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ

22Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Benzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ

!7Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Estimate	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL

32Q, 033Q, 034Q, 038Q, 040Q, 042Q, 043Q, 045Q, 046Q, 047Q, 048Q, 049Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	6.0 S.U.	-	8.5 S.U.	Quarterly	Grab	WQBEL
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Estimate	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL

59Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Methyl Tert-Butyl Ether	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Benzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ

60Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Zinc Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Cadmium, Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Lead, Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Copper Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Mercury Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ

61Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Benzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ

52Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Zinc Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Cadmium, Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Lead, Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Copper Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Mercury Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ

63S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Semi-Annually	Grab	BPJ
DDT	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ

54S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Semi-Annually	Grab	BPJ
DDT	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ

69Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Zinc Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Cadmium, Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Lead, Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Copper Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Mercury Total Recoverable	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ

71Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Nitrite Plus Nitrate Total 1 Det. (As N)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
1,1,1-Trichloroethane	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
1,1,2-Trichloroethane	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Trichloroethylene	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Perchlorate (CL04)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Mercury, Total (As Hg)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Volatile Compounds, (gc/ms)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Trinitrotoluene (TNT), Total	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
RDX, Total					REPORT mg/l	Annually	Grab	BPJ

'2Y:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Annually	Grab	BPJ
Chloride (As Cl)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Benzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Annually	Estimate	BPJ
Perchlorate (CL04)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Annually	Grab	BPJ

73S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Semi-Annually	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Benzene	-	-	-	-	15.54 ug/l	Semi-Annually	Grab	WQBEL
Ethylbenzene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
DDT	-	-	-	-	0.000128 ug/l	Semi-Annually	Grab	WQBEL
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ

74S:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Semi-Annually	Grab	BPJ
Zinc Total Recoverable	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Lead, Total Recoverable	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Copper Total Recoverable	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Benzene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ
Mercury Total Recoverable	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	BPJ

74Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
Temperature, Water Deg. Fahrenheit	-	-	-	-	86 F	Quarterly	Grab	WQBEL
Oil & Grease	-	-	-	-	15 mg/l	Quarterly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Instantaneous	BPJ
Chlorine, Total Residual	-	-	-	0.011 mg/l	0.019 mg/l	Quarterly	Grab	WQBEL
Solids, Total Dissolved	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ

75Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Quarterly	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Quarterly	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Benzene	-	-	-	-	15.54 ug/l	Quarterly	Grab	WQBEL
Ethylbenzene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
DDT	-	-	-	-	0.000128 ug/l	Quarterly	Grab	WQBEL
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ

76Q, 077Q, 078Q:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
pH	-	-	REPORT S.U.	-	REPORT S.U.	Quarterly	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Quarterly	Grab	BPJ
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Methyl Tert-Butyl Ether	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Toluene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Benzene	-	-	-	-	15.54 ug/l	Quarterly	Grab	WQBEL
Ethylbenzene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
Naphthalene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ
DDT	-	-	-	-	0.000128 ug/l	Quarterly	Grab	WQBEL
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Quarterly	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Quarterly	Grab	BPJ
Xylene	-	-	-	-	REPORT ug/l	Quarterly	Grab	BPJ

791:

Parameter	Monthly Avg Loading	Daily Max Loading	Daily Min Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
BOD, 5-Day (20 Deg. C)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
pH	-	-	6.0 S.U.	-	8.5 S.U.	Monthly	Grab	WQBEL
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Oil & Grease	-	-	-	-	15 mg/l	Monthly	Grab	BPJ
Nitrogen, Total (As N)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Nitrogen, Ammonia Total (As N)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Nitrite Plus Nitrate Total 1 Det. (As N)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Phosphorus, Total (As P)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Carbon, Tot Organic (TOC)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Toluene	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Benzene	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Ethylbenzene	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Naphthalene	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Monthly	Instantaneous	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ
Xylene	-	-	-	-	REPORT mg/l	Monthly	Grab	BPJ

*Basis for Permit Limitation

- BPJ – Best Professional Judgment
- WQBEL – Water Quality Based Effluent Limits
- EGL – Federal Effluent Guideline Limitations
- 303(d) – 303(d) List of Impaired Waters
- TMDL – Total Maximum Daily Load Requirements

Discussion

Best Professional Judgment (BPJ)
The parameters of concern for this facility are based on the parameters of concern listed in EPA Form 2F, EPA Form 2C, EPA Form 2E and from the current permit. These parameters are consistent with similar facilities in the state and have been proven to be reflective of the operations at this facility. The parameters with specific limits are discussed below:

316(B) REQUIREMENTS
The permittee is a public water system in accordance with Section 1401 of the Safe Drinking Water Act or the water used for cooling consists of effluent which would otherwise be discharged, therefore, the permittee is exempt from the requirements of this permit condition.

Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater from areas of industrial activities. This facility is required to maintain a BMP plan. The requirements of the BMP plan call for minimization of stormwater contact with waste materials, products and by-products, and for prevention of spills or loss of fluids from equipment maintenance activities. The effectiveness of the BMPs will be measured through the monitoring of the pollutants of concern.

303(d) List of Impaired Waters
Indian Creek is on the 303(d) List of Impaired Waters for pathogens, Huntsville Spring Branch is on the 303d list for arsenic, and Tennessee River is on the 303d list for mercury and nutrients. The facility is not expected to contribute to these impairments.

Requested Modifications
Various operations and site layouts have changed within Redstone Arsenal drainage basin. Due to these changes, Redstone Arsenal has requested the following modifications:

DSN004, DSN005, DSN011S
DSN004, DSN005, and DSN011S have been removed from the permit due to fuel storage and handling areas moving to a new location

DSN011Q
DSN011Q description has been changed from Stormwater runoff from fuel storage area, cooling tower blowdown, boiler blowdown and non-contact cooling water to Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water. This is due to the fuel storage and handling areas moving to a new location.

DSN017S
DSN017S has been removed from the permit because the Defense Logistics Agency (DLA) Disposition Services function has been moved to Anniston Army Depot.

DSN031, DSN035, DSN036, DSN037, DSN039, DSN041, DSN044, DSN050, DSN051, DSN052, DSN053 and DSN054
These outfalls have been removed from the permit because the water tanks have been taken out of service.

DSN057 and DSN058
DSN057 and DSN058 have been removed from the permit. The United States Naval Construction Battalions, better known as the Navy Seabees used to occupy the facility on the installation, but they have moved out. A new tenant in virtual business moved into the compound facilities, and motor pool is no longer needed for their function.

DSN068 and DSN070
DSN068 and DSN070 have been removed from the permit. Boiler plants are running on natural gas, oil-burning furnace has been removed from the operation process.

DSN076, DSN077, DSM078
DSN076, DSN077, and DSN078 have been added to the permit as stormwater from fuel storage and handling areas.

DSN079
DSN079 has been added to the permit as stormwater runoff and wastewater associated with testing of System Controlled Environmental Test Infrastructure. This test infrastructure is to provide and develop multi-functional test capability that will allow repeatable, controlled and realistic degraded visual environment and hostile fire indicator testing. The degraded visual environment will include water cannons, fog oil, sand, dust, and chaff. Diesel, oil, JP-8 smoke will be generated by burning the product in burn barrels. Red phosphorous smoke will be created through detonation of various phosphorous grenades. Flares will dispensed from aircraft.

DSN001 Storm water runoff from DDT remediation area

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

pH
The parameter for pH will continue to be monitor only. The pH as the result of the storm water discharge is not expected to affect the receiving stream.

Total Suspended Solids
Total Suspended Solids will continue to be in the permit on a monitor only basis to ensure proper Best Management Practices.

DDT
DDT is a parameter of concern. It is to be monitored to quantify the loading in the storm water.

DSN002 - Contaminated stormwater runoff and wastewater associated with testing rocket fuels and engines.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Temperature and Total Residual Chlorine
Due to retention times in the lagoon, Temperature and TRC do not represent pollutants of concern as both pollutants should be at ambient levels prior to discharge. No monitoring is proposed.

Chemical Oxygen Demand
This parameter is a measurement of organic and inorganic oxygen demanding pollutants that could be present in the discharge due to rocket fuel release and combustion. Monitoring only requirements will be continued in this issuance.

Total Suspended Solids (TSS)
TSS monitoring will continue to be used as an indicator for metals and other pollutants. Monitoring only requirements will be continued.

Perchlorate
Perchlorate is a major component of solid rocket fuel and has been determined to adversely impact human health. Monitoring only will be continued in this permit to ensure that this discharge does not contain detectable levels.

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Chronic Biomonitoring
Chronic Biomonitoring will be continued to evaluate potential synergistic toxic effects in this discharge. The receiving stream has a 7Q10 of 0.0 cfs; therefore testing will be performed using an IWC of 100%.

Biological Oxygen Demand, Total Nitrogen, Total Phosphorus, Total Organic Carbon, Ammonia, and Total Nitrogen
These parameters are being added to the permit due to the potential presence in the discharge.

DSN003 - Vehicle wash waters and stormwater runoff from fuel storage and handling areas

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
A reasonable potential analysis indicates DDT is a parameter of concern. The Human Health water quality limited will be included in the permit at this time.

Naphthalene
Naphthalene can be present in storm runoff from diesel storage and handling areas and from vehicle washing operations. Monitoring will be continued in this permit.

Benzene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Total Residual Chlorine
Due to the installation of an oil water separator, TRC does not represent pollutants of concern as it should be at ambient levels prior to discharge. No monitoring is proposed.

Phosphorus
The presence of Phosphorus in washing compounds could result in the discharge of phosphorus levels adequate to cause eutrophication in the receiving stream; therefore, monitoring for this pollutant will be continued in this permit. Monitoring will be required during non-storm events, when only wash waters are being discharged.

Total Organic Carbon, and Ammonia
These parameters are being added to the permit due to the potential presence in the discharge.

DSN010: Stormwater associated with aircraft facilities (hangars and waste storage areas) and operations (fuel storage and handling)

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Methyl tertiary butyl ether (MTBE)
MTBE is a gasoline additive that could be present in the discharge from both fuel handling and storage operations. Monitoring requirements from the existing permit are proposed to be continued. Limits are not proposed at this time, but could be developed based on the data collected.

DDT
DDT is a parameter of concern. It is to be monitored to quantify the loading in the storm water.

Naphthalene
Naphthalene can be present in storm runoff from diesel storage and handling operations, Naphthalene is a pollutant of concern. Monitoring will be continued in this permit.

Benzene

Due to maintenance activities performed and storm runoff from fuel handling and storage, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

DSN011 and DSN0017- Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water. (To be sampled during a non-storm event)

Temperature
In accordance with ADEM 335-6-10-.09(5)(e)(3), "the maximum temperature in streams, lakes and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting small mouth bass, sauger or walleye, shall not exceed 86°f. Therefore, temperature limitations are continued at 86°f for this outfall.

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Total Residual Chlorine
Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Flow
Flow will be continued in the permit with a monitor only requirement.

Total Organic Carbon, and Ammonia
These parameters are being added to the permit due to the potential presence in the discharge.

DSN013- Stormwater runoff from debris landfill, inert landfill and sand storage area.

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
DDT monitoring will be continued to address stormwater exposure to DDT contamination associated with former DDT use on this site. Monitoring only requirements will be continued in this permit

DSN015 and DSN071- Stormwater from Northeast and Western Demolition area (propellant and propellant waste disposal) and simulated chemical training area.

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Nitrates and Nitrites
Explosives degradation byproducts and detonation residuals can contain nitrite and/or nitrate. The existing permit requires testing for these pollutants to evaluate contamination of stormwater runoff from activities associated with open detonation of explosives. This testing is proposed to be continued and must be performed during a qualifying storm event.

Perchlorate
Perchlorate monitoring is required in the existing permit due to possible stormwater exposure to open burning/open detonation of propellants and propellant contaminated wastes. Perchlorate is a major component of solid rocket fuel and has been determined to adversely impact human health. Monitoring only will be continued in this permit to ensure that this discharge does not contain detectable levels.

Trichloroethylene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane and GC/MS Volatile Compounds.
Testing for these pollutants is required in the existing permit due to past open burning of spent solvents and solvent contaminated wastes. It is proposed that this testing is to be continued in this permit with monitoring to be performed during a qualifying storm event. **If no open burning occurs during the monitoring period, the permittee may provide certification to that effect and testing for these pollutants will not be required.**

Trinitrotoluene (TNT) and 1,3,5-hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
TNT and RDX constitute the largest quantity of secondary explosives used in military applications and are major ingredients in nearly every munitions formulation. Monitoring for these parameters is required in the existing permit to address stormwater exposure to open burning/open detonation activities. This testing is proposed to be continued and must be performed during a qualifying storm event. **If no open burning/open detonation occurs during the monitoring period, the permittee may provide certification to that effect and testing for these pollutants will not be required.**

Mercury
Previous testing for Mercury has indicated that this pollutant can be present at elevated levels. Testing is proposed to be continued in this permit. This testing is to be performed during a qualifying storm event. **If no open burning/open detonation occurs during the monitoring period, the permittee may provide certification to that effect and testing for these pollutants will not be required.**

DSN016-Stormwater runoff from former chemical weapons storage (Mustard Gas and Lewisite) demolition areas, hazardous waste storage building and test pad.

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Perchlorate

Perchlorate monitoring is required in the existing permit due to possible stormwater exposure to activities associated with test firing of rocket engines and/or open burning/open detonation of propellants and propellant contaminated wastes. Perchlorate is a major component of solid rocket fuel and has been determined to adversely impact human health. Monitoring only will be continued in this permit to ensure that this discharge does not contain detectable levels.

Nitrates and Nitrites
Explosives degradation byproducts and detonation residuals can contain Nitrite and/or Nitrate. The existing permit requires testing for these pollutants to evaluate contamination of stormwater runoff from activities associated with former disposal of ash from open burning/open detonation activities and open burning and detonation of various military munitions. This testing is proposed to be continued and must be performed during a qualifying storm event.

Chlorides, Total
Chloride containing compounds are hydrolysis products of both mustard gas and lewisite. Testing of this parameter will address stormwater contamination associated with weapon storage in this area.

Total Arsenic
Arsenic containing compounds are hydrolysis products of lewisite. Testing of this parameter will address stormwater contamination associated with weapon storage in this area. If testing indicates concentrations above detectable levels, the permit may need to be modified to include water quality based limits.

DSN020S - Runoff from former DDT plant site, storage yard for transformers, conductors and hazardous waste, cooling tower blowdown, boiler blowdown and non-contact cooling water (To be sampled during a storm event)

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
DDT monitoring will be continued to address stormwater exposure to DDT contamination associated with former manufacturing and DDT use on this site. Monitoring only requirements will be continued in this permit.

DSN020Q - Runoff from former DDT plant site, storage yard for transformers, conductors and hazardous waste, cooling tower blowdown, boiler blowdown and non-contact cooling water (To be sampled during a non-storm event)

Temperature

In accordance with ADEM 335-6-10-.09(5)(e)(3), "the maximum temperature in streams, lakes and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting small mouth bass, sauger or walleye, shall not exceed 86°f. Therefore, temperature limitations are continued at 86°f for this outfall.

pH

ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Total Residual Chlorine

Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Total Dissolved Solids (TDS)

Cooling tower and boiler blowdown are typically high in Dissolved Solids. Monitoring is proposed to be continued quarterly during non-storm events.

Flow

Flow will be continued in the permit with a monitor only requirement.

DSN021S - Runoff from closed storage impoundments, a former Lewisite manufacturing site and waste accumulation area, cooling tower blowdown, boiler blowdown and non-contact cooling water.(To be sampled during a storm event)

Flow

Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

pH

The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

TSS

Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)

Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease

The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
DDT and Its Metabolites monitoring will be continued to address stormwater exposure to DDT contamination associated with former manufacturing and DDT use on this site. Monitoring will be continued in this permit.

Total Arsenic
Arsenic containing compounds are hydrolysis products of lewisite. Testing of this parameter will address stormwater contamination associated with weapon storage in this area.

Chlorides, Total
Chloride containing compounds are hydrolysis products of both mustard gas and lewisite. Testing of this parameter will address stormwater contamination associated with weapon storage in this area.

DSN021Q - Runoff from closed storage impoundments, a former Lewisite manufacturing site and waste accumulation area, cooling tower blowdown, boiler blowdown and non-contact cooling water.(To be sampled during a non-storm event)

Temperature
In accordance with ADEM 335-6-10-.09(5)(e)(3), "the maximum temperature in streams, lakes and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting small mouth bass, sauger or walleye, shall not exceed 86°f. Therefore, temperature limitations are continued at 86°f for this outfall.

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Total Residual Chlorine
Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Total Dissolved Solids (TDS)
Cooling tower and boiler blowdown are typically high in Dissolved Solids. Monitoring is proposed to be continued quarterly during non-storm events.

Flow
Flow will be continued in the permit with a monitor only requirement.

Total Organic Carbon, and Ammonia
These parameters are being added to the permit due to the potential presence in the discharge.

DSN022Y - Runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown and non-contact cooling water (To be sampled during a non-storm event)

Flow

Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Naphthalene
Naphthalene can be present in storm runoff from maintenance areas and is a pollutant of concern. Monitoring will be continued in this permit.

Benzene
Due to maintenance activities performed and storm runoff from fuel handling, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

DSN022Q - Runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown and non-contact cooling water (To be sampled during a non-storm event)

Temperature
In accordance with ADEM 335-6-10-.09(5)(e)(3), "the maximum temperature in streams, lakes and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting small mouth bass, sauger or walleye, shall not exceed 86°f. Therefore, temperature limitations are continued at 86°f for this outfall.

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5

standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Total Residual Chlorine
Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Total Dissolved Solids (TDS)
Cooling tower and boiler blowdown are typically high in Dissolved Solids. Monitoring is proposed to be continued quarterly during non-storm events.

Flow
Flow will be continued in the permit with a monitor only requirement.

DSN027Q - Non-contact cooling water from Building 7120

Temperature
In accordance with ADEM 335-6-10-.09(5)(e)(3), "the maximum temperature in streams, lakes and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting small mouth bass, sauger or walleye, shall not exceed 86°f. Therefore, temperature limitations are continued at 86°f for this outfall.

pH
The ADEM Administrative Code, Division 6 Regulations, specifically 335-6-10-.09(5)(e)2-Specific Water Quality Criteria for Fish and Wildlife Classified streams states "Sewage, industrial waste, or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units."

Total Residual Chlorine
Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Flow
Flow will be continued in the permit with a monitor only requirement.

DSN031Q – 054Q - Potable/Industrial water tank releases

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Total Residual Chlorine
Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Flow
Flow will be continued in the permit with a monitor only requirement.

DSN059 - Runoff from public service station

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Benzene
Due to maintenance activities performed and storm runoff from fuel handling, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

Methyl Tertiary Butyl Ether (MTBE)
MTBE is a gasoline additive that could be present in the discharge from both fuel handling and storage and vehicle washing operations. Monitoring requirements from the existing permit are proposed to be continued. Limits are not proposed at this time, but could be developed based on the data collected.

DSN060Y, 062Y, 069Y – Stormwater runoff from equipment storage yard

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury and Total Recoverable Zinc
Monitoring for these pollutants will be continued in this permit to address stormwater contamination associated with metal material storage in this area.

DSN061Y - Runoff from motor pool and maintenance shop

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Benzene
Due to maintenance activities performed and storm runoff from fuel handling, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

Naphthalene
Naphthalene can be present in storm runoff from diesel equipment maintenance operations. Naphthalene is a pollutant of concern. Monitoring will be continued in this permit.

DSN063S, 064S – Stormwater runoff from inert landfill

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
DDT monitoring will be continued to address stormwater exposure to DDT contamination associated with former DDT use on this site. Monitoring only requirements will be continued in this permit.

DSN072Y – Stormwater runoff from maintenance shop, former chemical storage area and the test pad

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Benzene
Due to maintenance activities performed and storm runoff from fuel handling, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

Naphthalene
Naphthalene can be present in storm runoff from diesel equipment maintenance operations. Naphthalene is a pollutant of concern. Monitoring will be continued in this permit.

Chlorides, Total
Chloride containing compounds are hydrolysis products of both mustard gas and lewisite. Testing of this parameter will address stormwater contamination associated with weapon storage in this area.

Perchlorate
Perchlorate is a major component of solid rocket fuel and has been determined to adversely impact human health. Monitoring only will be continued in this permit to address stormwater contamination associated with weapon storage in this area.

DSN073S - Airplane wash water and storm water runoff from the tarmac area

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
A reasonable potential analysis indicates DDT is a parameter of concern. The Human Health water quality limited will be included in the permit at this time.

Naphthalene
Naphthalene can be present in storm runoff from diesel storage and handling areas and from vehicle washing operations. Monitoring will be continued in this permit.

Benzene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Benzene is a pollutant of concern. The Human Health water quality limited will be included in the permit at this time.

Toluene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Total Residual Chlorine
This outfall is not expected to discharge during non storm events due to the installation of an oil water separator. Therefore, TRC is not expected to be a parameter of concern.

Phosphorus
The presence of Phosphorus in washing compounds could result in the discharge of phosphorus levels adequate to cause eutrophication in the receiving stream; therefore, monitoring for this pollutant will be continued in this permit. Monitoring will be required during non-storm events, when only wash waters are being discharged.

DSN074S - Non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard (To be sampled during a storm event)

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Naphthalene
Naphthalene can be present in storm runoff from diesel storage and handling areas and from vehicle washing operations. Monitoring will be continued in this permit at this time.

Benzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury and Total Recoverable Zinc
Monitoring for these pollutants will be continued in this permit to address stormwater contamination associated with metal scrap material and product storage in this area.

DSN074Q - Non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard (To be sampled during a non-storm event)

Temperature
In accordance with ADEM 335-6-10-.09(5)(e)(3), "the maximum temperature in streams, lakes and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting small mouth bass, sauger or walleye, shall not exceed 86°f. Therefore, temperature limitations are continued at 86°f for this outfall.

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5

standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Total Residual Chlorine
Due to the nature of the discharge, TRC is a pollutant of concern. Therefore, based on BPJ, EPA's water quality criteria for TRC of 0.011 mg/l for chronic toxicity and 0.019 mg/l for acute toxicity will be implemented.

Total Dissolved Solids (TDS)
Cooling tower and boiler blowdown are typically high in Dissolved Solids. Monitoring is proposed to be continued quarterly during non-storm events.

Flow
Flow will be continued in the permit with a monitor only requirement.

DSN075Q - Vehicle wash waters and stormwater runoff.

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. As in the existing permit, COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

DDT
DDT monitoring will be continued to address the DDT contamination associated with former DDT use on this site. The Human Health water quality limited will be included in the permit at this time.

Naphthalene
Naphthalene can be present in storm runoff from diesel storage and handling areas and from vehicle washing operations. Monitoring will be continued in this permit at this time.

Benzene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Benzene is a pollutant of concern. The Human Health water quality limited will be included in the permit at this time.

Toluene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from vehicle washing operations, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Total Residual Chlorine
This outfall is not expected to discharge during non storm events due to the installation of an oil water separator. Therefore, TRC is not expected to be a parameter of concern.

Phosphorus
The presence of Phosphorus in washing compounds could result in the discharge of phosphorus levels adequate to cause eutrophication in the receiving stream; therefore, monitoring for this pollutant will be continued in this permit. Monitoring will be required during non-storm events, when only wash waters are being discharged.

DSN076, DSN0076, DSN0078 Stormwater runoff from fuel storage and handling areas

Flow
Flow will be monitored to quantify the volume of storm water runoff leaving the facility through their permitted outfalls.

TSS
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. TSS monitoring is proposed to evaluate the effectiveness of the BMPs.

pH
The pH as the result of the storm water discharge is not expected to affect the receiving stream. Therefore, pH will be monitor only.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Benzene
Due to maintenance activities performed and storm runoff from fuel handling, Benzene is a pollutant of concern. Monitoring will be continued in this permit.

Toluene
Due to maintenance activities performed and storm runoff from fuel handling, Toluene is a pollutant of concern. Monitoring will be continued in this permit.

Ethylbenzene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Ethylbenzene is a pollutant of concern. Monitoring will be continued in this permit.

Xylene
Due to maintenance activities performed and storm runoff from fuel handling and storage, Xylene is a pollutant of concern. Monitoring will be continued in this permit.

Naphthalene
Naphthalene can be present in storm runoff from diesel equipment maintenance operations. Naphthalene is a pollutant of concern. Monitoring will be continued in this permit.

DSN079- Stormwater and wastewater associated with testing of Systems Controlled Environmental Test Infrastructure

pH
ADEM Administrative Code, Division 6 Regulations, 335-6-10-.09 – Specific Water Quality for Fish & Wildlife classified streams states: "Sewage, industrial waste or other wastes shall not cause the pH to deviate more than one unit from then normal or natural pH, nor be less than 6.0, nor greater than 8.5 standard units." In view of the high discharge volume compared to the receiving stream flow, water quality based limits of 6.0 to 8.5 s.u. will be continued

Oil & Grease
The daily maximum limit of 15 mg/l for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

Temperature and Total Residual Chlorine
Due to retention times in the lagoon, Temperature and TRC do not represent pollutants of concern as both pollutants should be at ambient levels prior to discharge. No monitoring is proposed.

Chemical Oxygen Demand (COD)
Due to the nature of this discharge, Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater for these parameters. COD monitoring is proposed to evaluate the effectiveness of the BMPs.

Total Suspended Solids (TSS)
TSS monitoring will continue to be used as an indicator for metals and other pollutants. Monitoring only is proposed.

Benzene
Due to the presence of diesel and other oils at the site, Benzene is a pollutant of concern. Monitoring only is proposed.

Toluene
Due to the presence of diesel and other oils at the site, Toluene is a pollutant of concern. Monitoring only is proposed.

Ethylbenzene
Due to the presence of diesel and other oils at the site, Ethylbenzene is a pollutant of concern. Monitoring only is proposed.

Xylene
Due to the presence of diesel and other oils at the site, Xylene is a pollutant of concern. Monitoring only is proposed.

Naphthalene
Due to the presence of diesel and other oils at the site, Naphthalene is a pollutant of concern. Monitoring only is proposed.

Phosphorus
The presence of Phosphorus in the red phosphorus smoke could result in the discharge of phosphorus levels adequate to cause eutrophication in the receiving stream; therefore, monitoring for this pollutant is proposed in this permit.

Nitrates and Nitrites
Explosives degradation byproducts and detonation residuals can contain nitrite and/or nitrate. The existing permit requires testing for these pollutants to evaluate contamination of stormwater runoff from activities associated with open detonation of explosives. This testing is proposed to be continued and must be performed during a qualifying storm event.

Biological Oxygen Demand, Total Nitrogen, Total Organic Carbon, Ammonia, and Total Nitrogen
These parameters are being added to the permit due to the potential presence in the discharge.

Facility Name: **Redstone DSN073**

NPDES No.: **AL000019**

$Q_d*C_d + Q_{d2}*C_{d2} + Q_s*C_s = Q_r*C_r$

ID	Pollutant	Carcinogen "yes"	Type	Background from upstream source (C_{d2}) Daily Max	Background from upstream source (C_{d2}) Monthly Ave	Background Instream (C_s) Daily Max	Background Instream (C_s) Monthly Ave	Enter Max Daily Discharge as reported by Applicant (C_d) Max	Enter Avg Daily Discharge as reported by Applicant (C_d) Ave	Partition Coefficient (Stream / Lake)
				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	
1	Antimony		Metals	0	0	0	0	0	0	-
2	**Arsenic*,****	YES	Metals	0	0	0	0	0	0	0.574
3	Beryllium		Metals	0	0	0	0	0	0	-
4	Cadmium**		Metals	0	0	0	0	0	0	0.236
5	Chromium / Chromium III**		Metals	0	0	0	0	0	0	0.210
6	Chromium / Chromium VI**		Metals	0	0	0	0	0	0	
7	Copper**		Metals	5	2.9	0	0	0	0	0.388
8	Lead**		Metals	0	0	0	0	0	0	0.206
9	Mercury**		Metals	0	0	0	0	0	0	0.302
10	Nickel**		Metals	0	0	0	0	0	0	0.505
11	Selenium		Metals	0	0	0	0	0	0	-
12	Silver		Metals	0	0	0	0	0	0	-
13	Thallium		Metals	0	0	0	0	0	0	-
14	Zinc**		Metals	100	72.2	0	0	0	0	0.330
15	Cyanide		Metals	0	0	0	0	0	0	-
16	Total Phenolic Compounds		Metals	0	0	0	0	0	0	-
17	Hardness (As CaCO3)		Metals	0	0	0	0	0	0	-
18	Acrolein		VOC	0	0	0	0	0	0	-
19	**Acrylonitrile***	YES	VOC	0	0	0	0	0	0	-
20	**Aldrin**	YES	VOC	0	0	0	0	0	0	-
21	**Benzene***	YES	VOC	0	0	0	0	1	1	-
22	**Bromoform***	YES	VOC	0	0	0	0	0	0	-
23	**Carbon Tetrachloride***	YES	VOC	0	0	0	0	0	0	-
24	**Chlordane**	YES	VOC	0	0	0	0	0	0	-
25	Clorobenzene		VOC	0	0	0	0	0	0	-
26	**Chlorodibromo-Methane***	YES	VOC	0	0	0	0	0	0	-
27	Chloroethane		VOC	0	0	0	0	0	0	-
28	2-Chloro-Ethylvinyl Ether		VOC	0	0	0	0	0	0	-
29	**ChloroForm***	YES	VOC	0	0	0	0	0	0	-
30	**4,4'-DDD**	YES	VOC	0	0	0	0	0	0	-
31	**4,4'-DDE**	YES	VOC	0	0	0	0	0	0	-
32	**4,4'-DDT**	YES	VOC	0	0	0	0	0.05	0.05	-
33	**Dichlorobromo-Methane***	YES	VOC	0	0	0	0	0	0	-
34	1, 1-Dichloroethane		VOC	0	0	0	0	0	0	-
35	**1, 2-Dichloroethane***	YES	VOC	0	0	0	0	0	0	-
36	Trans-1, 2-Dichloro-Ethylene		VOC	0	0	0	0	0	0	-
37	**1, 1-Dichloroethylene***	YES	VOC	0	0	0	0	0	0	-
38	1, 2-Dichloropropane		VOC	0	0	0	0	0	0	-
39	1, 3-Dichloro-Propylene		VOC	0	0	0	0	0	0	-
40	**Dieldrin**	YES	VOC	0	0	0	0	0	0	-
41	Ethylbenzene		VOC	0	0	0	0	0	0	-
42	Methyl Bromide		VOC	0	0	0	0	0	0	-
43	Methyl Chloride		VOC	0	0	0	0	0	0	-
44	**Methylene Chloride***	YES	VOC	0	0	0	0	0	0	-
45	**1, 1, 2, 2-Tetrachloro-Ethane***	YES	VOC	0	0	0	0	0	0	-
46	**Tetrachloro-Ethylene***	YES	VOC	0	0	0	0	0	0	-
47	Toluene		VOC	0	0	0	0	0	0	-
48	**Toxaphene**	YES	VOC	0	0	0	0	0	0	-
49	**Tributyltine (TBT)**	YES	VOC	0	0	0	0	0	0	-
50	1, 1, 1-Trichloroethane		VOC	0	0	0	0	0	0	-
51	**1, 1, 2-Trichloroethane***	YES	VOC	0	0	0	0	0	0	-
52	**Trichlorethylene***	YES	VOC	0	0	0	0	0	0	-
53	**Vinyl Chloride***	YES	VOC	0	0	0	0	0	0	-
54	P-Chloro-M-Cresol		Acids	0	0	0	0	0	0	-
55	2-Chlorophenol		Acids	0	0	0	0	0	0	-
56	2, 4-Dichlorophenol		Acids	0	0	0	0	0	0	-
57	2, 4-Dimethylphenol		Acids	0	0	0	0	0	0	-
58	4, 6-Dinitro-O-Cresol		Acids	0	0	0	0	0	0	-
59	2, 4-Dinitrophenol		Acids	0	0	0	0	0	0	-
60	**4,6-Dintro-2-methylophenol**	YES	Acids	0	0	0	0	0	0	-
61	**Dioxin (2,3,7,8-TCDD)**	YES	Acids	0	0	0	0	0	0	-
62	2-Nitrophenol		Acids	0	0	0	0	0	0	-
63	4-Nitrophenol		Acids	0	0	0	0	0	0	-
64	**Pentachlorophenol***	YES	Acids	0	0	0	0	0	0	-
65	Phenol		Acids	0	0	0	0	0	0	-
66	**2, 4, 6-Trichlorophenol***	YES	Acids	0	0	0	0	0	0	-
67	Acenaphthene		Bases	0	0	0	0	0	0	-
68	Acenaphthylene		Bases	0	0	0	0	0	0	-
69	Anthracene		Bases	0	0	0	0	0	0	-
70	Benzidine		Bases	0	0	0	0	0	0	-
71	**Benzo(A)Anthracene***	YES	Bases	0	0	0	0	0	0	-
72	**Benzo(A)Pyrene***	YES	Bases	0	0	0	0	0	0	-
73	3, 4 Benzo-Fluoranthene		Bases	0	0	0	0	0	0	-
74	Benzo(GHI)Perylene		Bases	0	0	0	0	0	0	-
75	Benzo(K)Fluoranthene		Bases	0	0	0	0	0	0	-
76	Bis (2-Chloroethoxy) Methane		Bases	0	0	0	0	0	0	-
77	**Bis (2-Chloroethyl)-Ether***	YES	Bases	0	0	0	0	0	0	-
78	Bis (2-Chloroiso-Propyl) Ether		Bases	0	0	0	0	0	0	-
79	**Bis (2-Ethylhexyl) Phthalate***	YES	Bases	0	0	0	0	0	0	-
80	4-Bromophenyl Phenyl Ether		Bases	0	0	0	0	0	0	-
81	Butyl Benzyl Phthalate		Bases	0	0	0	0	0	0	-
82	2-Chloronaphthalene		Bases	0	0	0	0	0	0	-
83	4-Chlorophenyl Phenyl Ether		Bases	0	0	0	0	0	0	-
84	**Chrysene[1]**	YES	Bases	0	0	0	0	0	0	-
85	Di-N-Butyl Phthalate		Bases	0	0	0	0	0	0	-
86	Di-N-Octyl Phthalate		Bases	0	0	0	0	0	0	-
87	**Dibenzo(,H)Anthracene***	YES	Bases	0	0	0	0	0	0	-
88	1, 2-Dichlorobenzene		Bases	0	0	0	0	0	0	-
89	1, 3-Dichlorobenzene		Bases	0	0	0	0	0	0	-
90	1, 4-Dichlorobenzene		Bases	0	0	0	0	0	0	-
91	**3, 3-Dichlorobenzidine***	YES	Bases	0	0	0	0	0	0	-
92	Diethyl Phthalate		Bases	0	0	0	0	0	0	-
93	Dimethyl Phthalate		Bases	0	0	0	0	0	0	-
94	**2, 4-Dinitrotoluene***	YES	Bases	0	0	0	0	0	0	-
95	2, 6-Dinitrotoluene		Bases	0	0	0	0	0	0	-
96	1,2-Diphenylhydrazine		Bases	0	0	0	0	0	0	-
97	**Endosulfan (alpha)**	YES	Bases	0	0	0	0	0	0	-
98	**Endosulfan (beta)**	YES	Bases	0	0	0	0	0	0	-
99	**Endosulfan sulfate**	YES	Bases	0	0	0	0	0	0	-
100	**Endrin**	YES	Bases	0	0	0	0	0	0	-
101	**Endrin Aldeyhide**	YES	Bases	0	0	0	0	0	0	-
102	Fluoranthene		Bases	0	0	0	0	0	0	-
103	Fluorene		Bases	0	0	0	0	0	0	-
104	Heptochlor	YES	Bases	0	0	0	0	0	0	-
105	Heptachlor Epoxide	YES	Bases	0	0	0	0	0	0	-
106	**Hexachlorobenzene***	YES	Bases	0	0	0	0	0	0	-
107	**Hexachlorobutadiene***	YES	Bases	0	0	0	0	0	0	-
108	**Hexachlorocyclohexan (alpa)**	YES	Bases	0	0	0	0	0	0	-
109	**Hexachlorocyclohexan (beta)**	YES	Bases	0	0	0	0	0	0	-
110	**Hexachlorocyclohexan (gamma)**	YES	Bases	0	0	0	0	0	0	-
111	HexachlorocycloPentadiene		Bases	0	0	0	0	0	0	-
112	Hexachloroethane		Bases	0	0	0	0	0	0	-
113	**Indeno(1, 2, 3-CK)Pyrene***	YES	Bases	0	0	0	0	0	0	-
114	Isophorone		Bases	0	0	0	0	0	0	-
115	Naphthalene		Bases	0	0	0	0	20	20	-
116	Nitrobenzene		Bases	0	0	0	0	0	0	-
117	**N-Nitrosodi-N-Propylamine***	YES	Bases	0	0	0	0	0	0	-
118	**N-Nitrosodi-N-Methylamine***	YES	Bases	0	0	0	0	0	0	-
119	**N-Nitrosodi-N-Phenylamine***	YES	Bases	0	0	0	0	0	0	-
120	**PCB-1016**	YES	Bases	0	0	0	0	0	0	-
121	**PCB-1221**	YES	Bases	0	0	0	0	0	0	-
122	**PCB-1232**	YES	Bases	0	0	0	0	0	0	-
123	**PCB-1242**	YES	Bases	0	0	0	0	0	0	-
124	**PCB-1248**	YES	Bases	0	0	0	0	0	0	-
125	**PCB-1254**	YES	Bases	0	0	0	0	0	0	-
126	**PCB-1260**	YES	Bases	0	0	0	0	0	0	-
127	Phenanthrene		Bases	0	0	0	0	0	0	-
128	Pyrene		Bases	0	0	0	0	0	0	-
129	1, 2, 4-Trichlorobenzene		Bases	0	0	0	0	0	0	-

2.6	Enter Q_d = wastewater discharge flow from facility (MGD)
4.0227954	Q_d = wastewater discharge flow (cfs) (this value is calculated from the MGD)
0	Enter flow from upstream discharge Qd2 = background stream flow in MGD above point of discharge
0	Qd2 = background stream flow from upstream source (cfs)
0	Enter 7Q10, Q_s = background stream flow in cfs above point of discharge
0	Enter or estimated, 1Q10, Q_s = background stream flow in cfs above point of discharge (1Q10 estimated at 75% of 7Q10)
0	Enter Mean Annual Flow, Q_s = background stream flow in cfs above point of discharge
0	Enter 7Q2, Q_s = background stream flow in cfs above point of discharge (For LWF class streams)
Enter 50 Left	Enter C_s = background in-stream pollutant concentration in µg/l (assuming this is zero "0" unless there is data)
Q_d +Qd2+Q_s	Q_r = resultant in-stream flow, after discharge
Calculated on other	C_r = resultant in-stream pollutant concentration in µg/l in the stream (after complete mixing occurs)
100	Enter, Background Hardness above point of discharge (assumed 50 South of Birmingham and 100 North of Birmingham)
7.00 s.u.	Enter, Background pH above point of discharge
yes	Enter, Is discharge to a stream? "YES" Other option would be to a Lake. (This changes the partition coefficients for the metals)

** Using Partition Coefficients

September 21, 2022

Facility Name: Redstone DSN073

NPDES No.: AL0000019

		Freshwater F&W classification.				Freshwater Acute (µg/l) Q_s =1Q10						Freshwater Chronic (µg/l) Q_s = 7Q10						Human Health Consumption Fish only (µg/l) Carcinogen Q_s = Annual Average Non-Carcinogen Q_s = 7Q10			
ID	Pollutant	RP?	Carcinogen yes	Background from upstream source (Cd2) Daily Max	Max Daily Discharge as reported by Applicant (C_{max})	Water Quality Criteria (C_c)	Draft Permit Limit (C_{max})	20% of Draft Permit Limit	RP?	Background from upstream source (Cd2) Monthly Ave	Avg Daily Discharge as reported by Applicant (C_{avg})	Water Quality Criteria (C_c)	Draft Permit Limit (C_{avg})	20% of Draft Permit Limit	RP?	Water Quality Criteria (C_c)	Draft Permit Limit (C_{max})	20% of Draft Permit Limit	RP?
1	Antimony			0	0	-	-	-	-	0	0	-	-	-	-	3.73E+02	3.73E+02	7.47E+01	No
2	Arsenic		YES	0	0	592.334	592.334	118.467	No	0	0	261.324	261.324	52.265	No	3.03E-01	3.03E-01	6.06E-02	No
3	Beryllium			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
4	Cadmium			0	0	8.533	8.533	1.707	No	0	0	1.042	1.042	0.208	No	-	-	-	-
5	Chromium/ Chromium III			0	0	2713.159	2713.159	542.632	No	0	0	352.928	352.928	70.585	No	-	-	-	-
6	Chromium/ Chromium VI			0	0	16.000	16.000	3.200	No	0	0	11.000	11.000	2.200	No	-	-	-	-
7	Copper			5	0	34.637	34.637	6.927	No	2.9	0	23.082	23.082	4.616	No	-	-	-	-
8	Lead			0	0	313.502	313.502	62.700	No	0	0	12.217	12.217	2.443	No	-	-	-	-
9	Mercury			0	0	2.400	2.400	0.480	No	0	0	0.012	0.012	0.002	No	0.042	0.042	0.008	No
10	Nickel			0	0	927.200	927.200	185.440	No	0	0	102.983	102.983	20.597	No	9.93E+02	9.93E+02	1.99E+02	No
11	Selenium			0	0	20.000	20.000	4.000	No	0	0	5.000	5.000	1.000	No	2.43E+03	2.43E+03	4.86E+02	No
12	Silver			0	0	3.217	3.217	0.643	No	0	0	-	-	-	-	-	-	-	-
13	Thallium			0	0	-	-	-	-	0	0	-	-	-	-	2.74E-01	2.74E-01	5.47E-02	No
14	Zinc			100	0	355.092	355.092	71.018	No	72.2	0	357.997	357.997	71.599	No	1.49E+04	1.49E+04	2.98E+03	No
15	Cyanide			0	0	22.000	22.000	4.400	No	0	0	5.200	5.200	1.040	No	9.33E+03	9.33E+03	1.87E+03	No
16	Total Phenolic Compounds			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
17	Hardness (As CaCO3)			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
18	Acrolein			0	0	-	-	-	-	0	0	-	-	-	-	5.43E+00	5.43E+00	1.09E+00	No
19	Acrylonitrile		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.44E-01	1.44E-01	2.88E-02	No
20	Aldrin		YES	0	0	3.000	3.000	0.600	No	0	0	-	-	-	-	2.94E-05	2.94E-05	5.88E-06	No
21	Benzene		YES	0	1	-	-	-	-	0	1	-	-	-	-	1.55E+01	1.55E+01	3.09E+00	No
22	Bromoform		YES	0	0	-	-	-	-	0	0	-	-	-	-	7.88E+01	7.88E+01	1.58E+01	No
23	Carbon Tetrachloride		YES	0	0	-	-	-	-	0	0	-	-	-	-	9.57E-01	9.57E-01	1.91E-01	No
24	Chlordane		YES	0	0	2.400	2.400	0.480	No	0	0	0.0043	0.004	0.001	No	4.73E-04	4.73E-04	9.46E-05	No
25	Clorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	9.06E+02	9.06E+02	1.81E+02	No
26	Chlorodibromo-Methane		YES	0	0	-	-	-	-	0	0	-	-	-	-	7.41E+00	7.41E+00	1.46E+00	No
27	Chloroethane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
28	2-Chloro-Ethylvinyl Ether			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
29	ChloroForm		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.02E+02	1.02E+02	2.04E+01	No
30	4,4' - DDD		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.81E-04	1.81E-04	3.63E-05	No
31	4,4' - DDE		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.28E-04	1.28E-04	2.56E-05	No
32	4,4' - DDT	YES	YES	0	0.05	1.100	1.100	0.220	No	0	0.05	0.001	0.001	0.000	Yes	1.28E-04	1.28E-04	2.56E-05	Yes
33	Dichlorobromo-Methane		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.00E+01	1.00E+01	2.01E+00	No
34	1, 1-Dichloroethane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
35	1, 2-Dichloroethane		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.14E+01	2.14E+01	4.27E+00	No
36	Trans-1, 2-Dichloro-Ethylene			0	0	-	-	-	-	0	0	-	-	-	-	5.91E+03	5.91E+03	1.18E+03	No
37	1, 1-Dichloroethylene		YES	0	0	-	-	-	-	0	0	-	-	-	-	4.17E+03	4.17E+03	8.33E+02	No
38	1, 2-Dichloropropane			0	0	-	-	-	-	0	0	-	-	-	-	8.49E+00	8.49E+00	1.70E+00	No
39	1, 3-Dichloro-Propylene			0	0	-	-	-	-	0	0	-	-	-	-	1.23E+01	1.23E+01	2.46E+00	No
40	Dieldrin		YES	0	0	0.240	0.240	0.048	No	0	0	0.056	0.056	0.011	No	3.12E-05	3.12E-05	6.25E-06	No
41	Ethylbenzene			0	0	-	-	-	-	0	0	-	-	-	-	1.24E+03	1.24E+03	2.49E+02	No
42	Methyl Bromide			0	0	-	-	-	-	0	0	-	-	-	-	8.71E+02	8.71E+02	1.74E+02	No
43	Methyl Chloride			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
44	Methylene Chloride		YES	0	0	-	-	-	-	0	0	-	-	-	-	3.46E+02	3.46E+02	6.91E+01	No
45	1, 1, 2, 2-Tetrachloro-Ethane		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.33E+00	2.33E+00	4.67E-01	No
46	Tetrachloro-Ethylene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.92E+00	1.92E+00	3.83E-01	No
47	Toluene			0	0	-	-	-	-	0	0	-	-	-	-	8.72E+03	8.72E+03	1.74E+03	No
48	Toxaphene		YES	0	0	0.730	0.730	0.146	No	0	0	0.0002	0.000	0.000	No	1.62E-04	1.82E-04	3.24E-05	No
49	Tributyltin (TBT)		YES	0	0	0.460	0.460	0.092	No	0	0	0.072	0.072	0.014	No	-	-	-	-
50	1, 1, 1-Trichloroethane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
51	1, 1, 2-Trichloroethane		YES	0	0	-	-	-	-	0	0	-	-	-	-	9.10E+00	9.10E+00	1.82E+00	No
52	Trichlorethylene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.75E+01	1.75E+01	3.49E+00	No
53	Vinyl Chloride		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.42E+00	1.42E+00	2.85E-01	No
54	P-Chloro-M-Cresol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
55	2-Chlorophenol			0	0	-	-	-	-	0	0	-	-	-	-	8.71E+01	8.71E+01	1.74E+01	No
56	2, 4-Dichlorophenol			0	0	-	-	-	-	0	0	-	-	-	-	1.72E+02	1.72E+02	3.44E+01	No
57	2, 4-Dimethylphenol			0	0	-	-	-	-	0	0	-	-	-	-	4.98E+02	4.98E+02	9.95E+01	No
58	4, 6-Dinitro-O-Cresol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
59	2, 4-Dinitrophenol			0	0	-	-	-	-	0	0	-	-	-	-	3.11E+03	3.11E+03	6.22E+02	No
60	4,6-Dinitro-2-methylphenol		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.65E+02	1.65E+02	3.31E+01	No
61	Dioxin (2,3,7,8-TCDD)		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.67E-08	2.67E-08	5.33E-09	No
62	2-Nitrophenol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
63	4-Nitrophenol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
64	Pentachlorophenol		YES	0	0	8.723	8.723	1.745	No	0	0	6.693	6.693	1.339	No	1.77E+00	1.77E+00	3.54E-01	No
65	Phenol			0	0	-	-	-	-	0	0	-	-	-	-	5.00E+05	5.00E+05	1.00E+05	No
66	2, 4, 6-Trichlorophenol		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.41E+00	1.41E+00	2.83E-01	No
67	Acenaphthene			0	0	-	-	-	-	0	0	-	-	-	-	5.79E+02	5.79E+02	1.16E+02	No
68	Acenaphthylene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
69	Anthracene			0	0	-	-	-	-	0	0	-	-	-	-	2.33E+04	2.33E+04	4.67E+03	No
70	Benzidine			0	0	-	-	-	-	0	0	-	-	-	-	1.16E-04	1.16E-04	2.32E-05	No
71	Benzo(A)Anthracene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
72	Benzo(A)Pyrene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
73	Benzo(b)fluoranthene			0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
74	Benzo(GHI)Perylene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
75	Benzo(K)Fluoranthene			0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
76	Bis (2-Chloroethoxy) Methane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
77	Bis (2-Chloroethyl)-Ether		YES	0	0	-	-	-	-	0	0	-	-	-	-	3.07E-01	3.07E-01	6.15E-02	No
78	Bis (2-Chloroiso-Propyl) Ether			0	0	-	-	-	-	0	0	-	-	-	-	3.78E+04	3.78E+04	7.56E+03	No
79	Bis (2-Ethylhexyl) Phthalate		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.28E+00	1.28E+00	2.56E-01	No
80	4-Bromophenyl Phenyl Ether			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
81	Butyl Benzyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	1.13E+03	1.13E+03	2.25E+02	No
82	2-Chloronaphthalene			0	0	-	-	-	-	0	0	-	-	-	-	9.24E+02	9.24E+02	1.85E+02	No
83	4-Chlorophenyl Phenyl Ether			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
84	Chrysene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
85	Di-N-Butyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	2.62E+03	2.62E+03	5.24E+02	No
86	Di-N-Octyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
87	Dibenzo(A,H)Anthracene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
88	1, 2-Dichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	7.56E+02	7.56E+02	1.51E+02	No
89	1, 3-Dichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	5.62E+02	5.62E+02	1.12E+02	No
90	1, 4-Dichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	1.12E+02	1.12E+02	2.25E+01	No
91	3, 3-Dichlorobenzidine		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.66E-02	1.66E-02	3.32E-03	No
92	Diethyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	2.56E+04	2.56E+04	5.11E+03	No
93	Dimethyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	6.48E+05	6.48E+05	1.30E+05	No
94	2, 4-Dinitrotoluene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.96E+00	1.96E+00	3.96E-01	No
95	2, 6-Dinitrotoluene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
96	1,2-Diphenylhydrazine			0	0	-	-	-	-	0	0	-	-	-	-	1.17E-01	1.17E-01	2.34E-02	No
97	Endosulfan (alpha)		YES	0	0	0.22	0.220	0.044	No	0	0	0.056	0.056	0.011	No	5.19E+01	5.19E+01	1.04E+01	No
98	Endosulfan (beta)		YES	0	0	0.22	0.220	0.044	No	0	0	0.056	0.056	0.011	No	5.19E+01	5.19E+01	1.04E+01	No
99	Endosulfan sulfate		YES	0	0	-	-	-	-	0	0	-	-	-	-	5.19E+01	5.19E+01	1.04E+01	No
100	Endrin		YES	0	0	0.086	0.086	0.017	No	0	0	0.036	0.036	0.007	No	3.53E-02	3.53E-02	7.05E-03	No
101	Endrin Aldeyhde		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.76E-01	1.76E-01	3.53E-02	No
102	Fluoranthene			0	0	-	-	-	-	0	0	-	-	-	-	8.12E+01	8.12E+01	1.62E+01	No
103	Fluorene			0	0	-	-	-	-	0	0	-	-	-	-	3.11E+03	3.11E+03	6.22E+02	No
104	Heptochlor		YES	0	0	0.52	0.520	0.104	No	0	0	0.0038	0.004	0.001	No	4.63E-05	4.63E-05	9.26E-06	No
105	Heptachlor Epoxide		YES	0	0	0.52	0.520	0.104	No	0	0	0.0038	0.004	0.001	No	2.29E-05	2.29E-05	4.58E-06	No
106	Hexachlorobenzene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.68E-04	1.68E-04	3.36E-05	No
107	Hexachlorobutadiene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.08E+01	1.08E+01	2.15E+00	No
108	Hexachlorocyclohexan (alpha)		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.85E-03	2.85E-03	5.70E-04	No
109	Hexachlorocyclohexan (beta)		YES	0	0	-	-	-	-	0	0	-	-	-	-	9.97E-03	9.97E-03	1.99E-03	No
110	Hexachlorocyclohexan (gamma)		YES	0	0	0.95	0.950	0.190	No	0	0	-	-	-	-	1.08E+00	1.08E+00	2.15E-01	No
111	HexachlorocycloPentadiene			0	0	-	-	-	-	0	0	-	-	-	-	6.45E+02	6.45E+02	1.29E+02	No
112	Hexachloroethane			0	0	-	-	-	-	0	0	-	-	-	-	1.92E+00	1.92E+00	3.84E-01	No
113	Indeno(1, 2, 3-CK)Pyrene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
114	Isophorone			0	0	-	-	-	-	0	0	-	-	-	-	5.61E+02	5.61E+02	1.12E+02	No
115	Naphthalene			0	20	-	-	-	-	0	20	-	-	-	-	-	-	-	-
116	Nitrobenzene			0	0	-	-	-	-	0	0	-	-	-	-	4.04E+02	4.04E+02	8.07E+01	No
117	N-Nitrosodi-N-Propylamine		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.95E-01	2.95E-01	5.90E-02	No
118	N-Nitrosodimethylamine		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.76E+00	1.76E+00	3.52E-01	No
119	N-Nitrosodiphenylamine		YES	0	0	-	-	-	-	0	0	-	-	-	-	3.50E+00	3.50E+00	7.00E-01	No
120	PCB-1016		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
121	PCB-1221		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
122	PCB-1232		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
123	PCB-1242		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
124	PCB-1248		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
125	PCB-1254		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
126	PCB-1260		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
127	Phenanthrene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
128	Pyrene			0	0	-	-	-	-	0	0	-	-	-	-	2.33E+03	2.33E+03	4.67E+02	No
129	1, 2 4-Trichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	4.09E+01	4.09E+01	8.19E+00	No

Facility Name: **Redstone DSN003**

NPDES No.: **AL0000019**

6/13/2017

$Q_d*C_d + Q_{d2}*C_{d2} + Q_s*C_s = Q_r*C_r$

ID	Pollutant	Carcinogen "yes"	Type	Background from upstream source (C_{d2}) Daily Max µg/l	Background from upstream source (C_{d2}) Monthly Ave µg/l	Background Instream (C_s) Daily Max µg/l	Background Instream (C_s) Monthly Ave µg/l	Enter Max Daily Discharge as reported by Applicant (C_d) Max µg/l	Enter Avg Daily Discharge as reported by Applicant (C_d) Ave µg/l	Partition Coefficient (Stream / Lake)
1	Antimony		Metals	0	0	0	0	0	0	-
2	**Arsenic*,****	YES	Metals	0	0	0	0	0	0	0.574
3	Beryllium		Metals	0	0	0	0	0	0	-
4	Cadmium**		Metals	0	0	0	0	0	0	0.236
5	Chromium / Chromium III**		Metals	0	0	0	0	0	0	0.210
6	Chromium / Chromium VI**		Metals	0	0	0	0	0	0	
7	Copper**		Metals	5	2.9	0	0	0	0	0.388
8	Lead**		Metals	0	0	0	0	0	0	0.206
9	Mercury**		Metals	0	0	0	0	0	0	0.302
10	Nickel**		Metals	0	0	0	0	0	0	0.505
11	Selenium		Metals	0	0	0	0	0	0	-
12	Silver		Metals	0	0	0	0	0	0	-
13	Thallium		Metals	0	0	0	0	0	0	-
14	Zinc**		Metals	100	72.2	0	0	0	0	0.330
15	Cyanide		Metals	0	0	0	0	0	0	-
16	Total Phenolic Compounds		Metals	0	0	0	0	0	0	-
17	Hardness (As CaCO3)		Metals	0	0	0	0	0	0	-
18	Acrolein		VOC	0	0	0	0	0	0	-
19	**Acrylonitrile***	YES	VOC	0	0	0	0	0	0	-
20	**Aldrin**	YES	VOC	0	0	0	0	0	0	-
21	**Benzene***	YES	VOC	0	0	0	0	1	1	-
22	**Bromoform***	YES	VOC	0	0	0	0	0	0	-
23	**Carbon Tetrachloride***	YES	VOC	0	0	0	0	0	0	-
24	**Chlordane**	YES	VOC	0	0	0	0	0	0	-
25	Clorobenzene		VOC	0	0	0	0	0	0	-
26	**Chlorodibromo-Methane***	YES	VOC	0	0	0	0	0	0	-
27	Chloroethane		VOC	0	0	0	0	0	0	-
28	2-Chloro-Ethylvinyl Ether		VOC	0	0	0	0	0	0	-
29	**ChloroForm***	YES	VOC	0	0	0	0	0	0	-
30	**4,4'-DDD**	YES	VOC	0	0	0	0	0	0	-
31	**4,4'-DDE**	YES	VOC	0	0	0	0	0	0	-
32	**4.4'-DDT**	YES	VOC	0	0	0	0	0.956	0.1633	-
33	**Dichlorobrome-Methane***	YES	VOC	0	0	0	0	0	0	-
34	1, 1-Dichloroethane		VOC	0	0	0	0	0	0	-
35	**1, 2-Dichloroethane***	YES	VOC	0	0	0	0	0	0	-
36	Trans-1, 2-Dichloro-Ethylene		VOC	0	0	0	0	0	0	-
37	**1, 1-Dichloroethylene***	YES	VOC	0	0	0	0	0	0	-
38	1, 2-Dichloropropane		VOC	0	0	0	0	0	0	-
39	1, 3-Dichloro-Propylene		VOC	0	0	0	0	0	0	-
40	**Dieldrin**	YES	VOC	0	0	0	0	0	0	-
41	Ethylbenzene		VOC	0	0	0	0	0	0	-
42	Methyl Bromide		VOC	0	0	0	0	0	0	-
43	Methyl Chloride		VOC	0	0	0	0	0	0	-
44	**Methylene Chloride***	YES	VOC	0	0	0	0	0	0	-
45	**1, 1, 2, 2-Tetrachloro-Ethane***	YES	VOC	0	0	0	0	0	0	-
46	**Tetrachloro-Ethylene***	YES	VOC	0	0	0	0	0	0	-
47	Toluene		VOC	0	0	0	0	0	0	-
48	**Toxaphene**	YES	VOC	0	0	0	0	0	0	-
49	**Tributyltine (TBT)**	YES	VOC	0	0	0	0	0	0	-
50	1, 1, 1-Trichloroethane		VOC	0	0	0	0	0	0	-
51	**1, 1, 2-Trichloroethane***	YES	VOC	0	0	0	0	0	0	-
52	**Trichlorethylene***	YES	VOC	0	0	0	0	0	0	-
53	**Vinyl Chloride***	YES	VOC	0	0	0	0	0	0	-
54	P-Chloro-M-Cresol		Acids	0	0	0	0	0	0	-
55	2-Chlorophenol		Acids	0	0	0	0	0	0	-
56	2, 4-Dichlorophenol		Acids	0	0	0	0	0	0	-
57	2, 4-Dimethylphenol		Acids	0	0	0	0	0	0	-
58	4, 6-Dinitro-O-Cresol		Acids	0	0	0	0	0	0	-
59	2, 4-Dinitrophenol		Acids	0	0	0	0	0	0	-
60	**4,6-Dinitro-2-methylophenol**	YES	Acids	0	0	0	0	0	0	-
61	**Dioxin (2,3,7,8-TCDD)**	YES	Acids	0	0	0	0	0	0	-
62	2-Nitrophenol		Acids	0	0	0	0	0	0	-
63	4-Nitrophenol		Acids	0	0	0	0	0	0	-
64	**Pentachlorophenol***	YES	Acids	0	0	0	0	0	0	-
65	Phenol		Acids	0	0	0	0	0	0	-
66	**2, 4, 6-Trichlorophenol***	YES	Acids	0	0	0	0	0	0	-
67	Acenaphthene		Bases	0	0	0	0	0	0	-
68	Acenaphthylene		Bases	0	0	0	0	0	0	-
69	Anthracene		Bases	0	0	0	0	0	0	-
70	Benzidine		Bases	0	0	0	0	0	0	-
71	**Benzo(A)Anthracene***	YES	Bases	0	0	0	0	0	0	-
72	**Benzo(A)Pyrene***	YES	Bases	0	0	0	0	0	0	-
73	3, 4 Benzo-Fluoranthene		Bases	0	0	0	0	0	0	-
74	Benzo(GHI)Perylene		Bases	0	0	0	0	0	0	-
75	Benzo(K)Fluoranthene		Bases	0	0	0	0	0	0	-
76	Bis (2-Chloroethoxy) Methane		Bases	0	0	0	0	0	0	-
77	**Bis (2-Chloroethyl)-Ether***	YES	Bases	0	0	0	0	0	0	-
78	Bis (2-Chloroiso-Propyl) Ether		Bases	0	0	0	0	0	0	-
79	**Bis (2-Ethylhexyl) Phthalate***	YES	Bases	0	0	0	0	0	0	-
80	4-Bromophenyl Phenyl Ether		Bases	0	0	0	0	0	0	-
81	Butyl Benzyl Phthalate		Bases	0	0	0	0	0	0	-
82	2-Chloronaphthalene		Bases	0	0	0	0	0	0	-
83	4-Chlorophenyl Phenyl Ether		Bases	0	0	0	0	0	0	-
84	**Chrysene***	YES	Bases	0	0	0	0	0	0	-
85	Di-N-Butyl Phthalate		Bases	0	0	0	0	0	0	-
86	Di-N-Octyl Phthalate		Bases	0	0	0	0	0	0	-
87	**Dibenzo(A,H)Anthracene***	YES	Bases	0	0	0	0	0	0	-
88	1, 2-Dichlorobenzene		Bases	0	0	0	0	0	0	-
89	1, 3-Dichlorobenzene		Bases	0	0	0	0	0	0	-
90	1, 4-Dichlorobenzene		Bases	0	0	0	0	0	0	-
91	**3, 3-Dichlorobenzidine***	YES	Bases	0	0	0	0	0	0	-
92	Diethyl Phthalate		Bases	0	0	0	0	0	0	-
93	Dimethyl Phthalate		Bases	0	0	0	0	0	0	-
94	**2, 4-Dinitrotoluene***	YES	Bases	0	0	0	0	0	0	-
95	2, 6-Dinitrotoluene		Bases	0	0	0	0	0	0	-
96	1,2-Diphenylhydrazine		Bases	0	0	0	0	0	0	-
97	**Endosulfan (alpha)**	YES	Bases	0	0	0	0	0	0	-
98	**Endosulfan (beta)**	YES	Bases	0	0	0	0	0	0	-
99	**Endosulfan sulfate**	YES	Bases	0	0	0	0	0	0	-
100	**Endrin**	YES	Bases	0	0	0	0	0	0	-
101	**Endrin Aldeyhide**	YES	Bases	0	0	0	0	0	0	-
102	Fluoranthene		Bases	0	0	0	0	0	0	-
103	Fluorene		Bases	0	0	0	0	0	0	-
104	Heptochlor	YES	Bases	0	0	0	0	0	0	-
105	Heptachlor Epoxide	YES	Bases	0	0	0	0	0	0	-
106	**Hexachlorobenzene***	YES	Bases	0	0	0	0	0	0	-
107	**Hexachlorobutadiene***	YES	Bases	0	0	0	0	0	0	-
108	**Hexachlorocyclohexan (alpa)**	YES	Bases	0	0	0	0	0	0	-
109	**Hexachlorocyclohexan (beta)**	YES	Bases	0	0	0	0	0	0	-
110	**Hexachlorocyclohexan (gamma)**	YES	Bases	0	0	0	0	0	0	-
111	HexachlorocycloPentadiene		Bases	0	0	0	0	0	0	-
112	Hexachloroethane		Bases	0	0	0	0	0	0	-
113	**Indeno(1, 2, 3-CK)Pyrene***	YES	Bases	0	0	0	0	0	0	-
114	Isophorone		Bases	0	0	0	0	0	0	-
115	Naphthalene		Bases	0	0	0	0	1	1	-
116	Nitrobenzene		Bases	0	0	0	0	0	0	-
117	**N-Nitrosodi-N-Propylamine***	YES	Bases	0	0	0	0	0	0	-
118	**N-Nitrosodi-N-Methylamine***	YES	Bases	0	0	0	0	0	0	-
119	**N-Nitrosodi-N-Phenylamine***	YES	Bases	0	0	0	0	0	0	-
120	**PCB-1016**	YES	Bases	0	0	0	0	0	0	-
121	**PCB-1221**	YES	Bases	0	0	0	0	0	0	-
122	**PCB-1232**	YES	Bases	0	0	0	0	0	0	-
123	**PCB-1242**	YES	Bases	0	0	0	0	0	0	-
124	**PCB-1248**	YES	Bases	0	0	0	0	0	0	-
125	**PCB-1254**	YES	Bases	0	0	0	0	0	0	-
126	**PCB-1260**	YES	Bases	0	0	0	0	0	0	-
127	Phenanthrene		Bases	0	0	0	0	0	0	-
128	Pyrene		Bases	0	0	0	0	0	0	-
129	1, 2, 4-Trichlorobenzene		Bases	0	0	0	0	0	0	-

0.76	Enter Q_d = wastewater discharge flow from facility (MGD)
1.17589404	Q_d = wastewater discharge flow (cfs) (this value is caluclated from the MGD)
0	Enter flow from upstream discharge Qd2 = background stream flow in MGD above point of discharge
0	Qd2 = background stream flow from upstream source (cfs)
0	Enter 7Q10, Q_s = background stream flow in cfs above point of discharge
0	Enter or estimated, 1Q10, Q_s = background stream flow in cfs above point of discharge (1Q10 estimated at 75% of 7Q10)
0	Enter Mean Annual Flow, Q_s = background stream flow in cfs above point of discharge
0	Enter 7Q2, Q_s = background stream flow in cfs above point of discharge (For LWF class streams)
Enter In Left	Enter C_s = background in-stream pollutant concentration in µg/l (assuming this is zero "0" unless there is data)
Q_d +Qd2+Q_s	Q_r = resultant in-stream flow, after discharge
Calculated on other	C_r = resultant in-stream pollutant concentration in µg/l in the stream (after complete mixing occurs)
100	Enter. Background Hardness above point of discharge (assumed 50 South of Birmingham and 100 North of Birmingham)
7.00 s.u.	Enter. Background pH above point of discharge
yes	Enter. Is discharge to a stream? "YES" Other option would be to a Lake. (This changes the partition coefficients for the metals)

** Using Partition Coefficients

September 21, 2022

Facility Name: Redstone DSN003

NPDES No.: AL0000019

						Freshwater Acute (µg/l) Q_s =1Q10						Freshwater Chronic (µg/l) Q_s = 7Q10					Human Health Consumption Fish only (µg/l) Carcinogen Q_s = Annual Average Non-Carcinogen Q_s = 7Q10			
Freshwater F&W classification					Max Daily Discharge as reported by Applicant (C_{max})						Avg Daily Discharge as reported by Applicant (C_{avg})									
ID	Pollutant	RP?	Carcinogen yes	Background from upstream source (Cd2) Daily Max		Water Quality Criteria (C_c)	Draft Permit Limit (C_{max})	20% of Draft Permit Limit	RP?	Background from upstream source (Cd2) Monthly Ave		Water Quality Criteria (C_c)	Draft Permit Limit (C_{avg})	20% of Draft Permit Limit	RP?	Water Quality Criteria (C_c)	Draft Permit Limit (C_{max})	20% of Draft Permit Limit	RP?
1	Antimony			0	0	-	-	-	-	0	0	-	-	-	-	3.73E+02	3.73E+02	7.47E+01	No
2	Arsenic		YES	0	0	592.334	592.334	118.467	No	0	0	261.324	261.324	52.265	No	3.03E-01	3.03E-01	6.06E-02	No
3	Beryllium			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
4	Cadmium			0	0	8.533	8.533	1.707	No	0	0	1.042	1.042	0.208	No	-	-	-	-
5	Chromium/ Chromium III			0	0	2713.159	2713.159	542.632	No	0	0	352.926	352.926	70.585	No	-	-	-	-
6	Chromium/ Chromium VI			0	0	16.000	16.000	3.200	No	0	0	11.000	11.000	2.200	No	-	-	-	-
7	Copper			5	0	34.637	34.637	6.927	No	2.9	0	23.082	23.082	4.616	No	-	-	-	-
8	Lead			0	0	313.502	313.502	62.700	No	0	0	12.217	12.217	2.443	No	-	-	-	-
9	Mercury			0	0	2.400	2.400	0.480	No	0	0	0.012	0.012	0.002	No	0.042	0.042	0.008	No
10	Nickel			0	0	927.200	927.200	185.440	No	0	0	102.983	102.983	20.597	No	9.93E+02	9.93E+02	1.99E+02	No
11	Selenium			0	0	20.000	20.000	4.000	No	0	0	5.000	5.000	1.000	No	2.43E+03	2.43E+03	4.86E+02	No
12	Silver			0	0	3.217	3.217	0.643	No	0	0	-	-	-	-	-	-	-	-
13	Thallium			0	0	-	-	-	-	0	0	-	-	-	-	2.74E-01	2.74E-01	5.47E-02	No
14	Zinc			100	0	355.092	355.092	71.018	No	72.2	0	357.997	357.997	71.599	No	1.49E+04	1.49E+04	2.98E+03	No
15	Cyanide			0	0	22.000	22.000	4.400	No	0	0	5.200	5.200	1.040	No	9.33E+03	9.33E+03	1.87E+03	No
16	Total Phenolic Compounds			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
17	Hardness (As CaCO3)			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
18	Acrolein			0	0	-	-	-	-	0	0	-	-	-	-	5.43E+00	5.43E+00	1.09E+00	No
19	Acrylonitrile		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.44E-01	1.44E-01	2.88E-02	No
20	Aldrin		YES	0	0	3.000	3.000	0.600	No	0	0	-	-	-	-	2.94E-06	2.94E-06	5.88E-06	No
21	Benzene		YES	0	1	-	-	-	-	0	1	-	-	-	-	1.55E+01	1.55E+01	3.09E+00	No
22	Bromoform		YES	0	0	-	-	-	-	0	0	-	-	-	-	7.88E+01	7.88E+01	1.58E+01	No
23	Carbon Tetrachloride		YES	0	0	-	-	-	-	0	0	-	-	-	-	9.57E-01	9.57E-01	1.91E-01	No
24	Chlordane		YES	0	0	2.400	2.400	0.480	No	0	0	0.0043	0.004	0.001	No	4.73E-04	4.73E-04	9.46E-05	No
25	Clorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	9.08E+02	9.08E+02	1.81E+02	No
26	Chlorodibromo-Methane		YES	0	0	-	-	-	-	0	0	-	-	-	-	7.41E+00	7.41E+00	1.48E+00	No
27	Chloroethane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
28	2-Chloro-Ethylvinyl Ether			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
29	ChloroForm		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.02E+02	1.02E+02	2.04E+01	No
30	4,4' - DDD		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.81E-04	1.81E-04	3.63E-05	No
31	4,4' - DDE		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.28E-04	1.28E-04	2.56E-05	No
32	4,4' - DDT	YES	YES	0	0.958	1.100	1.100	0.220	Yes	0	0.1633	0.001	0.001	0.000	Yes	1.28E-04	1.28E-04	2.56E-05	Yes
33	Dichlorobromo-Methane		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.00E+01	1.00E+01	2.01E+00	No
34	1, 1-Dichloroethane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
35	1, 2-Dichloroethane		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.14E+01	2.14E+01	4.27E+00	No
36	Trans-1, 2-Dichloro-Ethylene			0	0	-	-	-	-	0	0	-	-	-	-	5.91E+03	5.91E+03	1.18E+03	No
37	1, 1-Dichloroethylene		YES	0	0	-	-	-	-	0	0	-	-	-	-	4.17E+03	4.17E+03	8.33E+02	No
38	1, 2-Dichloropropane			0	0	-	-	-	-	0	0	-	-	-	-	8.49E+00	8.49E+00	1.70E+00	No
39	1, 3-Dichloro-Propylene			0	0	-	-	-	-	0	0	-	-	-	-	1.23E+01	1.23E+01	2.46E+00	No
40	Dieldrin		YES	0	0	0.240	0.240	0.048	No	0	0	0.056	0.056	0.011	No	3.12E-05	3.12E-05	6.25E-06	No
41	Ethylbenzene			0	0	-	-	-	-	0	0	-	-	-	-	1.24E+03	1.24E+03	2.49E+02	No
42	Methyl Bromide			0	0	-	-	-	-	0	0	-	-	-	-	8.71E+02	8.71E+02	1.74E+02	No
43	Methyl Chloride			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
44	Methylene Chloride		YES	0	0	-	-	-	-	0	0	-	-	-	-	3.46E+02	3.46E+02	6.91E+01	No
45	1, 1, 2, 2-Tetrachloro-Ethane		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.33E+00	2.33E+00	4.67E-01	No
46	Tetrachloro-Ethylene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.92E+00	1.92E+00	3.83E-01	No
47	Toluene			0	0	-	-	-	-	0	0	-	-	-	-	8.72E+03	8.72E+03	1.74E+03	No
48	Toxaphene		YES	0	0	0.730	0.730	0.146	No	0	0	0.0002	0.000	0.000	No	1.62E-04	1.62E-04	3.24E-05	No
49	Tributyltin (TBT)		YES	0	0	0.460	0.460	0.092	No	0	0	0.072	0.072	0.014	No	-	-	-	-
50	1, 1, 1-Trichloroethane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
51	1, 1, 2-Trichloroethane		YES	0	0	-	-	-	-	0	0	-	-	-	-	9.10E+00	9.10E+00	1.82E+00	No
52	Trichlorethylene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.75E+01	1.75E+01	3.49E+00	No
53	Vinyl Chloride		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.42E+00	1.42E+00	2.85E-01	No
54	P-Chloro-M-Cresol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
55	2-Chlorophenol			0	0	-	-	-	-	0	0	-	-	-	-	8.71E+01	8.71E+01	1.74E+01	No
56	2, 4-Dichlorophenol			0	0	-	-	-	-	0	0	-	-	-	-	1.72E+02	1.72E+02	3.44E+01	No
57	2, 4-Dimethylphenol			0	0	-	-	-	-	0	0	-	-	-	-	4.98E+02	4.98E+02	9.95E+01	No
58	4, 6-Dinitro-O-Cresol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
59	2, 4-Dinitrophenol			0	0	-	-	-	-	0	0	-	-	-	-	3.11E+03	3.11E+03	6.22E+02	No
60	4,6-Dinitro-2-methylphenol		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.65E+02	1.65E+02	3.31E+01	No
61	Dioxin (2,3,7,8-TCDD)		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.67E-08	2.67E-08	5.33E-09	No
62	2-Nitrophenol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
63	4-Nitrophenol			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
64	Pentachlorophenol		YES	0	0	8.723	8.723	1.745	No	0	0	6.693	6.693	1.339	No	1.77E+00	1.77E+00	3.54E-01	No
65	Phenol			0	0	-	-	-	-	0	0	-	-	-	-	5.00E+05	5.00E+05	1.00E+05	No
66	2, 4, 6-Trichlorophenol		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.41E+00	1.41E+00	2.83E-01	No
67	Acenaphthene			0	0	-	-	-	-	0	0	-	-	-	-	5.79E+02	5.79E+02	1.16E+02	No
68	Acenaphthylene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
69	Anthracene			0	0	-	-	-	-	0	0	-	-	-	-	2.33E+04	2.33E+04	4.67E+03	No
70	Benzidine			0	0	-	-	-	-	0	0	-	-	-	-	1.16E-04	1.16E-04	2.32E-05	No
71	Benzo(A)Anthracene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
72	Benzo(A)Pyrene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
73	Benzo(b)fluoranthene			0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
74	Benzo(GHI)Perylene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
75	Benzo(K)Fluoranthene			0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
76	Bis (2-Chloroethoxy) Methane			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
77	Bis (2-Chloroethyl)-Ether		YES	0	0	-	-	-	-	0	0	-	-	-	-	3.07E-01	3.07E-01	6.15E-02	No
78	Bis (2-Chloroiso-Propyl) Ether			0	0	-	-	-	-	0	0	-	-	-	-	3.78E+04	3.78E+04	7.56E+03	No
79	Bis (2-Ethylhexyl) Phthalate		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.28E+00	1.28E+00	2.56E-01	No
80	4-Bromophenyl Phenyl Ether			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
81	Butyl Benzyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	1.13E+03	1.13E+03	2.25E+02	No
82	2-Chloronaphthalene			0	0	-	-	-	-	0	0	-	-	-	-	9.24E+02	9.24E+02	1.85E+02	No
83	4-Chlorophenyl Phenyl Ether			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
84	Chrysene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
85	Di-N-Butyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	2.62E+03	2.62E+03	5.24E+02	No
86	Di-N-Octyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
87	Dibenzo(A,H)Anthracene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
88	1, 2-Dichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	7.55E+02	7.55E+02	1.51E+02	No
89	1, 3-Dichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	5.62E+02	5.62E+02	1.12E+02	No
90	1, 4-Dichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	1.12E+02	1.12E+02	2.25E+01	No
91	3, 3-Dichlorobenzidine		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.66E-02	1.66E-02	3.32E-03	No
92	Diethyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	2.58E+04	2.58E+04	5.11E+03	No
93	Dimethyl Phthalate			0	0	-	-	-	-	0	0	-	-	-	-	6.48E+05	6.48E+05	1.30E+05	No
94	2, 4-Dinitrotoluene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.98E+00	1.98E+00	3.96E-01	No
95	2, 6-Dinitrotoluene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
96	1,2-Diphenylhydrazine			0	0	-	-	-	-	0	0	-	-	-	-	1.17E-01	1.17E-01	2.34E-02	No
97	Endosulfan (alpha)		YES	0	0	0.22	0.220	0.044	No	0	0	0.056	0.056	0.011	No	5.19E+01	5.19E+01	1.04E+01	No
98	Endosulfan (beta)		YES	0	0	0.22	0.220	0.044	No	0	0	0.056	0.056	0.011	No	5.19E+01	5.19E+01	1.04E+01	No
99	Endosulfan sulfate		YES	0	0	-	-	-	-	0	0	-	-	-	-	5.19E+01	5.19E+01	1.04E+01	No
100	Endrin		YES	0	0	0.086	0.086	0.017	No	0	0	0.036	0.036	0.007	No	3.53E-02	3.53E-02	7.05E-03	No
101	Endrin Aldeyhde		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.76E-01	1.76E-01	3.53E-02	No
102	Fluoranthene			0	0	-	-	-	-	0	0	-	-	-	-	8.12E+01	8.12E+01	1.62E+01	No
103	Fluorene			0	0	-	-	-	-	0	0	-	-	-	-	3.11E+03	3.11E+03	6.22E+02	No
104	Heptochlor		YES	0	0	0.52	0.520	0.104	No	0	0	0.0036	0.004	0.001	No	4.63E-05	4.63E-05	9.26E-06	No
105	Heptachlor Epoxide		YES	0	0	0.52	0.520	0.104	No	0	0	0.0036	0.004	0.001	No	2.29E-05	2.29E-05	4.58E-06	No
106	Hexachlorobenzene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.68E-04	1.68E-04	3.36E-05	No
107	Hexachlorobutadiene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.08E+01	1.08E+01	2.15E+00	No
108	Hexachlorocyclohexan (alpha)		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.85E-03	2.85E-03	5.70E-04	No
109	Hexachlorocyclohexan (beta)		YES	0	0	-	-	-	-	0	0	-	-	-	-	9.97E-03	9.97E-03	1.99E-03	No
110	Hexachlorocyclohexan (gamma)		YES	0	0	0.95	0.950	0.190	No	0	0	-	-	-	-	1.08E+00	1.08E+00	2.15E-01	No
111	HexachlorocycloPentadiene			0	0	-	-	-	-	0	0	-	-	-	-	6.45E+02	6.45E+02	1.29E+02	No
112	Hexachloroethane			0	0	-	-	-	-	0	0	-	-	-	-	1.92E+00	1.92E+00	3.84E-01	No
113	Indeno(1, 2, 3-CK)Pyrene		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.07E-02	1.07E-02	2.13E-03	No
114	Isophorone			0	0	-	-	-	-	0	0	-	-	-	-	5.61E+02	5.61E+02	1.12E+02	No
115	Naphthalene			0	1	-	-	-	-	0	1	-	-	-	-	-	-	-	-
116	Nitrobenzene			0	0	-	-	-	-	0	0	-	-	-	-	4.04E+02	4.04E+02	8.07E+01	No
117	N-Nitrosodi-N-Propylamine		YES	0	0	-	-	-	-	0	0	-	-	-	-	2.95E-01	2.95E-01	5.90E-02	No
118	N-Nitrosodimethylamine		YES	0	0	-	-	-	-	0	0	-	-	-	-	1.76E+00	1.76E+00	3.52E-01	No
119	N-Nitrosodiphenylamine		YES	0	0	-	-	-	-	0	0	-	-	-	-	3.50E+00	3.50E+00	7.00E-01	No
120	PCB-1016		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
121	PCB-1221		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
122	PCB-1232		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
123	PCB-1242		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
124	PCB-1248		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
125	PCB-1254		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
126	PCB-1260		YES	0	0	-	-	-	-	0	0	0.014	0.014	0.003	No	3.74E-05	3.74E-05	7.48E-06	No
127	Phenanthrene			0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-
128	Pyrene			0	0	-	-	-	-	0	0	-	-	-	-	2.33E+03	2.33E+03	4.67E+02	No
129	1, 2, 4-Trichlorobenzene			0	0	-	-	-	-	0	0	-	-	-	-	4.09E+01	4.09E+01	8.19E+00	No

Limit Set	003-Q				
Parameter	End Date		Limit	Maximum Daily	Maximum Daily Limit
3-Q: Flow, In Conduit or Thru Treatment Plant	3/31/17	No Results	No Results	0.148	No Results
	6/30/17	No Results	No Results	*C	No Results
	9/30/17	No Results	No Results	0.148	No Results
	12/31/17	No Results	No Results	1.041	No Results
	3/31/18	No Results	No Results	0.043	No Results
	6/30/18	No Results	No Results	*C	No Results
	9/30/18	No Results	No Results	*C	No Results
	12/31/18	No Results	No Results	0.048	No Results
	3/31/19	No Results	No Results	0.038	No Results
	6/30/19	No Results	No Results	0.56	No Results
	9/30/19	No Results	No Results	0.465	No Results
	12/31/19	No Results	No Results	0.449	No Results
	3/31/20	No Results	No Results	0.01	No Results
	6/30/20	No Results	No Results	0.059	No Results
	9/30/20	No Results	No Results	*C	No Results
	12/31/20	No Results	No Results	0.427	No Results
	3/31/21	No Results	No Results	0.055	No Results
	6/30/21	No Results	No Results	3.257	No Results
	9/30/21	No Results	No Results	*C	No Results
	12/31/21	No Results	No Results	4.82	No Results
	3/31/22	No Results	No Results	0.79	No Results
	6/30/22	No Results	No Results	0.585	No Results
				0.761352941	

Average

Lounsberry, Rachel E

From: Makkouk, Ramzi S CIV USARMY USAG (USA) <ramzi.s.makkouk.civ@mail.mil>
Sent: Thursday, July 23, 2020 1:58 PM
To: Lounsberry, Rachel E
Subject: Analysis of Airport Fuel station sump water (UNCLASSIFIED)
Attachments: 1912030 Redstone FINAL 01 06 2020 1428.PDF; 1912030 COC and prep field sheets .PDF

CLASSIFICATION: UNCLASSIFIED

Rachel,

As you know, we have two outfalls (76 & 77) at the Bulk Fuel Facility at Redstone Airport. There were no storm water discharges from outfall 77. For outfall 76, all accumulated rainwater from dikes get drained into a sump to ensure the water has no oil sheen prior to discharge back to the environment . Attached is the sump water test analysis for Bulk Fuel Facility at Redstone Airport.

For Retail Fuel Facility on Patriot Road (Outfall 78); there were no storm water discharges.

Regards,

Ramzi S. Makkouk
Directorate of Public Works
Environmental Management Division
(IMRE-PWE-I, Room A336)
US Army Garrison - Redstone Arsenal
4488 Martin Road
256-955-8501

-----Original Message-----
From: Rebecca Greene [mailto:Rebecca.Greene@chugachgov.com]
Sent: Thursday, July 23, 2020 12:16 PM
To: Makkouk, Ramzi S CIV USARMY USAG (USA) <ramzi.s.makkouk.civ@mail.mil>
Subject: [Non-DoD Source] Analysis of Airport Fuel station water in sump NOT discharge

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Rebecca S. Greene

Chemist II

Wolf Creek Federal Services, Inc.

Redstone Arsenal, Alabama

256-876-4062 or 256-313-2125

Rebecca.Greene@chugachgov.com < Caution-mailto:Rebecca.Greene@chugachgov.com >

CLASSIFICATION: UNCLASSIFIED

REDSTONE ARSENAL
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Wolf Creek
FEDERAL SERVICES

CHEMISTRY LABORATORY
BLDG 3338
(256) 876-4062

Ramzi Makkouk
B.4488 Environmental Directorate/DPW
Building 4488
Redstone Arsenal AL, 35808

1/6/2020
Project Name: NPDES

Airfield holding sump @ fuel station
1912030-01 (Water)
Sampled: 12/23/2019 10:50 By: Rebecca S. Greene

Analyte	Result	Qualifier	Reg Level	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method
Volatile Organic Compounds by EPA Method 624										
Benzene	**0.821**	U, J	500		ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
Trichloroethylene	**0.794**	U, J	0.5		ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
Ethylbenzene	**0.272**	U, J			ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
Naphthalene	<1.00	U			ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
Toluene	**0.465**	U, J			ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
m,p-Xylenes	<2.00	U			ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
o-Xylene	<1.00	U			ug/L	1	P912124	12/30/2019	12/30/2019	EPA 624.1
Surrogate: 1,2-Dichlorobenzene-d4			*83 %*		*60-140*		*P912124*	*12/30/2019*	*12/30/2019*	*EPA 624.1*
Surrogate: 4-Bromofluorobenzene			*84 %*		*60-140*		*P912124*	*12/30/2019*	*12/30/2019*	*EPA 624.1*
Chemistry Parameters by EPA/Standard Methods Methods										
Oil & Grease	<5.00	U	15	2.30	mg/L	1	P912125	12/30/2019	12/31/2019	EPA 1664B
pH	**8.14**		8.5	0.00	N/A	1	P912123	12/23/2019	12/23/2019	SM 4500H+
Chemical Oxygen Demand	<5.00	U		3.06	mg/L	1	P912127	12/31/2019	12/31/2019	SM 5220 D

Ramzi Makkouk
B.4488 Environmental Directorate/DPW
Building 4488

1/6/2020 2:28:48PM
Project: NPDES

Volatile Organic Compounds by EPA Method 624 - Quality Control

Analyte	Result		MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P912124 - EPA 5030B											
Blank (P912124-BLK1)					Prepared & Analyzed: 12/30/2019						
Benzene	<1.00	U		ug/L		<1.00					
Trichloroethylene	<1.00	U		ug/L		<1.00					
Ethylbenzene	<1.00	U		ug/L		<1.00					
Naphthalene	<1.00	U		ug/L		<1.00					
Toluene	<1.00	U		ug/L		<1.00					
m,p-Xylenes	<2.00	U		ug/L		<2.00					
o-Xylene	<1.00	U		ug/L		<1.00					
Surrogate: 1,2-Dichlorobenzene-d4	*42.5*			*ug/L*	*50.0*		*85*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*44.0*			*ug/L*	*50.0*		*88*	*60-140*			
Blank (P912124-BLK2)					Prepared & Analyzed: 12/30/2019						
Benzene	<1.00	U		ug/L		<1.00					
Trichloroethylene	<1.00	U		ug/L		<1.00					
Ethylbenzene	<1.00	U		ug/L		<1.00					
Naphthalene	<1.00	U		ug/L		<1.00					
Toluene	<1.00	U		ug/L		<1.00					
m,p-Xylenes	<2.00	U		ug/L		<2.00					
o-Xylene	<1.00	U		ug/L		<1.00					
Surrogate: 1,2-Dichlorobenzene-d4	*42.7*			*ug/L*	*50.0*		*85*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*43.3*			*ug/L*	*50.0*		*87*	*60-140*			
LCS (P912124-BS1)					Prepared & Analyzed: 12/30/2019						
Benzene	20.9			ug/L	20.0	20.9	104	65-135			
Trichloroethylene	23.0			ug/L	20.0	23.0	115	65-135			
Ethylbenzene	19.9			ug/L	20.0	19.9	99	60-140			
Naphthalene	23.7			ug/L	20.0	23.7	119	60-140			
Toluene	22.5			ug/L	20.0	22.5	113	70-130			
m,p-Xylenes	42.1			ug/L	40.0	42.1	105	70-130			
o-Xylene	19.2			ug/L	20.0	19.2	96	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*46.8*			*ug/L*	*50.0*		*94*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*53.1*			*ug/L*	*50.0*		*106*	*60-140*			
Duplicate (P912124-DUP1)	**Source: 1912030-01**				Prepared & Analyzed: 12/30/2019						
Benzene	0.798	U, J		ug/L		0.798			3	25	
Trichloroethylene	0.859	U, J		ug/L		0.859			8	25	
Ethylbenzene	0.278	U, J		ug/L		0.278			2	25	
Naphthalene	<1.00	U		ug/L		<1.00				25	
Toluene	0.464	U, J		ug/L		0.464			0.2	25	
m,p-Xylenes	<2.00	U		ug/L		<2.00				25	
o-Xylene	<1.00	U		ug/L		<1.00				25	
Surrogate: 1,2-Dichlorobenzene-d4	*39.7*			*ug/L*	*50.0*		*79*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*39.8*			*ug/L*	*50.0*		*80*	*60-140*			
MRL Check (P912124-MRL1)					Prepared & Analyzed: 12/30/2019						
Benzene	1.42			ug/L	1.00	1.42	142	0-200			
Trichloroethylene	1.48			ug/L	1.00	1.48	148	0-200			
Ethylbenzene	0.821	U, J		ug/L	1.00	0.821	82	0-200			

Ramzi Makkouk
B.4488 Environmental Directorate/DPW
Building 4488

1/6/2020 2:28:48PM
Project: NPDES

Volatile Organic Compounds by EPA Method 624 - Quality Control

Analyte	Result		MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P912124 - EPA 5030B											
MRL Check (P912124-MRL1)					Prepared & Analyzed: 12/30/2019						
Naphthalene	0.385	U, J		ug/L	1.00	0.385	38	0-200			
Toluene	1.06			ug/L	1.00	1.06	106	0-200			
m,p-Xylenes	1.81	U, J		ug/L	2.00	1.81	91	0-200			
o-Xylene	0.819	U, J		ug/L	1.00	0.819	82	0-200			
Surrogate: 1,2-Dichlorobenzene-d4	*43.8*			*ug/L*	*50.0*		*88*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*45.0*			*ug/L*	*50.0*		*90*	*60-140*			
Matrix Spike (P912124-MS1)	**Source: 1912030-01**				Prepared & Analyzed: 12/30/2019						
Benzene	21.4			ug/L	20.0	21.4	103	37-151			
Trichloroethylene	23.1			ug/L	20.0	23.1	112	70-157			
Ethylbenzene	18.4			ug/L	20.0	18.4	91	37-162			
Naphthalene	22.5			ug/L	20.0	22.5	113	60-140			
Toluene	21.4			ug/L	20.0	21.4	105	47-150			
m,p-Xylenes	40.8			ug/L	40.0	40.8	102	70-130			
o-Xylene	18.2			ug/L	20.0	18.2	91	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*50.0*			*ug/L*	*50.0*		*100*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*51.5*			*ug/L*	*50.0*		*103*	*60-140*			
Matrix Spike Dup (P912124-MSD1)	**Source: 1912030-01**				Prepared & Analyzed: 12/30/2019						
Benzene	21.4			ug/L	20.0	21.4	103	37-151	0.1	61	
Trichloroethylene	23.3			ug/L	20.0	23.3	113	70-157	0.8	48	
Ethylbenzene	18.8			ug/L	20.0	18.8	92	37-162	2	63	
Naphthalene	22.0			ug/L	20.0	22.0	110	60-140	2	25	
Toluene	21.2			ug/L	20.0	21.2	104	47-150	0.7	41	
m,p-Xylenes	41.4			ug/L	40.0	41.4	104	70-130	1	25	
o-Xylene	18.7			ug/L	20.0	18.7	94	70-130	3	25	
Surrogate: 1,2-Dichlorobenzene-d4	*50.0*			*ug/L*	*50.0*		*100*	*60-140*			
Surrogate: 4-Bromofluorobenzene	*51.5*			*ug/L*	*50.0*		*103*	*60-140*			

Chemistry Parameters by EPA/Standard Methods Methods - Quality Control

Analyte	Result		MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P912123 - NO PREP											
Reference (P912123-SRM1)					Prepared & Analyzed: 12/23/2019						
pH	7.84			N/A	7.87	7.84	100	98-102			
Batch P912125 - NO PREP											
Blank (P912125-BLK1)					Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	<5.00	U	2.30	mg/L		<5.00					
LCS (P912125-BS1)					Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	35.0			mg/L	40.0	35.0	88	78-114			
Duplicate (P912125-DUP1)	**Source: 1912024-12**				Prepared: 12/30/2019 Analyzed: 12/31/2019						

Ramzi Makkouk
B.4488 Environmental Directorate/DPW
Building 4488

1/6/2020 2:28:48PM
Project: NPDES

Chemistry Parameters by EPA/Standard Methods Methods - Quality Control

Analyte	Result		MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P912125 - NO PREP											
Duplicate (P912125-DUP1)	**Source: 1912024-12**				Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	<5.00	U	2.30	mg/L		<5.00				25	
MRL Check (P912125-MRL1)					Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	4.11			mg/L	3.35	4.11	123	66-134			
Matrix Spike (P912125-MS1)	**Source: 1912024-12**				Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	33.0			mg/L	40.0	33.0	83	61.7-119			
Matrix Spike Dup (P912125-MSD1)	**Source: 1912024-12**				Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	35.4			mg/L	40.0	35.4	88	61.7-119	7	25	
Reference (P912125-SRM1)					Prepared: 12/30/2019 Analyzed: 12/31/2019						
Oil & Grease	135			mg/L	151	135	89	70.9-112			
Batch P912127 - NO PREP											
Blank (P912127-BLK1)					Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	<5.00	U	3.06	mg/L		<5.00					
LCS (P912127-BS1)					Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	27.6			mg/L	25.0	27.6	110	80-120			
Duplicate (P912127-DUP1)	**Source: 1912030-01**				Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	<5.00	U	3.06	mg/L		<5.00				25	
MRL Check (P912127-MRL1)					Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	4.64			mg/L	5.00	4.64	93	0-200			
Matrix Spike (P912127-MS1)	**Source: 1912030-01**				Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	26.8			mg/L	25.0	26.8	97	70-130			
Matrix Spike Dup (P912127-MSD1)	**Source: 1912030-01**				Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	28.2			mg/L	25.0	28.2	103	70-130	5	25	
Reference (P912127-SRM1)					Prepared & Analyzed: 12/31/2019						
Chemical Oxygen Demand	195			mg/L	211	195	92	82.5-115			

Notes and Definitions

U	Analyte included in the analysis, but not detected
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
RPD	Relative Percent Difference

Wolf Creek
FEDERAL SERVICES

Chain of Custody Record

Redstone Arsenal ISS Program-Chemlab

Building 3338 Redeye Road, Redstone Arsenal AL
(256) 876-4062

Building #: Airport fuel station	Contact Name: Ramzi Makkouk	Date of Contact: 12/23/2019	
Phone: 256.955.8501	Email:	POC:	Phone:
Fax:		Fax:	Email:

Work Order #:	Project:	Frequency:
1912030	NPDES	unknown

Sample Number	Sample Description/ Document #	Sample Date	Sample Time	Analyses Requested	Sample Type		Sample Bottle		Sample Preservative						
					Comp.*	Grab	Glass	Plastic	None	HCl	HNO3	H2SO4	NaOH	Cool 4 C	Other**
01	Holding tank water @ airfield Fuel station	12/23/2019	0730	PH, O&G, VOC's, COD		X	X	X	X	x		X		X	
02															
03															
04															
05															
06															
07															
08															
09															
10															
11															
12															

Sampled By:		Customer/Relinquished By:	Date/Time:
Rebecca Greene	Rebecca Greene	None	
Print	Sign	Print	Sign
Received By:	Date/Time:	Received at Lab By: Rebecca Greene	Date/Time: 12-23-19 @ 1100
Were all samples properly preserved? (Yes) No		Initials: RG	
Comments:			

Put an "X" in the appropriate column for sample type and sample preservative. Write in analyses requested.
*For composite samples include start and stop date and time in comments section. ** Write in preservative used in comments.

Initial Release Date:- 9/21/10
Current Release Date: 8/20/18

RASA NPDES PERMIT NO. AL0000019
Storm water and discharge monitoring

holding tank for Airfield Fuel Station

DSN # Potential 74-77 DATE: 12-23-19 SAMPLE # 19/2330-01 SAMPLED BY: Rw

☐ FLOW
☐ NO FLOW
☐ ALREADY FLOWING

Date /Amount of last significant rainfall: 3.64in. over past 3days
Total Rainfall for date:
Location of RainGauge: B. 3338

SAMPLE TIME: 1050 TEMP: 52.8 *Thermometer ID#:*
TIME ARRIVED: 1095 pH: 8.14 TIME: 1050 BY: Rw
TIME DEPARTED: 1055 pH Calibration #'s, QC: 4.00, 7.00, 10.00,
ELAPSED TIME: TIME: BY:

TYPE OF SAMPLES	COLLECTION BOTTLES	PRESERVATION
☐ FLOW NA	1 L Nalgene or Glass	N/A
☐ ~~pH~~	1 L Nalgene	N/A
☐ TEMP for pH only	1 L Nalgene	N/A
☐ TDS	500 ml Nalgene	N/A
☐ ~~TSS~~ Rw NA	500 ml Nalgene	N/A
☐ DDT	1 L Glass with PTFE-lined Cap	Refreigerate
☐ METALS	1 L Nalgene or Glass	HNO_3 to pH <2
☑ O/G	1 L Wide Mouth Glass	6N HCl or H_2SO_4 to pH <2
☐ BETX	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☑ VOC's	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☐ Naphthalene	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☐ TCE/TCA	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☑ COD	250 ml Amber Glass	H_2SO_4 to pH <2
☐ Hg	1 L Nalgene or Glass	HNO_3 to pH <2
☐ TRC	1 L Nalgene	N/A analyze immediately
☐ Perchlorate	Per Guardian Systems	per guardian
☐ Phosphorus, total	120ml nalgene	pH<2 w/ H2SO4
☐ Nitrate/Nitrite	200ml nalgene	pH<2 w/ H2SO4
☐ Chlorides	120 ml nalgene	N/A
☐ 1,1,1 &/or 1,1,2- Trichloroethane	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☐ Acrolein/VOC (DSN 15-71 only)	2 x 40 ml Glass with PTFE-lined Cap	pH 4-5 HCL
☐ GC/MS Fraction VOC's, total	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☐ Trinitrotoluene (TNT)	Per Guardian Systems	per guardian
☐ 1,3,5-hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	Per Guardian Systems	per guardian
☐ Trichloroethylene	2 x 40 ml Glass with PTFE-lined Cap	pH < 2 w/ HCL
☐ MTBE		

VOC's

NOT NPDES Sample

CALCULATIONS TO DETERMINE FLOW *Flow Meter ID#:*

DEPTH OF FLOW: HYDRAULIC AREA (Depth, ft x Width, ft):
WIDTH OF FLOW: CU. Ft./Sec (Hydraulic area x velocity):
VELOCITY: VOLUME, MGD (cu. ft./sec x .6463):

BUCKET AND STOPWATCH CALCULATION TO DETERMINE FLOW FLOW CALCULATION BY:

SIZE OF CONTAINER: TIME TO FILL CONTAINER: LITER/MIN:

CU. FT. / SEC = (Liters/min. x 0.0005886): VOLUME, MGD (Volume, cu. ft./sec x .6463):

PREPARATION BENCH SHEET

Prepared: 12/31/2019 07:17 by RG | P912127 | **Printed: 12/31/2019 12:56:34PM**

Matrix: Water

Prepared using: WETCHEM - NO PREP

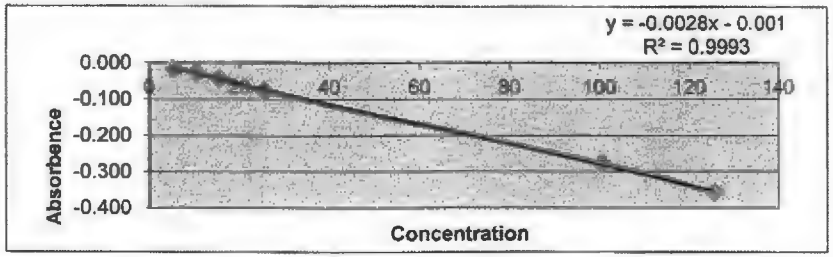
Sample ID	Sample ID and Source Sample	AMT Preped mL g L	Final Vol (mL)	Spike Amount uL 1 | 2	Comments
1912030-01	Airfield holding sump @ fuel station				2.50
P912127-BLK1	Blank			|	0.0
P912127-BS1	LCS			1 |	27.83
P912127-DUP1	Duplicate [1912030-01]			|	-0.36
P912127-MRL1	MRL Check			1 |	4.64
P912127-MS1	Matrix Spike [1912030-01]			1 |	26.79
P912127-MSD1	Matrix Spike Dup [1912030-01]			1 |	28.21
P912127-SRM1	Reference			1 |	195.0

Standard(s)		Standard ID#	Description	Manufacture Lot#
1800167	KHP spike for COD 25 ppm			
1900021	Demand QC P272-516			
1900105	KHP spike for COD 5 ppm			

SM 5220 D COD

1.6.2020

Std mg/L	COD Abs
5	-0.015
10	-0.026
15	-0.043
25	-0.076
100	-0.276
125	-0.355



Sample	Abs	Conc
Blank	0.000	**used to Zero spectrometer**
QC (2X)	-0.274	**195.00**
LCS	-0.079	**27.86**
Airfield sump	-0.008	**2.50**
DUP	0.000	**-0.36**
MS	-0.076	**26.79**
MSD	-0.080	**28.21**
MRL	-0.014	**4.64**

QC	195.00
QC Actual:	211
QC Range	174-243
% Rec.:	92.42%

ERA lot # P272-516

LCS	27.86
LCS True	25
LCS Range:	20.0-30.0
% Rec.:	111%

Spike	26.79	Spike	28.21
Spike TV	27.50	Spike TV	27.50
% Rec	97%	% Rec	103%
mdl 1	4.64		
Spike TV	5.00		
% Rec	93%		

RG 12/31/2019
Analyst/Date

Lounsberry, Rachel E

From: Makkouk, Ramzi S CIV USARMY USAG (US) <ramzi.s.makkouk.civ@mail.mil>
Sent: Thursday, September 19, 2019 10:53 AM
To: Lounsberry, Rachel E
Subject: Permit Number: AL0000019 (UNCLASSIFIED)
Attachments: NPDES Supplemental Information.docx

Follow Up Flag: Follow up
Flag Status: Flagged

CLASSIFICATION: UNCLASSIFIED

Good morning Rachel,

Attached are the updates to the storm water outfalls as requested. Hope all is well with you. If you need any additional information please let me know.

Thanks for your help,

Ramzi S. Makkouk
Directorate of Public Works
Environmental Management Division
(IMRE-PWE-I, Room A332)
US Army Garrison - Redstone Arsenal
4488 Martin Road
256-955-8501

CLASSIFICATION: UNCLASSIFIED

Supplemental Information - Permit Renewal Application

Significant Changes to Previous Permit

The storm water outfalls to be removed and outfall name change are as follows:

1. DSN004 and DSN005: Vehicle wash waters and storm water runoff from fuel storage and handling areas.
- Outfall Removal Justification: The fuel storage and handling location has moved to a different locations.

2. DSN011S: Stormwater runoff from fuel storage area, cooling tower blowdown, boiler blowdown and non-contact cooling water.
- Outfall Removal Justification: The fuel storage and handling has moved to a different locations.

3. DSN011Q: Stormwater runoff from fuel storage area, cooling tower blowdown, boiler blowdown and non-contact cooling water.
- Outfall Name Change To: Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water.
- Outfall Name Change Justification: The fuel storage site has been eliminated from this outfall.

4. DSN017S: Stormwater runoff from maintenance shop and scrap yard, cooling tower blowdown.
- Outfall Removal Justification: The Defense Logistics Agency (DLA) Disposition Services function has been moved to Anniston Army Depot. However, the FBI will take over the site, to build a covered motor pool and a 90-day storage building for storing "Hazardous Waste".

5. DSN017Q: Stormwater runoff from maintenance shop and scrap yard, cooling tower blowdown.

- Outfall Name Change To: Stormwater runoff from cooling tower blowdown, boiler blowdown and non-contact cooling water.

- Outfall Name Change Justification: The Defense Logistics Agency (DLA) Disposition Services function has been moved to Anniston Army Depot. However, the FBI will take over the site, to build a covered motor pool and a 90-day storage building for storing "Hazardous Waste".

6. DSN031Q-DSN054Q: Potable/Industrial water tank releases.

- Removing water tank releases outfalls: DSN031, DSN035, DSN036, DSN037, DSN039, DSN041, DSN044, DSN050, DSN051, DSN052, DSN053 and DSN054.

- Outfall Removal Justification: Water tanks have been taken out of service.

- Remaining water tank releases outfalls: DSN032, DSN033, DSN034, DSN038, DSN040, DSN042, DSN43, DSN045, DSN046, DSN047, DSN048 and DSN049.

7. DSN057Y and DSN058Y: Stormwater runoff from motor pool area.

- Outfall Removal Justification: The United States Naval Construction Battalions, better known as the Navy Seabees used to occupy the facility on the installation, but they have moved out. A new tenant in virtual business moved into the compound facilities, and motor pool is no longer needed for their function.

8. DSN068 and DSN070Y: Stormwater runoff from boiler plants.

- Outfall Removal Justification: Boiler plants are running on natural gas, oil-burning furnace has been removed from the operation process.

<u>The Storm water outfalls to be added are as follows:</u>

1. DSN076: Stormwater runoff from fuel storage and handling areas.

This discharge consists of storm water runoff from the Bulk Fuel Facility. There will be three fuel tanks total. Tanks are single wall, inside a concrete walled (~3') enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1) and F-24(Jet A) 35,000gal (total 2). Monitored at South East corner of the Bulk Fuel Facility.

2. DSN077: Stormwater runoff from fuel storage and handling areas.

This discharge consists of stormwater runoff from the Bulk Fuel Facility. There will be three fuel tanks total. Tanks are single wall, inside a concrete walled (~3') enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1) and F-24(Jet A) 35,000gal (total 2). Monitored at North East corner of the Bulk Fuel Facility.

3. DSN078: Stormwater runoff from fuel storage and handling areas.

This discharge consists of stormwater runoff from the Retail Fuel Facility. There will be three fuel tanks total. Tanks are double wall, inside a concrete curbed enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1); MOGAS (Unleaded) 12,000gal (total 1) & E85 12,000gal (total 1). Monitored at North East corner of the Retail Fuel facility.

4. DSN079: Stormwater runoff and wastewater associated with testing of System Controlled Environmental Test Infrastructure.

This discharge consists of wastewater from the testing of System Controlled Environmental Test Infrastructure (SCETI) at TA-6. This system will allow testers to accurately measure, control and record simulated rain conditions, in order to measure the intensity of rainfall on an aircraft through artificial rain conditions. The artificial rain generation capability will be developed through the use of water cannons.

Lounsberry, Rachel E

From:	Makkouk, Ramzi S CIV USARMY USAG (US) <ramzi.s.makkouk.civ@mail.mil>
Sent:	Thursday, February 28, 2019 10:06 AM
To:	Stanaland, Rachel E
Cc:	Stierwalt, Michael J CIV USARMY USAG (USA); Ortiz, Angelique E CTR (US)
Subject:	Outfalls 3, 11, 13 & 21 Sampling and Analysis
Attachments:	EPA Form 3510-2F 3,11,13,21(2019).pdf
Follow Up Flag:	FollowUp
Flag Status:	Flagged

Good morning Rachel,

Per your request, attached are the full sampling information requested with the exception of the demolition area that has not been sampled. But I will forward you the analysis once sampling is conducted. Again, thanks for your patience and understanding.

You have a good day and if you have any questions, please let me know.

Thanks,

Ramzi S. Makkouk
Directorate of Public Works
Environmental Management Division
(IMRE-PWE-I, Room A332)
US Army Garrison - Redstone Arsenal
4488 Martin Road
256-955-8501

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/L		1.00	DSN003
Biological Oxygen Demand (BOD5)	5.0 mg/l		5.0 mg/L		1.00	DSN003
Chemical Oxygen Demand (COD)	4.0 mg/l		4.0 mg/L		1.00	DSN003
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/L		1.00	DSN003
Total Nitrogen	0.5 mg/l		0.5 mg/L		1.00	DSN003
Total Phosphorus	0.1 mg/l		0.1 mg/L		1.00	DSN003
pH	Minimum 7.79	Maximum 7.79	Minimum 7.79	Maximum 7.79	1.00	DSN003

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
MTBE	0.618 mg/l		0.618 mg/L		1.00	DSN003
BTEX	1.0 ug/l		1 ug/L		1.00	DSN003
Naphthalene	1.0 ug/l		1.0 ug/l		1.00	DSN003
DDT	0.1 ug/l		0.1 ug/l		1.00	DSN003
Flow	0.0400 MGD		0.0400 MGD		1.00	DSN003

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/L		1.00	DSN011
Biological Oxygen Demand (BOD5)	4.0 mg/l		4.0 mg/L		1.00	DSN011
Chemical Oxygen Demand (COD)	5.0 mg/l		5.0 mg/L		1.00	DSN011
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/L		1.00	DSN011
Total Nitrogen	0.5 mg/l		0.5 mg/L		1.00	DSN011
Total Phosphorus	0.1 mg/l		0.1 mg/L		1.00	DSN011
pH	Minimum 6.98	Maximum 6.98	Minimum 6.98	Maximum 6.98	1.00	DSN011

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
MTBE	0.433 mg/l		0.433 mg/L		1.00	DSN011
BTEX	1.0 ug/l		1.0 ug/L		1.00	DSN011
Naphthalene	1.0 ug/l		1.0 ug/l		1.00	DSN011
DDT	0.1 ug/l		0.1 ug/l		1.00	DSN011
PCB	10 ug/l		10 ug/l		1.00	DSN011
Flow	0.0400 MGD		0.0400 MGD		1.00	DSN011

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/L		1.00	DSN013
Biological Oxygen Demand (BOD5)	5.0 mg/l		5.0 mg/L		1.00	DSN013
Chemical Oxygen Demand (COD)	7.87 mg/l		7.87 mg/L		1.00	DSN013
Total Suspended Solids (TSS)	8.0 mg/l		8.0 mg/L		1.00	DSN013
Total Nitrogen	0.5 mg/l		0.5 mg/L		1.00	DSN013
Total Phosphorus	0.1 mg/l		0.1 mg/L		1.00	DSN013
pH	Minimum 7.18	Maximum 7.18	Minimum 7.18	Maximum 7.18	1.00	DSN013

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.1 ug/l		0.1 ug/l		1.00	DSN013
Flow	0.150 MGD		0.150 MGD		1.00	DSN013

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/L		1.00	DSN021
Biological Oxygen Demand (BOD5)	5.0 mg/l		5.0 mg/L		1.00	DSN021
Chemical Oxygen Demand (COD)	6.26 mg/l		6.26 mg/L		1.00	DSN021
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/L		1.00	DSN021
Total Nitrogen	0.5 mg/l		0.5 mg/L		1.00	DSN021
Total Phosphorus	0.0480 mg/l		0.0480 mg/L		1.00	DSN021
pH	Minimum 7.54	Maximum 7.54	Minimum 7.54	Maximum 7.54	1.00	DSN021

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Arsenic	0.016 mg/l		0.016 mg/L		1.00	DSN021
DDT	0.1 ug/l		0.1 ug/l		1.00	DSN021
Chloride	3.7 mg/l		3.7 mg/l		1.00	DSN021
Flow	0.0400 MGD		0.0400 MGD		1.00	DSN021

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A	NODI			DSN017(Storm Water)
Biological Oxygen Demand (BOD5)	1.0 mg/L		1.0 mg/L		1.00	DSN017(Non Contact Water)
Chemical Oxygen Demand (COD)	NODI		NODI			DSN017(Storm Water)
Total Suspended Solids (TSS)	NODI		NODI			DSN017(Storm Water)
Total Nitrogen	0.5 mg/L		0.5 mg/L		1.00	DSN017(Non Contact Water)
Total Phosphorus	0.1 mg/L		0.1 mg/L		1.00	DSN017(Non Contact Water)
pH	Minimum 7.42	Maximum 7.42	Minimum 7.42	Maximum 7.42	1.00	DSN017(Non Contact Water)

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
O&G	NODI		NODI			DSN017(Storm Water)
Naphthalene	NODI		NODI			DSN017(Storm Water)
TRC	0.05 mg/L		0.05 mg/L		1.00	DSN017(Non Contact Water)
TDS	156.0 mg/L		156.0 mg/L		1.00	DSN017(Non Contact Water)
Mercury, Total	NODI		NODI			DSN017(Storm Water)
Zinc, Total	NODI		NODI			DSN017(Non Contact Water)
Lead, Total	NODI		NODI			DSN017(Storm Water)
Copper, Total	NODI		NODI			DSN017(Storm Water)
BETX	NODI		NODI			DSN017(Storm Water)
Temperature	48.4 F		48.4 F		1.00	DSN017(Non Contact Water)

Stanaland, Rachel E

From: Makkouk, Ramzi S CIV USARMY USAG (US) <ramzi.s.makkouk.civ@mail.mil>
Sent: Tuesday, November 13, 2018 3:38 PM
To: Stanaland, Rachel E
Subject: Controlled and realistic Degraded Visual Environment (DVE) and Hostile Fire Indicator (HFI) testing
Attachments: SCETI_EA_DRAFT1.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hello Rachel,

Need to add an additional outfall at Test Area#6 please. Attached is the draft environmental assessment for the subject document for your information. This project will consist of the following:

Water cannons will be turned on and a wide jet of water shot into the air, aimed at a camera mounted on a gimbal system. The purpose of the camera is to demonstrate flying in rain/fog conditions for visibility assessment. A water detention lagoon will be created to capture and slow water runoff from the site.

Let me know if there's anything else I need to provide in order to go forward with this project.

As always, thanks for all your help!

Thanks,

Ramzi S. Makkouk
Directorate of Public Works
Environmental Management Division
(IMRE-PWE-I, Room A332)
US Army Garrison - Redstone Arsenal
4488 Martin Road
256-955-8501

Draft Environmental Assessment for Construction and Operation of System of Systems Controlled Environmental Test Infrastructure at Redstone Arsenal, AL

Prepared for
Commander, Redstone Arsenal, Alabama

Prepared by
U.S. Army Redstone Test Center, Redstone Arsenal, Alabama

1

2

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SECTION 1.0 PURPOSE, NEED, AND SCOPE

1.1 INSTALLATION BACKGROUND AND SETTING

Redstone Arsenal is in Madison County, Alabama, and it was established in 1941 as a series of complexes supporting Army arsenal, depot, and chemical munitions development activities. Following World War II (WWII) and the drawdown of wartime support, Redstone Arsenal became home to the Army missile program. In that role, Redstone Arsenal supported the research of numerous scientists and engineers, including Wernher von Braun. Through the 1950s and 1960s, Redstone Arsenal played a pivotal role in the development of both civil and military space and ballistic technologies. With the establishment of the National Aeronautics and Space Administration in 1958, many Redstone Arsenal facilities and employees became part of the new agency at the newly designated George C. Marshall Space Flight Center on-installation while many others continued supporting the Army's unique needs.

Redstone Arsenal encompasses approximately 38,100 acres and is approximately 95 miles north of Birmingham, Alabama; 109 miles south of Nashville, Tennessee; 212 miles southeast of Memphis, Tennessee; and 175 miles northwest of Atlanta, Georgia (RSA 2015). Please refer to Figure 1 and Figure 2 in Appendix A.

Of the 38,100 acres, 5,617 acres consist of a portion of Wheeler National Wildlife Refuge; 1,260 acres are owned by the Tennessee Valley Authority; and 1,864 acres are permitted for use by the National Aeronautics and Space Administration's Marshall Space Flight Center. Approximately 25,500 acres of Redstone Arsenal are used as range and training areas, including nine research, development, test, and evaluation ranges for mostly explosive ordnance; four light demolition ranges; one heavy demolition range; and more than 7,000 acres for light maneuver training. Ten cantonment areas comprise approximately 10,700 acres and consist of administrative offices, military housing, industrial facilities, storage facilities, maintenance facilities, recreational areas, agricultural areas, forested areas, and water bodies (RSA 2015).

Redstone Arsenal is a center of testing, development, and doctrine for the Army missile program and, in addition to the Redstone Test Center, includes tenants such as the National Aeronautics and Space Administration, Missile Defense Agency, Missile and Space Intelligence Center, and Tactical Urban Assault Course Project Office. The support of those activities results in the employment of an estimated 35,000 personnel and economic activity in the Huntsville Metropolitan Area in excess of $10 billion a year.

The U.S. Army Redstone Test Center (RTC) is a United States Army Test and Evaluation Command (ATEC) tenant activity on Redstone Arsenal, Alabama. Redstone Test Center operates on over 14,000 acres, or about one-third the land area of Redstone Arsenal, Alabama providing cutting edge test and evaluation support for various customers since the early 1950s. The main mission of Redstone Test Center is to provide superior technical expertise and state-of-the-art facilities and capabilities to plan, conduct, analyze and report the results of tests on aviation, missile and sensor systems, subsystems and components. These services ensure the

safety, performance and reliability of military hardware and software in their operational environment.

This Environmental Assessment evaluates the potential environmental effects associated with the proposed System of Systems Controlled Environment Test Infrastructure (SCETI). The Environmental Assessment is prepared in accordance with the National Environmental Policy Act of 1969 (42 United States Code [U.S.C.] sections 4321–4347) and Environmental Analysis of Army Actions (Title 32 of the Code of Federal Regulations [CFR] part 651). The intent of the National Environmental Policy Act is to protect, restore, and enhance the environment through well-informed federal decisions. The regulations at 32 CFR part 651 provide Army guidance and procedures for National Environmental Policy Act compliance and establish policy, procedures, and responsibilities for assessing environmental effects of Army actions.

Section 2.0 discusses the proposed SCETI mission in detail

1.2 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of U.S. Army Redstone Test Center's proposed action is to provide and develop a multi-functional test capability that will allow repeatable, controlled and realistic Degraded Visual Environment (DVE) and Hostile Fire Indicator (HFI) testing. DVE occurs when aircraft pilots find themselves in situations with reduced visibility. As visibility degrades, aviation operations can become more dangerous, less effective, and often deadly. Typical DVE conditions can include, but are not limited to, smoke, dust, rain, fog, or flat light. HFI systems are installed onboard aircraft to detect and locate incoming fire of various small arms.

The Department of the Army has identified a significant need for simulated flight, under controlled and repeatable conditions for DVE and HFI testing. Both small arms fire and degraded visibility during in-theater landing or take-off scenarios contribute to the highest rates of pilot and aircraft loss overseas. Currently, the only way to test DVE systems is to conduct costly, higher risk flight operations involving a piloted aircraft moving in actual degraded visual environment conditions. Similarly, the current way to test HFI systems is to have high risk, high cost piloted aircraft in live-fire scenarios. The SCETI concept would completely take out the risk to test pilots and aircraft.

1.3 SCOPE OF THE ANALYSIS AND DECISION TO BE MADE

This Environmental Assessment considers direct, indirect, and cumulative effects of the proposed action, alternatives and the No Action Alternative. It was prepared in accordance with the National Environmental Policy Act (42 U.S.C. § 4321 et seq.), Council on Environmental Quality Regulations (40 CFR parts 1500-1508), and the Army's implementing procedures published in 32 CFR part 651 (Environmental Analysis of Army Actions). This Environmental Assessment is an appraisal of impacts of the proposed project that will result in either a Finding of No Significant Impact or a Notice of Intent to prepare an Environmental Impact Statement.

This Environmental Assessment focuses on the proposed, future SCETI testing and required construction. It provides a discussion of the affected environment and the potential impacts to physical, natural, cultural, and socioeconomic resources. The following Valued Environmental

Components were identified as having the potential for adverse impacts and are, therefore, analyzed for all alternatives carried forward for analysis in the Environmental Assessment:

- Land Use
- Air Emissions and Quality
- Noise Management
- Water Resources
- Environmental Restoration Areas
- Hazardous Materials and Waste Management
- Non-Hazardous Waste Management and Recycling
- Threatened and Endangered Species
- Historical Structures and Archaeological Resources
- Socioeconomic Impacts
- Geology and Soils

As detailed in Section 2.0, the Preferred Alternative would help Redstone Test Center address the U.S. Department of the Army mission requirements. If it is determined that the proposed action will not result in any significant environmental impact, the final conclusion will be covered within a Finding of No Significant Impact. If it is determined that implementing the proposed action would result in unavoidable or nonmitigable significant adverse environmental impacts, the Army will publish a Notice of Intent and initiate the preparation of an Environmental Impact Statement.

The No Action Alternative serves as a baseline against which the impacts of the proposed action are evaluated. Under the No Action Alternative, Redstone Test Center would not implement the proposed action.

1.4 PUBLIC INVOLVEMENT

The Army invites public participation in the National Environmental Policy Act process. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process.

1.5 IMPACT ANALYSIS PERFORMED

An interdisciplinary team of environmental scientists, biologists, planners, engineers, archaeologists, historians, and military technicians has analyzed the alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action.

1.6 RELEVANT STATUTES AND EXECUTIVE ORDERS

In addressing environmental considerations, the Army is guided by relevant statutes (and their implementing regulations) and executive orders that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act; Clean Water Act; Noise Control Act; Endangered Species Act; National Historic

Preservation Act; Archaeological Resources Protection Act; Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; and Toxic Substances Control Act. Executive orders bearing on the proposed action include Executive Order 11593 (*Protection and Enhancement of the Cultural Environment*), Executive Order 11988 (*Floodplain Management*), Executive Order 11990 (*Protection of Wetlands*), and Executive Order 12088 (*Federal Compliance with Pollution Control Standards*). This Environmental Assessment addresses such authorities when relevant to environmental resources and conditions.

SECTION 2.0

SCREENING CRITERIA, DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section includes a description of screening criteria, the No Action Alternative, the proposed action (which includes several alternatives, including the preferred alternative), and alternatives considered but eliminated from detailed study.

2.1 SCREENING CRITERIA

U.S. Army Redstone Test Center performed screening to determine the most appropriate location for the continued and future implementation of the proposed action. To be considered viable and carried forward for analysis, alternatives must have met the following criteria:

- Be in a location where associated Safety Fans do not encroach outside of currently controlled ranges or impact occupied facilities and unrelated activities;
- Minimize impact to wetlands and floodplains;
- Minimize conflict with existing testing activities;
- Meet sensor line-of-sight requirements;
- Not jeopardize personnel safety during testing; and
- Not subject public outside of Redstone Arsenal to unreasonable levels of noise.

2.2 PROPOSED ACTION

The Proposed Action is to construct and operate the proposed System of System Controlled Environment Test Infrastructure at an existing U.S. Army Redstone Test Center range at Redstone Arsenal, Alabama. The SCETI operational concept will include four 200' tall towers, located at the corners of a 400' wide x 1000' long rectangle. The towers will hoist cables, via winches at the base, which will suspend a DVE or HFI sensor system. The suspended system package will be remotely controlled and moved along the cables within the footprint (See Appendix A, Figure 3). This simulated flight area will consist of a 280' wide x 700' long area. A central, 200' wide x 400' long improved surface pad will be used to place various targets or obstacles for the suspended sensor system.

Also, the 400' wide x 1000' long footprint will consist of a flexible obstacle field. Obstacles can consist of, but are not limited to, holes, trenches, berms, poles, rock piles or fabricated (typically

wooden) structures as well as vehicle hulls. Depth of disturbance shall not exceed two feet, and above ground structure will not surpass 33 feet above ground level. These obstacles are intended to further extend the variation of environmental conditions the sensor system under test would be exposed to during testing operations.

2.2.1 Degraded Visual Environment Testing

Furthermore, the SCETI will have a roughly 100' wide x 200' long area in which degraded visual environments can be generated for DVE sensor testing. See Table 2.2.1 for a list of proposed obscurants and materials that could be used during testing to simulate various environmental and combat conditions that could be encountered by aircraft in theater. Many of the listed obscurants other than rain and sand are currently utilized for sensor testing at the U.S. Army Redstone Test Center's Test Area 3.

Degraded visual environment testing will be done to assess aircraft sensor packets in various degraded visual environment conditions. Blowing rain will be generated by sixteen mounted water cannons that will be located on either side of the central improved surface pad. It is expected that approximately 1,872 gallons of water would be generated in a 15 minute test run at the highest rain rate (0.6 inches/hour) in the test requirements. It is reasonably expected that the scenario could be repeated up to ten times a day. This would equate to approximately 18,720 gallons of water over an eight hour day. Current test forecasting expects for approximately one test day per every three months leading to a total annual water usage of 56,160 gallons.

There is a potential for an outlier case for non-typical industry customers such as the Federal Aviation Administration or the Meteorological community. The extreme outlier can be assumed to be 8 inches/hour, with a total volume of 24,960 gallons introduced to the test site in a 15 minute window. This is the upper limit of the water cannon design capability. Due to the demand on the system, the lack of use cases and complexities of data collection in this scenario, this outlier will be at a lesser frequency than the average use cases. It can be assumed this this outlier requirement would occur no more than twice per day, with a total volume calculated to be 49,920 gallons per test day. Assuming three test days per week, the total weekly water usage would be 149,760 gallons. Again, it should be noted that this is a highly unique use case, which has no current request or requirements, would be conducted once per year.

Fog Oil, sand, dust and chaff will be generated by M56 Coyote Generators (See Appendix A, Figure 4). Diesel, oil, and JP-8 smoke will be generated by burning the product in burn barrels. Red phosphorus smoke will be created through the detonation of various phosphorus grenades. Flares will be dispensed from aircraft. The following subsection will briefly describe each obscurant.

Description of Obscurants

Fog Oil – Primarily used in smoke generators. This is low viscosity petroleum distillate. Fog oils have two standard grades, standard grade fuel (SGF) No. 1 and SGF No. 2. SGF No. 1 has a higher viscosity and is typically used when the atmospheric temperature is 40°F or above; SGF No. 2 is usually applied when the temperature is between -15° and 40°F. The U.S. Army usage

mainly consists primarily of SGF No. 2 for year-round smoke/obscurant use. It should also be noted that SGF No. 2 is additive free (AMCCOM 1983).

SGF No. 2, being a light lubricating oil, is similar in most respects to automotive lubricants and some industrial lubricating oils of similar viscosities. The hydrocarbons constituting these oils generally contain 20-50 carbon atoms. Based upon viscosity, SGF No. 2 is made up mainly of hydrocarbons in the molecular weight range of 240-420 atomic units.

Diesel Fuel – Another low viscosity petroleum distillate. It is a very complex mixture of hydrocarbons containing small quantities of additives. Additives are present in very small quantities to improve combustibility (alkylnitrates), reduce corrosion of surface storage containers (surfactants), reduce gum formation (mixed surfactant), or act as antioxidants (aromatic amines or phenols).

Diesel fuels come in four grades. The first two are products of the middle distillate oils. They are used in high-speed engines such as tractors, trucks, and buses. Other grades of diesel fuel are more viscous, containing blends of higher-boiling distillates and some residual (nonvolatile) fuels. These are used in low-speed engines operating with sustained loads at constant speeds such as large marine and railroad diesel engines. The acceptance criteria and specifications for these fuels are outlined in Federal Specification VV-F-800C and Military Specification MIL-F-46162B (AMCCOM 1983).

Dust and Sand – Kaolin is a naturally occurring fine, usually white clay resulting from extreme weathering of aluminous minerals that contain kaolinite as a principle constituent. The mineral is often used by military ranges to simulate battlefield dust. The dust is usually generated and dispersed by a high-velocity air stream generator. Based on widespread usage and extensive toxicity studies, kaolin is considered safe for humans and the environment (USEPA 1999).

Bi-Spectral Dust (Graphite Flakes mixed with Fog Oil) – Graphite is a soft-scale form of carbon and can be natural or synthetic in origin. Natural graphite is associated with quartz, iron oxide, mica, and granite impairers. Free silica content typically ranges from 1% to 25%. Synthetic graphite is formed by heating petroleum coke, a binder (usually coal tar pitch), and a petroleum-based oil to facilitate extrusion of the particles. Synthetic graphite is the source currently used by the military. The chemical composition of the bulk powders is predominantly carbon with trace impurities totaling < 1% by weight. The trace impurities include small quantities of silica, aluminum, iron, calcium, titanium, and magnesium (USACBDA 1993).

Red Phosphorus –Red phosphorus (RP) is used by the military for smoke munitions. It is a reddish solid that can be finely powdered or a massively formed material. RP is much less reactive with air than white phosphorus and is also very insoluble in water (AMCCOM 1983b).

Chaff – Modern chaff consists of bundles of extremely small strands of aluminum-coated silica fibers that reflect radio waves from a radar set. Chaff fibers are proximately the thickness of a very thin human hair and range in length from 0.3 to over 1.0 inch (0.76 centimeters to 2.5 centimeters). The length of the chaff determines the frequency range of the radio wave most effectively reflected by that particular filament. When released from an aircraft, chaff initially

forms a "puff" that disperses widely in the air. Dispersed chaff forms an electronic cloud that effectively reflects radar signals and forms an image on a radar screen. If the pilot quickly maneuvers the aircraft while momentarily obscured from precise radar detection, the aircraft can safely maneuver to avoid the threat (U.S. Air Force, 2003).

Several studies and assessments have received the available information on the environmental effects and health risks of chaff. These reviews and studies demonstrate that chaff poses no significant risks nor does it adversely affect livestock, wildlife, land use, or visual resources. Indeed, the main chaff components (silica, aluminum, and stearic acid [anti-clumping agent]) are generally prevalent in the environment.

Flares – Defensive flares are magnesium pellets that, when ignited, burn for a short period (3.5 to 5 seconds) at approximately 2,000 °F. The burn temperature is hotter than the exhaust of an aircraft engine and therefore attracts and decoys heat-seeking weapons and sensors targeted on the aircraft.

The flares are wrapped with aluminum-filament-reinforced tape and inserted in an aluminum case closed with a felt spacer and a plastic end cap. The top of the case has a pyrotechnic impulse cartridge that is activated electrically to produce hot gases that push a one 1-inch square by ¼-inch thick cap and the flare material out of the flare dispenser mounted in the aircraft. The flare ignites as it is ejected from the dispenser (U.S. Air Force, 2003).

2.2.2 Hostile Fire Indicator Testing

Hostile Fire Indicators are aircraft mounted sensor systems that can detect incoming fire of various small arms. To test these systems in a simulated environment, the U.S. Army Redstone Test Center will utilize the SCETI capability. See various small arms in Table 2.2.1 that will utilized to test the HFI systems.

Munitions will be fired downrange from a fixed position at the SCETI site. Live fire will be directed below or beside the HFI system under test that is being remotely guided along the guy wire system, within a predetermined safety distance that is determined by munition dispersion patterns. Data will be gathered by various velocity and tracking radars, acoustic arrays, and high speed cameras

Table 2.2.1 SCETI Materials Used for DVE & HFI Testing

Materials & Materials	Approximate Annual Usage
Rain (light, medium, heavy)	56,160 gallons
Dust (bi-spectral dust, red clay dust)	600 pounds
Sand	300 pounds
Red Phosphorus	440 pounds
Fog Oil	150 gallons

Burn Barrels (Diesel, Oil, JP-8)	150 gallons
Munition Type	**Approximate Annual Usage (In Rounds)**
7.62 millimeter	15,000
25 millimeter	2,400
30 millimeter	2,400
50 caliber	15,000
Rocket Propelled Grenade	30
2.75 inch rockets	180
Chaff	240
Flares	4,500

2.3 NO ACTION ALTERNATIVE

The No Action Alternative, included as prescribed by Council on Environmental Quality regulations, serves as a baseline against which the impacts of the Preferred Alternative can be evaluated.

Under the No Action Alternative, Redstone Test Center would not implement the proposed action, which is the proposed System of Systems Controlled Environment Test Infrastructure (SCETI) testing and construction of associated infrastructure. These operations would not occur under this alternative. Simulated DVE and HFI testing would not occur. This alternative would not allow the U.S. Army Redstone Test Center to meet the existing need of the Department of Defense need for this type of testing. This would likely result in adverse impacts to future systems fielded for use by U.S. Army aviators and soldiers. It would also not provide a safer and more reliable means to test these new systems.

2.4 ALTERNATIVES CONSIDERED IN DETAILED STUDY

Two action alternatives were considered for detailed study in this environmental assessment. The selection of these two alternatives for the SCETI operation was based of the Screening Criteria detailed in Section 2.1.

2.4.1 Alternative A (Preferred Alternative)

Alternative A is the U.S. Army Redstone Test Center's Preferred Alternative. This would involve implementing the SCETI operation at the existing range of the U.S. Army Redstone Test Center's Test Area 6 (TA-6) (See Appendix A, Figure 5). This range primarily focuses on ground and aviation-based sensors and aviation countermeasure testing. It consists of a 4,588 acre subset of the much larger TA-1 Range Complex. This alternative would consist of

constructing the SCETI on the northeastern portion of TA-6. Also, a portion of trees would need to be cleared to achieve the sensor line of sight requirement.

2.4.2 Alternative B

Alternative B would consist of implementing the SCETI operation at the existing range of the U.S. Army Redstone Test Center's Test Area 6 (TA-1). TA-1 serves as the primary missile flight test range for RTC. This range complex is approximately 9,465 acres in size. The SCETI would be constructed in the northeastern corner of the main flight range (See Appendix A, Figure 6).

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Optional location around the U.S. Army Redstone Test Center's controlled property were considered for the location of the SCETI operation. They were, however, eliminated from selection because of either extensive presence of wetlands and floodplains, operational constraints due to inadequate range space, conflicts with existing operations, or combinations of these issues.

U.S. Army Redstone Test Center, Test Area 3

Test Area 3 (TA-3) serves as the main sensor, countermeasure and obscurant test range for the U.S. Army Redstone Test Center. It is a 1,818 acre range located on the northwestern corner for the Redstone Arsenal. While TA-3 does perform aviation sensor and obscurant testing, the extensive presence of wetlands and floodplains does not make it an ideal location for the construction of the SCETI capability. Also, TA-3's orientation at the northwestern border of Redstone Arsenal does not make it a favorable location for the live fire of small arms required for HFI testing.

U.S. Army Redstone Test Center, Test Area 1, Site 2

An additional site on Test Area 1 was considered during the planning process. This site was located on the far eastern portion of the range. While this site allowed for far less operational conflicts and provided the greatest distance for line of sight, its proximity to various administrative buildings did not make it suitable for the safe deployment of the obscurants required for DVE testing.

SECTION 3.0

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 APPROACH FOR ANALYZING IMPACTS

The analysis of the Valued Environmental components identified in section 1.3 includes affect environment and environmental consequences, including cumulative effects.

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 Code of Federal Regulations part 1508.27. The intensity of a potential impact refers to the impact's severity and includes consideration of beneficial and adverse effects; the level of controversy associated with a project's impacts on human health; whether the action establishes a precedent for future actions with significant effects; the level of uncertainty about project impacts; or whether the action threatens to violate federal, state, or local law requirements imposed for the protection of the environment. The severity of an environmental impact is characterized as none/negligible, minor, moderate, significant, or beneficial.

- **None/negligible** – No measureable impacts are expected to occur
- **Minor** – Primarily short-term but measureable adverse impacts are expected. Impacts might have slight impact on the resource.
- **Moderate** – Noticeable adverse impacts that would have a measureable effect on a resource and are not short term.
- **Significant** – Adverse impacts would be obvious, both short term and long term, and would have serious consequences on a resource. These impacts would be considered significant unless mitigable to a less-than-significant level.
- **Beneficial** – Impacts would benefit the resource/issue.

The evaluation of impacts in this Environmental Assessment includes thresholds of concern for each resource. Some thresholds have been designated based on legal or regulatory limits or requirements; others reflect the Army's discretionary judgment in accomplishing its primary mission of military readiness, while also fulfilling its conservation stewardship responsibilities. Quantitative and qualitative analyses have been used, as appropriate, to determine whether, and the extent to which, a threshold would be exceeded. Based on the results of the analyses, this Environmental Assessment identifies whether a particular potential impact would be adverse or beneficial, and to what extent. The following sections discuss the affected environment and the environmental consequences associated with each alternative, including the No Action Alternative.

Council on Environmental Quality regulations require that a proposed project's cumulative impact be addressed as part of a National Environmental Policy Act document. Cumulative impacts are effects on the environment that result from the incremental effect of a project in combination with other past, present, or reasonable foreseeable future actions, regardless of jurisdiction or entity. Cumulative impacts can result from individually minor, but collectively significant, action occurring over time. Section 3.14 discusses cumulative impacts.

3.2 LAND USE

3.2.1 Affected Environment

Land use includes all existing land use activities, land ownership, and planned land uses – as defined in any applicable land-use planning documents – in the potentially affected area. This section describes Redstone Arsenal land-use zoning and the land use of the alternative proposed project sites and the surrounding land.

Redstone Arsenal's Real Property Master Plan includes development plans for four major land use zones: residential, city center, professional, and industrial (US Army Garrison-Redstone Arsenal, 2014). The industrial zone is the largest of Redstone Arsenal's land use zones at almost 27,700 acres. It contains the installation's industrial and explosive operations; Redstone Army Airfield with a 7,300-foot runway, test areas, warehousing, and ammunition storage; more than 5,600 acres of Wheeler Wildlife Refuge; approximately 1,260 acres of Tennessee Valley Authority property; and more than 10 miles of the Tennessee River waterfront with recreation areas. The acreage includes nine research, development, test and evaluation (RDT&E) ranges; four light demolition ranges; and one heavy demolition range. This area is most heavily constrained by restrictive safety arcs, wetlands, ecologically sensitive areas, archaeological and cultural resource sites, and 100-year floodplains.

Potential Impacts to land use are considered significant when the proposed uses conflict with applicable ordinances and/or permit requirements, cause nonconformance with current general plans and land use plans, preclude adjacent or nearby properties from being used for existing activities, or conflict with established uses of an area requiring mitigation.

3.2.2 Impacts Associated with Alternative A (Preferred Alternative)

Land use compatibility is determined by comparing the proposed use to the existing use of the project site and surrounding areas. Negligible effects would be expected with Alternative A. The location of the proposed SCETI operation at U.S. Army Redstone Test Center's TA-6 would be consistent with the Installation's Real Property Master Plan (U.S. Army Garrison – Redstone Arsenal, 2014). The industrial zone land use designation of the site and surrounding land would be compatible with the proposed use of the land. Constructing and operating at the proposed site would not create a conflict or disrupt or divide established land use configurations.

3.2.3 Impacts Associated with Alternative B

Land use compatibility is determined by comparing the proposed use to the existing use of the project site and surrounding areas. Negligible effects would be expected with Alternative B. The location of the proposed SCETI operation at U.S. Army Redstone Test Center's TA-1 would be consistent with the Installation's Real Property Master Plan (U.S. Army Garrison – Redstone Arsenal, 2014). The industrial zone land use designation of the site and surrounding land would be compatible with the proposed use of the land. Constructing and operating at the proposed site would not create a conflict or disrupt or divide established land use configurations.

3.2.4 Impacts Associated with the No Action Alternative

No effects on land use would be expected with the No Action Alternative. The proposed Redstone Test Center TA-1 project would not be implemented. There would be no changes in the land use of the proposed project site.

3.3 AIR EMISSIONS AND QUALITY

3.3.1 Affected Environment

The U.S. Environmental Protection Agency Region 4 and Alabama Department of Environmental Management regulate air quality in Alabama. The Clean Air Act (42 U.S.C. 7401-7671q), as amended, assigns the U.S. Environmental Protection Agency responsibility to establish the primary and secondary National Ambient Air Quality Standards (40 CFR § 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), sulfur dioxide (SO_2), carbon monoxide (CO), oxides of nitrogen (NO_x), ozone (O_3), and lead (Pb). Short-term National Ambient Air Quality Standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term National Ambient Air Quality Standards (annual averages) have been established for pollutants contributing to chronic health effects. Although each state has the authority to adopt standards stricter than those established under the federal program, the state of Alabama has accepted the federal standards.

Federal regulations designate Air Quality Control Regions that are in violation of the National Ambient Air Quality Standards as *nonattainment* areas. Federal regulations designate Air Quality Control Regions with concentration levels of the six criteria pollutants below the National Ambient Air Quality Standards as *attainment* areas. Madison County (and, therefore, all areas associated with the action) is within the Tennessee River Valley (Alabama)-Cumberland Mountains (Tennessee) Interstate (40 Code of Federal Regulations part 81.72). The United States Environmental Protection Agency has designated Madison County as in attainment for all criteria pollutants (United States Environmental Protection Agency 2018) and it monitors levels of criteria pollutants at representative sites in each region throughout Alabama. For reference purposes, Table 3.3-1 shows the monitored concentrations of criteria pollutants at the monitoring location closest to the proposed alternate project sites (Site ID: 01-089-0014, Old Airport Road).

Table 3.3-1. Air Quality Standards and Monitored Data

Pollutant	Air Quality Standards	Monitored Data
CO		
1-Hour (ppm)	35	No Data
8-Hour (ppm)	9	No Data
NO_2		
1-Hour (ppb)	100	No Data
O_3		
1-Hour (ppm)	0.12	0.053

8-Hour (ppm)	0.070	0.061
SO_2		
1-Hour (ppb)	75	No Data
3-Hour (ppm)	0.5	No Data
$PM_{2.5}$		
24-Hour (ug/m^3)	35	13.8
Weighted Annual Mean (ug/m^3)	12	6.8
PM_{10}		
24-Hour (ug/m^3)	150	29
Lead		
3-Month Average (ug/m^3)	0.15	No Data

Source: 40 CFR 50.1-50.12 and USEPA 2018.

Notes: ug/m^3 – micrograms per cubic meter; CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; ppb = parts per billion; ppm = parts per million; SO_2 = sulfur dioxide.

Redstone Arsenal is considered a major facility for the purposes of air permitting and holds a major operating Title V permit (#709-0007), which expires in 2023. The permit requirements include annual periodic inventory of all significant stationary sources of air emissions for each of the criteria pollutants of concern; monitoring and recordkeeping requirements also are included in the permit. Primary stationary sources of air emissions include boilers and generators. Table 3.3-2 lists Redstone Arsenal's Actual 2017 facility-wide air emissions from all significant stationary sources.

Table 3.3-2. RSA Actual 2017 Facility-Wide Emissions

Pollutant	Emissions (tons/year)
Nitrogen oxides (NO_x)	24.0
Particulate Matter (PM)	9.36
Fine particulate matter ($PM_{2.5}$)	4.04
Fine particulate matter (PM_{10})	4.18
Condensable particulate matter (PM-CON)	0.79
Sulfur dioxide (SO_2)	0.72
Volatile Organic Compounds (VOCs)	32.1

Carbon monoxide (CO)	16.8

Notes: Data from CY 2017 RSA Annual Emissions Inventory

Emissions from research, development, test, and evaluation ranges are categorized as fugitive emissions within Redstone Arsenal's Title V Air permit. Total emissions are calculated and reported to the Alabama Department of Environmental Management on an annual basis. Test Area 6 emissions are cumulatively analyzed with the U.S. Army Redstone Test Center Test Area 1. Current obscurants used in sensor testing at the U.S. Army Redstone Test Center Test Area 3 (TA-3) is reported on an annual basis as well. See Table 3.3-3 for the most recent annual emissions from munition testing at the TA-1/TA-6 range complex and obscurant usage at TA-3.

Table 3.3-3 Actual Pollutant Emissions for R1000 (Test Areas 1 and 6) and R1107 (Test Area 3) for Calendar Year 2017

R1000 (Test Area 1 and Test Area 6)	
Pollutant	**Emissions (tons/year)**
Carbon monoxide (CO)	1.31
Nitrogen dioxide (NO_2)	0.00
Particulate Matter (PM_{total})	2.74
Particulate Matter ($PM_{2.5}$)	No Data
Particulate Matter (PM_{10})	No Data
Ammonia (NH_3)	No Data
Sulfur Dioxide (SO_2)	No Data
Volatile Organic Compounds (VOCs)	No Data
Total Hazardous Air Pollutants (HAPs)	0.13
R1107 (Test Area 3)	
Pollutant	**Emissions (tons/year)**
Carbon monoxide (CO)	0.03
Nitrogen dioxide (NO_2)	0.00
Particulate Matter (PM_{total})	0.82
Particulate Matter ($PM_{2.5}$)	No Data
Particulate Matter (PM_{10})	0.82
Ammonia (NH_3)	No Data

Sulfur Dioxide (SO_2)	No Data
Volatile Organic Compounds (VOCs)	2.42
Total Hazardous Air Pollutants (HAPs)	0.00

Notes: Data from CY 2017 RSA Annual Emissions Inventory

Existing Climate, Greenhouse Gases, and Climate Change. Huntsville has an average high temperature of 89.4° Fahrenheit (°F) in the hottest month of July, and an average low temperature of 30.7°F in the coldest month of January. Huntsville has an average annual precipitation of 57.5 inches per year. The wettest month of the year is March with an average rainfall of 6.7 inches (Idcide 2018).

Greenhouse gases are components of the atmosphere of that trap heat relatively near the surface of the earth and therefore contribute to the greenhouse effect and climate change. Most greenhouse gases occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO_2), methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether or not rainfall will increase or decrease remains difficult to project for specific regions (IPCC 2018).

The Council of Environmental Quality has released draft guidance on when and how Federal agencies should consider greenhouse gases emissions and climate change in National Environmental Policy Act analyses. The draft guidance includes a presumptive effects threshold of 25,000 metric tons per year of carbon dioxide equivalent emissions from a federal action (CEQ 2010).

Significant impacts occur to air quality when actions contribute to or result in a substantial increase in criteria pollutant levels as compared to the National Ambient Air Quality Standards or expose sensitive receptors to substantial pollutant concentrations.

3.3.2 Impacts Associated with Alternative A (Preferred Alternative)

Preliminary estimates indicate a negligible increase in emissions of air pollutants and a minor impact to air quality during the operation of the SCETI at TA-1. Neither an air permit nor a permit modification would be required. A formal letter, however, would be prepared to notify the Alabama Department of Environmental Management of this change in activity to accurately reflect facility operations in Redstone Arsenal's Title V Air permit and to gain concurrence as a courtesy. See Table 3.3-4 for calculated approximate annual emissions from DVE and HFI testing to be tested at the proposed TA-6 project site.

Table 3.3-4 Criteria Pollutant Emissions from DVE and HFI

Criteria Pollutant	Total (lbs/yr)	Total (tons/yr)
Carbon Monoxide (CO)	2,995.92	1.50

Nitrogen oxides (NO_x)	39.80	0.02
Fine particulate matter ($PM_{2.5}$)	No Data	No Data
Fine particulate matter (PM_{10})	1,661.47	0.83
Sulfur oxides (SO_x)	0.716	3.60×10^{-4}
Lead (Pb)	373.5	0.19
Methane (CH_4)	No Data	No Data
Carbon dioxide (CO_2)	No Data	No Data

Notes: Based of CY 2017 RSA Emissions Factors and Data in Tables 2.2.1 and 2.2.2

Negligible effects would be expected during the short-term construction of the utilities, pads and towers for the SCETI. The Alabama Department of Environmental Management outlines requirements with which the developer must comply when constructing new facilities, such as controlling fugitive dust and open burning. All persons responsible for any operations, process, handling, transportation, or storage facility that could result in fugitive dust would be required to take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from construction, road grading, or land clearing. In addition, construction would have to proceed in full compliance with current Alabama Department of Environmental Management requirements, with compliant practices and/or products. These requirements include fugitive dust and fugitive emissions (Alabama Department of Environmental Management Admin Code 335-3-4-.02)

3.3.3 Impacts Associated with Alternative B

Similarly to Alterative A, Alternative B would likely result a negligible increase in emissions of air pollutants and a minor impact to air quality during the operation of the SCETI at TA-1. Neither an air permit nor a permit modification would be required. A formal letter, however, would be prepared to notify the Alabama Department of Environmental Management of this change in activity to accurately reflect facility operations in Redstone Arsenal's Title V Air permit and to gain concurrence as a courtesy.

3.3.4 Impacts Associated with the No Action Alternative

No effects on air quality would result from implementing the No Action Alternative. There would be no short- or long-term emissions changes due to the action. Ambient air-quality would remain unchanged when compared to existing conditions.

3.4 NOISE MANAGEMENT

3.4.1 Affected Environment

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise distance between the noise source and the

receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, measured in decibels (dB), is used to quantify sound intensity. The decibel is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz is a unit used to quantify sound frequency. The human ear responds differently to difference frequencies. "A-weighting", measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans. Sounds encountered in daily life and their A-weighted decibel levels are provided in Table 3.4-1.

Table 3.4-1. Common Sounds and Their dBA Levels

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998

The dBA noise metric describes steady noise levels, although very few noises are, in fact, constant. Therefore, A-weighted Day-night Sound Level has been developed. Day-night Sound Level is defined as the average sound energy in a 24-hour period with a 10-decibel penalty added to the nighttime levels (10 p.m. to 7 a.m.). Day-night Sound Level is a useful descriptor because it averages ongoing yet intermittent noise, and measures total sound energy over a 24-hour period. In addition, Equivalent Sound Level (L_{eq}) is often used to describe the overall noise environment. Equivalent Sound Level is the average sound level in decibels.

The Noise Control Act of 1972 (PL 92-574) directs federal agencies to comply with applicable federal, state, and local noise control regulations. In 1974, the United States Environmental Protection Agency provided information suggesting that continuous and long-term noise levels in excess of Day-night Sound Level 65 A-weighted decibels are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals. Madison County maintains a noise ordinance that limits the maximum sound level (L_{max}) to 70 A-weighted decibels in residential areas of which construction noise is exempt between the hours of 7:00

a.m. and 10:00 p.m. This is consistent with the City of Huntsville, which limits the maximum sound level from industrial activities to 70 A-weighted decibels.

U.S. Army Garrison-Redstone Arsenal has developed an Installation Compatible Use Zone Program (U.S. Army Public Health Center 2015) to identify noise sources within the installation boundary and to minimize the encroachment of noise disturbances to sensitive areas, both on and off the installation. Major sources of noise at Redstone Arsenal include a Skeet Range, demolition ranges, solid, liquid, and hybrid rocket test areas, and aircraft (primarily helicopters). Within the developed areas of the installation, automobiles/traffic are the major sources of noise. Areas are designated as Zone I (acceptable), Zone II (normally acceptable), and Zone III (unacceptable) based on current and projected operations at the time of the study. The general intent of the Installation Compatible Use Zone study was to inform the public of potential noise disturbances without disrupting or inhibiting various mission activities. Sources of noise disturbances generally are located so that a buffer exists between the activities and noise sensitive areas. Although both the City of Huntsville and the City of Madison have noise ordinances, city ordinances cannot be enforced outside of city limits and, therefore, do not apply to Redstone Arsenal (U.S. Army Public Health Center 2015).

Potential noise impacts would be considered significant if they resulted in communication issues, sleep interference, high intensity startle response from wildlife, or hearing loss.

3.4.2 Impacts Associated with Alternative A (Preferred Alterative)

Short-term negligible and minor long-term adverse effects would be expected under the preferred alternative. Short-term increases in noise would be due to construction activities. Long-term minor adverse effects would be due to increases in noise from operations of the proposed SCETI operation. Table 3.4-2 presents typical noise levels (A-weighted decibels at 50 feet) that the United States Environmental Protection Agency has estimated for the main phases of outdoor construction. Individual pieces of construction equipment typically generate noise levels of 80 to 90 A-weighted decibels at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction site. The zone of relatively high construction noise typically extends to distances of 400 to 800 feet from the site of major equipment operations. No noise-sensitive receptors are located within 800 feet of the proposed site. Given the temporary nature of proposed construction activities and the limited amount of noise that heavy equipment would generate, this impact would be negligible. In addition, limited truck and worker traffic may be audible at some nearby locations, but it would be expected to have negligible adverse effects.

Table 3.4-2. Noise Levels Associated With Outdoor Construction

Construction Phase	Leq (dBA)
Ground Clearing	84
Excavation, grading	89

Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971

Minor long-term adverse effects occur under the preferred alternative. Primary sources of noise would be from sporadic and intermittent firings of small arms during HFI testing. Another major source is primarily from aviation activities in support of flare dispensing for DVE testing. According to the Installation Compatible Use Zone study, small arms and test facility ranges were not identified as being incompatible with the majority of the surrounding land. Furthermore, TA-6 was not identified as a major source of range-associated noise that could significantly impact off-post receptors (U.S. Army Public Health Center 2015).

Furthermore, RTC maintains an on-site meteorological team to support range activities. A part of this support includes a noise forecasting tool that can assist range personnel in assessing noise impacts on the community for any small arms firing.

According to Army guidelines, the noise from aircraft operations are compatible with the surrounding land use. The Noise Zones are contained within the boundary. On-post, the Noise Zones do not contain noise-sensitive land uses. Nevertheless, individual flights departing and arriving, as well as traveling along flight routes, have the potential to cause annoyance. Pilots are instructed to adhere to the Army's "fly neighborly" guidelines and avoid noise-sensitive land uses and maintain minimum flight altitudes. These measures along with specific airfield regulations are in place to mitigate the effects of aircraft noise

3.4.3 Impacts Associated with Alternative B

Similarly to Alterative A, Alternative B would likely result in minor impacts to noise during the construction and operation of the SCETI at TA-1. RTC would still maintain and operate its noise forecasting tool to assist range personnel in assessing noise impacts on the community for any small arms firing. Furthermore, pilots would still adhere to the Army's "fly neighborly" guidelines.

3.4.4 Impacts Associated with the No Action Alternative

No effects on the noise environment would result from implementing the No Action Alternative. No construction or additional testing operations would be undertaken. Noise conditions would remain unchanged from existing conditions.

3.5 WATER RESOURCES

3.5.1 Affected Environment

Surface and Ground Water. Redstone Arsenal is on the north bank of the Tennessee River about 46 miles above Wheeler Dam and 17 miles downstream from Guntersville Dam (RSA 2015). The Huntsville Spring Branch drains approximately 13,000 acres of Redstone Arsenal and flows

southwestward to join Indian Creek, a tributary of the Tennessee River. The southern portions of the installation drains into the Tennessee River through smaller, unnamed channels.

The Clean Water Act requires each state to submit a report [the 305(b) Report] to the United States Environmental Protection Agency every 2 years describing the status of its surface and ground waters. The report includes an assessment of existing water quality in the state's surface waters. Section 303(d) of the Clean Water Act requires each state to develop a list of waters that are not attaining water quality standards and are not expected to meet state water quality standards even after applying technology-based controls for point sources or other control requirements, such as best management practices for nonpoint sources of pollution. The 303(d) list is a subset of all of the impaired waters listed in the comprehensive 305(b) water quality report. Huntsville Spring Branch is an impaired water [i.e., it is included in Alabama's 305(b) Report], but the section that is on the 303(d) list is north of Redstone Arsenal after it enters Huntsville.

The topography and location of the installation makes some of the land susceptible to flooding by the Tennessee River. Approximately 10,400 acres of Redstone Arsenal (i.e., about 27 percent of the installation) are affected by high stages of the Tennessee River and its tributary streams.

Floodplains. Pursuant to Executive Order (EO) 11988, Floodplain Management; EO 13690, establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input; and EO 11990, Protection of Wetlands; the long and short term adverse impacts to floodplains and wetlands should be avoided to the extent practicable. Additionally, EOs 11988 and 11990 require a Finding of No Practicable Alternative (FNPA) prior to proceeding with actions that would impact floodplains or wetlands. The practicability of an alternative is evaluated by considering factors such as community welfare, environmental impact, and feasibility, in light of the overall project purposes.

Wetlands. A National Wetland Inventory (NWI) was completed for the Installation in 2002; these non-jurisdictional maps are used as planning level surveys at Redstone Arsenal and serve as the basis for identifying potential impacts to wetland resources.

The US Army Corps of Engineers (USACE) and the United States Environmental Protections Agency (EPA) jointly oversee management and protection of wetland resources. Section 404 of the Clean Water Act (CWA) (33 USC. 1344) authorizes the issuance of permits for the discharge of dredged or fill material into waters of the United States. A wetland permit would be required under section 404 of the Clean Water Act for any construction that would affect jurisdictional wetlands. The United States Army Corps of Engineers regulates discharges of dredged or fill material into wetlands and other waters of the United States (e.g., navigable streams and certain relatively permanent waters) and the U.S. Army Corps of Engineers is the lead federal agency for wetland permits, commonly termed section 404 permits. Most construction activities that involve the physical disturbance of wetlands (e.g., grading or ditching) require a section 404 permit. In addition, such activities might require a permit from the Alabama Department of Environmental Management. Redstone Test Center would be required to comply with any

avoidance or mitigation requirements of a section 404 permit and any permit issued by the Alabama Department of Environmental Management.

Significant effects on surface waters and drainage would occur if an action resulted in the following:

- Pollution of a surface water during construction or operation from stormwater pollutants, especially to a degree that the project caused a violation of a water quality standard.
- Degradation of groundwater quality resulting from infiltration of contamination from construction or operations on the site.
- Creation of a risk of flood loss of a facility; an impact to human safety, health, and welfare resulting from flooding; or a reduction in the values served by floodplains.
- Significant surface soil contamination resulting from explosive contaminants which may subsequently wash into surface waters and impact receptors off-installation.
- Substantial increase in impervious surfaces that would increase surface water discharge rates.
- An unpermitted discharge of dredged or fill material into waters of the United States (including Wetlands) or a violation of Executive Order 11990 (*Protection of Wetlands*).

3.5.2 Impacts Associated with Alternative A (Preferred Alternative)

Surface and Ground Water. No adverse effects on surface or ground water resources would be expected from implementing construction of the Preferred Alternative. Soil disturbance during construction and some soil erosion and spills and leakage of oils and lubricants from construction equipment would be expected during construction. The project would be permitted under the Alabama Department of Environmental Management General National Pollutant Discharge Elimination System (NPDES) for discharges associated with construction activities that disturb an acre or more of land. Redstone Test Center would require that effective erosion and sediment controls be implemented in accordance with an approved erosion and sediment control plan and a construction best management practices plan.

In accordance with the Energy Independence and Security Act of 2007, which requires that federal agencies reduce stormwater runoff from federal development and redevelopment projects to protect water resources, development on the parcels would be designed to incorporate green infrastructure or low-impact development stormwater management practices, which could include minimizing the amount of impervious surface or using vegetative practices. Such precautions would minimize the potential impacts on surface and ground waters. The design for the SCETI infrastructure will be done in such a way as to mimic the drainage and infiltration of stormwater much in the same way as it currently behaves in its existing state. This will be done through the use of an aggregate surface which will allow much of the water to infiltrate directly into the ground below proposed impervious surfaces. Additionally, surface water detention features will likely be installed to retain and control the artificially generated rain mentioned in Section 2.2.1.

Long-term minor adverse effects on water quality would be expected from obscurant generation and small arms firings from Hostile Fire Indicator testing.. To meet Department of Defense

(DoD) requirements and support the U.S. Army's Sustainable Range Program, the Army is conducting the Operational Range Assessment Program (ORAP) to determine whether a release of munitions constituents of concern (MCOC) from an operational range to an off-range area creates a potentially unacceptable risk to human health or the environment. The Redstone Arsenal Operational Range Assessment Program Phase II assessment in 2015 re-evaluated whether the source-receptor pathways identified in previous assessments were complete and identified any new information that may impact previous conclusions. Additionally, it involved a quantitative assessment consisting of the collection and laboratory analysis of environmental media to determine whether munitions constituents of concern are potentially leaving an operational range footprint and pose a potential risk to off-site receptors.

The Phase II assessment (Arcadis 2015) categorized U.S. Army Redstone Test Center Test Area 6 as an *Unlikely* operational range. Operational ranges categorized as "*Unlikely*" are those where there is sufficient evidence to show that there are no known releases or source-receptor interactions that could present an unacceptable risk to human health or the environment (Arcadis 2015). Furthermore, to facilitate the description of current and historical munitions-related operations, RSA has been divided into five geographic regions: Northwest (NW), Northeast (NE), Southeast (SE), South Central (SC), and Southwest (SW). Test Area 6 was placed into the Southwest (SW) region (Figure 7, Appendix A). According to the Phase II Assessment, munition constituents of concern are unlikely to be migrating from the SW region at concentrations that may pose an unacceptable risk to off-range receptors. Therefore, munition constituents of concern from the southwest region are unlikely to pose an unacceptable risk to off-range human and ecological receptors.

Floodplains. According to Figure 8 in Appendix A, there should be no adverse impacts to the 100-year floodplain. The site boundaries of the proposed SCETI infrastructure do not extend into the floodplain.

Wetlands. No adverse effects on wetlands would be expected from the implementation of the Preferred Alternative.

3.5.3 Impacts Associated with Alternative B

Surface and Ground Water. Similarly to the Preferred Alterative, Alternative B would have no adverse impacts to surface and ground water resources would occur as a result of constructing the SCETI infrastructure at the proposed TA-1 site. The U.S. Army Redstone Test Center would still implement construction best management practices and be required to obtain a NPDES permit. Additionally, construction would still utilize green infrastructure or low-impact development stormwater management practices as well as mimic the drainage and infiltration of stormwater much in the same way as it currently behaves in its existing state. This will be done through the use of an aggregate surface which will allow much of the water to infiltrate directly into the ground below proposed impervious surfaces.

Furthermore, the Phase II Assessment discussed in Section 3.5.2 also lists TA-1 as an *Unlikely* operational range, meaning that munition constituents of concern are unlikely to be migrating from this site at concentrations that may pose an unacceptable risk to off-range receptors.

Floodplains. Unlike the Preferred Alternative, minor adverse effects to floodplains would be expected from the implementation of Alternative B. The entirety of the proposed TA-1 SCETI location would occur within the 100-year Floodplain (Figure 9, Appendix A). The U.S. Army Redstone Test Center would have to design the project in accordance with Executive Order 11988 (*Floodplain Management*), which requires federal agencies to take actions to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in managing federal lands and facilities. A Finding of No Practicable Alternative would also have to be submitted to the U.S. Army Office of the Assistant Chief of Staff for Installation Management (OACSIM) for review and approval prior to any actions that would adversely affect the floodplain.

Wetlands. Unlike the Preferred Alternative, minor adverse effect to wetlands would be expected from the implementation of Alterative B. The proposed TA-1 SCETI location would occur on 1.6 acre parcel of an emergent palustrine wetland complex (Figure 9, Appendix A). The U.S. Army Redstone Test Center would likely have to pursue a permit through the U.S. Army Corps of Engineers in accordance with section 404 of the Clean Water Act.

3.5.4 Impacts Associated with the No Action Alternative

No effects on water resources would result from implementing the No Action Alternative. No construction or additional testing operations would be undertaken. Environmental conditions would remain unchanged from existing conditions.

3.6 ENVIRONMENTAL RESTORATION AREAS

3.6.1 Affected Environment

Contamination of soil and ground water has occurred in areas of Redstone Arsenal that resulted from past operations when hazardous materials and waste were not properly managed. Portions of operational ranges overlap areas historically used as bombing and/or mortar ranges and impacts areas during World War II (WW II) training operations. Other historical operations include: three production plants, an airfield and associated bomb and test ranges, and administration and support areas. Munitions were filled with chemical weapons materiel at the Huntsville Arsenal, and then transported to the Redstone Ordnance Plant for final assembly. More than 8 million pounds of munitions were deployed or field-tested in this area prior to the current operational range configuration.

Currently, the Installation Restoration (IR) Branch of the US Army Garrison – Redstone Arsenal Environmental Management Division (EMD) is responsible for managing these areas of past contaminations in accordance with Federal laws and Army regulations. These areas are identified, characterized, and mapped by the IR Branch and usually are associated with a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 or Resource Conservation and Recovery Act (RCRA) site identification number. In general, project proponents and Arsenal tenants are not held responsible for clean-up operations. However, construction or operations within these areas are often restricted or tightly controlled.

As required by Redstone Arsenal's Installation Restoration Branch, the subsequent items should be followed relative to interaction with hazardous waste sites:

- No intrusive or nonintrusive activities are to be performed within any environmental restoration sites without a project-specific Installation Restoration Program Review. If approved, the Installation Restoration Program will generate a site map as well as a checklist identifying safety and site integrity contingencies for the proponent.
- Installation-wide Groundwater Land-Use Controls: The United States Army Garrison - Redstone Garrison Installation Restoration Program, in conjunction with the Environmental Protection Agency and the Alabama Department of Environmental Management, has implemented enforceable interim land-use controls for the use of and potential exposure to installation-wide groundwater. Any intrusive activities that may expose workers to groundwater (including springs and seeps) must be reviewed by the Installation Restoration Branch through the Directorate of Public Works job order request procedure. No wells will be installed without proper review and approval from the Installation Restoration Branch.

Redstone Arsenal Regulation 200-7 provides a ranking for the probability of encountering unexploded ordnance (UXO) and chemical warfare material. The rankings are based on historical uses and proximity to known encounter locations. Rankings are from high to low potential to encounter with assigned values of frequent, likely, occasional, seldom, and unlikely.

3.6.2 Impacts Associated with Alternative A (Preferred Alternative)

The Redstone Test Center TA-6 project site does occur within Installation Solid Waste Management Unit designated as RSA-074. This is a three hundred and sixty five acre site located on a World War II bombing range near multiple impact zones that was used for explosives and munitions trainings. Currently, the site is designated within the U.S. Army's Operational Range Assessment Program (ORAP) and cleanup has been deferred until range closure. RSA-074 is within the operational footprint of TA-6 and land use is designated as range space.

The site of construction for the SCETI infrastructure is within an area that is rated as having a UXO probability of "Seldom". This requires that a minimum unexploded ordnance support be on-call during intrusive construction/digging operations. Explosive ordnance disposal (EOD) personnel or unexploded ordnance-qualified personnel must be contacted to ensure their availability, advised of the project, and placed on call to assist if suspected unexploded ordnance is encountered during construction. There are portions within the tree clearing footprint that are rated as having a UXO probability of "Moderate/High". This would require "mag-and-flag" surveys to be conducted to screen for any potential UXO prior to intrusive operations.

A reassessment of the project area would be required if unexploded ordnance or discarded military munitions are encountered during construction within areas designated as "Seldom" UXO probability. No intrusive operations would be allowed within areas currently designated as "Moderate/High" UXO probability. Furthermore, soil from within the boundaries of RSA-074 would not be allowed to leave the site.

No negative impacts on environmental restoration areas are expected to occur as a result of the operations associated with this alternative. Firings and vibrations resulting from the use of small arms during testing are not expected to have any detrimental effects on the sites. Similar operations have occurred at and around TA-6 for decades with no known measureable effect.

3.6.2 Impacts Associated with Alternative B

The RTC TA-1 range project site has multiple remediation sites within its boundary. Entrance into these areas is strictly managed by the U.S. Army Garrison-Redstone Arsenal EMD IR Branch. Several of these sites are suspected to contain buried chemical warfare material from historical operations during WWII.

The vast majority of the TA-1 range is rated as having a UXO probability of "Seldom." This requires that minimum UXO support be on-call during intrusive construction/digging operations. Explosive Ordnance Disposal (EOD) personnel or UXO-qualified personnel must be contacted to ensure their availability, advised of the project, and placed on-call to assist if suspected UXO is encountered during construction. A reassessment of the project area would be required if UXO or discarded military munitions are encountered during construction.

No negative impacts on environmental restoration areas are expected to occur as a result of the operations associated with this alternative. Firings and vibrations resulting from the use of small arms during testing are not expected to have any detrimental effects on the sites. Similar operations have occurred at TA-1 for decades with no known measureable effect.

3.6.4 Impacts Associated with the No Action Alternative

No effects on environmental restoration areas would result from implementing the No Action Alternative. No construction or additional testing operations would be undertaken. Environmental conditions would remain unchanged from existing conditions.

3.7 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

3.7.1 Affected Environment

Hazardous Materials. A variety of regulatory agencies define hazardous materials for specific situations. The broadest and most applicable is the United States Department of Transportation definition for transportation of materials: A hazardous material is a substance or material that is capable of posing an unreasonable risk to health, safety, or property when transported in commerce. In addition, several federal agencies oversee various aspects of hazardous material usage. The Department of Transportation regulates packaging and transporting of hazardous materials, the Occupational Safety and Health Administration regulates the use of hazardous materials in the workplace, and the U.S. Environmental Protection Agency regulates environmental safety and public health issues associated with hazardous materials (RSA 2014).

Tenants at Redstone Arsenal are responsible for the day-to-day management of hazardous materials possessed by their organization (RSA 2014). Currently, all tenants are required to track their hazardous materials through the Enterprise Environmental, Safety & Occupational Health Management Information System (EESOH-MIS). This online-based system allows for

complete environmental and safety review of all hazardous materials before purchase and addition to an inventory. This system is also used by the US Army Garrison – Redstone Arsenal Environmental Management Division to compile data for various environmental reports to state and federal regulators. These include Tier II and Toxic Release Inventory (TRI) reports that are required to be submitted annually for all hazardous materials currently in inventory as well as all hazardous materials consumed per calendar year within the boundaries of Redstone Arsenal.

Petroleum, Oil, and Lubricants. Petroleum, oil, and lubricants used at Redstone Arsenal are stored in storage tanks of which only nine are underground storage tanks. Four underground storage tanks are at the installation airfield, four support the Army and Air Force Exchange Service stations (three at the old station and one at the new station on Mills Road), and one is at the installation golf course (RSA 2014).

Hazardous Waste. Redstone Arsenal operates under a Resource Conservation and Recovery Act (RCRA) part B permit and subsequent amendments for managing hazardous wastes. The part B permit identifies corrective actions required for RCRA solid waste management units (SWMUs), including completing investigations, reporting releases, identifying new solid waste management units, and implementing corrective actions where required. In 2007, Redstone Arsenal filed an application for a RCRA part A and part B hazardous waste permit with the Alabama Department of Environmental Management (ADEM). A new permit was issued in 2010 and expires in 2020. The current part B permit identifies 352 solid waste management units, including sites formerly managed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 that are now managed under the Resource Conservation and Recovery Act program (RSA 2014). Redstone Arsenal was placed on the U.S. Environmental Protection Agency's Superfund National Priorities List in 1994.

Hazardous waste generated from ongoing work processes, spillage, or discarded portions of hazardous materials are also managed under the Installation Hazardous Waste Management Program. These wastes are disposed of in coordination with the installation hazardous waste coordinator.

Waste Munitions. A military munition, as defined in 40 Code of Federal Regulations Part 266.202, is not considered a solid or hazardous waste when it is used for its *intended purpose*. A military munition's *intended purpose* includes: 1) use in training of explosive and munitions emergency response specialists or military personnel; 2) use in research, development, testing, and evaluation (RDT&E); and 3) recovery, collection, and on-range destruction of unexploded ordnance and munitions fragments during range clearance activities at active or inactive ranges. The *intended purpose* does not include the on-range disposal or burial of unexploded ordnance and contaminants when the burial is not a result of the munitions' intended use. A used or fired military munition is considered a solid waste, and potentially a hazardous waste, when it is transported 1) off range or 2) from the site of use, where the site of use is not a range. In either case, if the munition is transported for the purposes of storage, reclamation, treatment, disposal, or treatment prior to disposal, or if the munition lands off-range and is not promptly rendered safe and/or retrieved, it is then considered a solid and/or potentially hazardous waste.

Waste munitions generated on Redstone Arsenal are treated at a Resource Conservation and Recovery Act-permitted open burn/open detonation (OB/OD) area located in the southwestern portion of the arsenal. This treatment area is regulated by the Alabama Department of Environmental Management and is subject to various regulatory requirements and environmental oversight.

Impacts to the management and use of hazardous materials or waste would be considered significant if implementing the proposed project resulted in noncompliance with applicable federal and state regulations or exceeded established installation permit quantities for hazardous materials or waste.

3.7.2 Impacts Associated with Alternative A (Preferred Alternative)

Minor adverse effects would be expected from implementing the Preferred Alternative. Hazardous materials and waste associated with construction and operation of the proposed facilities would be minimal and handled and disposed of in accordance with local, state, and federal regulations and in accordance with established installation procedures, where applicable. Vehicles used during construction activities would use petroleum, oil, and lubricants. Construction contracts would be responsible for preventing spills by implementing proper storage and handling procedures and by following installation procedures.

Military munitions used for the research, development, test, and evaluation operations at the site would be managed and tracked through the Aviation and Missile Command Ammunition Tracking System (AMCATS). This would allow for proper accountability of all test items. Any waste munitions generate as a result of these proposed operations would be managed through the permitted Open Burn/Open Detonation (OB/OD) area. It is expected that small arms firings, detonation of red phosphorus grenades, and flares would likely result in debris and fragments that can be managed through range clearance operations. An Explosive Ordnance Disposal (EOD) team would be called in for on-range destruction in the event of a munition malfunction during test operations that could pose a threat to range personnel.

3.7.3 Impacts Associated with Alternative B

Similarly to Alterative A, Alternative B would likely result in minor impacts to hazardous management during the construction and operation of the SCETI at TA-1. Construction and contractors and RTC test personnel would still operate in accordance with all applicable federal, state, and local regulations with respect to hazardous waste.

3.7.4 Impacts Associated with the No Action Alternative

No effects on hazardous materials or waste would result from implementing the No Action Alternative. The construction and operation of the facilities being proposed would not occur if the No Action Alternative was implemented.

3.8 NON-HAZARDOUS WASTE MANAGEMENT AND RECYCLING

3.8.1 Affected Environment

The EPA defines solid waste as any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. There are two primary types of solid waste: municipal solid waste (trash or garbage) and industrial waste (a wide variety of non-hazardous materials resulting from the production of goods and products). The installation Compliance Branch, EMD works in conjunction with the Directorate of Public Works, Operations and Maintenance Division to manage municipal waste. The Solid Waste and Qualified Recycling Program Manager under the auspices of the Installation Compliance Branch works and coordinates with the base contractor's support in the operation and maintenance of the Redstone Landfill.

The Redstone Landfill is a solid waste disposal facility (Permit number: ADEM 45-03) and accepts solid waste for the disposal of nonputrecible and nonhazardous construction and demolition waste and rubbish as defined by the Code of Alabama, Rule 335-13-1-.03. Tenants on Redstone Arsenal must coordinate with Directorate of Public Works organizations above for proper turn-in of all solid waste generated, as well as the disposal of waste on the installation.

Redstone Arsenal Recycling Center is a permitted recycling facility, Registration # RF12514. The recycling center accepts commodities, such as white office ledger paper, cardboard, used oil, toner cartridges, etc. Based on existing legislation, all federal facilities must comply with the source reduction of solid waste through recycling of materials. There are also requirements to recycle waste materials resulting from construction and demolition of buildings within the installation's fence lines.

3.8.2 Impacts Associated with Alternative A (Preferred Alternative)

Negligible adverse effects would be expected from implementing the Preferred Alternative. Various construction debris would be generated during the construction of the arena pad. The contractor would have to complete material certifications and delivery tickets when hauling any debris to the Redstone Arsenal landfill. Also, they would ensure that the project site was policed and cleaned up appropriately.

Any waste munitions debris would be processed through the Open Burn/Open Detonation area. The material would be demilitarized, declassified, and rendered safe. This would allow for the generation of scrap metal to be managed by the Defense Logistics Agency (DLA) office located on-installation.

As stated in section 3.6.2, Alternative A would occur in RSA Site 074. This would prevent native soil currently within the site from being transported outside the boundaries of the site. Any soil generated from clearing, construction or forestry activities would have to remain within the site boundaries.

3.8.2 Impacts Associated with Alternative B

Similarly to Alterative A, negligible adverse effects would be expected from implementing the Alternative B. Various construction debris would be generated during the construction of the arena pad. The contractor would have to complete material certifications and delivery tickets when hauling any debris to the Redstone Arsenal landfill. Also, they would ensure that the project site was policed and cleaned up appropriately.

Any waste munitions debris would be processed through the Open Burn/Open Detonation area. The material would be demilitarized, declassified, and rendered safe. This would allow for the generation of scrap metal to be managed by the Defense Logistics Agency (DLA) office located on-installation.

3.8.4 Impacts Associated with the No Action Alternative

No effects on solid waste or recycling would result from the No Action Alternative. The construction and operation of the facilities being proposed would not occur if the No Action Alternative was implemented.

3.9 THREATENED AND ENDANGERED SPECIES

3.9.1 Affected Environment

The biological resources evaluated for this Environmental Assessment include plant and animal species and habitats occurring or likely to occur within the TA-1 and TA-6 range complex. Even though no exhaustive inventory of the flora and fauna of Redstone Arsenal has been done, the Alabama Natural Heritage Program (ALNHP) conducted a biological inventory of Redstone Arsenal to determine the presence or potential presence of federally listed and state-tracked rare species of plants and animals (ALNHP 1995). The ALNHP report also identified Ecologically Sensitive Areas.

The Redstone Arsenal Integrated Natural Resources Management Plan (INRMP) provides forest, fish, wildlife, and land management practices and maintenance procedures as required by Army Regulation (AR) 200-1. A portion of Wheeler National Wildlife Refuge is included in the U.S. Army Redstone Test Center's TA-1 and TA-6 ranges. They are, however, used under a 1941 land use agreement with the United States Fish and Wildlife Service.

Flora and Fauna. The main portions of the ranges used for actual operations is maintained field. Herbaceous areas on TA-1 and TA-6 are regularly mowed and managed with prescribed fire to maintain line of sight for test activities and to ensure safety of range personnel. The ranges are often dominated by a monoculture of thatch-producing cool season grasses, but there are pockets of wetland-dominated vegetation and other bunch grasses, especially within the area of TA-1. Bunch grasses are good habitat for ground nesting birds. Furthermore, wetland vegetation provides wildlife habitat also. Common species of wildlife that are observed in these areas include coyotes (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), Red-Tailed Hawks (*Buteo jamaicensis*), Mourning Dove (*Zenaida macroura),* and Killdeer (*Charadrius vociferus*).

Threatened and Endangered Species. The DoD and Redstone Arsenal protect and manage for Species of Concern, which include those species that are:

- Federally Threatened and Endangered,
- Petitioned for proposal for listing under the Endangered Species Act,
- Candidate species for listing under the Endangered Species Act,
- Listed or formerly listed as Threatened or Endangered under the Endangered Species Act,
- Identified as an Army Species at Risk, and
- Identified as a State of Alabama species of Conservation Concern.

Federally listed species known to occur or potentially occur on Redstone Arsenal include the Price's potato bean (*Apios priceana*), Morefield's leather flower (*Clematis morefieldii*), Alabama cave shrimp (*Palaemonias alabamae*), American alligator (*Alligator mississippiensis*), Whooping Crane (*Grus americana*), gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), and northern long-eared bat (*M. septentrionalis*). There are also a number of federally protected mussels with the potential to occur in waterways on the installation. Within Redstone Arsenal, the greatest threats to threatened and endangered species are groundwater degradation, deforestation, and invasive plant species (RSA 2017).

Impacts on threatened and endangered species or other biological resources from implementing the Preferred Alternative would be considered significant if one or more of the following occurred:

- One or more individuals of a federal or state-listed endangered or threatened species were adversely affected.
- Five percent or more of a population of a state species of concern was adversely affected.
- The project would reduce a species' population, habitat, or reproductive capacity to the extent that the species' viability was reduced.

3.9.2 Impacts Associated with the Preferred Alternative (Alternative A)

Flora and Fauna. Long-term minor adverse effects on biological resources would be expected if the Preferred Alternative was implemented. An approximately 150 acre parcel of forested area would need to be partially cleared to accommodate the SCETI infrastructure and allow for clear line-of-sight downrange. The stand is made of approximately 54 acres of mixed pine hardwood, 40 acres of planted pines, 27 acres of deciduous, and 26 acres of forested area within the Wheeler National Wildlife Refuge. However, the amount of habitat lost would not substantially reduce the quantity of similar habitat locally or regionally. The viability of locally common animal and plant populations would not be affected if the Preferred Alternative was implemented.

As stated in other sections of this assessment, the Army has been granted permission by the United States Fish and Wildlife Service (Wheeler National Wildlife Refuge) to utilize its lands for military mission purposes since 1941. The Preferred Alternative is compatible with the intent of this land use agreement.

Threatened and Endangered Species. Suitable habitat for Price's potato bean and Morefield's leather flower is not present at the proposed location. Suitable habitat for the American alligator is present in the large wetland complex of Test Area 1 and Test Area 6 however it is not within the vicinity of the Preferred Alternative (> 0.5 km) and therefore impacts would not be expected.

Whooping Cranes have been remotely tracked and/or visually observed in the wetland habitats adjacent to and on TA-1 and TA-6 since 2013. In addition to stopping over during the winter, they may fly over the Installation during spring and fall migration. In consultation with the United States Fish and Wildlife Service, the US Army Garrison-Redstone Environmental Management Division and Redstone Test Center enacted a protocol to avoid adverse impacts to this species as a result of test area missions. This protocol and correspondence with the United States Fish and Wildlife Service is provided at Appendix B; adherence to the protocol will minimize impacts to this species and reduce the likelihood of take from Test Area activities.

Furthermore, the US Army Garrison-Redstone Environmental Management Division and U.S. Army Redstone Test Center will manage obscurant operations at the SCETI in accordance with previous consultations provided by the United States Fish and Wildlife Service. These consultations specifically deal with mitigations to avoid adverse impacts potential populations of Indiana bats and northern long-eared bats. This protocol and correspondence with the United States Fish and Wildlife Service is provided at Appendix C; adherence to the protocol will minimize impacts to this species and reduce the likelihood of take from Test Area activities.

Due to the towers associated with the SCETI project, the U.S. Army Redstone Test Center has implemented several mitigations recommended by the U.S. FWS to mitigate impacts to migratory birds (U.S. FWS, 2016). These include: visual markings, FAA-compliant night-time tower lighting, down-shielded operational lighting, and anti-nesting structures along the towers. It should be noted that night-time operational lighting will be used at a minimum for operational setups and tear downs. Furthermore, this site is the least impactful between Alternatives A and B with regards to tower placement. The closest wetlands complex is approximately 400 yards to the northeast according to the U.S. FWS National Wetlands Inventory Mapper (U.S. FWS 2018).

No Ecologically Sensitive Areas are located within TA-6. Critical habitat is defined under the Endangered Species Act as "specific geographic area(s) that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection." Designation of critical habitat on lands owned/controlled by the Department of Defense, or designated for its use, are subject to a compliant or operational INRMP if the US Fish and Wildlife Service determines that the plan provides a conservation benefit to the species for which critical habitat is being designated.

3.9.3 Impacts Associated with Alternative B

Similarly to Alternative A, minor adverse impacts to flora, fauna and threatened and endangered species would be expected from Alternative B. The main difference would be the siting of the SCETI infrastructure within and adjacent to the extensive wetlands complex of TA-1, and the loss of habitat mainly consisting of wetland vegetation. The SCETI infrastructure would still implement tower construction mitigation guidance recommended by the U.S. FWS.

3.9.4 Impacts Associated with the No Action Alternative

No effects on threatened and endangered species or other biological resources would result from implementing the No Action Alternative. The construction and operation of the facilities being proposed would not occur if the No Action Alternative was implemented.

3.10 HISTORICAL STRUCTURES AND ARCHAEOLOGICAL RESOURCES

3.10.1 Affected Environment

According to the 2012 Redstone Arsenal Integrated Cultural Resources Management Plan, 100 percent of Redstone Arsenal has been surveyed for archaeological resources, "including re-survey of areas with conspicuous gaps in site density" (Hoksbergen 2012). As of the 2012 publication date of this document, 955 sites, with 660 prehistoric components and 451 historic components, were documented on Redstone Arsenal. Of the 955 sites, none are listed on the National Register of Historic Places; however, 43 sites were evaluated and determined eligible for National Register of Historic Places listing and 398 sites were recommended potentially eligible for listing. The remaining 514 sites were recommended as not eligible for listing. Although a large portion (34 percent) of the prehistoric sites are not dated to a specific prehistoric time period, 5 percent have Paleoindian components, 27 percent have an Archaic component, 10 percent can be affiliated with the Gulf Formational, 20 percent to the Woodland period, and 4 percent have Mississippian components. The historic sites date from the early 19th to mid-20th century (Hoksbergen 2012).

Architectural Inventory Actions. The historic building inventory at Redstone Arsenal included 2,615 buildings and structures in 2011. Because of construction and demolition, exact figures are difficult to ascertain. Many early buildings were razed in advance of Redstone Arsenal construction in the 1940s. However, one pre-World War II building exists at Redstone Arsenal. The Harris House (Building 8012) is a pre-1941 structure. The Goddard House Building 7134 was also another pre- building located on Redstone Arsenal, but it was recently demolished to make room for future land use. A 2015 survey determined that the structure did not meet several National Historic Preservation Act (NHPA) criteria (Alexander Archaeological Consultants, 2015). It was recommended that any original architecture or hardware be removed intact to be donated to the Historic Huntsville Foundation for use in local historic restoration projects. Of the remaining 2,613 buildings estimated to stand at Redstone Arsenal in 2011, approximately 715 date to the era (1941–1946); approximately 1,008 date to the Cold War era (1947–1989); and 891 are from the post-Cold War era (1990–2003). Approximately 1,275 buildings and structures have been studied and one property has been listed on the National Register of Historic Places, 437 have been assessed as eligible but not nominated, eight have been determined eligible, and 837 are not eligible (Hoksbergen 2012). Four National Historic Landmarks are also listed on the National Register of Historic Places at Redstone Arsenal, all of which are National Aeronautics and Space Administration properties: the Neutral Buoyancy Space Simulator, the Propulsion and Structural Test Facility, the Redstone Test Stand, and the Saturn V Dynamic Test Stand (Hoksbergen 2012).

Several memoranda of agreement between the US Army Garrison – Redstone Arsenal, the Alabama State Historic Preservation Office, and the Department of the Army outline management for historic resources, including eligible historic districts, individually eligible properties, a Works Projects Administration-era bridge, missile schools, and a laboratory (Hoksbergen 2012).

Traditional Cultural Properties and Sacred Sites Actions. During a 2010 consultation, two Native American tribes presented natural resources that they consider to be traditional cultural properties within the bounds of Redstone Arsenal. As of the 2012 Integrated Cultural Resources Management Plan, no tribe members have "requested access to any of the resources" and "continuing consultation with the potentially affiliated federally recognized Native American tribes is focused on how the tribes would like to see these resources managed and how this management is incorporated into the Section 106 process" (Hoksbergen 2012).

Native American Grave Protection and Repatriation Act Actions. In 1995 and 1996, as part of the Native American Graves Protection and Repatriation Act, a study was conducted to locate, inventory, and assess archaeological collections that might fall under repatriation. Both human remains (more than 300 skeletal elements) and burial items (more than 50 objects) were collected from Redstone Arsenal archaeological sites between 1978 and 1986. In 1999, 17 tribes were invited to participate in a Native American Graves Protection and Repatriation Act meeting and the tribes "agreed to support the Eastern Band of the Cherokee Indians in making an official claim for the remains" (Hoksbergen 2012). Negotiations and meetings were held over the next several years. Redstone Arsenal eventually determined that the remains were "too old to make a determination of cultural affiliation with any present day tribes" and the remains were to be reburied in a "keep safe plot" that is unmarked "except for a red cedar tree at each corner" (Hoksbergen 2012). As of the writing of the 2012 Integrated Cultural Resources Management Plan, the draft agreement "was tabled until it could be revised to include the latest plans" for additional remains (Hoksbergen 2012).

Cemetery Actions. A 1985 management plan for Redstone Arsenal documented 45 cemeteries, while an additional two were noted in the 1992 Integrated Cultural Resources Management Plan.

The number was altered again in a 1999 Integrated Cultural Resources Management Plan to 50 cemeteries. As of the 2012 Integrated Cultural Resources Management Plan, 47 historic cemeteries are documented and fenced with a total area of 19.8 acres. Three cemeteries are located (one counted in the 47 total and two not counted) on National Aeronautics and Space

Administration property and are not managed by Redstone Arsenal. Some information has been gathered and some photographs have been taken by the Redstone Arsenal archaeologist and a local volunteer.

Cultural and archaeological resources are finite and nonrenewable. They have value for research and from a historical perspective. In addition, every federal action must be reviewed in terms of its effect on historic and archaeological resources under the National Historic Preservation Act. Ground-disturbing activities can destroy or harm cultural resources.

3.10.2 Impacts Associated with Alternative A (Preferred Alternative)

Negligible short term impacts would be expected from the construction of the SCETI infrastructure at the proposed TA-6 location. There are seven sites that are potentially eligible for listing on the National Register of Historic Places. The construction zone would, however, be outside of these sites' boundaries. Furthermore, no tree clearing would be permitted within eligible sites with aboveground features. Eligible sites without aboveground features would have tree cut and grounded to the soil surface, but no intrusive clearing of the remaining root systems would be permitted within the site. Therefore, no direct impacts from construction or tree clearing operations would be expected.

Minor long term impacts would likely occur as a result of proposed testing operations at the project site. The area covered by the operational safety fan would cover approximately 121 sites containing both potentially eligible and non-eligible sites. However, these impacts are still expected to be minimal due to the high obscurant dispersion area and the controlled firing methods resulting from the use of small arms.

3.10.3 Impacts Associated with Alternative B

Similarly to Alternative A, negligible short term impact would be expected from the construction of the SCETI infrastructure at the proposed TA-1 location. No archaeological site occur within the proposed site at TA-1. Also, minor long term impacts would likely occur as a result of proposed testing operations at the TA-1 project site. The area covered by the operational safety fan would cover approximately 131 sites containing both potentially eligible and non-eligible sites. However, these impacts are still expected to be minimal due to the high obscurant dispersion area and the controlled firing methods resulting from the use of small arms.

3.10.4 Impacts Associated with the No Action Alternative

No effects on cultural resources would be expected under the No Action Alternative. The construction and operation of the facilities being proposed would not occur if the No Action Alternative was implemented.

3.11 SOCIOECONOMIC IMPACTS

3.11.1 Affected Environment

This section describes the socioeconomic environment of the region of influence surrounding Redstone Arsenal. The region of influence is a geographic area selected as a basis on which social and economic impacts of project alternatives are analyzed. The region for this proposed project is defined as Madison County, Alabama. Socioeconomic indicators are provided for the county, with data for Alabama and the United States presented for comparative purposes.

3.11.1.1 Socioeconomic Environment

Madison County is a growing area, with an increasing population and labor force, with incomes higher than state and national averages. The strong job and population growth can be attributed to three major factors: 1) the expansion of the Redstone Arsenal workforce due to the 2005 Base Realignment and Closure (BRAC) actions, along with the associated defense, space program,

and high-tech contractors moving to the area; 2) the presence of Cummings Research Park, which is the second-largest research park in the country; and 3) growth of the existing manufacturing industries such as Toyota and Carpenter Technology (CNNMoney 2013). Madison County's population increased from about 334,800 in 2010 to about 353,100 in 2015, an increase of 5.5 percent. During the same time period, Alabama's population increased by 1.6 percent while the United States' population increased by about four percent (U.S. Census Bureau 2018).

Madison County income levels were higher than state and national levels. The median household income (in 2014 dollars) from 2010-2014 was $58,203. National and state median household income was $53,482 and $43,411, respectively. Madison County's per capita personal income was $32,307. This is noticeably higher than the national and state levels of $28,555 and $23,936, respectively.

3.11.1.2 Environmental Justice

President Clinton issued Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*) on February 11, 1994. The executive order requires that federal agencies take into consideration disproportionately high and adverse environmental effects of governmental decisions, policies, projects, and programs on minority and low-income populations, and that the agencies identify alternatives that could mitigate those impacts.

Minority populations should be identified where either the minority population of the affected area exceeds 50 percent or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (Council of Environmental Quality 1997). According to the U.S. Census Bureau, minority populations composed about 34 percent of Madison County's total population, the same as Alabama's statewide minority population rate but lower than the national minority population rate of 37 percent (U.S. Census Bureau 2018).

Poverty thresholds established by the Census Bureau are used to identify low-income populations (Council on Environmental Qquality 1997). Poverty status is reported as the number of persons or families with income below a defined threshold level. As of 2015, the Census Bureau defined the poverty threshold level as $12,331 or less of annual income for an individual and $24,036 or less of annual income for a family of four (U.S. Census Bureau 2018). Madison County's poverty rate was 14 percent, which is lower than the Alabama poverty rate of 19 percent and U.S. poverty rate of 15 percent (U.S. Census Bureau 2018).

3.11.1.3 Protection of Children

President Clinton issued Executive Order 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*) on April 17, 1997. The executive order seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of federal policies, programs, activities, and standards. It recognizes a growing body of scientific knowledge that demonstrates that children might suffer disproportionately from environmental health and safety risks. Those risks arise because children's bodily systems are not fully

developed; children eat, drink, and breathe more in proportion to their body weight; their size and weight might diminish protection from standard safety features; and their behavior patterns might make them more susceptible to accidents.

Children can be present at Redstone Arsenal as residents or as visitors for recreational or educational purposes. The Army takes precautions for their safety through a number of means, including requiring adult supervision and restricting access to off-limits areas. The proposed Redstone Test Center Test Area 1 project area is not adjacent to facilities where children are typically present (such as residences, schools, or playgrounds).

Impacts on socioeconomic resources from implementing the alternatives would be considered significant if one or more of the following occurs:

- Substantial gains or losses in population or employment.
- Disequilibrium in the housing market such as severe housing shortages or surpluses.
- Project-related demands on public infrastructure or services triggering the need for expanded capacity or resulting in discernible reductions in the service level provided.
- Activities or operations substantially altering lifestyles or quality of life of Redstone Arsenal employees and their families or civilian households living near Redstone Arsenal.
- Disproportionately high and adverse environmental or human health impacts to an identified minority or low-income population, which appreciably exceed those to the general population around the project area.
- Disproportionately high and adverse environmental health or safety risks to an identified population of children, such as the increase in a child's risk of exposure to an environmental hazard through contact or ingestion, or the risk of substantial harm to the safety of children during construction and operation activities.

3.11.2 Impacts Associated with Alternative A (Preferred Alternative)

Socioeconomic Environment. Negligible beneficial economic effects would be expected. The Preferred Alternative would result in a negligible increase in local employment, income, and business sales from the construction of the proposed facilities, but would not change local population and, therefore, would not affect the housing market or demand for public services (e.g., schools, healthcare, emergency services).

Overall, the economic effects from the proposed action would be expected to be negligible relative to the local economy. The demographic patterns, racial makeup, age distribution, employment, and income levels of the region's population are influenced by larger economic and societal factors that are at work on a regional basis. Implementing the Preferred Alternative would not be expected to create a measureable change in regional economic indicators.

Environmental Justice and Protection of Children. No effects would be expected. The proposed Redstone Test Center Test Area 1 project site is not adjacent to residential neighborhoods, hospitals, schools, playgrounds, churches, etc., where children typically are present. Implementing the Preferred Alternative would not result in disproportionate adverse

environmental or health effects on low-income or minority populations or the health and safety of children. It is not an action with the potential to substantially affect human health or the environment by excluding persons, denying persons of benefits, or subjecting persons to discrimination or environmental health or safety risks.

3.11.2 Impacts Associated with Alternative B

Socioeconomic Environment. Negligible beneficial economic effects would be expected. The Preferred Alternative would result in a negligible increase in local employment, income, and business sales from the construction of the proposed facilities, but would not change local population and, therefore, would not affect the housing market or demand for public services (e.g., schools, healthcare, emergency services).

Overall, the economic effects from the proposed action would be expected to be negligible relative to the local economy. The demographic patterns, racial makeup, age distribution, employment, and income levels of the region's population are influenced by larger economic and societal factors that are at work on a regional basis. Implementing the Preferred Alternative would not be expected to create a measureable change in regional economic indicators.

Environmental Justice and Protection of Children. No effects would be expected. The proposed Redstone Test Center Test Area 1 project site is not adjacent to residential neighborhoods, hospitals, schools, playgrounds, churches, etc., where children typically are present. Implementing Alternative B would not result in disproportionate adverse environmental or health effects on low-income or minority populations or the health and safety of children. It is not an action with the potential to substantially affect human health or the environment by excluding persons, denying persons of benefits, or subjecting persons to discrimination or environmental health or safety risks.

3.11.4 Impacts Associated with the No Action Alternative

No effects would be expected under the No Action Alternative. It would not affect regional socioeconomic activity in terms of generating new employment, increasing population, or creating demand for housing or for public services. Implementing the No Action Alternative would not result in disproportionate adverse environmental or health effects on low-income or minority populations or children. It is not an action with the potential to substantially affect human health or the environment by excluding persons, denying persons of benefits, or subjecting persons to discrimination or health or safety risks.

3.12 GEOLOGY AND SOILS

3.12.1 Affected Environment

Geology. The bedrock underlying Madison County is sedimentary in origin and consists predominantly of several varieties of limestone, sandstone, and a few acid shales (RSA 2015). Most of Redstone Arsenal is underlain by Tuscumbia limestone, which is the surface formation across more than half of Madison County. This bedrock has an average thickness of 151 feet and consists of gray, medium- to coarse-grained, fossiliferous limestone. It often contains solution-

enlarged cavities along joints, fractures, bedding planes, and faults that contribute to the formation of sinkholes and depressions at the land surface.

The bedrock structure below the installation is very complex. An integrated network of generally north-south trending conduits and solutionally enlarged faults and fractures (karst) dominates below the surface soils at Redstone Arsenal. Subsurface karst evidence includes enterable caves, epikarst development, and solution cavities. There are, however, no caves within the boundaries of the installation that are considered significant caves administered by the Secretary of Agriculture or the Secretary of the Interior as defined by the Federal Cave Resources Protection Act of 1988. Bobcat Cave, located near the western edge of the installation, is home to the Federally Endangered Alabama Cave Shrimp. As such, Redstone Arsenal officials restrict access and maintain protection under Section 3 of the Alabama Cave Protection Law of 1988, the Endangered Species Act, and Redstone's INRMP.

The Tuscumbia limestone is underlain by Fort Payne chert, which is the surface formation on the northeast and northwest portions of Redstone Arsenal. Chert is a fine-grained, silica-rich sedimentary rock that might contain small fossils. Fort Payne chert is generally 154 to 184 feet thick and consists of alternating beds of bluish-gray chert and fine-grained, fossiliferous limestone. The Fort Payne chert is underlain by Chattanooga shale and other older geologic units. Overlying the Tuscumbia limestone are successively younger formations including Monteagle limestone and Hartselle sandstone.

The surface geology of Redstone Arsenal and much of Madison County consists of unconsolidated material known as regolith, which is mainly derived from weathering of the bedrock. Regolith derived from Tuscumbia limestone consists of moderate red to moderate red-orange clay and porous, powdery rectangular-to-irregular blocks of chert. Dense chert or rectangular blocks of fossiliferous chert are also present because of the weathering of the Fort Payne chert where it is the surface bedrock formation.

Soils. According to the 2002 U.S. Department of Agriculture Natural Resources conservation Soil Survey of Redstone Arsenal, 43 map units representing 19 different soil series are mapped on the installation's grounds. The predominant upland soil type on the installation is the Urban Land-Decatur-Emory Complex, which consists of a deep, well-drained, silt loam to silty clay loam. These soils typically possess a loamy surface horizon underlain by a loamy clay subsoil layer with lenses of silty and/or sandy clay. Soil depths range from very shallow on the mountains to much deeper along the larger tributaries of the Tennessee River.

Significant effects on geology and soils would occur if an action resulted in the following:

- Activities cause substantial erosion of the soil or destabilization of a geologic feature.
- Soils are degraded as a result of contamination from spills of chemicals or fuels that require remediation.
- Soil properties, such as shrinking, swelling, or corrosiveness, cause substantial damage to a structure.

3.12.2 Impacts Associated Alternative A (Preferred Alternative)

Short-term minor adverse impacts on soils would be expected from implementing the Preferred Alternative. Construction disturbs soils and can cause erosion, which in turn can transport the soil to and adversely affect surface water bodies through stormwater runoff. The Alabama Department of Environmental Management established General National Pollutant Discharge Elimination System Permit No. ALR100000 for discharge associated with regulated construction activities that will result in land disturbance equal to or greater than an acres, or from construction activities involving less than an acres and that are part of a common plan of development equal to or greater than an acres. Operators and owners of all regulated construction sites in Alabama must implement and maintain effective erosion and sediment controls in accordance with a construction best management practices plan prepared and certified by a qualified credentialed professional. Construction site operators or owners seeking coverage under the general permit must submit a Notice of Intent in accordance with the permit requirements. Soil erosion and sediment runoff would be controlled through the use of state-approved best management practices for erosion control and sediment retention.

Additionally, there would be no expected impacts to the karst environment nor the population of Alabama Cave Shrimp located in Bobcat Cave. To date, surveys and population monitoring have only documented this species in Bobcat Cave and two other cave systems located off the Installation in Madison County. Bobcat Cave has been monitored since the 1990s and the population has remained stable throughout all of the mission activities on Redstone to date, including prior similar test activities on exiting test ranges. Furthermore, Test Area 6 falls out of the existing Buffer Zone for the Alabama Cave Shrimp. While there is the potential for Alabama Cave Shrimp to occur in the karst system throughout the Installation, it is not anticipated that the proposed action will impact this existing population.

3.12.3 Impacts Associated Alternative B

Similarly to Alternative A, Alternative B would likely result in minor short term impacts to soils due to the construction of the SCETI infrastructure at the proposed TA-1 site. Similar state-approved construction best management practices would have to be implemented to reduce and mitigate impacts to soils. Also, as with Alternative A, there would be no expected impacts to the karst environment or population of Alabama Cave Shrimp located in Bobcat Cave.

3.12.4 Impacts Associated with No Action Alternative

No effects on geology or soils would result from implementing the No Action Alternative. The proposed project would not be implemented and the current environment would remain unchanged.

3.13 CUMULATIVE IMPACTS

The Council on Environmental Quality defines a *cumulative impact* as the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from

individually insignificant but collectively significant actions taking place over a period of time (40 Code of Federal Regulations part 1508.7).

Projects at Redstone Arsenal consist of construction, renovation, and demolition projects, as well as operational activities conducted by its various tenant organizations. Table 3.13-1 lists recent past actions. Table 3.13-2 lists ongoing actions. Table 3.13-3 lists future projects that are expected to occur over the next five years. All these construction-based projects will have to undergo an environmental review process through the Redstone Arsenal Environmental Management Division. The Redstone Arsenal actively integrates environmental considerations into decision-making in a manner consistent with NEPA and Council of Environmental Quality regulations. In the process of carrying out this obligation, the NEPA program promotes environmental stewardship of natural and cultural resources as well as legal and regulatory compliance at Redstone for future operations and use.

Table 3.13-1 Recent Past Actions

Federal Bureau of Investigation (FBI) - Construction and Operation of the Terrorist Explosive Devices and Analytical Center (TEDAC). Construct and operate a Main Site and an Intake Center to provide facilities for administrative offices, classrooms, forensic examination, and intelligence analysis. Once fully operational, the RSA TEDAC would be staffed by approximately 455 employees. All personnel would be located at the Main Site, with staff carrying out operations at the Intake Center as needed. Environmental impacts analyzed and covered by *Final Environmental Assessment for the Construction and Operation of a Terrorist Explosives Device Analytical Center Main Campus and Intake Center, Redstone Arsenal, Alabama*, dated December 2010.
Martin Road Widening. The widening Martin Road to four lanes from the western boundary of RSA at Zierdt Road to Rideout Road to the east (approximately 2.75 miles) with upgrades to nearby infrastructure and to the installation access controls at Gate 7. Environmental impacts analyzed and covered by *Final Environmental Assessment for the Widening of Martin Road from Rideout Road to Zierdt Road at Redstone Arsenal, Alabama*, dated July 2009.
Alabama Department of Transportation (AL DOT) – Widening CR-7 (Zierdt Road). Improvement of an approximately 3.5 mile portion of Zierdt Road by constructing additional lanes to the existing two lane facility. Area of improvement consisted of widening from two lanes to four lanes between Madison Boulevard and Martin Road. Environmental impacts analyzed and covered by *Environmental Assessment for Project STPHV-85-7(600) Widening CR-7 (Zierdt Road), Madison County, Alabama*, dated May 2012.

Table 3.13-2 Ongoing Actions

Construction and Operation of Tracking Equipment Support Facility. Consolidate personnel and work and storage facilities into a centralized area that is outside of safety arcs/fans; to provide climate controlled office and laboratory space; to provide shelter for expensive, highly instrumented mobile support range vehicles; to provide space for safe instrument loading and changing for range vehicles; to provide an observation deck and sensor/instrumentation tower for weapon system testing; to relieve TA-1 entrance traffic congestion; to provide a centralized shipping, receiving, and logistics area; and to extend or realign roads for improved traffic flow. Environmental impacts analyzed and covered by *Final Environmental Assessment for Construction and Operation of Test Area 1 Area Development Plan at Redstone Arsenal, Huntsville, Alabama,* dated May 2015.
Construction and Operation of a Combined Heat and Power Facility and a Solar Facility. Development and operation of a 20-megawatt electric generation Combined Heat and Power facility on Redstone Arsenal property, and to develop and operate up to 100 acres of solar photovoltaic arrays split between two locations within the boundaries of Redstone Arsenal. The solar photovoltaic arrays would produce a Government-estimated 14 megawatts of solar photovoltaic energy. Environmental impacts analyzed and covered by *Final Environmental Assessment for Construction and Operation of a Combined Heat and Power Facility and a Solar Facility at Redstone Arsenal, Huntsville, Alabama*, dated August 2014.
Expansion of FBI Hazardous Devices School. The hazardous devices school has been operating at RSA since 1971 and has trained and accredited thousands of bomb squad technicians and managers. This will allow the school to certify more technicians. The deployment building will be duplicated, allowing for additional storage of more bomb trucks for training. Six more training villages will be installed as well.
Gate 9 Relocation and Operation. Relocation of Gate 9 approximately a 1,000 yards back from the existing controlled entrance. The new gate will be at the intersection of Rideout Road and Goss Road. The purpose of this is to allow the City of Huntsville to build up the area outside of the restricted portions of Redstone Arsenal. This will allow for better accommodations of transients and Very Important Persons that are visiting the area.

Table 3.13-3 Five Year Future Projects

Redstone Test Center (RTC) - Aviation, Test, Instrumentation and Integration Facility (ATIF). Construct a new 73,150 square foot aircraft hangar facility to support developmental flight test activities, including aircraft instrumentation and test systems integration for rotary and fixed-wing aircraft. Approximately 68,093 square foot shall be high-bay space with the remaining square footage dedicated for supporting facilities (mechanical, electrical, equipment and communications rooms). Project will also construct an aircraft movement apron and aircraft taxiway.
Redstone Arsenal Airfield (RAAF) - Airfield Control Tower. Project will construct a new 7,440 square foot Redstone Arsenal Airfield- Air Traffic Control Tower to increase Operational Safety due to increased missions.
Space and Missile Defense Command (SMDC) - Directed Energy Program Facility. No additional information available at this time.
Installation Morale, Wellness and Recreation Office (MWR) - Community Club Expansion. Square Footage – Approximately 15,000 square feet. Preferred location – within the Residential zone of the Installation Development Plan. The purpose of this project is to expand the Summit facility by adding additional conferencing/event space, in an effort to consolidate operations that are currently housed in building 3711. The new space would be capable of supporting conferences and events, complete with IT/AV capabilities to accommodate the varying needs of our customer base. This would become the one MWR location to offer SIPR VTC and services.
MWR - RV Park Expansion. Estimated cost - $750k. Square Footage – expand RV Park to include 20-25 additional spaces, increase capacity of bathhouse to accommodate additional users. Will include wireless and other utilities necessary for spaces. Location is adjacent to the currently existing 42 sites at the Redstone Arsenal MWR RV Park.

MWR - Bingo Facility. Estimated cost - $6M. Square Footage – App. 15,000 sf. Preferred location – within the Residential zone of the Installation Development Plan.
MWR - Goss Shaded Play Areas. Used in inclement weather (heat, direct sun) to protect children skin from UV ray and hot playground areas that will cause damage to skin. Goss Rd CDC; Mills Rd CDC; SAS buildings. Child and Youth DOD Certification and National Accreditation require outdoor child play areas to have shade structures.
MWR - Patriot Green Renovation. Preferred location – The Patriot Course, which is the 18-hole course situated north of Goss Rd.
MWR - Car Wash Bay Conversion. Convert existing bay located at the MWR car wash to an automatic drive through car wash.
MWR - Bowling Center Expansion. The Family Entertainment Center will be attached to the existing Bowling Center.
MWR - Pet Care Center. Square Footage – App 5,000 sf. Located off a main road close to gate access and vast land area – Pet Care Center co-located with Dog wash station and Dog Park.
MWR - Vincent Road Splash Park. Upgraded pavilions, Upgraded picnic areas, Removal of old playground equipment on northwest side of park, New playgrounds, Bleachers that meet safety requirements, Upgraded ball field, restroom pavilions.

FBI - Ballistic Range Facility. The Ballistics Research Facility (BRF), Bldg. 6315, engages in the assembly of experimental cartridges and high precision cartridges used in personal protective armor and weapon accuracy testing. A reloading room allows the centralization of all the required equipment and materials for low quantity production of center fire rifle and handgun cartridges. Weapons are fired in the on-site ranges to allow the development of ballistic maps of the weapons and ammunition tested. This project involves construction of the following: 1. A 14,055 sf long span metal building frame, CMU and brick veneer, concrete slab and metal roof system. 2. One indoor 50 meter shooting range and one indoor 120 meter test range. Construction method will be cast in place concrete walls and 10" hollow core precast panels. 3. An 1800 sf metal building (building #6316) for storage. Construction will include metal building system. This project includes all related site preparation and grading, utility relocation, placement and connections, all building components and system installations and site preparation. It includes all new architectural, electrical, mechanical, plumbing, communications and sprinkler components and systems installations.
FBI - Defensive Systems Unit. The Defensive Systems Unit (DSU), Bldg. 7450, takes in weapons from agents that require repair or replacement and issues new weapons to the agents. At this facility the weapons will be repaired and test fired in the on-site range to assure it is within manufacturers spec. Worn out weapons are destroyed in the on-site shredder. This facility also takes in old body armor for disposal. This project involves construction of the following: 1. A 21,168 sf long span metal building frame, CMU and stone panel veneer, concrete slab and metal roof system. One indoor 50 meter shooting range, approximately 4,825sf. Construction method will be cast in place concrete walls and 10" hollow core precast panels.
FBI - Training Center FBI - Entry Control Facility. The Entry Control Building (ECB), Bldg. 4xxx, is the main visitor's entrance into the FBI north site, from Dodd Road. The main building will include a waiting area, interview rooms and processing space for visitors to receive credential to access the site. Four guard booths and drive lanes are provided to check credentials of occupants of vehicles entering the site. This project includes the construction of a 3943sf metal building and all related site preparation and grading, utility placement and connections, building components and systems installations and site repair.

Source: D. Lacy, personal communication September 5, 2017

3.13.1 Air Quality

The state of Alabama takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Estimated emissions generated by the Proposed Action would not contribute significantly to adverse cumulative effects to air quality.

3.13.2 Noise

The Proposed Action would introduce short- and long-term incremental increases to the noise environment from construction and changes in operations. The changes would have negligible cumulative effects.

3.13.3 Water Resources

Development and operation of the Proposed Action would not be expected to result in cumulative effects on the quality of water resources. The preferred alternative site of construction is neither in wetlands nor the 100-year floodplain.

3.13.4 Threatened and Endangered Species

The Proposed Action would incur negligible cumulative impacts to this environmental resource. The area of the project is not in any designated critical habitat or ecologically sensitive areas. The sparse and intermittent nature of the proposed operations would not likely introduce significant impacts on local flora or fauna. Additionally, similar habitat is found both locally and regionally.

SECTION 4.0

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

For each Valued Environmental Component, the predicted effects from implementing Alternative A (the Preferred Alternative), Alternative B, and the No Action Alternative are summarized in Table 4.0-1. The level of cumulative impacts presented in the table represents the implementation of the Preferred Alternative.

Table 4.0-1. Level of Impacts to Each Valued Environmental Component Under the Preferred Alternative and No Action Alternative

Valued Environmental Component	Alternative A (Preferred Alternative)	Alterative B	No Action Alternative	Cumulative Impact
Land Use	Negligible	Negligible	None	None
Air Emissions & Quality	Minor	Minor	None	Negligible
Noise Management	Minor	Minor	None	Negligible

Water Resources	Minor	Moderate	None	Negligible
Environmental Restoration Areas	None	None	None	None
Hazardous Materials & Waste Management	Minor	Minor	None	Negligible
Non-Hazardous Waste Management & Recycling	Negligible	Negligible	None	None
Threatened & Endangered Species	Minor	Minor	None	Negligible
Historical Structures & Archaeological Resources	Minor	Minor	None	Negligible
Socioeconomic Impacts	Negligible	Negligible	None	None
Geology & Soils	Minor	Minor	None	Negligible

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. This Environmental Assessment does not identify any significant adverse effects. Implementing the Proposed Action would not be expected to result in significant environmental or socioeconomic effects. Issuance of a Finding of No Significant Impact would be appropriate, and preparing an Environmental Impact Statement before implementing the Proposed Action would be unnecessary.

SECTION 5.0

ACRONYMS AND ABBREVIATIONS

°C = degrees Celsius

°F = degrees Fahrenheit

ADEM = Alabama Department of Environmental Management

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

CEQ = Council on Environmental Quality

CFR = Code of Federal Regulations

CH_3 = Ammonia

CH_4 = Methane

CO = Carbon monoxide

CO_2 = Carbon dioxide

dB = decibel

dBA = A-weighted decibel

DVE = Degraded Visual Environment

EMD = Environmental Management Division

EPA = Environmental Protection Agency

FWS = Fish and Wildlife Service

HAPs = Hazardous Air Pollutants

HFI = Hostile Fire Indicator

L_{eq} = equivalent sound level

L_{max} = maximum sound level

NO_x = nitrogen oxides

O_3 = ozone

OB/OD = open burn and open detonation

PM_{10} = particulate matter less than 10 microns in diameter

$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

ppm = parts per million

ppb = parts per billion

RCRA = Resource Conservation and Recovery Act

RDT&E = Research, Development, Test & Evaluation

RSA = Redstone Arsenal

RTC = Redstone Test Center

SCETI = System of Systems Controlled Environmental Test Infrastructure

SO_2 = Sulfur dioxide

SO_x = Sulfur oxides

TA-1 = Test Area 1

TA-3 = Test Area 3

TA-6 = Test Area 6

TOW = Tube-launched, Optically-tracked, Wire-guided missile

ug/m^3 = micrograms per cubic meter

USACOE = United States Army Corps of Engineers

U.S.C. = United States Code

UXO = Unexploded Ordnance

VOC = Volatile Organic Compound

SECTION 6.0

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SECTION 7.0

PERSONS CONSULTED

U.S. Army Garrison-Redstone Arsenal

Allison Guilliams, NEPA Coordinator, Cultural and Natural Resources Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Ashley Hall, Civil Engineer, Engineering Division, Directorate of Public Works, U.S. Army Garrison-Redstone Arsenal, AL.

Ben Hoksbergen, Archaeologist, Cultural and Natural Resources Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Christine Easterwood, Ecologist, Cultural and Natural Resources Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Gregory Hicks, Forester, Cultural and Natural Resources Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Jared Symonds, Environmental Analyst, Cultural and Natural Resources Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Jason Braxton, Air Program Manager, Compliance Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Jason Watson, Environmental Protection Specialist, Installation Restoration Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Kaela Hamby, Master Planning, Directorate of Public Works, U.S. Army Garrison-Redstone Arsenal AL.

Matthew Kachelman, Graphic Information Specialist, Master Planning Division, Directorate of Public Works, U.S. Army Garrison-Redstone Arsenal, AL.

Melissa Douglas, Environmental Protection Specialist, Compliance Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Ramzi Makkouk, Environmental Engineer, Compliance Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

Valerie Mason, NEPA Support, Cultural and Natural Resources Branch, Directorate of Public Works, Environmental Management Division, U.S. Army Garrison-Redstone Arsenal, AL.

U.S. Army Redstone Test Center

Michael Krause, Director, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Whitley Collyn Mann, SCETI Lead, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Win Miller, Technical Lead/Sensor Technologist, Advanced Technology Office, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Richard Brown, Chief Engineer, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Bryan Aronian, Meteorologist, Range Operations Division, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

John Cooper, Chief, Range Operations Division, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Tim Hamlett, TA-1 Range Safety Officer, Range Operations Division, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Jake Hamlett, Test Engineer, Test Engineering Division, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Mike Fischer, Facilities Specialist, Support Division, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Mike McNeil, Environmental Safety and Occupational Health Manager, Safety Office, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Chris Helser, Explosive Safety Manager, Safety Office, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Wendell Harden, Explosive Safety Specialist, Safety Office, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Patrick Golwitzer, Facilities Specialist, Logistics Management Office, Center Support Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Daniel Thompson, Test Engineer/Laser Safety Officer, Test Engineering Division, Missile and Sensors Test Directorate, U.S. Army Redstone Test Center, Redstone Arsenal, AL.

Geeks and Nerds (GaN

Jerry Hardin, Senior Designer, Geeks and Nerds (GaN), Huntsville, AL.

Ben Mitchell, Program Manager, Geeks and Nerds (GaN), Huntsville AL.

SECTION 8.0

DISTRIBUTION LIST

Agencies

U.S. Environmental Protection Agency, Region 4, Atlanta, GA.

U.S. Fish and Wildlife Service, Ecological Services Division, Daphne, AL.

Alabama Department of Conservation and Natural Resources, Montgomery, AL.

Alabama Department of Environmental Management, Montgomery, AL.

Alabama State Historic Preservation Office, Montgomery, AL.

Tribes

Absentee Shawnee Tribe of Indians of Oklahoma (Carol Butler)

Alabama-Coushatta Tribe of Texas (Bryant Celestine)

Alabama-Quassarte Tribal Town (Augustine Asbury)

Cherokee Nation (Sheila Bird)

Cherokee Nation of Oklahoma (Virginia Nail)

Coushatta Tribe of Louisiana (Bertney and Linda Langley)

Eastern Band of Cherokee Indians (Miranda Panther)

Eastern Shawnee Tribe of Oklahoma (Robin DuShane)

Kialegee Tribal Town (Kara Gann)

Muskogee (Creek) Nation of Oklahoma (RaeLynn Butler)

Poarch Band of Creek Indians (Robert Thrower)

Seminole Nation of Oklahoma (Natalie Deere)

Seminole Tribe (Willard Steele)

Shawnee Tribe (Kim Jumper)

Thlopthlocco Tribal Town (Charles Coleman)

Tunica-Biloxi Indian Tribe of Louisiana (Earl J. Barby, Jr.)

United Keetoowah Band of Cherokee Indians in Oklahoma (Lisa Baker)

APPENDIX A: LIST OF FIGURES

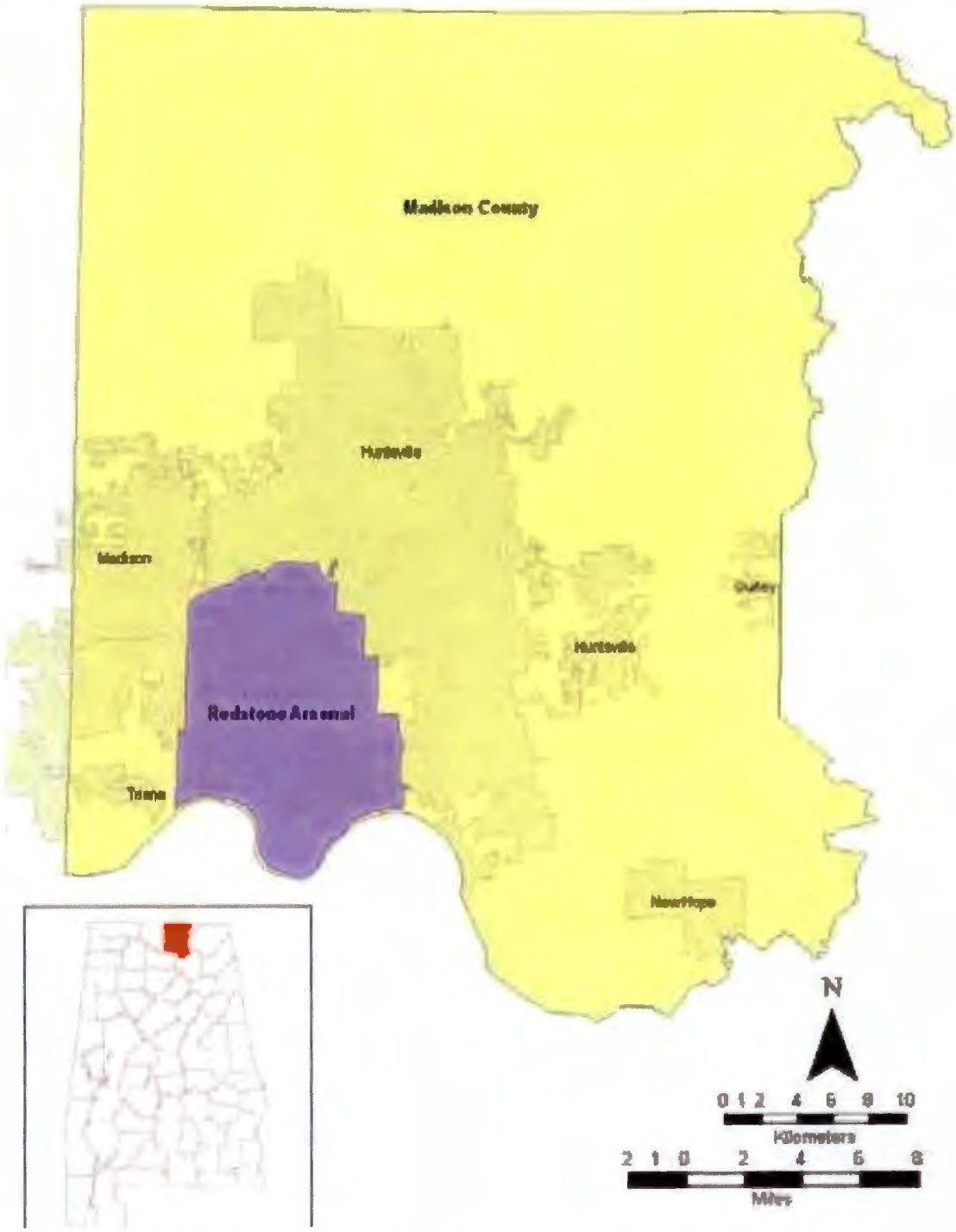


Figure 1, Source: RSA 2017

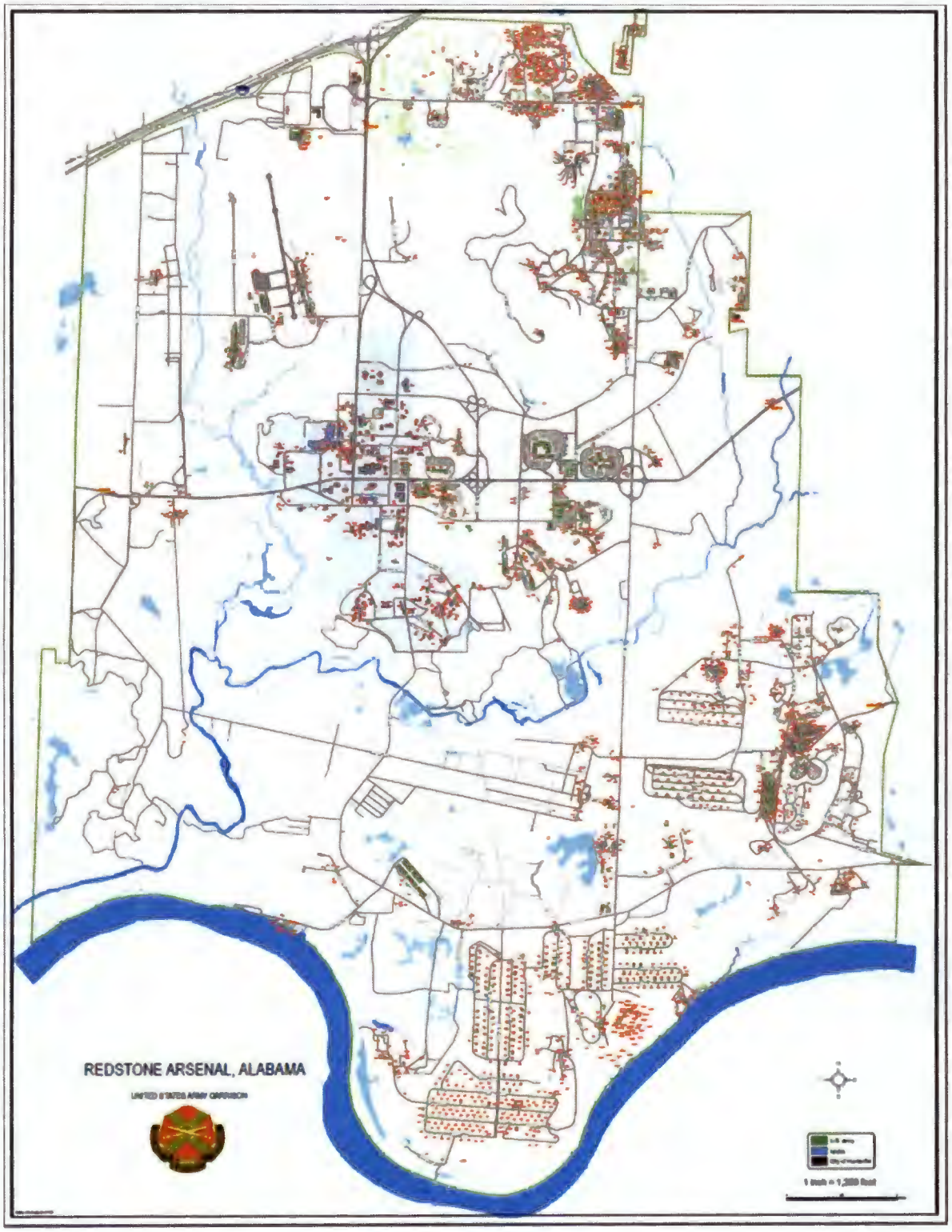


Figure 2, Source: RSA, 2016

Figure 3, Source: U.S. Army Redstone Test Center

Figure 4, Source: Google

Figure 5, Source: U.S. Army Redstone Test Center

Notes: Green = Tree Clearing, Orange = SCETI, Yellow = Fencing

Figure 6, Source: U.S. Army Redstone Test Center

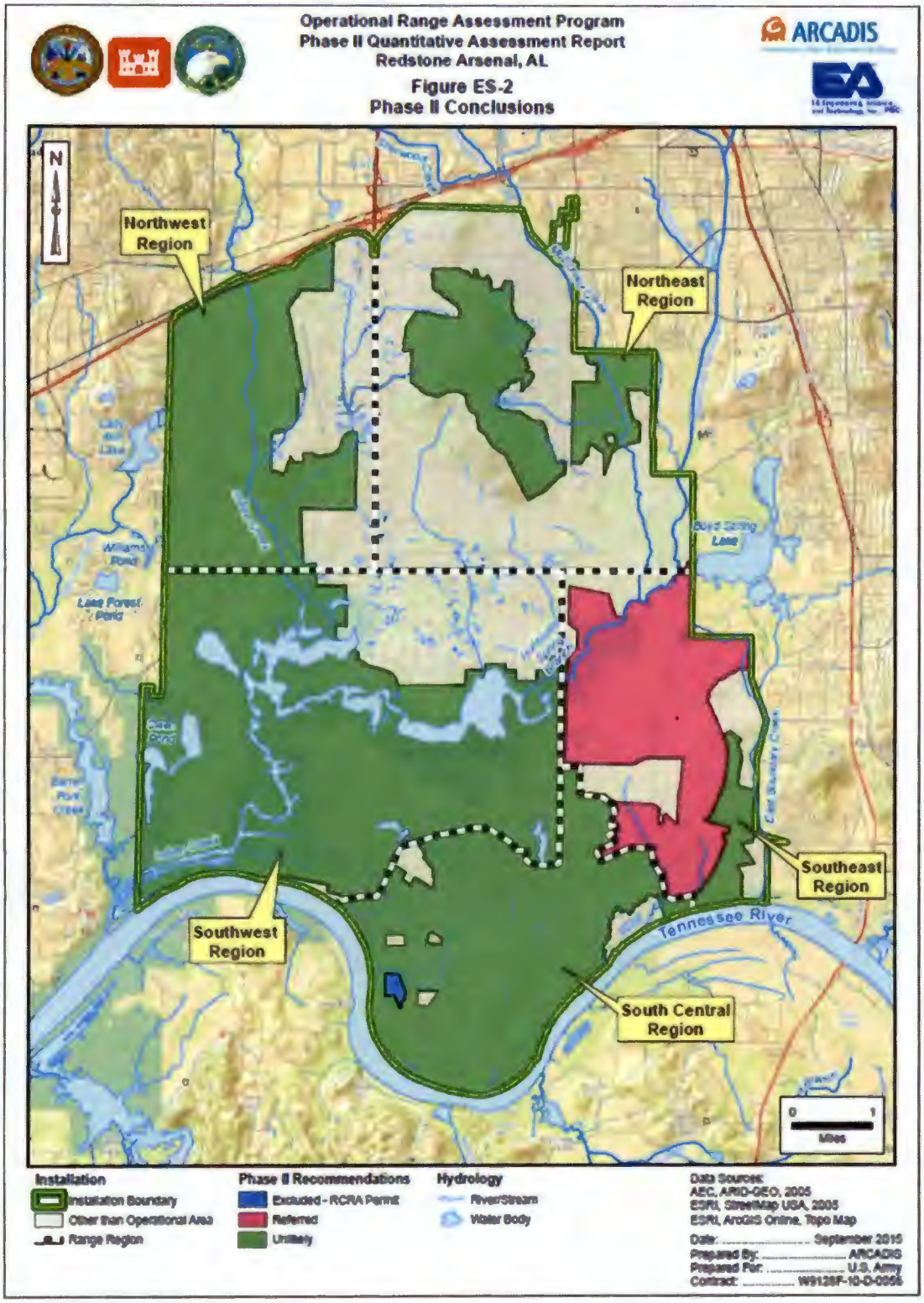


Figure 7, Source: Arcadis 2015

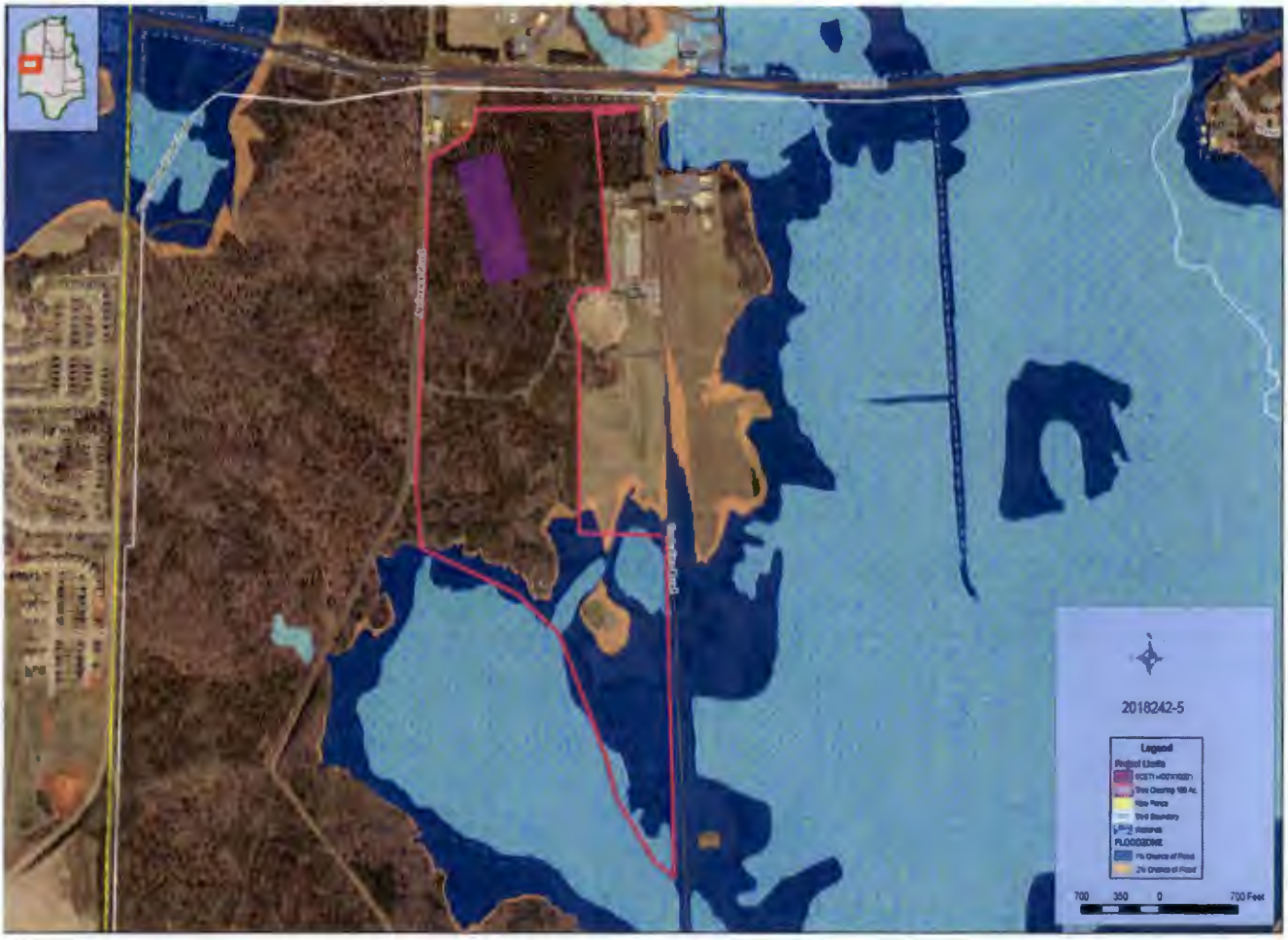


Figure 8, Source: RSA 2018

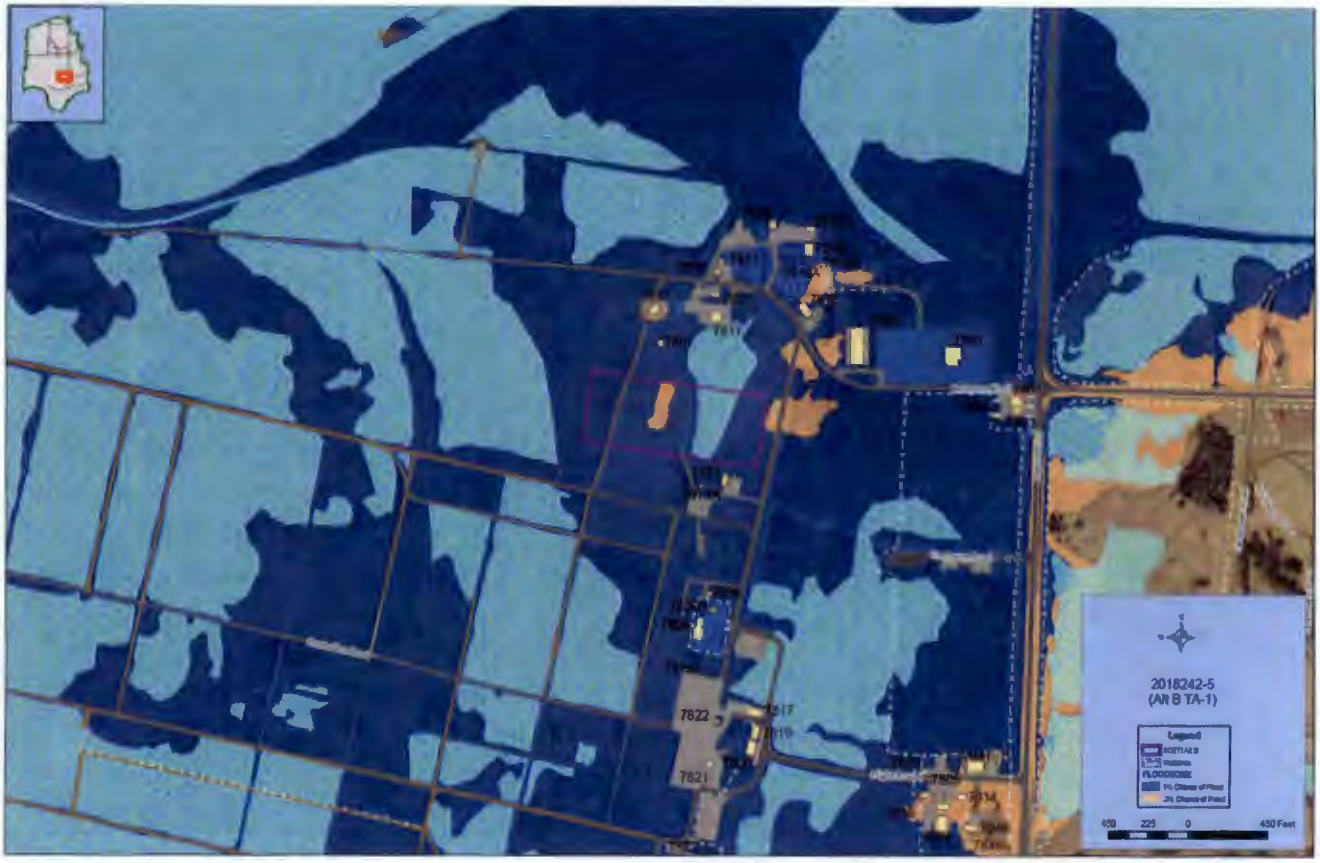


Figure 9, Source: RSA 2018

APPENDIX B: RANGE PROTOCOL CONCERNING WHOOPING CRANES CONCURRED BY U.S. FISH AND WILDLIFE

APPENDIX C: U.S. FWS RESPONSE LETTER TO OBSCURANT OPERATIONS

APPENDIX D: AGENCY CORRESPONDANCE

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, REDSTONE
4488 MARTIN ROAD
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

JUN 1 4 2019

Directorate of Public Works

Ms. Rachel Stanaland
Alabama Department of Environmental Management
Industrial/Mining Permitting Section
Water Division
Post Office Box 301463
Montgomery, Alabama 36130-1463

Dear Ms. Stanaland:

Reference the National Pollutant Discharge Elimination System Permit Renewal Application for Redstone Arsenal Permit Number AL0000019. Enclosed are the updates to the permit application that is currently under your review, due to new operational developments on Redstone Arsenal, as discussed earlier.

Please replace the following pages in the permit application with the enclosed pages as follows:

1. Replace page titled "The Alabama NPDES Permit Application Outline"
2. Replace outfalls 15 and 71 monitoring data in the "Form 2F Part VII" section.
3. Replace Attachment 1 in the Form 2F "Outfall Locations & Receiving Waters" section.
4. Replace Attachment 2 in the Form 2F "Narrative Description" section.
5. Replace the two #5 Maps in the "Maps" section including the Redstone Arsenal New Bulk/Retail Fuel Facility Site Location map cover page.
6. Add #6 Redstone Arsenal New System Controlled Environmental Test Infrastructure Site Location cover page in the "Maps" section, along with the map for this section.

Thank you for your help on this permit application. My point of contact for this matter is Mr. Ramzi Makkouk, Environmental Management Division, Directorate of Public Works, 256-955-8501 or e-mail ramzi.s.makkouk.civ@mail.mil

Sincerely,

Joey B. Skinner
Acting Chief, Environmental Management Division

Enclosures

Alabama NPDES Permit Application Outline

1. EPA Form 3510-1
   a. Form 1

2. ADEM Supplemental Form 187
   a. Form 187

3. EPA Form 3510-2C
   a. Form 2
   b. Form 2C Part V for each outfall location
   c. Form 2C Attachment 1 – Chronic Biomonitoring Test Data

4. EPA Form 3510-2E
   a. Form 2E
   b. Form 2E Attachment 1- Outfall Locations and Receiving waters

5. EPA Form 3510-2F
   a. Form 2F
   b. Form 2F Part VII for each outfall location
   c. Form 2F Attachment 1 – Outfall Locations and Receiving waters
   d. Form 2F Attachment 2 – Narrative Description
   e. Form 2F Attachment 3 – Area of Impervious surfaces
   f. Form 2F Attachment 4 – Requested Permit Modifications

6. Figures
   1. Redstone Arsenal Site Location (Topographical)
   2. Redstone Arsenal NPDES Discharge Locations
   3. Redstone Arsenal Outline of Drainage Basins
   4. Redstone Arsenal Industrial/Potable Water Above Ground Tanks
   5. Redstone Arsenal New Bulk Fuel Facility Site Location
   6. Redstone Arsenal New Retail Fuel Facility Site Location

7. Redstone Arsenal New System Controlled Environmental Test Infrastructure Site Location

7. Appendices
   A. Compiled Raw Data (2006-2008)

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)	8 mg/L				1.00	DSN015
Chemical Oxygen Demand (COD)	23.5 mg/L				1.00	DSN015
Total Suspended Solids (TSS)	<5.0 mg/L				1.00	DSN015
Total Nitrogen	0.95 mg/L				1.00	DSN015
Total Phosphorus						
pH	Minimum 7.38	Maximum 7.38	Minimum	Maximum	1.00	DSN015

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
TCETHY	<2 ug/L				1.00	DSN015
1,1,1-TCE	<2 ug/L				1.00	DSN015
1,1,2-TCE	<2 ug/L				1.00	DSN015
GC/MS	2.55 ug/L				1.00	DSN015
CLO4	3.8 ug/L				1.00	DSN015
NO3 & NO2	0.391 mg/L				1.00	DSN015
TNT	<0.22 ug/L				1.00	DSN015
RDX	0.22 ug/L				1.00	DSN015
Hg, T	<0.001 mg/L				1.00	DSN015

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)	12 mg/L				1.00	DSN071
Chemical Oxygen Demand (COD)	27.4 mg/L				1.00	DSN071
Total Suspended Solids (TSS)	24.0 mg/L				1.00	DSN071
Total Nitrogen	1.3 mg/L				1.00	DSN071
Total Phosphorus						
pH	Minimum 7.05	Maximum 7.05	Minimum	Maximum	1.00	DSN071

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
TCETHY	<2 ug/L				1.00	DSN071
1,1,1-TCE	<2 ug/L				1.00	DSN071
1,1,2-TCE	<2 ug/L				1.00	DSN071
GC/MS	1.67 ug/L				1.00	DSN071
CLO4	<4 ug/L				1.00	DSN071
NO3 & NO2	0.495 mg/L				1.00	DSN071
TNT	<0.21 ug/L				1.00	DSN071
RDX	<0.21 ug/L				1.00	DSN071
Hg, T	<0.001 mg/L				1.00	DSN071

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

Form 2F Attachment 1 - Outfall Locations and Receiving Waters

Outfall Number	Latitude			Longitude			Receiving Waters
	deg		sec	deg	min	sec	
DSN-001	34	37	32	86	38	21	Tributary to Huntsville Spring Branch
DSN-002	34	33	56	86	38	28	Unnamed tributary to Tennessee River
DSN-003	34	40	31	86	40	54	Unnamed tributary to Indian Creek
DSN-005	34	37	55	86	38	37	Huntsville Spring Branch
DSN-010	34	40	10	86	40	32	Tributary to Indian Creek
DSN-011	34	37	40	86	38	40	Tributary to Huntsville Spring Branch
DSN-013	34	37	39	86	38	52	Huntsville Spring Branch
DSN-015	34	34	20	86	39	59	Tributary to Tennessee River
DSN-016	34	34	13	86	39	38	Tributary to Tenessee River
DSN-017	34	35	43	86	36	41	Tributary to Tenessee River
DSN-020	34	38	1	86	38	19	Tributary to Huntville Spring Branch
DSN-021	34	38	28	86	38	1	Tributary to Huntsville Spring Branch
DSN-022	34	39	52	86	37	46	Tributary to McDonald Creek
DSN-027	34	53	39	86	37	7	Tributary to Tenessee River
DSN-032	34	39	51	86	38	60	Unnamed tributary to Huntsville Spring Branch
DSN-033	34	41	35	86	38	40	Tributary to McDonald Creek
DSN-034	34	37	51	86	40	6	Unnamed tributary to Huntsville Spring Branch
DSN-035	34	35	9	86	40	54	Tributary to Tenessee River
DSN-036	34	40	36	86	40	54	Unnamed tributary to Indian Creek
DSN-038	34	37	51	86	40	2	Unnamed tributary to Huntsville Spring Branch
DSN-040	34	37	51	86	39	48	Unnamed tributary to Huntsville Spring Branch
DSN-041	34	35	12	86	40	54	Tributary to Tenessee River
DSN-043	34	37	51	86	39	47	Tributary to Huntsville Spring Branch
DSN-045	34	34	15	86	38	20	Tributary to Tenessee River
DSN-046	34	34	35	86	37	11	Tributary to Tenessee River
DSN-047	34	37	13	86	37	49	Tributary to Tenessee River
DSN-048	34	39	56	86	39	19	Tributary to Huntsville Spring Branch
DSN-049	34	42	10	86	39	18	Tributary to Indian Creek
DSN-051	34	38	22	86	38	2	Tributary to Huntsville Spring Branch
DSN-054	34	41	36	86	38	40	Unnamed tributary to Indian Creek
DSN-057	34	42	31	86	37	47	Tributary to McDonald Creek
DSN-058	34	42	11	86	37	53	Tributary to McDonald Creek
DSN-059	34	41	39	86	37	49	Tributary to McDonald Creek
DSN-060	34	40	30	86	42	18	Tributary to Indian Creek
DSN-061	34	40	22	86	37	14	Tributary to McDonald Creek
DSN-062	34	39	8	86	42	30	Tributary to Indian Creek
DSN-063	34	37	32	86	39	10	Tributary to Indian Creek
DSN-064	34	37	34	86	39	11	Tributary to Huntsville Spring Branch
DSN-068	34	35	40	86	37	6	Unnamed tributary to Tennessee River
DSN-069	34	35	47	86	35	10	Unnamed tributary to Tennessee River

Form 2F Attachment 1 - Outfall Locations and Receiving Waters

Outfall Number	Latitude			Longitude			Receiving Waters
	deg	min	sec	deg	min	sec	
DSN-070	34	35	22	86	35	47	Unnamed tributary to Tennessee River
DSN-071	34	34	11	86	40	10	Unnamed tributary to Tennessee River
DSN-072	34	33	28	86	38	46	Unnamed tributary to Tennessee River
DSN-073	34	40	18	86	40	50	Unnamed tributary to Indian Creek
DSN-074	34	36	54	86	39	55	Unnamed tributary to Indian Creek
DSN-075	34	39	53	86	41	38	Unnamed tributary to Indian Creek
DSN-076	34	40	34	86	40	47	Unnamed tributary to Indian Creek
DSN-077	34	40	36	86	40	48	Unnamed tributary to Indian Creek
DSN-078	34	39	50	86	37	47	Tributary to McDonald Creek
DSN-079	34	39	47	86	37	47	Unnamed tributary to Indian Creek

Form 2F Attachment 6 - Narrative Description of Pollution Sources

DSN001: This discharge consists of stormwater runoff from the DDT remediation area.

DSN002: This discharge consists of wastewater from the testing of Rocket engines at TA-5.

DSN003: This discharge consists of vehicle washwaters and stormwater runoff from the Fuel storage and handling area at the Air Field. The sample is taken at At the O/W separator.

DSN005: This discharge consists of vehicle washwaters and stormwater runoff from the Fuel storage and handling areas (POL Tank Farm).

DSN010: This discharge consists of stormwater runoff airport facility, including Hangars, fueling areas and waste storage.

DSN011: This discharge consists of stormwater runoff from the bulk fuel storage area (POL Tank Farm) and Cooling tower blowdown, boiler blowdown and non-contact cooling water. (wooded Area South of POL yard) NW of DDT remediation area, west of Stewart road.

DSN013: This discharge consists of stormwater runoff from the construction and debris Landfill, cooling tower blowdown, boiler blowdown, and non-contact cooling Water. Monitored at the big ditch on east side of Inert Landfill.

DSN015: This discharge area consists of stormwater runoff from the northeast area of the OB/OD Area. This area consists of six open burn pans used to treat munitions items and components, bulk energetic, and energetic-contaminated materials, including some solvent-contaminated materials. Each burn pan is supported by a concrete pad, which elevates each pan above the 100 year flood plain. Ash is collected from each pan and drummed for disposal. Another portion of this area is used for the detonation of typically unfired waste munitions items. Prior to January 1986, solvents and solvent-contaminated materials were routinely incinerated directly on the ground at two open burn pads located in the northwest portion of the OB/OD area. Two "Contaminated Waste Burn Trenches" located in the southeast portion of the OB/OD area were also used to incinerate materials contaminated with propellants. In 1984, it was discovered that the trenches had also been used to dump and burn waste solvents from a Redstone Arsenal explosive production area, and such activities were ceased. From 1984 until 1991, materials such as non-hazardous propellant-contaminated materials were disposed of in the Contaminated Waste Burn Trenches at least once every 90 days. Monitored at North East corner of OB/OD area.

DSN016: This discharge consists of stormwater from former chemical storage and demolition areas, hazardous waste storage building area and a test pad. This area was

used during the 1940-50 time frame to store mustard gas and lewisite. The demolition area was active from 1950-70's for disposal of ash from open burning and open burn pads. Static Test Stand No. 8883, a bermed concrete pad equipped with a test firing rocket motors, discharges stormwater through this point. Monitored at 1/10 of a mile north of Bldg 8410.

DSN017: This discharge consists of stormwater runoff from a maintenance shop and storage yard, cooling tower blowdown, bolier blowdown, and non-contact cooling water. This area is used to collect scrap from various facilities throughout the arsenal. Typical materials stored include: cast iron, wood pallets, wire and electronic equipment, scrap metal, scrap vehicles, refrigerators, air conditioners, blocks of crushed metals, wood poles, mobile generators, gas cylinders, empty metal canisters, and various drums. Monitored at Buxton West of Warehouse Road (first ditch).

DSN020: This discharge of stormwater runoff from the former DDT plant site, electric storage yard for temporary storage of transformers, open storage for used transformers, conductors, and hazardous waste, cooling tower blowdown, boiler blowdown, and non-contact cooling water. Monitored at Industrial Rd. approx. 1/10 of a mile South of Mills Rd.

DSN021: This discharge consists of stormwater runoff from various disposal areas which were active from 1940-70's, a former lewisite manufacturing site and a satellite waste accumulation area, cooling tower blowdown, boiler blowdown, and non-contact cooling water. The disposal areas include former arsenic ponds, former arsenic waste lagoon, sanitary landfill, rubble fill and building debris. Monitored at Viper Rd.

DSN022: this discharge consists of stormwater runoff from RSA motor pool, maintenance shops and paint shop, cooling tower blowdown, boiler blowdown, and non-contact cooling water. Monitored at Patriot drive, ¼ mile North of Neal Rd.

DSN027: This discharge consists of non-contact cooling water from Bldg. 7120.

DSN031- DSN054: This discharge consists of water runoff from Potable/Industrial water tank releases.

DSN057- 058: This discharge consists of stormwater runoff from the motor pool area. Monitored at SEEBEE Area (3100 Area).

DSN059: This discharge consists of stormwater runoff from a public service station. Monitored at Mauler Rd. South of PX).

DSN060, DSN062 & DSN069: This discharge consists of stormwater runoff from an equipment storage yards. (TA-3, Tank Yard). Monitored at DSN060.

DSN061: This discharge consists of stormwater runoff from the motor pool, maintenance shop. Monitored at Hanson Rd. ½ mile east of Patton.

DSN062: This discharge consists of stormwater runoff from an equipment storage area. Monitored at DSN060.

DSN063- DSN064: This discharge consists of stormwater runoff from the inert landfill.

DSN068 & 070: This discharge consists of stormwater runoff from boiler plants.

DSN071: This discharge consists of stormwater runoff from western area demolition area(Propellant and propellant wastes disposal). Monitored at south west corner of OB/OD area.

DSN072: This discharge consists of stormwater runoff from maintenance shop, former chemical storage area, and TA-5 test pad. Monitored at south border of TA-5.

DSN073: This discharge consists of airplane wash waters and stormwater runoff. East of the wash rack, North of Bldg 4832.

DSN074: This discharge consists of non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard. Monitored at TA-1 East of Dodd Rd.

DSN075: This discharge consists of Bradley Fighting Vehicles wash waters and stormwater runoff from general purpose lab and test building. West of the wash rack, West of Bldg. 6274.

DSN076 (New): This discharge consists of stormwater runoff from the Bulk Fuel Facility. There will be three fuel tanks total. Tanks are single wall, inside a concrete walled (~3') enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1) and F-24(Jet A) 35,000gal (total 2). Monitored at South East corner of the Bulk Fuel Facility.

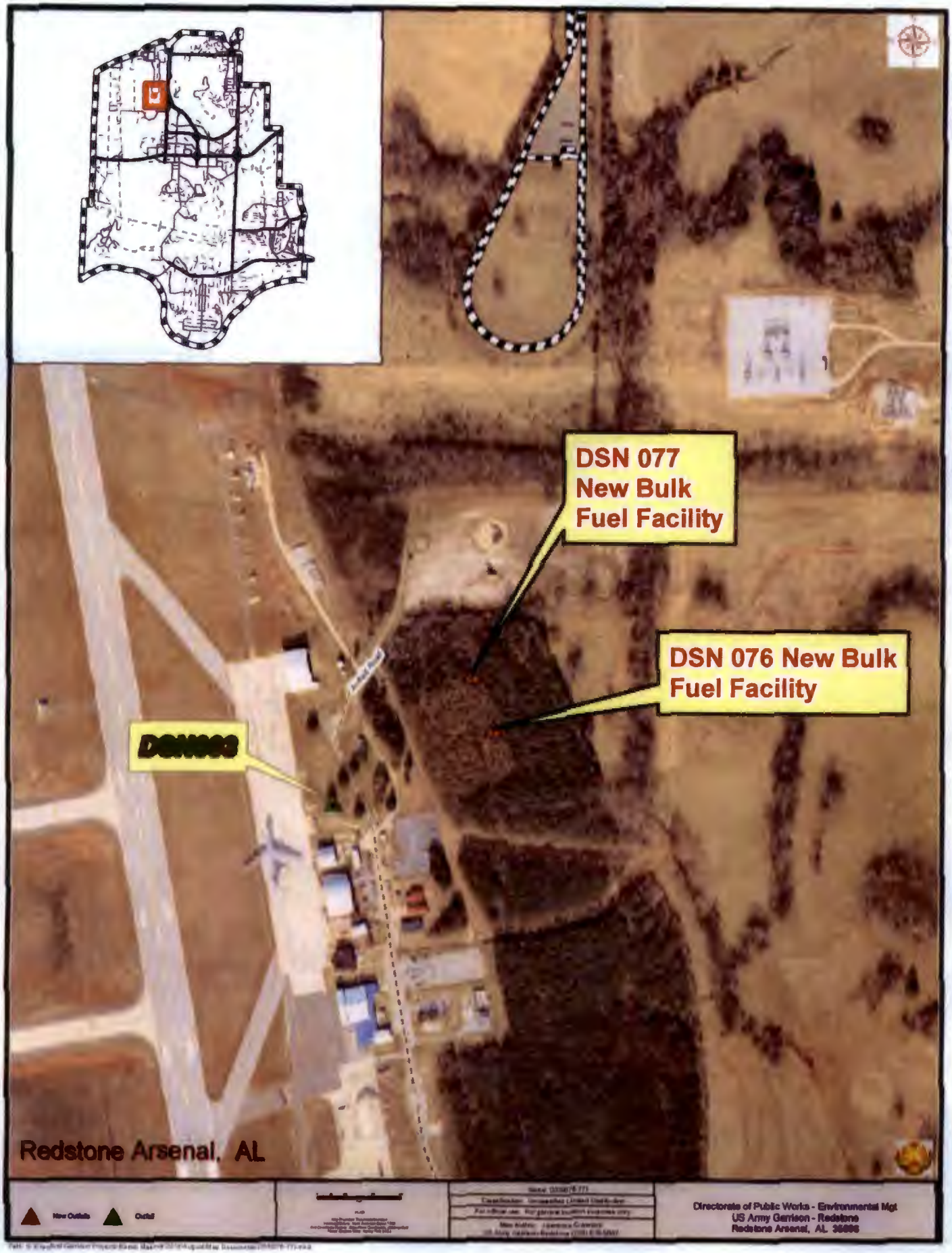
DSN077 (New): This discharge consists of stormwater runoff from the Bulk Fuel Facility. There will be three fuel tanks total. Tanks are single wall, inside a concrete walled (~3') enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1) and F-24(Jet A) 35,000gal (total 2). Monitored at North East corner of the Bulk Fuel Facility.

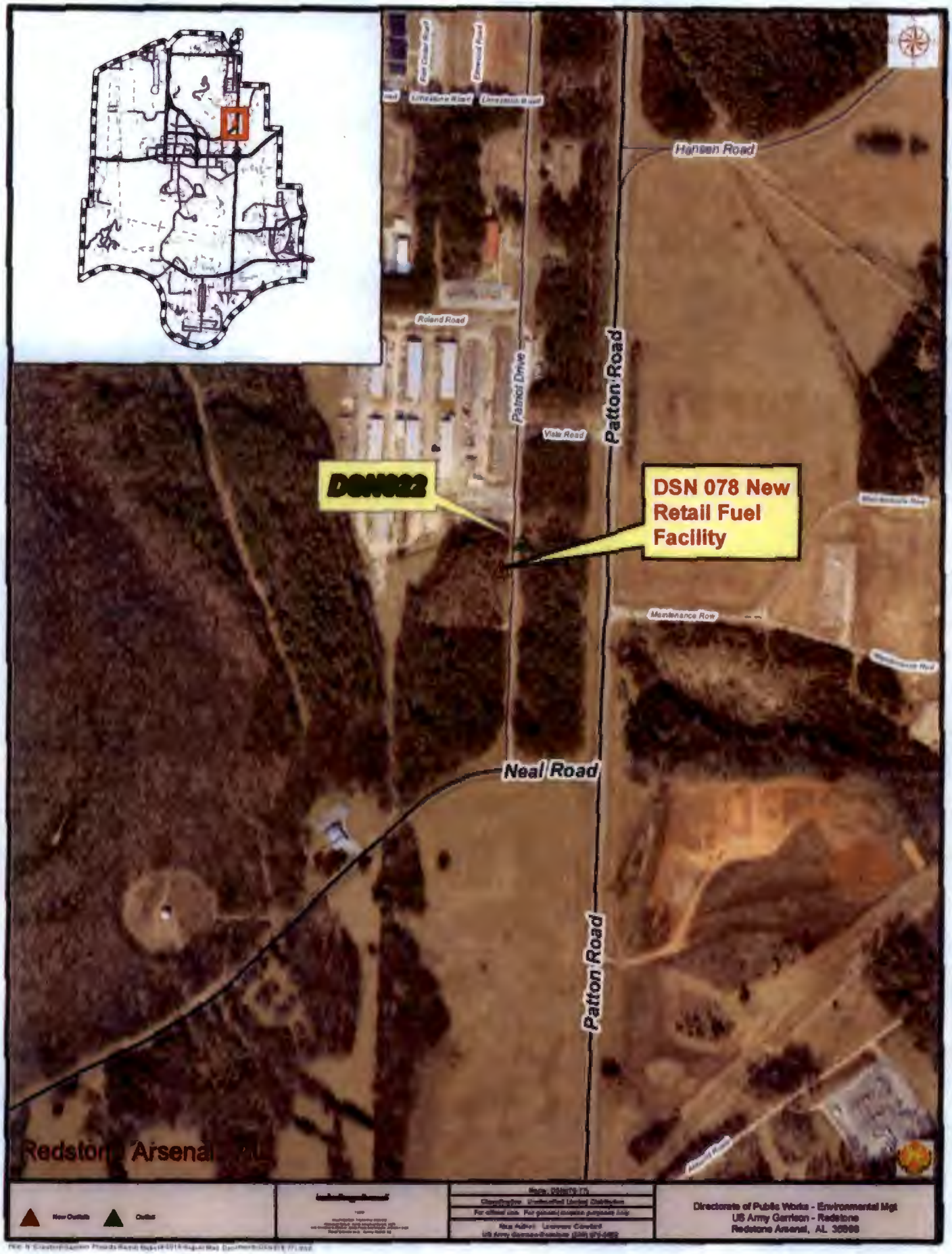
DSN078 (New): This discharge consists of stormwater runoff from the Retail Fuel Facility. There will be three fuel tanks total. Tanks are double wall, inside a concrete curbed enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1); MOGAS (Unleaded) 12,000gal (total 1) & E85 12,000gal (total 1). Monitored at North East corner of the Retail Fuel facility.

DSN079 (New): This discharge consists of wastewater from the testing of System Controlled Environmental Test Infrastructure (SCETI) at TA-6. This system will allow

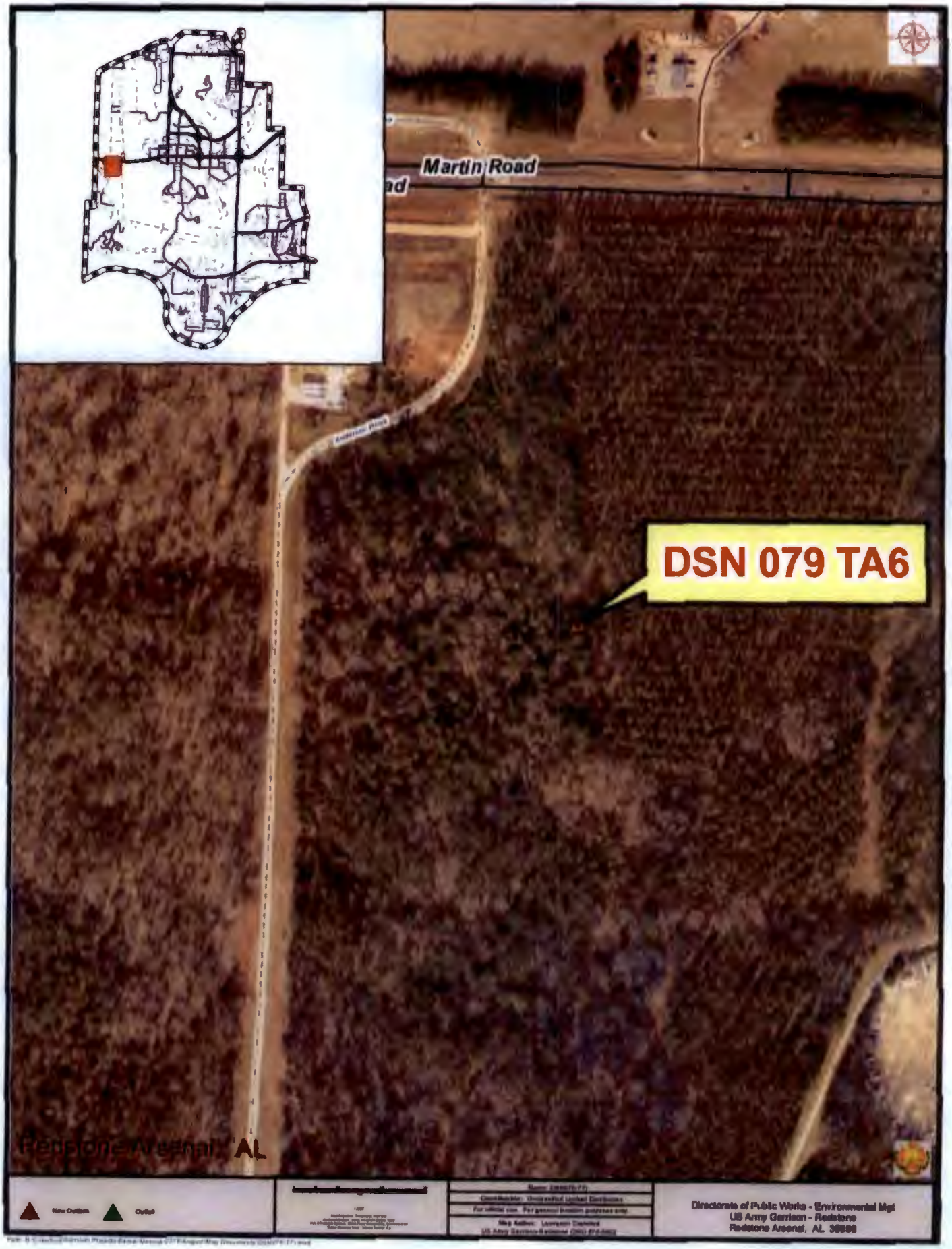
testers to accurately measure, control and record simulated rain conditions, in order to measure the intensity of rainfall on an aircraft through artificial rain conditions. The artificial rain generation capability will be developed through the use of water cannons. According to Mr. Wes Jones of RTC, just artificial rain will be discharged through this process.

5. Redstone Arsenal New Bulk/Retail Fuel Facility Site Location


DSN 077
New Bulk
Fuel Facility
DSN 076 New Bulk
Fuel Facility
DSN068
Redstone Arsenal, AL
Directorate of Public Works - Environmental Mgt
US Army Garrison - Redstone
Redstone Arsenal, AL 35898


Hansen Road
Roland Road
Patriot Drive
Patton Road
Vale Road
DSN022
DSN 078 New Retail Fuel Facility
Maintenance Row
Neal Road
Patton Road
Redstone Arsenal
Directorate of Public Works - Environmental Mgt
US Army Garrison - Redstone
Redstone Arsenal, AL 35898

6. Redstone Arsenal New System Controlled Environmental Test Infrastructure Site Location


Martin Road
DSN 079 TA6
Redstone Arsenal, AL
Directorate of Public Works - Environmental Mgt
US Army Garrison - Redstone
Redstone Arsenal, AL 35898

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT APPLICATION SUPPLEMENTARY INFORMATION

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION – INDUSTRIAL SECTION
POST OFFICE BOX 301463
MONTGOMERY, ALABAMA 36130-1463

INSTRUCTIONS: APPLICATIONS SHOULD BE TYPED OR PRINTED IN INK AND SUBMITTED TO THE DEPARTMENT IN DUPLICATE. PLEASE CONTINUE ON AN ATTACHED SHEET OF PAPER IF INSUFFICIENT SPACE IS AVAILABLE TO ADDRESS ANY ITEM BELOW. PLEASE MARK N/A IN THE APPROPRIATE BOX WHEN AN ITEM IS NON-APPLICABLE TO THE APPLICANT.

PURPOSE OF THIS APPLICATION

___ INITIAL PERMIT APPLICATION FOR NEW FACILITY
___ INITIAL PERMIT APPLICATION FOR EXISTING FACILITY
___ MODIFICATION OF EXISTING PERMIT
_X_ REISSUANCE OF EXISTING PERMIT
___ REVOCATION & REISSUANCE OF EXISTING PERMIT

1. Facility Name: U.S. Army Garrison - Redstone

   a. Operator Name: _____

   b. Is the operator identified in 1.a., the owner of the facility? Yes _X_ No _____
   If no, provide the name and address of the operator and submit information indicating the operator's scope of responsibility for the facility.

2. NPDES Permit Number AL 0000019

3. SID Permit Number (if applicable): IU __ __ - __ __ - __ __ __ __ __

4. NPDES General Permit Number (if applicable) ALR040033

5. Facility Location: (Attach a map with location marked; street, route no. or other specific identifier)

   Street: 4488 Martin Road (ATTN: IMRE-RED-PWE)

   City: Redstone Arsenal County: Madison State: Alabama Zip: 35898

6. Facility Mailing Address (Street or Post Office Box): Same

   City: _____ County: _____ State: _____ Zip: _____

7. Responsible Official (as described on page 12 of this application):

   Name and Title COL. Kelsey A. Smith, Garrison Commander

   Address: ATTN: IMRE-RED-PWE, Bldg. # 4488

   City: Redstone Arsenal State: Alabama Zip: 35898

   Phone Number: (256) 876-8861

8. Designated Facility Contact:

Name and Title: Ramzi S. Makkouk, Environmental Engineer

Phone Number: (256) 955-8501

9. Type of Business Entity:

___ Corporation ___ General Partnership ___ Limited Partnership

___ Sole Proprietorship _x_ Other (Please Specify) U.S. Army Installation

10. Complete this section if the Applicant's business entity is a Corporation

a) Location of Incorporation:

Address: _____

City: _____ State: _____ Zip: _____

b) Parent Corporation of Applicant:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

c) Subsidiary Corporation(s) of Applicant:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

d) Corporate Officers:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

e) Agent designated by the corporation for purposes of service:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

11. Please complete this section if the Applicant's business entity is a Partnership

a) General Partners:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

12. Please complete this section if the Applicant's business entity is a Proprietorship

a) Proprietor:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

13. Permit numbers for Applicant's previously issued NPDES Permits and identification of any other State Environmental Permits presently held by the Applicant or its parent corporation or subsidiary corporations within the State:

Permit Name	Permit Number	Held by
RCRA	AL7210020742	US Army Garrison - Redstone
Air	709-0007	US Army Garrison - Redstone
Drinking water	2017-521	US Army Garrison - Redstone
NPDES System/General Permit	AL0000019/ALR040033	US Army Garrison - Redstone
Solid Waste Disposal Construction & Demolition Landfill Permit	45-03	US Army Garrison - Redstone

14. Identify all Administrative Complaints, Notices of Violation, Directives, or Administrative Orders, or Litigation concerning water pollution, if any, against the Applicant, its parent corporation or subsidiary corporations within the State within the past five years (attach additional sheets if necessary):

Facility Name	Permit Number	Type of Action	Date of Action

SECTION B – BUSINESS ACTIVITY

1. If your facility conducts or will be conducting any of the processes listed below (regardless of whether they generate wastewater, waste sludge, or hazardous wastes), place a check beside the category of business activity (check all that apply):

Industrial Categories

[ ] Aluminum Forming
[ ] Asbestos Manufacturing
[ ] Battery Manufacturing
[ ] Can Making
[ ] Canned and Preserved Fruit and Vegetables
[ ] Canned and Preserved Seafood
[ ] Cement Manufacturing
[ ] Centralized Waste Treatment
[ ] Carbon Black
[ ] Coal Mining
[ ] Coil Coating
[ ] Copper Forming
[ ] Electric and Electronic Components Manufacturing
[ ] Electroplating
[ ] Explosives Manufacturing
[ ] Feedlots
[ ] Ferroalloy Manufacturing
[ ] Fertilizer Manufacturing
[ ] Foundries (Metal Molding and Casting)
[ ] Glass Manufacturing
[ ] Grain Mills
[ ] Gum and Wood Chemicals Manufacturing
[ ] Inorganic Chemicals
[ ] Iron and Steel
[ ] Leather Tanning and Finishing
[ ] Metal Finishing
[ ] Meat Products
[ ] Metal Molding and Casting
[ ] Metal Products
[ ] Nonferrous Metals Forming
[ ] Nonferrous Metals Manufacturing
[ ] Oil and Gas Extraction
[ ] Organic Chemicals Manufacturing
[ ] Paint and Ink Formulating
[ ] Paving and Roofing Manufacturing
[ ] Pesticides Manufacturing
[ ] Petroleum Refining
[ ] Phosphate Manufacturing
[ ] Photographic
[ ] Pharmaceutical
[ ] Plastic & Synthetic Mat'ls
[ ] Plastics Processing Manufacturing
[ ] Porcelain Enamel
[ ] Pulp, Paper, and Fiberboard Manufacturing
[ ] Rubber
[ ] Soap and Detergent Manufacturing
[ ] Steam and Electric
[ ] Sugar Processing
[ ] Textile Mills
[ ] Timber Products
[ ] Transportation Equipment Cleaning
[ ] Waste Combustion
[ ] Other (specify)_____

A facility with processes inclusive in these business areas may be covered by Environmental Protection (EPA) categorical standards. These facilities are termed "categorical users".

2. Give a brief description of all operations at this facility including primary products or services (attach additional sheets if necessary):

Provide sustainment support to join Warfighters and Allies, ensuring aviation and missile system readiness with seamless transition to combat operations; support Program Executive Officers/Project Managers to enable the development, acquisition, and fielding of superior aviation and missile systems; ensure the integration of aviation and missile technology for sustainment.

3. Production: (projected for new facilities) – Provide units appropriate to the applicable subpart referenced in Section B.1.

Product(s) Manufactured (Brand name)	Last 12 Months (Highest Month)		Highest Production Year of Last 5 Years (Monthly Avg. Production)		Average Production of Last 5 Years (5 Year Avg. Production)	
		units		units		units

SECTION C – WASTEWATER DISCHARGE INFORMATION

Facilities that checked activities in question 1 of Section B who are considered Categorical Industrial Users should skip to question 2 of this section.

1. For Non-Categorical Users Only: List highest monthly flow in the past 12 months, highest flow year of last 5 years, and average flow for the past 5 years, and the type of discharge for each plant process. Include the reference number from the process flow schematic (reference Figure 1) that corresponds to each process. [New facilities should provide estimates for each discharge.]

Process Description	Last 12 Months (gals/day) Highest Month Avg. Flow	Highest Flow Year of Last 5 Years (gals/day) Monthly Avg. Flow	Average Flow of Last 5 Years (gals/day) 5 Year Avg. Flow	Discharge Type (batch, cont., none)

If batch discharge occurs or will occur, indicate: [New facilities may estimate.]

a. Number of batch discharges: _____ per day

b. Average discharge per batch: _____ (GPD)

c. Time of batch discharges _____ at _____
(days of week) (hours of day)

d. Flow rate: _____ gallons/minute

e. Percent of total discharge: _____

Answer questions 2, 3, and 4 only if you are subject to Categorical Standards and plan to directly discharge the associated wastewater directly to a water of the State. If Categorical wastewater is discharged exclusively via an indirect discharge to a public or privately-owned treatment works, check "Yes" in the appropriate space below and proceed directly to part 2.c .

[ ] Yes

2. For Categorical Users: Provide the wastewater discharge flows or production (whichever is applicable by the effluent guidelines) for each of your processes or proposed processes. Include the reference number from the process flow schematic (reference Figure 1) that corresponds to each process. [New facilities should provide estimates for each discharge.]

a. Regulated Process	Applicable Category	Applicable Subpart	Type of Discharge Flow (batch, continuous, none)

b. Categorical Process*	Categorical Production or Flow Highest Month	Last 12 Months Monthly Average	Highest Year of Last 5 Years 5 Year Average	Average of Last 5 Year

*** - The values reported should be in the units of the applicable Federal production-based standard. For example, flow (MGD), production (pounds per day), etc.**

c. Unregulated Process Description	Last 12 Months gals/day Highest Month Avg. Flow	Highest Flow Year of Last 5 Years gals/day Monthly Avg. Flow	Average Flow of Last 5 Years gals/day 5 Year Avg. Flow	Discharge Type (batch, cont., none)

d. Non-Process Discharges (e.g. non-contact cooling water)	Last 12 Months gals/day Highest Month Avg. Flow	Highest Flow Year of Last 5 Years gals/day Monthly Avg. Flow	Average Flow of Last 5 Years gals/day 5 Year Avg. Flow	Discharge Type (batch, cont., none)

e. If batch discharge occurs or will occur, indicate: [New facilities may estimate.]

a. Number of batch discharges: _____ per day

b. Average discharge per batch: _____ (GPD)

c. Time of batch discharges _____ at _____
(days of week) (hours of day)

d. Flow rate: _____ gallons/minute

e. Percent of total discharge: _____

3. Do you have, or plan to have, automatic sampling equipment or continuous wastewater flow metering equipment at this facility?

Current:	Flow Metering	Yes	___	No	___	N/A	___
	Sampling Equipment	Yes	___	No	___	N/A	___
Planned:	Flow Metering	Yes	___	No	___	N/A	___
	Sampling Equipment	Yes	___	No	___	N/A	___

If so, please indicate the present or future location of this equipment on the sewer schematic and describe the equipment below:

_____

_____

4. Are any process changes or expansions planned during the next three years that could alter wastewater volumes or characteristics? Yes _____ No _____(If no, skip Question 5)

Briefly describe these changes and their effects on the wastewater volume and characteristics: (Attach additional sheets if needed.)

_____

_____

5. List the trade name and chemical composition of all biocides and corrosion inhibitors used:

Trade Name	Chemical Composition
_____	_____

For each biocide and/or corrosion inhibitor used, please include the following information:

(1) 96-hour median tolerance limit data for organisms representative of the biota of the waterway into which the discharge will ultimately reach,
(2) quantities to be used,
(3) frequencies of use,
(4) proposed discharge concentrations, and
(5) EPA registration number, if applicable

SECTION D – WATER SUPPLY

Water Sources (check as many as are applicable):

[ ] Private Well
[x] Municipal Water Utility (Specify City):
[x] Surface Water
[ ] Other (Specify): _____

IF MORE THAN ONE WELL OR SURFACE INTAKE, PROVIDE DATA FOR EACH ON AN ATTACHMENT

City: HSV *MGD Well: ____ *MGD Well Depth: ____ Ft. Latitude: _____ Longitude: _____

Surface Intake Volume**: 1.70 *MGD

Intake Elevation: 580 Ft Latitude: 34° 56′ 88″ Longitude: 86° 55′ 48″

[ ] Private Well
[x] Municipal Water Utility (Specify City):
[x] Surface Water
[ ] Other (Specify): _____

City: RSA *MGD Well: ____ *MGD Well Depth: ____ Ft. Latitude: _____ Longitude: _____

Surface Intake Volume**: 2.63 *MGD

Intake Elevation: 550 Ft Latitude: 34° 35′ 07″ Longitude: 86° 35′ 00″

Name of Surface Water Source: Tennessee River

* - MGD = Million Gallons Per Day
** - If the surface water intake amount is greater than 2.0 MGD, is 25% or more used for cooling purposes?

[x] Yes
[ ] No

SECTION E – WASTE STORAGE AND DISPOSAL INFORMATION

Provide a description of the location of all sites involved in the storage of solids or liquids that could be accidentally discharged to a water of the state, either directly or indirectly via such avenues as storm water drainage, municipal wastewater systems, etc., that are located at the facility for which the NPDES application is being made. Where possible the location should be noted on a map and included with this application:

Description of Waste	Description of Storage Location
Construction & Demolition Waste	Redstone Arsenal Landfill
Sludge	Central Waste Water Treatment Plant (WWTP)

Provide a description of the location of the ultimate disposal sites of solid or liquid waste by-products (such as sludges) from any wastewater treatment system located at the facility.

Description of Waste	Quantity (lbs/day)	Disposal Method*
Construction & Demolition Waste	486,571	Redstone Arsenal Landfill (on-site)
Sludge (From Central WWTP)	517.10	Huntsville Solid Waste Disposal Authority (by incineration, off-site)

***Indicate which wastes identified above are disposed of at an off-site treatment facility and which are disposed of on-site. If any wastes are sent to an off-site centralized waste treatment facility, identify the waste and the facility.**

SECTION F – COASTAL ZONE INFORMATION

Is the discharge(s) located within 10-foot elevation of Mobile or Baldwin County?
Yes [ ] No [x] If yes, then complete items A through M below:

	YES	NO
A. Does the project require new construction?	____	____
B. Will the project be a source of new air emissions?	____	____
C. Does the project involve dredging and/or filling?	____	____
Has the Corps of Engineers (COE) permit been received?	____	____
Corps Project Number _____		
D. Does the project involve wetlands and/or submersed grassbeds?	____	____
E. Are oyster reefs located near the project site? (Include a map showing project and discharge location with respect to oyster reefs)	____	____
E. Does the project involve the siting, construction and operation of an energy facility as defined in ADEM Admin. Code R. 335-8-1-.02(bb)?	____	____
G. Does the project involve shoreline erosion mitigation?	____	____
H. Does the project involve construction on beaches and dunes?	____	____
I. Will the project interfere with public access to coastal waters?	____	____
J. Does the project lie within the 100-year floodplain?	____	____
K. Does the project involve the registration, sale, use, or application of pesticides?	____	____
L. Does the project propose to construct a new well or alter an existing well to pump more than 50 GPD?	____	____
M. Has the applicable permit been obtained?	____	____

SECTION G – ANTI-DEGRADATION EVALUATION

In accordance with 40 CFR 131.12 and the Alabama Department of Environmental Management Administrative Code, Section 335-6-10-.04 for antidegradation, the following information must be provided, if applicable. It is the applicant's responsibility to demonstrate the social and economic importance of the proposed activity. If further information is required to make this demonstration, attach additional sheets to the application.

1. Is this a new or increased discharge that began after April 3, 1991? Yes [ ] No [x].
   If yes, complete question 2 below. If no, do not complete this section.

2. Has an Anti-Degradation Analysis been previously conducted and submitted to the Department for the new or increased discharge referenced in question 1? Yes [ ] No [ ].

   If no, complete questions A through F below and ADEM forms 311 and 313 (attached). Form 313 must be provided for each alternative considered technically viable. If yes, do not complete this section.

Information required for new or increased discharges to high quality waters:

A. What environmental or public health problem will the discharger be correcting?

B. How much will the discharger be increasing employment (at its existing facility or as the result of locating a new facility)?

C. How much reduction in employment will the discharger be avoiding?

D. How much additional state or local taxes will the discharger be paying?

E. What public service to the community will the discharger be providing?

F. What economic or social benefit will the discharger be providing to the community?

SECTION H – EPA Application Forms

All Applicants must submit EPA permit application forms. More than one application form may be required from a facility depending on the number and types of discharges or outfalls found there. The EPA application forms are found on the Department's website at http://www.adem.state.al.us/. The EPA application forms must be submitted in duplicate as follows:

1. All applicants must submit Form 1.

2. Applicants for existing industrial facilities (including manufacturing facilities, commercial facilities, mining activities, and silvicultural activities) that discharge process wastewater must submit Form 2C.

3. Applicants for new industrial facilities that propose to discharge process wastewater must submit Form 2D.

4. Applicants for new and existing industrial facilities that discharge only non-process wastewater (i.e., non-contact cooling water and/or sanitary wastewater) must submit Form 2E.

5. Applicants for new and existing facilities whose discharge is composed entirely of storm water associated with industrial activity must submit Form 2F, unless exempted by § 122.26(c)(1)(ii). If the discharge is composed of storm water and non-storm water, the applicant must also submit, Forms 2C, 2D, and/or 2E, as appropriate (in addition to Form 2F).

SECTION I – ENGINEERING REPORT/BMP PLAN REQUIREMENTS
See ADEM 335-6-6-.08(i) & (j)

SECTION J – APPLICATION CERTIFICATION

THE INFORMATION CONTAINED IN THIS FORM MUST BE CERTIFIED BY A RESPONSIBLE OFFICIAL AS DEFINED IN ADEM ADMINISTRATIVE RULE 335-6-6-.09 "SIGNATORY REQUIREMENTS FOR PERMIT APPLICATIONS" (SEE BELOW).

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM,

OR THOSE PERSONS DIRECTLY RESONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE.I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

"I FURTHER CERTIFY UNDER PENALTY OF LAW THAT ALL ANALYSES REPORTED AS LESS THAN DETECTABLE IN THIS APPLICATION OR ATTACHMENTS THERETO WERE PERFORMED USING THE EPA APPROVED TEST METHOD HAVING THE LOWEST DETECTION LIMIT FOR THE SUBSTANCE TESTED."

SIGNATURE OF RESPONSIBLE OFFICIAL: _____ DATE SIGNED: 28 SEP 2018

(TYPE OR PRINT)

NAME OF RESPONSIBLE OFFICIAL: COL Kelsey A. Smith

OFFICIAL TITLE OF RESPONSIBLE OFFICIAL: Garrison Commander

MAILING ADDRESS: ATTN: IMRE-RED-PWE, Bldg. # 4488

AREA CODE & PHONE NUMBER: (256) 876-8861

SIGNATORY REQUIREMENTS FOR PERMIT APPLICATIONS

Responsible official is defined as follows:

1. In the case of a corporation, by a principal officer of at least the level of vice president; or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;

2. In the case of a partnership, by a general partner;

3. In the case of a sole proprietorship, by the proprietor; or

4. In the case of a municipal, state, federal, or other public facility, by either a principal executive officer, or ranking elected official.

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

For Approved. OMB No. 2040-0086. Approval expires 5-31-92

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F	AL 7210020742		D
1	2 13	14	15

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING LIST
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been proved. Refer to the instructions for detailed item descriptions and for the legal authorization under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental from listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.?** (FORM 2A)	☐ 16	☒ 17	☐ 18	B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.?** (FORM 2B)	☐ 19	☒ 20	☐ 21
C. Is this facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	☒ 22	☐ 23	☐ 24	D. Is this proposal facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.?** (FORM 2D)	☐ 25	☒ 26	☐ 27
E. Does or will this facility treat, store, or dispose of **hazardous wastes?** (FORM 3)	☒ 28	☐ 29	☐ 30	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	☐ 31	☒ 32	☐ 33
G. Do you or will you inject at this facility any produced water other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	☐ 34	☒ 35	☐ 36	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfer by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	☐ 37	☒ 38	☐ 39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area?** (FORM 5)	☐ 40	☒ 41	☐ 42	J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment are?** (FORM 5)	☐ 43	☒ 44	☐ 45

III. NAME OF FACILITY

C 1 | SKIP | 15 | 16-29 | 30 | ***UNITED STATES ARMY GARRISON - REDSTONE*** | 69

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2 | 15 | 16 ***COL. Kelsey A. Smith, Garrison Commander*** 45	***256*** 46 48 ***876*** 49 51 ***8861*** 52 55

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3 | 15 | 16 ***ATTN: IMRE-RED-PWE (Bldg. # 4488)*** 45

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 | 15 | 16 ***Redstone Arsenal*** 40	***AL*** 41 42	***35898*** 47 51

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5 | 15 | 16 ***4488 Martin Road*** 45

B. COUNTY NAME

Madison 46 70

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE
C 6 | 15 | 16 ***Redstone Arsenal*** 40	***AL*** 41 42	***35898*** 47 51	52 54

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VII. SIC CODES (4-digit, in order of priority)

A. FIRST		B. SECOND	
9711	(specify) National Security	4941	(specify) Water Supply
C. THIRD		**D. FOURTH**	
4173	(specify) Terminal & Service Facilities for Motor Vehicle	5171	(specify) Petroleum Bulk Storage & Terminals

VIII. OPERATOR INFORMATION

A. NAME: UNITED STATES ARMY GARRISON - REDSTONE

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other," specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)
F (specify)

D. PHONE (area code & no.): 256 876 8861

E. STREET OR PO BOX: 4488 Martin Road

F. CITY OR TOWN	G. STATE	H. ZIP CODE
Redstone Arsenal	AL	35898

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): AL 0000019	D. PSD (Air Emissions from Proposed Sources): NA	
B. UIC (Underground Injection of Fluids): NA	E. OTHER (specify): 2017-521	(Specify) Drinking Water
C. RCRA (Hazardous Wastes): AL 7210020742	E. OTHER (specify): 709-0007	(Specify) Title V Major Source Operating Permit

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Provide sustainment support to joint Warfighters and Allies, ensuring aviation and missile system readiness with seamless transition to combat operations; support Program Executive Officers/Project Managers to enable the developemnt, acquisition and fielding of superior aviation and missile systems; ensure the integration of aviation and missile technology for sustaiment.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
COL. Kelsey A. Smith, Garrison CMDR		28 SEP 2018

COMMENTS FOR OFFICIAL USE ONLY

Please type or print in the unshaded areas only

EPA ID Number *(Copy from Item 1 of Form 1)*
AL7210020742

Form Approved
OMB No. 2040-0086
Approval expires 7-31-88

Form **2C** NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS
Consolidated Permits Program

I. Outfall Location

For this outfall, list the latitude and longitude, and name of the receiving water(s)

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
DSN002	***34***	***33***	***56***	***86***	***38***	***28***	***Unnamed tributary to the Tennessee River***
DSN003	***34***	***40***	***31***	***86***	***40***	***54***	***Unnamed tributary to Indian Creek***
DSN005	***34***	***37***	***55***	***86***	***38***	***37***	***Hunstville Spring Branch***
DSN075	***34***	***39***	***53***	***86***	***41***	***38***	***Unnamed tributary to Indian Creek***

II. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION *(list)*	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
DSN002	***Cooling Water***	***6.482 MGD Intermittent***	***Surface Discharge***	***4-A***	
DSN003	***Oil Water Separator***	***0.29025 MGD Intermittent***	***Surface Discharge***	***4-A***	***1-H***
DSN005	***Oil Water Separator***	***(No Discharge) MGD***	***Surface Discharge***	***4-A***	***1-H***
DSN075	***Oil Water Separator***	***(No Discharge) MGD***	***Surface Discharge***	***4-A***	***1-H***

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C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **YES** *(complete the following table)* ☐ **NO** *(go to Section III)*

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units		c. DURATION (in days)
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
DSN002	***Testing of rocket engines***							
DSN003	***Wash rack/fuel handling area***							
DSN005	***Wash rack/fuel handling area***							
DSN075	***Bradley Fighting Vehicle wash waters***							

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☐ **YES** *(complete Item III-B)* ☒ **NO** *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☐ **YES** *(complete Item III-C)* ☒ **NO** *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** *(complete the following table)* ☒ **NO** *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. No	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables or each outfall - Annotate the outfall number in the space provided. **NOTE:** Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

D: Use the space below t list any of the pollutants listed in Tables 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
NA			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **YES** *(list all such pollutants below)* ☒ **NO** *(go to Item VI-B)*

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** *(identify the test(s) and describe their purpose below)* ☐ **NO** *(go to Section VIII)*

DSN002- Chronic Biomonitoring testing was completed to test for any significant differences as a result of the release.

See Form 2C Attachment 1 - Chronic Biomonitoring Test data

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ **YES** *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ **NO** *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Wolf Creek Federal Services.	***P.O. Box 8200 Redstone Arsenal, AL 35808***	***(256) 876-4062***	***Metals, VOCs,DDT, Oil & Grease,TSS,pH, TSS.***
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	
		( )	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
COL. Kelsey A. Smith, Garrison Commander	***(256.) 876-8861***
C. SIGNATURE	D. DATE SIGNED 28 SEP 2018

Please type or print in the unshaded areas only

EPA ID Number *(Copy from Item 1 of Form 1)*
AL7210020742

Form Approved
OMB No. 2040-0086
Approval expires 7-31-88

Form **2C** NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS
Consolidated Permits Program

I. Outfall Location

For this outfall, list the latitude and longitude, and name of the receiving water(s)

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
DSN002	***34***	***33***	***56***	***86***	***38***	***28***	***Unnamed tributary to the Tennessee River***
DSN003	***34***	***40***	***31***	***86***	***40***	***54***	***Unnamed tributary to Indian Creek***
DSN005	***34***	***37***	***55***	***86***	***38***	***37***	***Hunstville Spring Branch***
DSN075	***34***	***39***	***53***	***86***	***41***	***38***	***Unnamed tributary to Indian Creek***

II. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION *(list)*	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
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DSN005	***Oil Water Separator***	***(No Discharge) MGD***	***Surface Discharge***	***4-A***	***1-H***
DSN075	***Oil Water Separator***	***(No Discharge) MGD***	***Surface Discharge***	***4-A***	***1-H***

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C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **YES** *(complete the following table)* ☐ **NO** *(go to Section III)*

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units		c. DURATION (in days)
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
DSN002	***Testing of rocket engines***							
DSN003	***Wash rack/fuel handling area***							
DSN005	***Wash rack/fuel handling area***							
DSN075	***Bradley Fighting Vehicle wash waters***							

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B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☐ **YES** *(complete Item III-C)* ☒ **NO** *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** *(complete the following table)* ☒ **NO** *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. No	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED

 CONTINUED ON PAGE 3

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding - Complete one set of tables or each outfall - Annotate the outfall number in the space provided. **NOTE:** Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

D: Use the space below t list any of the pollutants listed in Tables 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
NA			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **YES** *(list all such pollutants below)* ☒ **NO** *(go to Item VI-B)*

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** *(identify the test(s) and describe their purpose below)* ☐ **NO** *(go to Section VIII)*

DSN002- Chronic Biomonitoring testing was completed to test for any significant differences as a result of the release.

See Form 2C Attachment 1 - Chronic Biomonitoring Test data

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ **YES** *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ **NO** *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED *(list)*
Wolf Creek Federal Services.	***P.O. Box 8200 Redstone Arsenal, AL 35808***	***(256) 876-4062***	***Metals, VOCs,DDT, Oil & Grease,TSS,pH, TSS.***
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IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
COL. Kelsey A. Smith, Garrison Commander	***(256.) 876-8861***
C. SIGNATURE	D. DATE SIGNED: 28 SEP 2018

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
AL7210020742

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand *(BOD)*												
b. Chemical Oxygen Demand *(COD)*	42.9	2055.71			28.65	702.53		mg/	kg			
c. Total Organic Carbon *(TOC)*												
d. Total Suspended Solids *(TSS)*	18	862.54			11	269.73	2	mg/l	kg			
e. Ammonia *(as N)*												
f. Flow	Value 12.667		Value		Value 6.482					Value		
g. Temperature *(winter)*	Value		Value		Value			°C		Value		
h. Temperature *(summer)*	Value		Value		Value			°C		Value		
i. pH	Minimum 7.23	Maximum 7.19	Minimum 7.23	Maximum 7.26			2	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	☐	☒												
b. Chlorine, Total Residual	☐	☒												
c. Color	☐	☒												
d. Fecal Coliform	☐	☒												
e. Fluoride (16984-48-8)	☐	☒												
f. Nitrate-Nitrite *(as N)*	☐	☒												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic *(as N)*	☐	☒												
h. Oil and Grease	☒	☐	*5.0*	*239.60*			*5.0*	*122.60*	*2*	*mg/l*	*kg*			
i. Phosphorus *(as P)*, Total (7723-14-0)	☐	☒												
j. Radioactivity														
(1) Alpha, Total	☐	☒												
(2) Beta, Total	☐	☒												
(3) Radium, Total	☐	☒												
(4) Radium 226, Total	☐	☒												
k. Sulfate *(as SO_4)* (14808-79-8)	☐	☒												
l. Sulfide (as S)	☐	☒												
m. Sulfite *(as SO_3)*(14265-45-3)	☐	☒												
n. Surfactants	☐	☒												
o. Aluminum, Total (7429-90-5)	☐	☒												
p. Barium, Total (7440-39-3)	☐	☒												
q. Boron, Total (7440-42-8)	☐	☒												
r. Cobalt, Total (7440-48-4)	☐	☒												
s. Iron, Total (7439-89-6)	☐	☒												
t. Magnesium, Total (7439-95-4)	☐	☒												
u. Molybdenum, Total (7439-98-7)	☐	☒												
v. Manganese, Total (7439-96-5)	☐	☒												
w. Tin, Total (7440-31-5)	☐	☒												
x. Titanium, Total (7440-32-6)	☐	☒												

CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	*DSN002*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☐	☐	☒												
2M. Arsenic, Total (7440-38-2)	☐	☐	☒												
3M. Beryllium, Total (7440-41-7)	☐	☐	☒												
4M. Cadmium, Total (7440-43-9)	☐	☐	☒												
5M Chromium, Total (7440-47-3)	☐	☐	☒												
6M Copper, Total (7440-50-8)	☐	☐	☒												
7M lead, Total (7439-92-1)	☐	☐	☒												
8M Mercury, Total (7439-97-6)	☐	☐	☒												
9M Nickel, Total (7440-02-0)	☐	☐	☒												
10M Selenium, Total (7782-49-2)	☐	☐	☒												
11M Silver, Total (7440-22-4)	☐	☐	☒												
12M Thallium, Total (7440-28-0)	☐	☐	☒												
13M Zinc, Total (7440-66-6)	☐	☐	☒												
14M Cyanide, Total (57-12-5)	☐	☐	☒												
15M Phenols, Total	☐	☐	☒												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764--01-6)	☐	☐	☒	DESCRIBE RESULTS											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V Acrolein (107-02-8)	☐	☐	☒												
2V Acrylonitrile (107-13-1)	☐	☐	☒												
3V Benzene (71-43-2)	☐	☐	☒												
4V Bis (Chloromethyl) Ether (542-88-1)	☐	☐	☒												
5V Bromoform (75-25-2)	☐	☐	☒												
6V Carbon Tetrachloride (56-23-5)	☐	☐	☒												
7V Chlorobenzene (108-90-7)	☐	☐	☒												
8V Chlorodibromomethane (124-48-1)	☐	☐	☒												
9V Chloroethane (75-00-3)	☐	☐	☒												
10V 2-Chloroethylvinyl Ether (110-75-8)	☐	☐	☒												
11V Chloroform (67-66-3)	☐	☐	☒												
12V Dichlorobromoethane (75-71-8)	☐	☐	☒												
13V Dichlorodifluoromethane (75-71-8)	☐	☐	☒												
14V 1,1-Dichloroethane (75-34-3)	☐	☐	☒												
15V 1,2-Dichloroethane (107-06-2)	☐	☐	☒												
16V 1,1-Dichloroethylene (75335-4)	☐	☐	☒												
17V 1,2-Dichloropropane (78-87-5)	☐	☐	☒												
18V 1,3-Dichloropropylene (542-75-6)	☐	☐	☒												
19V Ethylbenzene (100-41-4)	☐	☐	☒												
20V Methyl Bromide (74-83-9)	☐	☐	☒												
21V Methyl Chloride (74-87-3)	☐	☐	☒												

CONTINUE ON PAGE V-5

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *AL7210020742*

OUTFALL NUMBER: *DSN002*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS *(continued)*															
22 V Methylene Chloride (75-09-2)	☐	☐	☒												
23V 1,1,2,2-Tetrachloroethane (79-34-5)	☐	☐	☒												
24V Tetrachloroethylene (127-18-4)	☐	☐	☒												
25V Toluene (108-88-3)	☐	☐	☒												
26V 1,2-Trans-Dichloroethylene (156-60-5)	☐	☐	☒												
27V 1,1,1-Trichloroethane (71-55-6)	☐	☐	☒												
28V 1,1,2-Trichloroethane (79-00-5)	☐	☐	☒												
29V Trichloroethylene (79-01-6)	☐	☐	☒												
30V Trichlorofluoromethane (75-69-4)	☐	☐	☒												
31V Vinyl Chloride (75-01-4)	☐	☐	☒												
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☐	☐	☒												
2A 2,4-Dichlorophenol (120-83-2)	☐	☐	☒												
3A 2,4-Dimethylphenol (105-67-9)	☐	☐	☒												
4A 4,6-Dinitro-O-cresol (534-52-1)	☐	☐	☒												
5A 2,4-Dinitrophenol (51-28-5)	☐	☐	☒												
6A 2-Nitrophenol (88-75-5)	☐	☐	☒												
7A 4-Nitrophenol (100-02-7)	☐	☐	☒												
8A P-Chloro-M-Cresol (59-50-7)	☐	☐	☒												
9A Pentachlorophenol (87-86-5)	☐	☐	☒												
10A Phenol (108-95-2)	☐	☐	☒												
11A 2,4,6-Trichlorophenol (88-06-2)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenaphthene (83-32-9)	☐	☐	☒												
2B Acenaphthylene (208-96-8)	☐	☐	☒												
3B Anthracene (120-12-7)	☐	☐	☒												
4B Benzidine (92-87-5)	☐	☐	☒												
5B Benzo (a) Anthracene (56-55-3)	☐	☐	☒												
6B Benzo (a) Pyrene (50-32-8)	☐	☐	☒												
7B 3,4-Benzo-fluoranthene (205-99-2)	☐	☐	☒												
8B Benzo *(ghi)* Perylene (191-24-2)	☐	☐	☒												
9B Benzo *(k)* Fluoranthene (207-08-9)	☐	☐	☒												
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☐	☐	☒												
11B Bis *(2-Chloroethyl)* Ether (111-44-4)	☐	☐	☒												
12B Bis *(2-Chloroisopropyl)* Ether (102-60-1	☐	☐	☒												
13B Bis *(2-Ethylhexyl)* Phthalate (117-81-7)	☐	☐	☒												
14 B 4-Bromophenyl Phenyl Ether (101-55-3)	☐	☐	☒												
15B Butyl Benzyl Phthalate (85-68-7)	☐	☐	☒												
16B 2-Chloronaphthalene (91-58-7)	☐	☐	☒												
17B 4-Chlorophenyl Phenyl Ether (7005-72-3)	☐	☐	☒												
18B Chrysene (218-01-9)	☐	☐	☒												
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☐	☐	☒												
20B 1,2-Dichlorobenzene (95-50-1)	☐	☐	☒												
21B 1,3-Dichlorobenzene (541-73-1)	☐	☐	☒												

CONTINUE ON PAGE V-7

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: **AL7210020742**

OUTFALL NUMBER: **DSN002**

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B 1,4-Dichlorobenzene (106-46-7)	☐	☐	☒												
23B 3,3'-Dichlorobenzidine (91-94-1)	☐	☐	☒												
24B Diethyl Phthalate (84-66-2)	☐	☐	☒												
25B Dimethyl Phthalate (131-11-3)	☐	☐	☒												
26B Di-N-Butyl Phthalate (131-11-3)	☐	☐	☒												
27B 2,4-Dinitrotoluene (121-14-2)	☐	☐	☒												
28B 2,6-Dinitrotoluene (606-20-2)	☐	☐	☒												
29B Di-N-Octyl Phthalate (117-84-0)	☐	☐	☒												
30B 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	☐	☐	☒												
31B Fluoranthene (206-44-0)	☐	☐	☒												
32B Fluorene (86-73-7)	☐	☐	☒												
33B Hexachlorobenzene (118-74-1)	☐	☐	☒												
34B Hexachlorobutadiene (87-68-3)	☐	☐	☒												
35B Hexachlorocyclopentadiene (77-47-4)	☐	☐	☒												
36B Hexachloroethane (67-72-1)	☐	☐	☒												
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☐	☐	☒												
38B Isophorone (78-59-1)	☐	☐	☒												
39B Naphthalene (91-20-3)	☐	☐	☒												
40B Nitrobenzene (98-95-3)	☐	☐	☒												
41B N-Nitrosodimethylamine (62-75-9)	☐	☐	☒												
42B N-Nitrosodi-N-Propylamine (621-64-7)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)	☐	☐	☒												
44B Phenanthrene (85-01-/	☐	☐	☒												
45B Pyrene (129-00-0)	☐	☐	☒												
46B 1,2,4-Trichlorobenzene (120-82-1)	☐	☐	☒												
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☐	☐	☒												
2P β-Bhc (319-85-7)	☐	☐	☒												
4P γ-BHC (58-89-9)	☐	☐	☒												
5P δ-BHC (319-86-8)	☐	☐	☒												
6P Chlordane (57-74-9)	☐	☐	☒												
7P 4,4'-DDT (50-29-3)	☒	☐	☐												
8P 4,4'-DDE (72-55-9)	☐	☐	☒												
9P 4,4'-DDD (72-54-8)	☐	☐	☒												
10P Dieldrin (60-57-1)	☐	☐	☒												
11P α-Endosulfan (115-29-7)	☐	☐	☒												
12P β-Endosulfan (115-29-7	☐	☐	☒												
13P Endosulfan Sulfate (1031-07-8)	☐	☐	☒												
14P Endrin (72-20-8)	☐	☐	☒												
15P Endrin Aldehyde (7421-93-4)	☐	☐	☒												
16P Heptachlor (76-44-8)	☐	☐	☒												

CONTINUE ON PAGE V-9

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: ***AL7210020742***

OUTFALL NUMBER: ***DSN002***

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES *(continued)*															
17P Heptachlor Expoxide (1024-57-3)	☐	☐	☒												
18P PCB-1242 (53469-21-9)	☐	☐	☒												
19P PCB-1254 (11097-69-1)	☐	☐	☒												
20P PCB-1221 (11104-28-2)	☐	☐	☒												
21P PCB-1232 (11141-16-5)	☐	☐	☒												
22P PCB-1248 (12672-29-6)	☐	☐	☒												
23P PCB-1260 (11096-82-5)	☐	☐	☒												
24P PCB-1016 (12674-11-2)	☐	☐	☒												
25P Toxaphene (8001-35-2)	☐	☐	☒												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
AL7210020742

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand *(BOD)*												
b. Chemical Oxygen Demand *(COD)*	42.9	2055.71			28.65	702.53		mg/	kg			
c. Total Organic Carbon *(TOC)*												
d. Total Suspended Solids *(TSS)*	18	862.54			11	269.73	2	mg/l	kg			
e. Ammonia *(as N)*												
f. Flow	Value 12.667		Value		Value 6.482					Value		
g. Temperature *(winter)*	Value		Value		Value			°C		Value		
h. Temperature *(summer)*	Value		Value		Value			°C		Value		
i. pH	Minimum 7.23	Maximum 7.19	Minimum 7.23	Maximum 7.26			2	STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	☐	☒												
b. Chlorine, Total Residual	☐	☒												
c. Color	☐	☒												
d. Fecal Coliform	☐	☒												
e. Fluoride (16984-48-8)	☐	☒												
f. Nitrate-Nitrite *(as N)*	☐	☒												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		b. NO. OF ANALYSES
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic *(as N)*	☐	☒												
h. Oil and Grease	☒	☐	*5.0*	*239.60*			*5.0*	*122.60*	*2*	*mg/l*	*kg*			
i. Phosphorus *(as P)*, Total (7723-14-0)	☐	☒												
j. Radioactivity														
(1) Alpha, Total	☐	☒												
(2) Bets, Total	☐	☒												
(3) Radium, Total	☐	☒												
(4) Radium 226, Total	☐	☒												
k. Sulfate *(as SO_4) (14808-79-8)*	☐	☒												
l. Sulfide (as S)	☐	☒												
m. Sulfite *(as SO_3)(14265-45-3)*	☐	☒												
n. Surfactants	☐	☒												
o. Aluminum, Total (7429-90-5)	☐	☒												
p. Barium, Total (7440-39-3)	☐	☒												
q. Boron, Total (7440-42-8)	☐	☒												
r. Cobalt, Total (7440-48-4)	☐	☒												
s. Iron, Total (7439-89-4)	☐	☒												
t. Magnesium, Total (7439-95-4)	☐	☒												
u. Molybdenum, Total (7439-98-7)	☐	☒												
v. Manganese, Total (7439-96-5)	☐	☒												
w. Tin, Total (7440-31-5)	☐	☒												
x. Titanium, Total (7440-32-6)	☐	☒												

CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	*DSN003*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☐	☐	☒												
2M. Arsenic, Total (7440-38-2)	☐	☐	☒												
3M. Beryllium, Total (7440-41-7)	☐	☐	☒												
4M. Cadmium, Total (7440-43-9)	☐	☐	☒												
5M Chromium, Total (7440-47-3)	☐	☐	☒												
6M Copper, Total (7440-50-8)	☐	☐	☒												
7M lead, Total (7439-92-1)	☐	☐	☒												
8M Mercury, Total (7439-97-6)	☐	☐	☒												
9M Nickel, Total (7440-02-0)	☐	☐	☒												
10M Selenium, Total (7782-49-2)	☐	☐	☒												
11M Silver, Total (7440-22-4)	☐	☐	☒												
12M Thallium, Total (7440-28-0)	☐	☐	☒												
13M Zinc, Total (7440-66-6)	☐	☐	☒												
14M Cyanide, Total (57-12-5)	☐	☐	☒												
15M Phenols, Total	☐	☐	☒												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764--01-6)	☐	☐	☒	DESCRIBE RESULTS											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	☐	☐	☒												
2V Acrylonitrile (107-13-1)	☐	☐	☒												
3V Benzene (71-43-2)	☐	☐	☒												
4V Bis (Chloromethyl) Ether (542-88-1)	☐	☐	☒												
5V Bromoform (75-25-2)	☐	☐	☒												
6V Carbon Tetrachloride (56-23-5)	☐	☐	☒												
7V Chlorobenzene (108-90-7)	☐	☐	☒												
8V Chlorodibromomethane (124-48-1)	☐	☐	☒												
9V Chloroethane (75-00-3)	☐	☐	☒												
10V 2-Chloroethylvinyl Ether (110-75-8)	☐	☐	☒												
11V Chloroform (67-66-3)	☐	☐	☒												
12V Dichlorobromoethane (75-71-8)	☐	☐	☒												
13V Dichlorodifluoromethane (75-71-8)	☐	☐	☒												
14V 1,1-Dichloroethane (75-34-3)	☐	☐	☒												
15V 1,2-Dichloroethane (107-06-2)	☐	☐	☒												
16V 1,1-Dichloroethylene (75335-4)	☐	☐	☒												
17V 1,2-Dichloropropane (78-87-5)	☐	☐	☒												
18V 1,3-Dichloropropylene (542-76-6)	☐	☐	☒												
19V Ethylbenzene (100-41-4)	☐	☐	☒												
20V Methyl Bromide (74-83-9)	☐	☐	☒												
21V Methyl Chloride (74-87-3)	☐	☐	☒												

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CONTINUED FROM PAGE V-4

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *AL7210020742*

OUTFALL NUMBER: *DSN003*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS *(continued)*															
22 V Methylene Chloride (75-09-2)	☐	☐	☒												
23V 1,1,2,2-Tetra-Chloroethane (79-34-5)	☐	☐	☒												
24V Tetrachloro-ethylene (127-18-4)	☐	☐	☒												
25V Toluene (108-88-3)	☐	☐	☒												
26V 1,2-Trans-Dichloroethylene (156-60-5)	☐	☐	☒												
27V 1,1,1-Tri-chloroethane (71-55-6)	☐	☐	☒												
28V 1,1,2-Tri-chloroethane (79-00-5)	☐	☐	☒												
29V Trichloro-ethylene (79-01-6)	☐	☐	☒												
30V Trichloro-fluoromethane (75-69-4)	☐	☐	☒												
31V Vinyl Chloride (75-01-4)	☐	☐	☒												
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☐	☐	☒												
2A 2,4-Dichloro-phenol (120-83-2)	☐	☐	☒												
3A 2,4-Dimethyl-phenol (105-67-9)	☐	☐	☒												
4A 4,6-Dinitro-O-cresol (534-52-1)	☐	☐	☒												
5A 2,4-Dinitro-phenol (51-28-5)	☐	☐	☒												
6A 2-Nitro-phenol (88-75-5)	☐	☐	☒												
7A 4-Ntro-phenol (100-02-7)	☐	☐	☒												
8A P-Chloro-M-Cresol (59-50-7)	☐	☐	☒												
9A Penta-chlorophenol (87-86-5)	☐	☐	☒												
10A Phenol (10/-95-2)	☐	☐	☒												
11A 2,4,6-Tri-chlorophenol (88-06-2)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenphthene (83-32-9)	☐	☐	☒												
2B Acenaphtylene (208-96-8)	☐	☐	☒												
3B Anthracene (120-12-7)	☐	☐	☒												
4B Benzidine (92-87-5)	☐	☐	☒												
5B Benzo (a) Anthracene (56-55-3)	☐	☐	☒												
6B Benzo (a) Pyrene (50-32-8)	☐	☐	☒												
7B 3,4-Benzo-fluoranthene (205-99-2)	☐	☐	☒												
8B Benzo *(ghi)* Perylene (191-24-2)	☐	☐	☒												
9B Benzo *(k)* Fluoranthene (207-08-9)	☐	☐	☒												
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☐	☐	☒												
11B Bis *(2-Chloro-ethyl)* Ether (111-44-4)	☐	☐	☒												
12B Bis *(2-Chloroisepropyl)* Ether (102-60-1	☐	☐	☒												
13B Bis*(2-Ethyl-hexyl)* Phthalate (117-81-7)	☐	☐	☒												
14 B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	☐	☒												
15B Butyl Benzyl Phthalate (85-68-7)	☐	☐	☒												
16B 2-Chloro-naphthalene (91-68-7)	☐	☐	☒												
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	☐	☒												
18B Chrysene (218-01-9)	☐	☐	☒												
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☐	☐	☒												
20B 1,2-Dichloro-benzene (95-50-1)	☐	☐	☒												
21B 1,3-Dichloro-benzene (541-73-1)	☐	☐	☒												

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: AL7210020742

OUTFALL NUMBER: DSN003

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B 1,4-Dichlorobenzene (106-46-7)	☐	☐	☒												
23B 3,3'-Dichlorobenzidine (91-94-1)	☐	☐	☒												
24B Diethyl Phthalate (84-66-2)	☐	☐	☒												
25B Dimethyl Phthalate (131-11-3)	☐	☐	☒												
26B Di-N-Butyl Phthalate (131-11-3)	☐	☐	☒												
27B 2,4-Dinitrotoluene (121-14-2)	☐	☐	☒												
28B 2,6-Dinitrotoluene (606-20-2)	☐	☐	☒												
29B Di-N-Octyl Phthalate (117-84-0)	☐	☐	☒												
30B 1,2-Diphenylhydrazine *(as Azo-benzene)* (122-66-7)	☐	☐	☒												
31B Fluoranthene (206-44-0)	☐	☐	☒												
32B Fluorene (86-73-7)	☐	☐	☒												
33B Hexachlorobenzene (118-74-1)	☐	☐	☒												
34B Hexachlorobutadiene (87-68-3)	☐	☐	☒												
35B Hexachlorocyclopentadiene (77-47-4)	☐	☐	☒												
36B Hexachloroethane (67-72-1)	☐	☐	☒												
37B Indeno *(1,2,3-cd)* Pyrene (193-39-5)	☐	☐	☒												
38B Isophorone (78-59-1)	☐	☐	☒												
39B Napthalene (91-20-3)	☐	☐	☒												
40B Nitrobenzene (98-95-3)	☐	☐	☒												
41B N-Nitrosodimethylamine (62-75-9)	☐	☐	☒												
42B N-Nitrosdi-N-Propylamine (621-64-7)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)	☐	☐	☒												
44B Phenanthrene (85-01-/	☐	☐	☒												
45B Pyrene (129-00-0)	☐	☐	☒												
46B 1,2,4-Trichlorobenzene (120-82-1)	☐	☐	☒												
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☐	☐	☒												
2P β-Bhc (319-85-7)	☐	☐	☒												
4P γ-BHC (58-89-9)	☐	☐	☒												
5P δ-BHC (319-86-8)	☐	☐	☒												
6P Chlordane (57-74-9)	☐	☐	☒												
7P 4,4'-DDT (50-29-3)	☒	☐	☐	*0.956*	*3.765*			*0.1633*	*0.179*	*8*	*ug/l*	*g*			
8P 4,4'-DDE (72-55-9)	☐	☐	☒												
9P 4,4'-DDD (72-54-8)	☐	☐	☒												
10P Dieldrin (60-57-1)	☐	☐	☒												
11P α-Endosulfan (115-29-7)	☐	☐	☒												
12P β-Endosulfan (115-29-7	☐	☐	☒												
13P Endosulfan Sulfate (1031-07-8)	☐	☐	☒												
14P Endrin (72-20-8)	☐	☐	☒												
15P Endrin Aldehyde (7421-93-4)	☐	☐	☒												
16P Heptachlor (76-44-8)	☐	☐	☒												

CONTINUE ON PAGE V-9

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EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *AL7210020742*

OUTFALL NUMBER: *DSN003*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES *(continued)*															
17P Heptachlor Expxide (1024-57-3)	☐	☐	☒												
18P PCB-1242 (53469-21-9)	☐	☐	☒												
19P PCB-1254 (11097-69-1)	☐	☐	☒												
20P PCB-1221 (11104-28-2)	☐	☐	☒												
21P PCB-1232 (11141-16-5)	☐	☐	☒												
22P PCB-1248 (12672-29-6)	☐	☐	☒												
23P PCB-1260 (11096-82-5)	☐	☐	☒												
24P PCB-1016 (12674-11-2)	☐	☐	☒												
25P Toxaphene (8001-35-2)	☐	☐	☒												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
AL7210020742

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		b. NO. OF ANALYSES
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand *(BOD)*												
b. Chemical Oxygen Demand *(COD)*	***NODI***											
c. Total Organic Carbon *(TOC)*												
d. Total Suspended Solids *(TSS)*	***NODI***											
e. Ammonia *(as N)*												
f. Flow	Value		Value		Value					Value		
g. Temperature *(winter)*	Value		Value		Value			°C		Value		
h. Temperature *(summer)*	Value		Value		Value			°C		Value		
i. pH	Minimum	Maximum	Minimum	Maximum				STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		b. NO. OF ANALYSES
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	☐	☒												
b. Chlorine, Total Residual	☐	☒												
c. Color	☐	☒												
d. Fecal Coliform	☐	☒												
e. Fluoride (16984-48-8)	☐	☒												
f. Nitrate-Nitrite *(as N)*	☐	☒												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic *(as N)*	☐	☒												
h. Oil and Grease	☐	☒												
i. Phosphorus *(as P)*, Total (7723-14-0)	☐	☒												
j. Radioactivity														
(1) Alpha, Total	☐	☒												
(2) Beta, Total	☐	☒												
(3) Radium, Total	☐	☒												
(4) Radium 226, Total	☐	☒												
k. Sulfate *(as SO_4)* (14808-79-8)	☐	☒												
l. Sulfide (as S)	☐	☒												
m. Sulfite *(as SO_3)* (14265-45-3)	☐	☒												
n. Surfactants	☐	☒												
o. Aluminum, Total (7429-90-5)	☐	☒												
p. Barium, Total (7440-39-3)	☐	☒												
q. Boron, Total (7440-42-8)	☐	☒												
r. Cobalt, Total (7440-48-4)	☐	☒												
s. Iron, Total (7439-89-4)	☐	☒												
t. Magnesium, Total (7439-95-4)	☐	☒												
u. Molybdenum, Total (7439-98-7)	☐	☒												
v. Manganese, Total (7439-96-5)	☐	☒												
w. Tin, Total (7440-31-5)	☐	☒												
x. Titanium, Total (7440-32-6)	☐	☒												

CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	*DSN005*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☐	☐	☒												
2M. Arsenic, Total (7440-38-2)	☐	☐	☒												
3M. Beryllium, Total (7440-41-7)	☐	☐	☒												
4M. Cadmium, Total (7440-43-9)	☐	☐	☒												
5M Chromium, Total (7440-47-3)	☐	☐	☒												
6M Copper, Total (7440-50-8)	☐	☐	☒												
7M lead, Total (7439-92-1)	☐	☐	☒												
8M Mercury, Total (7439-97-6)	☐	☐	☒												
9M Nickel, Total (7440-02-0)	☐	☐	☒												
10M Selenium, Total (7782-49-2)	☐	☐	☒												
11M Silver, Total (7440-22-4)	☐	☐	☒												
12M Thallium, Total (7440-28-0)	☐	☐	☒												
13M Zinc, Total (7440-66-6)	☐	☐	☒												
14M Cyanide, Total (57-12-5)	☐	☐	☒												
15M Phenols, Total	☐	☐	☒												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764--01-6)	☐	☐	☒	DESCRIBE RESULTS											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V Acrolein (107-02-8)	☐	☐	☒												
2V Acrylonitrile (107-13-1)	☐	☐	☒												
3V Benzene (71-43-2)	☒	☐	☐	***NODI***											
4V Bis (Chloromethyl) Ether (542-88-1)	☐	☐	☒												
5V Bromoform (75-25-2)	☐	☐	☒												
6V Carbon Tetrachloride (56-23-5)	☐	☐	☒												
7V Chlorobenzene (108-90-7)	☐	☐	☒												
8V Chlorodibromomethane (124-48-1)	☐	☐	☒												
9V Chloroethane (75-00-3)	☐	☐	☒												
10V 2-Chloroethylvinyl Ether (110-75-8)	☐	☐	☒												
11V Chloroform (67-66-3)	☐	☐	☒												
12V Dichlorobromoethane (75-71-8)	☐	☐	☒												
13V Dichlorodifluoromethane (75-71-8)	☐	☐	☒												
14V 1,1-Dichloroethane (75-34-3)	☐	☐	☒												
15V 1,2-Dichloroethane (107-06-2)	☐	☐	☒												
16V 1,1-Dichloroethylene (75335-4)	☐	☐	☒												
17V 1,2-Dichloropropane (78-87-5)	☐	☐	☒												
18V 1,3-Dichloropropylene (542-75-6)	☐	☐	☒												
19V Ethylbenzene (100-41-4)	☒	☐	☐	***NODI***											
20V Methyl Bromide (74-83-9)	☐	☐	☒												
21V Methyl Chloride (74-87-3)	☐	☐	☒												

CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	*DSN005*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS *(continued)*															
22V Methylene Chloride (75-09-2)	☐	☐	☒												
23V 1,1,2,2-Tetrachloroethane (79-34-5)	☐	☐	☒												
24V Tetrachloroethylene (127-18-4)	☐	☐	☒												
25V Toluene (108-88-3)	☒	☐	☐	*NODI*											
26V 1,2-Trans-Dichloroethylene (156-60-5)	☐	☐	☒												
27V 1,1,1-Trichloroethane (71-55-6)	☐	☐	☒												
28V 1,1,2-Trichloroethane (79-00-5)	☐	☐	☒												
29V Trichloroethylene (79-01-6)	☐	☐	☒												
30V Trichlorofluoromethane (75-69-4)	☐	☐	☒												
31V Vinyl Chloride (75-01-4)	☐	☐	☒												
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☐	☐	☒												
2A 2,4-Dichlorophenol (120-83-2)	☐	☐	☒												
3A 2,4-Dimethylphenol (105-67-9)	☐	☐	☒												
4A 4,6-Dinitro-O-cresol (534-52-1)	☐	☐	☒												
5A 2,4-Dinitrophenol (51-28-5)	☐	☐	☒												
6A 2-Nitrophenol (88-75-5)	☐	☐	☒												
7A 4-Nitrophenol (100-02-7)	☐	☐	☒												
8A P-Chloro-M-Cresol (59-50-7)	☐	☐	☒												
9A Pentachlorophenol (87-86-5)	☐	☐	☒												
10A Phenol (108-95-2)	☐	☐	☒												
11A 2,4,6-Trichlorophenol (88-06-2)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenaphthene (83-32-9)	☐	☐	☒												
2B Acenaphthylene (208-96-8)	☐	☐	☒												
3B Anthracene (120-12-7)	☐	☐	☒												
4B Benzidine (92-87-5)	☐	☐	☒												
5B Benzo (a) Anthracene (56-55-3)	☐	☐	☒												
6B Benzo (a) Pyrene (50-32-8)	☐	☐	☒												
7B 3,4-Benzo-fluoranthene (205-99-2)	☐	☐	☒												
8B Benzo *(ghi)* Perylene (191-24-2)	☐	☐	☒												
9B Benzo *(k)* Fluoranthene (207-08-9)	☐	☐	☒												
10B Bis *(2-Chloroethoxy)* Methane (111-91-1)	☐	☐	☒												
11B Bis (2-Chloro-ethyl) Ether (111-44-4)	☐	☐	☒												
12B Bis *(2-Chloroisopropyl)* Ether (102-60-1	☐	☐	☒												
13B Bis*(2-Ethyl-hexyl)* Phthalate (117-81-7)	☐	☐	☒												
14 B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	☐	☒												
15B Butyl Benzyl Phthalate (85-68-7)	☐	☐	☒												
16B 2-Chloro-naphthalene (91-58-7)	☐	☐	☒												
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	☐	☒												
18B Chrysene (218-01-9)	☐	☐	☒												
19B Dibenzo *(a,h)* Anthracene (53-70-3)	☐	☐	☒												
20B 1,2-Dichloro-benzene (95-50-1)	☐	☐	☒												
21B 1,3-Dichloro-benzene (541-73-1)	☐	☐	☒												

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: **AL7210020742**

OUTFALL NUMBER: **DSN005**

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B 1,4-Dichlorobenzene (106-46-7)	☐	☐	☒												
23B 3,3'-Dichlorobenzidine (91-94-1)	☐	☐	☒												
24B Diethyl Phthalate (84-66-2)	☐	☐	☒												
25B Dimethyl Phthalate (131-11-3)	☐	☐	☒												
26B Di-N-Butyl Phthalate (131-11-3)	☐	☐	☒												
27B 2,4-Dinitrotoluene (121-14-2)	☐	☐	☒												
28B 2,6-Dinitrotoluene (606-20-2)	☐	☐	☒												
29B Di-N-Octyl Phthalate (117-84-0)	☐	☐	☒												
30B 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	☐	☐	☒												
31B Fluoranthene (206-44-0)	☐	☐	☒												
32B Fluorene (86-73-7)	☐	☐	☒												
33B Hexachlorobenzene (118-74-1)	☐	☐	☒												
34B Hexachlorobutadiene (87-68-3)	☐	☐	☒												
35B Hexachlorocyclopentadiene (77-47-4)	☐	☐	☒												
36B Hexachloroethane (67-72-1)	☐	☐	☒												
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☐	☐	☒												
38B Isophorone (78-59-1)	☐	☐	☒												
39B Naphthalene (91-20-3)	☐	☐	☒												
40B Nitrobenzene (98-95-3)	☐	☐	☒												
41B N-Nitrosodimethylamine (62-75-9)	☐	☐	☒												
42B N-Nitrosodi-N-Propylamine (621-64-7)	☐	☐	☒												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)	☐	☐	☒												
44B Phenanthrene (85-01-8)	☐	☐	☒												
45B Pyrene (129-00-0)	☐	☐	☒												
46B 1,2,4-Trichlorobenzene (120-82-1)	☐	☐	☒												
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☐	☐	☒												
2P α-BHC (319-85-7)	☐	☐	☒												
4P β-BHC (58-89-9)	☐	☐	☒												
5P δ-BHC (319-86-8)	☐	☐	☒												
6P Chlordane (57-74-9)	☐	☐	☒												
7P 4,4'-DDT (50-29-3)	☒	☐	☐	***NODI***											
8P 4,4'-DDE (72-55-9)	☐	☐	☒												
9P 4,4'-DDD (72-54-8)	☐	☐	☒												
10P Dieldrin (60-57-1)	☐	☐	☒												
11P α-Endosulfan (115-29-7)	☐	☐	☒												
12P β-Endosulfan (115-29-7	☐	☐	☒												
13P Endosulfan Sulfate (1031-07-8)	☐	☐	☒												
14P Endrin (72-20-8)	☐	☐	☒												
15P Endrin Aldehyde (7421-93-4)	☐	☐	☒												
16P Heptachlor (76-44-8)	☐	☐	☒												

CONTINUE ON PAGE V-9

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	***DSN005***

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES *(continued)*															
17P Heptachlor Expxide (1024-57-3)	☐	☐	☒												
18P PCB-1242 (53469-21-9)	☐	☐	☒												
19P PCB-1254 (11097-69-1)	☐	☐	☒												
20P PCB-1221 (11104-28-2)	☐	☐	☒												
21P PCB-1232 (11141-16-5)	☐	☐	☒												
22P PCB-1248 (12672-29-6)	☐	☐	☒												
23P PCB-1260 (11096-82-5)	☐	☐	☒												
24P PCB-1016 (12674-11-2)	☐	☐	☒												
25P Toxaphene (8001-35-2)	☐	☐	☒												

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
AL7210020742

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand *(BOD)*												
b. Chemical Oxygen Demand *(COD)*	***NODI***											
c. Total Organic Carbon *(TOC)*												
d. Total Suspended Solids *(TSS)*	***NODI***											
e. Ammonia *(as N)*												
f. Flow	Value		Value		Value					Value		
g. Temperature *(winter)*	Value		Value		Value			°C		Value		
h. Temperature *(summer)*	Value		Value		Value			°C		Value		
i. pH	Minimum	Maximum	Minimum	Maximum				STANDARD UNTIS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitation guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	☐	☒												
b. Chlorine, Total Residual	☐	☒												
c. Color	☐	☒												
d. Fecal Coliform	☐	☒												
e. Fluoride (16984-48-8)	☐	☒												
f. Nitrate-Nitrite *(as N)*	☐	☒												

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic *(as N)*	☐	☒												
h. Oil and Grease	☐	☒												
i. Phosphorus *(as P)*, Total (7723-14-0)	☐	☒												
j. Radioactivity														
(1) Alpha, Total	☐	☒												
(2) Bets, Total	☐	☒												
(3) Radium, Total	☐	☒												
(4) Radium 226, Total	☐	☒												
k. Sulfate *(as SO_4)* *(14808-79-8)*	☐	☒												
l. Sulfide (as S)	☐	☒												
m. Sulfite *(as SO_3)(14265-45-3)*	☐	☒												
n. Surfactants	☐	☒												
o. Aluminum, Total (7429-90-5)	☐	☒												
p. Barium, Total (7440-39-3)	☐	☒												
q. Boron, Total (7440-42-8)	☐	☒												
r. Cobalt, Total (7440-48-4)	☐	☒												
s. Iron, Total (7439-89-4)	☐	☒												
t. Magnesium, Total (7439-95-4)	☐	☒												
u. Molybdenum, Total (7439-98-7)	☐	☒												
v. Manganese, Total (7439-96-5)	☐	☒												
w. Tin, Total (7440-31-5)	☐	☒												
x. Titanium, Total (7440-32-6)	☐	☒												

CONTINUE ON PAGE V-3

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	*DSN075*

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant. If you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS			a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCENTRATION	b. MASS	(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1m. Antimony, Total (7440-36-0)	☐	☐	☒												
2M. Arsenic, Total (7440-38-2)	☐	☐	☒												
3M. Beryllium, Total (7440-41-7)	☐	☐	☒												
4M. Cadmium, Total (7440-43-9)	☐	☐	☒												
5M Chromium, Total (7440-47-3)	☐	☐	☒												
6M Copper, Total (7440-50-8)	☐	☐	☒												
7M lead, Total (7439-92-1)	☐	☐	☒												
8M Mercury, Total (7439-97-6)	☐	☐	☒												
9M Nickel, Total (7440-02-0)	☐	☐	☒												
10M Selenium, Total (7782-49-2)	☐	☐	☒												
11M Silver, Total (7440-22-4)	☐	☐	☒												
12M Thallium, Total (7440-28-0)	☐	☐	☒												
13M Zinc, Total (7440-66-6)	☐	☐	☒												
14M Cyanide, Total (57-12-5)	☐	☐	☒												
15M Phenols, Total	☐	☐	☒												
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764--01-6)	☐	☐	☒	DESCRIBE RESULTS											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS															
1V Acrolein (107-02-8)	☐	☐	☒												
2V Acrylonitrile (107-13-1)	☐	☐	☒												
3V Benzene (71-43-2)	☒	☐	☐	***NODI***											
4V Bis (Chloromethyl) Ether (542-88-1)	☐	☐	☒												
5V Bromoform (75-25-2)	☐	☐	☒												
6V Carbon Tetrachloride (56-23-5)	☐	☐	☒												
7V Chlorobenzene (108-90-7)	☐	☐	☒												
8V Chlorodibromomethane (124-48-1)	☐	☐	☒												
9V Chloroethane (75-00-3)	☐	☐	☒												
10V 2-Chloroethylvinyl Ether (110-75-8)	☐	☐	☒												
11V Chloroform (67-66-3)	☐	☐	☒												
12V Dichlorobromoethane (75-71-8)	☐	☐	☒												
13V Dichlorodifluoromethane (75-71-8)	☐	☐	☒												
14V 1,1-Dichloroethane (75-34-3)	☐	☐	☒												
15V 1,2-Dichloroethane (107-06-2)	☐	☐	☒												
16V 1,1-Dichloroethylene (75335-4)	☐	☐	☒												
17V 1,2-Dichloropropane (78-87-5)	☐	☐	☒												
18V 1,3-Dichloropropylene (542-75-6)	☐	☐	☒												
19V Ethylbenzene (100-41-4)	☒	☐	☐	***NODI***											
20V Methyl Bromide (74-83-9)	☐	☐	☒												
21V Methyl Chloride (74-87-3)	☐	☐	☒												

CONTINUE ON PAGE V-5

CONTINUED FROM PAGE V-4

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*	OUTFALL NUMBER
AL7210020742	*DSN075*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - VOLATILE COMPOUNDS *(continued)*															
22 V Methylene Chloride (75-09-2)	☐	☐	☒												
23V 1,1,2,2-Tetrachloroethane (79-34-5)	☐	☐	☒												
24V Tetrachloroethylene (127-18-4)	☐	☐	☒												
25V Toluene (108-88-3)	☒	☐	☐	*NODI*											
26V 1,2-Trans-Dichloroethylene (156-60-5)	☐	☐	☒												
27V 1,1,1-Trichloroethane (71-55-6)	☐	☐	☒												
28V 1,1,2-Trichloroethane (79-00-5)	☐	☐	☒												
29V Trichloroethylene (79-01-6)	☐	☐	☒												
30V Trichlorofluoromethane (75-69-4)	☐	☐	☒												
31V Vinyl Chloride (75-01-4)	☐	☐	☒												
GC/MS FRACTION - ACID COMPOUNDS															
1A 2-Chlorophenol (95-57-8)	☐	☐	☒												
2A 2,4-Dichlorophenol (120-83-2)	☐	☐	☒												
3A 2,4-Dimethylphenol (105-67-9)	☐	☐	☒												
4A 4,6-Dinitro-O-cresol (534-52-1)	☐	☐	☒												
5A 2,4-Dinitrophenol (51-28-5)	☐	☐	☒												
6A 2-Nitrophenol (88-75-5)	☐	☐	☒												
7A 4-Nitrophenol (100-02-7)	☐	☐	☒												
8A P-Chloro-M-Cresol (59-50-7)	☐	☐	☒												
9A Pentachlorophenol (87-86-5)	☐	☐	☒												
10A Phenol (108-95-2)	☐	☐	☒												
11A 2,4,6-Trichlorophenol (88-06-2)	☐	☐	☒												

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1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B Acenaphthene (83-32-9)	☐	☐	☒												
2B Acenaphthylene (208-96-8)	☐	☐	☒												
3B Anthracene (120-12-7)	☐	☐	☒												
4B Benzidine (92-87-5)	☐	☐	☒												
5B Benzo (a) Anthracene (56-55-3)	☐	☐	☒												
6B Benzo (a) Pyrene (50-32-8)	☐	☐	☒												
7B 3,4-Benzo-fluoranthene (205-99-2)	☐	☐	☒												
8B Benzo (*ghi*) Perylene (191-24-2)	☐	☐	☒												
9B Benzo (*k*) Fluoranthene (207-08-9)	☐	☐	☒												
10B Bis (2-Chloroethoxy) Methane (111-91-1)	☐	☐	☒												
11B Bis (2-Chloroethyl) Ether (111-44-4)	☐	☐	☒												
12B Bis (2-Chloroisopropyl) Ether (108-60-1)	☐	☐	☒												
13B Bis(2-Ethyl-hexyl) Phthalate (117-81-7)	☐	☐	☒												
14B 4-Bromo-phenyl Phenyl Ether (101-55-3)	☐	☐	☒												
15B Butyl Benzyl Phthalate (85-68-7)	☐	☐	☒												
16B 2-Chloro-naphthalene (91-58-7)	☐	☐	☒												
17B 4-Chloro-phenyl Phenyl Ether (7005-72-3)	☐	☐	☒												
18B Chrysene (218-01-9)	☐	☐	☒												
19B Dibenzo (*a,h*) Anthracene (53-70-3)	☐	☐	☒												
20B 1,2-Dichloro-benzene (95-50-1)	☐	☐	☒												
21B 1,3-Dichloro-benzene (541-73-1)	☐	☐	☒												

CONTINUED FROM PAGE V-6

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *AL7210020742*

OUTFALL NUMBER: *DSN075*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - BASE/NEUTRAL COMPOUNDS *(continued)*															
22B 1,4-Dichlorobenzene (106-46-7)	☐	☐	☒												
23B 3,3'-Dichlorobenzidine (91-94-1)	☐	☐	☒												
24B Diethyl Phthalate (84-66-2)	☐	☐	☒												
25B Dimethyl Phthalate (131-11-3)	☐	☐	☒												
26B Di-N-Butyl Phthalate (131-11-3)	☐	☐	☒												
27B 2,4-Dinitrotoluene (121-14-2)	☐	☐	☒												
28B 2,6-Dinitrotoluene (606-20-2)	☐	☐	☒												
29B Di-N-Octyl Phthalate (117-84-0)	☐	☐	☒												
30B 1,2-Diphenylhydrazine (as *Azobenzene*) (122-66-7)	☐	☐	☒												
31B Fluoranthene (206-44-0)	☐	☐	☒												
32B Fluorene (86-73-7)	☐	☐	☒												
33B Hexachlorobenzene (118-74-1)	☐	☐	☒												
34B Hexachlorobutadiene (87-68-3)	☐	☐	☒												
35B Hexachlorocyclopentadiene (77-47-4)	☐	☐	☒												
36B Hexachloroethane (67-72-1)	☐	☐	☒												
37B Indeno (1,2,3-cd) Pyrene (193-39-5)	☐	☐	☒												
38B Isophorone (78-59-1)	☐	☐	☒												
39B Naphthalene (91-20-3)	☐	☐	☒												
40B Nitrobenzene (98-95-3)	☐	☐	☒												
41B N-Nitrosodimethylamine (62-75-9)	☐	☐	☒												
42B N-Nitrosodi-N-Propylamine (621-64-7)	☐	☐	☒												

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1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSIS	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS *(continued)*															
43B N-Nitrosodiphenylamine (86-30-6)	☐	☐	☒												
44B Phenanthrene (85-01-8)	☐	☐	☒												
45B Pyrene (129-00-0)	☐	☐	☒												
46B 1,2,4-Trichlorobenzene (120-82-1)	☐	☐	☒												
GC/MS FRACTION - PESTICIDES															
1P Aldrin (309-00-2)	☐	☐	☒												
2P β-BHC (319-85-7)	☐	☐	☒												
4P γ-BHC (58-89-9)	☐	☐	☒												
5P δ-BHC (319-86-8)	☐	☐	☒												
6P Chlordane (57-74-9)	☐	☐	☒												
7P 4,4'-DDT (50-29-3)	☒	☐	☐	***NODI***											
8P 4,4'-DDE (72-55-9)	☐	☐	☒												
9P 4,4'-DDD (72-54-8)	☐	☐	☒												
10P Dieldrin (60-57-1)	☐	☐	☒												
11P α-Endosulfan (115-29-7)	☐	☐	☒												
12P β-Endosulfan (115-29-7	☐	☐	☒												
13P Endosulfan Sulfate (1031-07-8)	☐	☐	☒												
14P Endrin (72-20-8)	☐	☐	☒												
15P Endrin Aldehyde (7421-93-4)	☐	☐	☒												
16P Heptachlor (76-44-8)	☐	☐	☒												

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CONTINUED FROM PAGE V-6

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: *AL7210020742*

OUTFALL NUMBER: *DSN075*

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'			2. EFFLUENT						d. NO. OF ANALYSIS	3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*			a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS - PESTICIDES *(continued)*															
17P Heptachlor Epoxide (1024-57-3)	☐	☐	☒												
18P PCB-1242 (53469-21-9)	☐	☐	☒												
19P PCB-1254 (11097-69-1)	☐	☐	☒												
20P PCB-1221 (11104-28-2)	☐	☐	☒												
21P PCB-1232 (11141-16-5)	☐	☐	☒												
22P PCB-1248 (12672-29-6)	☐	☐	☒												
23P PCB-1260 (11096-82-5)	☐	☐	☒												
24P PCB-1016 (12674-11-2)	☐	☐	☒												
25P Toxaphene (8001-35-2)	☐	☐	☒												

Please print or type in the unshaded areas only.	EPA ID Number (copy from Item 1 of Form 1)	Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 2E NPDES

EPA Facilities Which Do Not Discharge Process Wastewater

I. RECEIVING WATERS

For this outfall, list the latitude and longitude, and name of the receiving water(s).

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
DSN027	34.0(	35.0(	39.0(	86.0(	37.0(	7.00	Unnamed tributary to Tennessee River

II. DISCHARGE DATE *(If a new discharger, the date you expect to begin discharging)*

III. TYPE OF WASTE

A. Check the box(es) indicating the general type(s) of wastes discharged.

☐ Sanitary Wastes ☐ Restaurant or Cafeteria Wastes ☑ Noncontact Cooling Water ☐ Other Nonprocess Wastewater *(Identify)*

B. If any cooling water additives are used, list them here. Briefly describe their composition if this information is available.

N/A

IV. EFFLUENT CHARACTERISTICS

A. Existing Sources — Provide measurements for the parameters listed in the left-hand column below, unless waived by the permitting authority *(see instructions)*.

B. New Dischargers — Provide estimates for the parameters listed in the left-hand column below, unless waived by the permitting authority. Instead of the number of measurements taken, provide the source of estimated values *(see instructions)*.

Pollutant or Parameter	(1) Maximum Daily Value *(include units)*		(2) Average Daily Value *(last year)* *(include units)*		(3) Number of Measurements Taken *(last year)*	(or) (4) Source of Estimate *(if new discharger)*
	Mass	Concentration	Mass	Concentration		
Biochemical Oxygen Demand (BOD)						
Total Suspended Solids (TSS)						
Fecal Coliform *(if believed present or if sanitary waste is discharged)*						
Total Residual Chlorine *(if chlorine is used)*	87.39	<0.05 mg/l	34.14	<0.05	4.00	
Oil and Grease						
*Chemical oxygen demand (COD)						
*Total organic carbon (TOC)						
Ammonia *(as N)*						
Discharge Flow	Value 0.462		0.1805		4.00	
pH *(give range)*	Value					
Temperature *(Winter)*	17.40 °C		20.40 °C		4.00	
Temperature *(Summer)*	27.90 °C		26.80 °C		4.00	

*If noncontact cooling water is discharged

V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? ☐ Yes ☑ No

If yes, briefly describe the frequency of flow and duration.

VI. TREATMENT SYSTEM *(Describe briefly any treatment system(s) used or to be used)*

N/A

VII. OTHER INFORMATION *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title	B. Phone No. *(area code & no.)*
COL. Kelsey A. Smith, Garrison Commander	(256) 876-8861
C. Signature	D. Date Signed
	28 SEP 2018

Please print or type in the unshaded areas only.

EPA ID Number (copy from Item 1 of Form 1)

Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 2E NPDES

EPA Facilities Which Do Not Discharge Process Wastewater

I. RECEIVING WATERS

For this outfall, list the latitude and longitude, and name of the receiving water(s).

Outfall Number (list)	Latitude			Longitude			Receiving Water (name)
	Deg	Min	Sec	Deg	Min	Sec	
See Sec.VII							See Form 2E Attachment 1 - Outfall Location & Receiving Waters.

II. DISCHARGE DATE *(If a new discharger, the date you expect to begin discharging)*

III. TYPE OF WASTE

A. Check the box(es) indicating the general type(s) of wastes discharged.

☐ Sanitary Wastes ☐ Restaurant or Cafeteria Wastes ☐ Noncontact Cooling Water ☑ Other Nonprocess Wastewater *(Identify)*

B. If any cooling water additives are used, list them here. Briefly describe their composition if this information is available.

N/A

IV. EFFLUENT CHARACTERISTICS

A. Existing Sources — Provide measurements for the parameters listed in the left-hand column below, unless waived by the permitting authority *(see instructions)*.

B. New Dischargers — Provide estimates for the parameters listed in the left-hand column below, unless waived by the permitting authority. Instead of the number of measurements taken, provide the source of estimated values *(see instructions)*.

Pollutant or Parameter	(1) Maximum Daily Value *(include units)*		(2) Average Daily Value *(last year)* *(include units)*		(3) Number of Measurements Taken *(last year)*	(or) (4) Source of Estimate *(if new discharger)*
	Mass	Concentration	Mass	Concentration		
Biochemical Oxygen Demand (BOD)						
Total Suspended Solids (TSS)						
Fecal Coliform *(if believed present or if sanitary waste is discharged)*						
Total Residual Chlorine *(if chlorine is used)*	NODI	NODI			0.00	
Oil and Grease						
*Chemical oxygen demand (COD)						
*Total organic carbon (TOC)						
Ammonia *(as N)*						
Discharge Flow	Value NODI				0.00	
pH *(give range)*	Value					
Temperature *(Winter)*		°C		°C		
Temperature *(Summer)*		°C		°C		

*If noncontact cooling water is discharged

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V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? ☐ Yes ☑ No

If yes, briefly describe the frequency of flow and duration.

VI. TREATMENT SYSTEM *(Describe briefly any treatment system(s) used or to be used)*

N/A

VII. OTHER INFORMATION *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

These designated outfalls are for water runoff from Potable/Industrial tanks releases. As of 2016, eight Potable/Industrial tanks were demoed - Tank#1,DSN31;Tank#12,DSN42;Tank#5,DSN52;Tank#7,DSN44; Tank#4,DSN50;Tank#6,DSN53;Tank#2,DSN39& Tank#3,DSN37.

The remaing water storage tanks with designated numbers to be permitted are as follows: Tank#14,DSN32;Tank8,DSN33;Tank#4668,DSN34;Tank#15,DSN35;Tank#4800,DSN36;Tank#4669,DSN38; Tank#4562,DSN40;Tank#15a,DSN41;Tank#4552,DSN43;Tank#11,DSN45;Tank#16,DSN46;Tank#13,DSN47; Tank#10,DSN48;Tank#9,DSN49;Tank#17,DSN51;Tank#Goss Road Pump Station,DSN54.

Sixsteen outfalls remaining to be permitted and are as follows: DSN032,033,034,035,036,038,040,041,043,045,046,047,048,049,051&054.

See Potable/Industrial tank map in Figure # 4 - Above Ground Water Tank Locations

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title	B. Phone No. *(area code & no.)*
COL. Kelsey A. Smith, Garrison Commander	(256) 876-8861
C. Signature	D. Date Signed
	28 SEP 2018

Please print or type in the unshaded areas only.

EPA ID Number (copy from Item 1 of Form 1)

Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 2E NPDES

EPA Facilities Which Do Not Discharge Process Wastewater

I. RECEIVING WATERS

For this outfall, list the latitude and longitude, and name of the receiving water(s).

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
DSN074	34.0(	56.0(	54.0(	86.0(	39.0(	56.0(	Unnamed tributary to Huntsville Spring Branch

II. DISCHARGE DATE *(If a new discharger, the date you expect to begin discharging)*

III. TYPE OF WASTE

A. Check the box(es) indicating the general type(s) of wastes discharged.

☐ Sanitary Wastes ☐ Restaurant or Cafeteria Wastes ☑ Noncontact Cooling Water ☑ Other Nonprocess Wastewater *(Identify)*

B. If any cooling water additives are used, list them here. Briefly describe their composition if this information is available.

N/A

IV. EFFLUENT CHARACTERISTICS

A. **Existing Sources** — Provide measurements for the parameters listed in the left-hand column below, unless waived by the permitting authority *(see instructions)*.

B. **New Dischargers** — Provide estimates for the parameters listed in the left-hand column below, unless waived by the permitting authority. Instead of the number of measurements taken, provide the source of estimated values *(see instructions)*.

Pollutant or Parameter	(1) Maximum Daily Value *(include units)*		(2) Average Daily Value *(last year)* *(include units)*		(3) Number of Measurements Taken *(last year)*	*(or)* (4) Source of Estimate *(if new discharger)*
	Mass	Concentration	Mass	Concentration		
Biochemical Oxygen Demand (BOD)						
Total Suspended Solids (TSS)	NODI	NODI			0.00	
Fecal Coliform *(if believed present or if sanitary waste is discharged)*						
Total Residual Chlorine *(if chlorine is used)*	NODI	NODI			0.00	
Oil and Grease	NODI	NODI			0.00	
*Chemical oxygen demand (COD)	NODI	NODI			0.00	
*Total organic carbon (TOC)						
Ammonia *(as N)*						
Discharge Flow	Value NODI				0.00	
pH *(give range)*	Value					
Temperature *(Winter)*		°C		°C		
Temperature *(Summer)*		°C		°C		

*If noncontact cooling water is discharged

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V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? ☑ Yes ☐ No

If yes, briefly describe the frequency of flow and duration.

This discharge consists of non-contact cooling water and stormwater runoff from maintenace shop and equipment storage yard. The water runoff from this outfall is accumulated in a dike-pond (Man-made pond), in order to hold water in the pond. The dike is equipped with a mechanical float switch that turns the pump on and off in response to the water level in the pond.

VI. TREATMENT SYSTEM *(Describe briefly any treatment system(s) used or to be used)*

N/A

VII. OTHER INFORMATION *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title	B. Phone No. *(area code & no.)*
COL. Kelsey A. Smith, Garrison Commander	(256) 876-8861
C. Signature	D. Date Signed
	01 OCT 18

Form 2E Attachment 1 - Outfall Locations and Receiving Waters

Outfall Number	Latitude			Longitude			Receiving Waters
	deg	min	sec	deg	min	sec	
DSN-001	34	37	32	86	38	21	Tributary to Huntsville Spring Branch
DSN-002	34	33	56	86	38	28	Unnamed tributary to Tennessee River
DSN-003	34	40	31	86	40	54	Unnamed tributary to Indian Creek
DSN-005	34	37	55	86	38	37	Huntsville Spring Branch
DSN-010	34	40	10	86	40	32	Tributary to Indian Creek
DSN-011	34	37	40	86	38	40	Tributary to Huntsville Spring Branch
DSN-013	34	37	39	86	38	52	Huntsville Spring Branch
DSN-015	34	34	20	86	39	59	Tributary to Tennessee River
DSN-016	34	34	13	86	39	38	Tributary to Tenessee River
DSN-017	34	35	43	86	36	41	Tributary to Tenessee River
DSN-020	34	38	1	86	38	19	Tributary to Huntville Spring Branch
DSN-021	34	38	28	86	38	1	Tributary to Huntsville Spring Branch
DSN-022	34	39	52	86	37	46	Tributary to McDonald Creek
DSN-027	34	53	39	86	37	7	Tributary to Tenessee River
DSN-032	34	39	51	86	38	60	Unnamed tributary to Huntsville Spring Branch
DSN-033	34	41	35	86	38	40	Tributary to McDonald Creek
DSN-034	34	37	51	86	40	6	Unnamed tributary to Huntsville Spring Branch
DSN-035	34	35	9	86	40	54	Tributary to Tenessee River
DSN-036	34	40	36	86	40	54	Unnamed tributary to Indian Creek
DSN-038	34	37	51	86	40	2	Unnamed tributary to Huntsville Spring Branch
DSN-040	34	37	51	86	39	48	Unnamed tributary to Huntsville Spring Branch
DSN-041	34	35	12	86	40	54	Tributary to Tenessee River
DSN-043	34	37	51	86	39	47	Tributary to Huntsville Spring Branch
DSN-045	34	34	15	86	38	20	Tributary to Tenessee River
DSN-046	34	34	35	86	37	11	Tributary to Tenessee River
DSN-047	34	37	13	86	37	49	Tributary to Tenessee River
DSN-048	34	39	56	86	39	19	Tributary to Huntsville Spring Branch
DSN-049	34	42	10	86	39	18	Tributary to Indian Creek
DSN-051	34	38	22	86	38	2	Tributary to Huntsville Spring Branch
DSN-054	34	41	36	86	38	40	Unnamed tributary to Indian Creek
DSN-057	34	42	31	86	37	47	Tributary to McDonald Creek
DSN-058	34	42	11	86	37	53	Tributary to McDonald Creek
DSN-059	34	41	39	86	37	49	Tributary to McDonald Creek
DSN-060	34	40	30	86	42	18	Tributary to Indian Creek
DSN-061	34	40	22	86	37	14	Tributary to McDonald Creek
DSN-062	34	39	8	86	42	30	Tributary to Indian Creek
DSN-063	34	37	32	86	39	10	Tributary to Indian Creek
DSN-064	34	37	34	86	39	11	Tributary to Huntsville Spring Branch
DSN-068	34	35	40	86	37	6	Unnamed tributary to Tennessee River
DSN-069	34	35	47	86	35	10	Unnamed tributary to Tennessee River

Form 2E Attachment 1 - Outfall Locations and Receiving Waters

Outfall Number	Latitude			Longitude			Receiving Waters
	deg	min	sec	deg	min	sec	
DSN-070	34	35	22	86	35	47	Unnamed tributary to Tennessee River
DSN-071	34	34	11	86	40	10	Unnamed tributary to Tennessee River
DSN-072	34	33	28	86	38	46	Unnamed tributary to Tennessee River
DSN-073	34	40	18	86	40	50	Unnamed tributary to Indian Creek
DSN-074	34	36	54	86	39	55	Unnamed tributary to Indian Creek
DSN-075	34	39	53	86	41	38	Unnamed tributary to Indian Creek
DSN-076	34	40	36	86	40	48	Unnamed tributary to Indian Creek
DSN-077	34	39	47	86	37	47	Tributary to McDonald Creek

Please print or type in the unshaded areas only.

EPA ID Number (*copy from Item 1 of Form 1*)
AL742002721

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

FORM 2F NPDES

U.S. Environmental Protection Agency
Washington, DC 20460

Application for Permit to Discharge Storm Water Discharges Associated with Industrial Activity

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (*list*)	B. Latitude			C. Longitude			D. Receiving Water (*name*)
DSN001-DSN005							See Form 2F Attachment 1- Outfall Locations and
DSN010-DSN13							Receiving waters
DSN020-DSN22							
DSN060-DSN064							
DSN066							
DSN068-DSN074							
DSN075-DSN077							

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
NA					

B: You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfalls(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage of disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which received storm water discharges from the facility.

Continue on Page 2

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of imperious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface *(provide units)*	Total Area Drained *(provide units)*	Outfall Number	Area of Impervious Surface *(provide units)*	Total Area Drained *(provide units)*
	See Form 2F Attachment 3- Area of Impervious Surfaces				

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas, and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

See Form 2F Attachment 2 - Narrative Description

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
	NA	

V. Nonstormwater Discharges

A. I certify under penalty of law hat the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharged from these outfall(s) are identified in either an accompanying Form 2C or From 2E application for the outfall.

Name and Official Title *(type or print)*	Signature	Date Signed
COL. Kelsey A.Smith		28 SEP 2018

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Visual observations of all points.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

NA

Continued from Page 2

EPA ID Number *(copy from Item 1 of Form 1)*

VII. Discharge Information

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Table VII-A, VII-B, VII-C are included on separate sheets numbers VII-1 and VII-2.

E. Potential discharges not covered by analysis – is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ Yes *(list all such pollutants below)* ☑ No *(go to Section IX)*

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes *(list all such pollutants below)* ☐ No *(go to Section IX)*

See Form 2C Attachemnt 1 - Chronic Biomonitoring Test Data

IX. Contract Analysis Information

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☑ Yes *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ No *(go to Section X)*

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Wolf Creek Federal Services	P.O. Box 8200 Redstone Arsenal, AL 35808	256-876-4062	Metals, Oil & Grease, DDT, BETX, VOCs, TCE, TCA, TSS, Naphthalene, pH, COD and BOD5.

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title *(Type Or Print)*	B. Area Code and Phone No.
COL. Kelsey A Smith, Garrison Commander	(256) 876-8861
C. Signature	D. Date Signed
	28 SEP 2018

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	NODI					DSN001
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	NODI					DSN001

Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		2.00	DSN002
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	42.9 mg/l		28.65 mg/l		2.00	DSN002
Total Suspended Solids (TSS)	18.0 mg/l		11.0 mg/l		2.00	DSN002
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.19	Maximum 7.26	Minimum 7.23	Maximum 7.26	2.00	DSN002

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Perchlorate	0.002 mg/l		0.002 mg/l		2.00	DSN002
Biomonitor	Pass		Pass		1.00	DSN002

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		8.00	DSN003
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	83.1 mg/l		22.21 mg/l		8.00	DSN003
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/l		8.00	DSN003
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.02	Maximum 8.56	Minimum 7.49	Maximum 8.56	8.00	DSN003

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.956 ug/l		0.163 ug/l		8.00	DSN003
BETX	2.0 ug/l		0.938 ug/l		8.00	DSN003
Naphthalene	20 ug/l		15.750 ug/l		8.00	DSN003
MTBE	5.0 ug/l		1.312 ug/l		8.00	DSN003
Phosphorous	0.8 mg/l		0.188 mg/l		8.00	DSN003

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN004
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN004
Total Suspended Solids (TSS)	NODI					DSN004
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		DSN004

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	NODI					DSN004
BETX	NODI					DSN004
Naphthalene	NODI					DSN004
MTBE	NODI					DSN004
Phosphorous	NODI					DSN004

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN005
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN005
Total Suspended Solids (TSS)	NODI					DSN005
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		DSN005

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	NODI					DSN005
BETX	NODI					DSN005
Naphthalene	NODI					DSN005
MTBE	NODI					DSN005
Phosphorous	NODI					DSN005

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN010
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN010
Total Suspended Solids (TSS)	NODI					DSN010
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		DSN010

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	NODI					DSN010
BETX	NODI					DSN010
Naphthalene	NODI					DSN010
MTBE	NODI					DSN010

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
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VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 ug/l	N/A	5.0 ug/l			DSN011
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	5.0 mg/l		5.0 mg/l			DSN011
Total Suspended Solids (TSS)	2.0 mg/l		2.0 mg/l			DSN011
Total Nitrogen						
Total Phosphorus						
pH	Minimum 6.74	Maximum 7.17	Minimum 6.86	Maximum 7.17		DSN011

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.05 mg/l		0.05 mg/l			DSN011
BETX	1.0 ug/l		1.0 ug/l			DSN011
Naphthalene	1.0 ug/l		1.0 ug/l			DSN011
MTBE	1.0 ug/l		1.0 ug/l			DSN011
TEMP	73.9 F		62.9 F			DSN011
TRC	0.05 mg/l		0.05 mg/l			DSN011

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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Form Approved. OMB No. 2040-0086
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.00 mg/l	N/A	5.00 mg/l		3.00	DSN013
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	42.40 mg/l		20.21 mg/l		3.00	DSN013
Total Suspended Solids (TSS)	18.00 mg/l		11.67 mg/l		3.00	DSN013
Total Nitrogen						
Total Phosphorus						
pH	Minimum 6.67	Maximum 7.58	Minimum 7.10	Maximum 7.58	3.00	DSN013

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.05 ug/l		0.05 ug/l		3.00	DSN013

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN015
Total Suspended Solids (TSS)	NODI					DSN015
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
TCETHY	NODI					DSN015
1,1,1-TCE	NODI					DSN015
1,1,2-TCE	NODI					DSN015
GC/MS	NODI					DSN015
CLO4	NODI					DSN015
NO3 & NO2	NODI					DSN015
TNT	NODI					DSN015
RDX	NODI					DSN015
Hg, T	NODI					DSN015

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN016
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN016
Total Suspended Solids (TSS)	NODI					DSN016
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
NO3 & NO2	NODI					DSN016
CLO4	NODI					DSN016
CL, T	NODI					DSN016
As, T	NODI					DSN016

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN017
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	NODI					DSN017
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
P, T	NODI					DSN017
Zinc	NODI					DSN017
Lead	NODI					DSN017
Cu, T	NODI					DSN017
Toluene	NODI					DSN017
TEMP	NODI					DSN017
TRC	NODI					DSN017
TDS	NODI					DSN017

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN020
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN020
Total Suspended Solids (TSS)	NODI					DSN020
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
P, T	NODI					DSN020
TEMP	NODI					DSN020
TDS	NODI					DSN020
TRC	NODI					DSN020
DDT	NODI					DSN020

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	23.5 mg/l		16.05 mg/l		4.00	DSN021
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/l		4.00	DSN021
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.16	Maximum 7.58	Minimum 7.41	Maximum 7.58	4.00	DSN021

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
P, T	0.377 mg/l		0.138		10.00	DSN021
TEMP	77.9 F		65.85 F		10.00	DSN021
TDS	187 mg/l		148 mg/l		10.00	DSN021
Arsenic	0.027 mg/l		0.036 mg/l		4.00	DSN021
DDT	0.050 ug/l		0.057 ug/l		4.00	DSN021
TRC	0.05 mg/l		0.05 mg/l		10.00	DSN021
Chlorides	20.0 mg/l		15.75 mg/l		4.00	DSN021

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

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VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	3.34 mg/l		3.00	DSN022
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	16.03 mg/l		12.71 mg/l		3.00	DSN022
Total Suspended Solids (TSS)	11 mg/l		5.33 mg/l		3.00	DSN022
Total Nitrogen						
Total Phosphorus						
pH	Minimum 6.83	Maximum 7.99	Minimum 7.59	Maximum 7.99	3.00	DSN022

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	1.0 mg/l		0.668 mg/l		3.00	DSN022
Naphthalene	2.0 ug/l		1.002 ug/l		3.00	DSN022
TEMP	55.7 F		55.7 F		1.00	DSN022
TRC	0.05mg/l		0.05mg/l		1.00	DSN022
TDS	233 mg/l		233 mg/l		1.00	DSN022

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
P, T	0.10 mg/l		0.10		10.00	DSN027
TEMP	82.3 F		70.47 F		10.00	DSN027
TRC	0.05 mg/l		0.05 mg/l		10.00	DSN027

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		1.00	DSN057
Biological Oxygen Demand (BOD5)						DSN057
Chemical Oxygen Demand (COD)	19.6 ug/l		19.6 ug/l		1.00	
Total Suspended Solids (TSS)	84 mg/l		84 mg/l		1.00	DSN057
Total Nitrogen						
Total Phosphorus						
pH	Minimum 8.68	Maximum 8.68	Minimum	Maximum	1.00	DSN057

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	1.0 ug/l		1.0 ug/l		1.00	DSN057

Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		1.00	DSN058
Biological Oxygen Demand (BOD5)						DSN058
Chemical Oxygen Demand (COD)	19.6 ug/l		19.6 ug/l		1.00	
Total Suspended Solids (TSS)	84 mg/l		84 mg/l		1.00	DSN058
Total Nitrogen						
Total Phosphorus						
pH	Minimum 8.68	Maximum 8.68	Minimum	Maximum	1.00	DSN058

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	1.0 ug/l		1.0 ug/l		1.00	DSN058

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		3.00	DSN059
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	47.0 ug/l		30.73 ug/l		3.00	DSN059
Total Suspended Solids (TSS)	12.0 mg/l		7.33 mg/l		3.00	DSN059
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.03	Maximum 7.79	Minimum 7.28	Maximum 7.79	3.00	DSN059

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	1.0 ug/l		1.0 ug/l		3.00	DSN059
MTBE	1.0 ug/l		1.0 ug/l		3.00	DSN059

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN060
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	NODI					DSN060
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Zinc, TR	NODI					DSN060
Cadmium, TR	NODI					DSN060
Lead, TR	NODI					DSN060
Copper, TR	NODI					DSN060
Mercury, TR	NODI					DSN060

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		1.00	DSN061
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	4.97 mg/l		4.97 mg/l		1.00	DSN061
Total Suspended Solids (TSS)	3.0 mg/l		3.0 mg/l		1.00	DSN061
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.45	Maximum 7.45	Minimum	Maximum	1.00	DSN061

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	1.0 ug/l		1.0 ug/l		1.00	DSN061
Naphthalene	1.0 ug/l		1.0 ug/l		1.00	DSN061

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN062
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	NODI					DSN062
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Zinc, TR	NODI					DSN062
Cadmium, TR	NODI					DSN062
Lead, TR	NODI					DSN062
Copper, TR	NODI					DSN062
Mercury, TR	NODI					DSN062

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		2.00	DSN063
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	38.1 mg/l		21.55 mg/l		2.00	DSN063
Total Suspended Solids (TSS)	63.0 mg/l		43.5 mg/l		2.00	DSN063
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.00	Maximum 8.38	Minimum 7.00	Maximum 7.69	2.00	DSN063

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.050 ug/l		0.050 ug/l		2.00	DSN063

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		2.00	DSN064
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	38.1 mg/l		21.55 mg/l		2.00	DSN064
Total Suspended Solids (TSS)	63.0 mg/l		43.5 mg/l		2.00	DSN064
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.00	Maximum 8.38	Minimum 7.00	Maximum 7.69	2.00	DSN064

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.050 ug/l		0.050 ug/l		2.00	DSN064

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN068
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	NODI					DSN068
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		1.00	DSN069
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/l		1.00	DSN069
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.58	Maximum 7.58	Minimum	Maximum	1.00	DSN069

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Zinc, TR	0.024 ug/l		0.024 ug/l		1.00	DSN069
Cadmium, TR	0.002 ug/l		0.002 ug/l		1.00	DSN069
Lead, TR	0.012 ug/l		0.012 ug/l		1.00	DSN069
Copper, TR	0.014 ug/l		0.014 ug/l		1.00	DSN069
Mercury, TR	0.001 ug/l		0.001 ug/l		1.00	DSN069

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number (*if available*)	Maximum Values (*include units*)		Average Values (*include units*)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN070
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)	NODI					DSN070
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number (*if available*)	Maximum Values (*include units*)		Average Values (*include units*)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		

Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN071
Total Suspended Solids (TSS)	NODI					DSN071
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
TCETHY	NODI					DSN071
1,1,1-TCE	NODI					DSN071
1,1,2-TCE	NODI					DSN071
GC/MS	NODI					DSN071
CLO4	NODI					DSN071
NO3 & NO2	NODI					DSN071
TNT	NODI					DSN071
RDX	NODI					DSN071
Hg, T	NODI					DSN071

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN072
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN072
Total Suspended Solids (TSS)	NODI					DSN072
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
CLO4	NODI					DSN072
BETX	NODI					DSN072
Naphthalene	NODI					DSN072
CL, T	NODI					DSN072

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		3.00	DSN073
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	19.5 mg/l		8.43 mg/l		3.00	DSN073
Total Suspended Solids (TSS)	13.0 mg/l		13.0 mg/l		3.00	DSN073
Total Nitrogen						
Total Phosphorus	5.0 mg/l		1.742 mg/l		3.00	DSN073
pH	Minimum 7.03	Maximum 7.98	Minimum 7.42	Maximum 7.98	3.00	DSN073

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	1.0 ug/l		1.0 ug/l		3.00	DSN073
Naphthalene	20.0 ug/l		7.33 ug/l		3.00	DSN073
DDT	0.05 ug/l		0.05 ug/l		3.00	DSN073

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN074
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN074
Total Suspended Solids (TSS)	NODI					DSN074
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	NODI					DSN074
Naphthalene	NODI					DSN074
TRC	NODI					DSN074
TDS	NODI					DSN074
Mercury	NODI					DSN074
TEMP	NODI					DSN074

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
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Form Approved. OMB No. 2040-0086
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VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	NODI	N/A				DSN075
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	NODI					DSN075
Total Suspended Solids (TSS)	NODI					DSN075
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
BETX	NODI					DSN075
Naphthalene	NODI					DSN075

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		8.00	DSN076(New, similar to DSN003)
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	83.1 mg/l		22.21 mg/l		8.00	DSN076(New, similar to DSN003)
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/l		8.00	DSN076(New, similar to DSN003)
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.02	Maximum 8.56	Minimum 7.49	Maximum 8.56	8.00	DSN076(New, similar to DSN003)

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.956 ug/l		0.163 ug/l		8.00	DSN076(New, similar to DSN003)
BETX	2.0 ug/l		0.938 ug/l		8.00	DSN076(New, similar to DSN003)
Naphthalene	20 ug/l		15.750 ug/l		8.00	DSN076(New, similar to DSN003)
MTBE	5.0 ug/l		1.312 ug/l		8.00	DSN076(New, similar to DSN003)
Phosphorous	0.8 mg/l		0.188 mg/l		8.00	DSN076(New, similar to DSN003)

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

EPA ID Number (*copy from Item 1 of Form 1*)
AL7210020742

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	5.0 mg/l	N/A	5.0 mg/l		8.00	DSN077(New, similar to DSN003)
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)	83.1 mg/l		22.21 mg/l		8.00	DSN077(New, similar to DSN003)
Total Suspended Solids (TSS)	5.0 mg/l		5.0 mg/l		8.00	DSN077(New, similar to DSN003)
Total Nitrogen						
Total Phosphorus						
pH	Minimum 7.02	Maximum 8.56	Minimum 7.49	Maximum 8.56	8.00	DSN077(New, similar to DSN003)

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
DDT	0.956 ug/l		0.163 ug/l		8.00	DSN077(New, similar to DSN003)
BETX	2.0 ug/l		0.938 ug/l		8.00	DSN077(New, similar to DSN003)
Naphthalene	20 ug/l		15.750 ug/l		8.00	DSN077(New, similar to DSN003)
MTBE	5.0 ug/l		1.312 ug/l		8.00	DSN077(New, similar to DSN003)
Phosphorous	0.8 mg/l		0.188 mg/l		8.00	DSN077(New, similar to DSN003)

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
N/A						

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*
N/A					

7. Provide a description of the method of flow measurement or estimate.

N/A

Form 2F Attachment 1 - Outfall Locations and Receiving Waters

Outfall Number	Latitude			Longitude			Receiving Waters
	deg		sec	deg	min	sec	
DSN-001	34	37	32	86	38	21	Tributary to Huntsville Spring Branch
DSN-002	34	33	56	86	38	28	Unnamed tributary to Tennessee River
DSN-003	34	40	31	86	40	54	Unnamed tributary to Indian Creek
DSN-005	34	37	55	86	38	37	Huntsville Spring Branch
DSN-010	34	40	10	86	40	32	Tributary to Indian Creek
DSN-011	34	37	40	86	38	40	Tributary to Huntsville Spring Branch
DSN-013	34	37	39	86	38	52	Huntsville Spring Branch
DSN-015	34	34	20	86	39	59	Tributary to Tennessee River
DSN-016	34	34	13	86	39	38	Tributary to Tenessee River
DSN-017	34	35	43	86	36	41	Tributary to Tenessee River
DSN-020	34	38	1	86	38	19	Tributary to Huntville Spring Branch
DSN-021	34	38	28	86	38	1	Tributary to Huntsville Spring Branch
DSN-022	34	39	52	86	37	46	Tributary to McDonald Creek
DSN-027	34	53	39	86	37	7	Tributary to Tenessee River
DSN-032	34	39	51	86	38	60	Unnamed tributary to Huntsville Spring Branch
DSN-033	34	41	35	86	38	40	Tributary to McDonald Creek
DSN-034	34	37	51	86	40	6	Unnamed tributary to Huntsville Spring Branch
DSN-035	34	35	9	86	40	54	Tributary to Tenessee River
DSN-036	34	40	36	86	40	54	Unnamed tributary to Indian Creek
DSN-038	34	37	51	86	40	2	Unnamed tributary to Huntsville Spring Branch
DSN-040	34	37	51	86	39	48	Unnamed tributary to Huntsville Spring Branch
DSN-041	34	35	12	86	40	54	Tributary to Tenessee River
DSN-043	34	37	51	86	39	47	Tributary to Huntsville Spring Branch
DSN-045	34	34	15	86	38	20	Tributary to Tenessee River
DSN-046	34	34	35	86	37	11	Tributary to Tenessee River
DSN-047	34	37	13	86	37	49	Tributary to Tenessee River
DSN-048	34	39	56	86	39	19	Tributary to Huntsville Spring Branch
DSN-049	34	42	10	86	39	18	Tributary to Indian Creek
DSN-051	34	38	22	86	38	2	Tributary to Huntsville Spring Branch
DSN-054	34	41	36	86	38	40	Unnamed tributary to Indian Creek
DSN-057	34	42	31	86	37	47	Tributary to McDonald Creek
DSN-058	34	42	11	86	37	53	Tributary to McDonald Creek
DSN-059	34	41	39	86	37	49	Tributary to McDonald Creek
DSN-060	34	40	30	86	42	18	Tributary to Indian Creek
DSN-061	34	40	22	86	37	14	Tributary to McDonald Creek
DSN-062	34	39	8	86	42	30	Tributary to Indian Creek
DSN-063	34	37	32	86	39	10	Tributary to Indian Creek
DSN-064	34	37	34	86	39	11	Tributary to Huntsville Spring Branch
DSN-068	34	35	40	86	37	6	Unnamed tributary to Tennessee River
DSN-069	34	35	47	86	35	10	Unnamed tributary to Tennessee River

Form 2F Attachment 1 - Outfall Locations and Receiving Waters

Outfall Number	Latitude			Longitude			Receiving Waters
	deg	min	sec	deg	min	sec	
DSN-070	34	35	22	86	35	47	Unnamed tributary to Tennessee River
DSN-071	34	34	11	86	40	10	Unnamed tributary to Tennessee River
DSN-072	34	33	28	86	38	46	Unnamed tributary to Tennessee River
DSN-073	34	40	18	86	40	50	Unnamed tributary to Indian Creek
DSN-074	34	36	54	86	39	55	Unnamed tributary to Indian Creek
DSN-075	34	39	53	86	41	38	Unnamed tributary to Indian Creek
DSN-076	34	40	36	86	40	48	Unnamed tributary to Indian Creek
DSN-077	34	39	47	86	37	47	Tributary to McDonald Creek

Form 2F Attachment 6 - Narrative Description of Pollution Sources

DSN001: This discharge consists of stormwater runoff from the DDT remediation area.

DSN002: This discharge consists of wastewater from the testing of Rocket engines at TA-5.

DSN003: This discharge consists of vehicle washwaters and stormwater runoff from the Fuel storage and handling area at the Air Field. The sample is taken at At the O/W separator.

DSN005: This discharge consists of vehicle washwaters and stormwater runoff from the Fuel storage and handling areas (POL Tank Farm).

DSN010: This discharge consists of stormwater runoff airport facility, including Hangars, fueling areas and waste storage.

DSN011: This discharge consists of stormwater runoff from the bulk fuel storage area (POL Tank Farm) and Cooling tower blowdown, boiler blowdown and non-contact cooling water. (wooded Area South of POL yard) NW of DDT remediation area, west of Stewart road.

DSN013: This discharge consists of stormwater runoff from the construction and debris Landfill, cooling tower blowdown, boiler blowdown, and non-contact cooling Water. Monitored at the big ditch on east side of Inert Landfill.

DSN015: This discharge area consists of stormwater runoff from the northeast area of the OB/OD Area. This area consists of six open burn pans used to treat munitions items and components, bulk energetic, and energetic-contaminated materials, including some solvent-contaminated materials. Each burn pan is supported by a concrete pad, which elevates each pan above the 100 year flood plain. Ash is collected from each pan and drummed for disposal. Another portion of this area is used for the detonation of typically unfired waste munitions items. Prior to January 1986, solvents and solvent-contaminated materials were routinely incinerated directly on the ground at two open burn pads located in the northwest portion of the OB/OD area. Two "Contaminated Waste Burn Trenches" located in the southeast portion of the OB/OD area were also used to incinerate materials contaminated with propellants. In 1984, it was discovered that the trenches had also been used to dump and burn waste solvents from a Redstone Arsenal explosive production area, and such activities were ceased. From 1984 until 1991, materials such as non-hazardous propellant-contaminated materials were disposed of in the Contaminated Waste Burn Trenches at least once every 90 days. Monitored at North East corner of OB/OD area.

DSN016: This discharge consists of stormwater from former chemical storage and demolition areas, hazardous waste storage building area and a test pad. This area was

used during the 1940-50 time frame to store mustard gas and lewisite. The demolition area was active from 1950-70's for disposal of ash from open burning and open burn pads. Static Test Stand No. 8883, a bermed concrete pad equipped with a test firing rocket motors, discharges stormwater through this point. Monitored at 1/10 of a mile north of Bldg 8410.

DSN017: This discharge consists of stormwater runoff from a maintenance shop and storage yard, cooling tower blowdown, bolier blowdown, and non-contact cooling water. This area is used to collect scrap from various facilities throughout the arsenal. Typical materials stored include: cast iron, wood pallets, wire and electronic equipment, scrap metal, scrap vehicles, refrigerators, air conditioners, blocks of crushed metals, wood poles, mobile generators, gas cylinders, empty metal canisters, and various drums. Monitored at Buxton West of Warehouse Road (first ditch).

DSN020: This discharge of stormwater runoff from the former DDT plant site, electric storage yard for temporary storage of transformers, open storage for used transformers, conductors, and hazardous waste, cooling tower blowdown, boiler blowdown, and non-contact cooling water. Monitored at Industrial Rd. approx. 1/10 of a mile South of Mills Rd.

DSN021: This discharge consists of stormwater runoff from various disposal areas which were active from 1940-70's, a former lewisite manufacturing site and a satellite waste accumulation area, cooling tower blowdown, boiler blowdown, and non-contact cooling water. The disposal areas include former arsenic ponds, former arsenic waste lagoon, sanitary landfill, rubble fill and building debris. Monitored at Viper Rd.

DSN022: this discharge consists of stormwater runoff from RSA motor pool, maintenance shops and paint shop, cooling tower blowdown, boiler blowdown, and non-contact cooling water. Monitored at Patriot drive, ¼ mile North of Neal Rd.

DSN027: This discharge consists of non-contact cooling water from Bldg. 7120.

DSN031- DSN054: This discharge consists of water runoff from Potable/Industrial water tank releases.

DSN057- 058: This discharge consists of stormwater runoff from the motor pool area. Monitored at SEEBEE Area (3100 Area).

DSN059: This discharge consists of stormwater runoff from a public service station. Monitored at Mauler Rd. South of PX).

DSN060, DSN062 & DSN069: This discharge consists of stormwater runoff from an equipment storage yards. (TA-3, Tank Yard). Monitored at DSN060.

DSN061: This discharge consists of stormwater runoff from the motor pool, maintenance shop. Monitored at Hanson Rd. ½ mile east of Patton.

DSN062: This discharge consists of stormwater runoff from an equipment storage area. Monitored at DSN060.

DSN063- DSN064: This discharge consists of stormwater runoff from the inert landfill.

DSN068 & 070: This discharge consists of stormwater runoff from boiler plants.

DSN071: This discharge consists of stormwater runoff from western area demolition area(Propellant and propellant wastes disposal). Monitored at south west corner of OB/OD area.

DSN072: This discharge consists of stormwater runoff from maintenance shop, former chemical storage area, and TA-5 test pad. Monitored at south border of TA-5.

DSN073: This discharge consists of airplane wash waters and stormwater runoff. East of the wash rack, North of Bldg 4832.

DSN074: This discharge consists of non-contact cooling water and stormwater runoff from maintenance shop and equipment storage yard. Monitored at TA-1 East of Dodd Rd.

DSN075: This discharge consists of Bradley Fighting Vehicles wash waters and stormwater runoff from general purpose lab and test building. West of the wash rack, West of Bldg. 6274.

DSN076 (New): This discharge consists of stormwater runoff from the Bulk Fuel Facility. There will be three fuel tanks total. Tanks are single wall, inside a concrete walled (~3') enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1) and F-24(Jet A) 35,000gal (total 2).

DSN077 (New): This discharge consists of stormwater runoff from the Retail Fuel Facility. There will be three fuel tanks total. Tanks are double wall, inside a concrete curbed enclosure that drains to a spill containment pit. The fuel storage tanks are as follows: Diesel 12,000gal (total 1); MOGAS (Unleaded) 12,000gal (total 1) & E85 12,000gal (total 1).

Form 2F Attachment 5 – Area of Impervious Surfaces

Outfall Number	Area of Impervious Surface	Total area Drained
DSN-001	This area is included in the Area of Impervious Surface for DSN013	
DSN-002	This area is included in the Area of Impervious Surface for DSN072	
DSN-003	This area is included in the Area of Impervious Surface for DSN010	
DSN-004	This area is included in the Area of Impervious Surface for DSN013	
DSN-005	This area is included in the Area of Impervious Surface for DSN013	
DSN-10	420 acres	4700 acres
DSN-11	13.5 acres	98 acres
DSN-013	79.9 acres	1761 acres
DSN-015	.8 acres	11 acres
DSN-016	8.6 acres	747 acres
DSN-017	47.2 acres	489 acres
DSN-20	12.0 acres	124 acres
DSN-21	61.4 acres	622 acres
DSN-022	10.3 acres	138 acres
DSN-027	This area is included in the Area of Impervious Surface for DSN068	
DSN-057	This area is included in the Area of Impervious Surface for DSN058	
DSN-058	3.7 acres	6.2 acres
DSN-59	25 acres	59 acres
DSN-060	2 acres	50 acres
DSN-061	**59 acres	661 acres
DSN-062	2 acres	8.3 acres
DSN-063	1 acre	13.8 acres
DSN-064	0.75 acre	11 acres
DSN-066	**4.5 acres	49.6 acres
DSN-068	4.1 acres	57.9 acres
DSN-069	**11 acres	124 acres
DSN-070	**3.4 acres	37 acres
DSN-071	1 acre	18.6 acres
DSN-072	6 acres	198 acres
DSN-073	This area is included in the Area of Impervious Surface for DSN010	
DSN-074	**0.5 acre	3 acres
DSN-75	**0.5 acre	This area is included in the Area of Impervious Surface for DSN060

Form 2F Attachment 5 – Area of Impervious Surfaces

Outfall Number	Area of Impervious Surface	Total area Drained
DSN-76		This area is included in the Area of Impervious Surface for DSN010
DSN-77		This area is included in the Area of Impervious Surface for DSN021

*Greater than 1500 acres are off Redstone property. Accurate mapping of current impervious rea is not available. Comparable areas range from 5 to 9% impervious surface. 9% is presented for this application.

**Accurate mapping of current impervious area is not available. Comparable areas range from 5 to 9% impervious surface. 9% is presented for this application.

REQUESTED Permit Modifications

DSN004Q: Proposed to be eliminated by March 2019. This discharge consisted of vehicle wash waters and storm water runoff from a formerly Fuel storage and handling areas (POL Tank Farm). As of March 2013, the fuel pump house, along with the oil/water separator were removed from the POL Tank Farm. A new POL Tank Farm is being constructed, and the expected completion date is March 2019.

DSN017S: Proposed to be eliminated by March 2019. The runoff from maintenance shop and scrap yard have been eliminated from this outfall. This outfall served the Defense Logistics Agency's (DLA) function which has been moved to Anniston Army Depot and contains no industrial activity contributing to the storm water runoff at this time. Request to remove monitoring requirements for PH; Solids, Total Suspended; Oil & Grease; Phosphorus, Total; Zinc Total Recoverable; Lead, Total Recoverable; Copper Total Recoverable and Toluene.

DSN068, 070Y: Storm water runoff from boiler plants. Proposed to be eliminated by March 2019, since the fuel oil standby system has been removed from the process. The boiler plant is strictly running on natural gas now. Request to remove the outfalls from the permit.

DSN020Q: Proposed to be eliminated by March 2019. The boiler house in building 5540 has been mothballed; no longer needed. Request to remove monitoring requirements for PH; Phosphorus; Temperature; Total Residual Chlorine; Total Dissolved Solids, and Flow.

DSN076 (Storm water runoff from bulk fuel storage and handling areas) and DSN077 (Storm water runoff from retail fuel storage and handling areas) will be added as discharge points and sampling points. We do not have a vehicle wash area planned for either fueling facility site during operation. The project construction completion date is anticipated to be March 2019.

Bulk Fuel Facility - Tanks are single wall, inside a concrete walled (~3') enclosure that drains to a spill containment pit.
Diesel 12,000 gal (total 1) and
F-24 (Jet A) 35,000 gal (total 2)

Retail Fuel Facility - Tanks are double wall, inside a concrete curbed enclosure that drains to a spill containment pit.
Diesel 12,000 gal (total 1); MOGAS (Unleaded) 12,000 gal (total 1) and
E85 12,000 gal (total 1)

Redstone Arsenal, AL

Installation Area

Map Projection: Transverse Mercator
Horizontal Datum: North American Datum 1983
Grid Coordinate System: State Plane Coordinates, Alabama East
Planar Distance Units: Survey Feet (U.S.)

Name: RSATopo(11X17)

Classification: Unclassified Limited Distribution

For official use. For general location purposes only.

Map Author: Lawrence Crawford
US Army Garrison-Redstone (256) 876-5682

Directorate of Public Works - Environmental Mgt
US Army Garrison - Redstone
Redstone Arsenal, AL 35898

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N
W E
S

McDonald Creek

McDonald
Cr-Huntsville
Sp Br

Indian Creek

Huntsville Spring Branch

Indian Creek

Tennessee River

Redstone Arsenal, AL

Watershed Area

- Indian Creek
- McDonald Cr-Huntsville Sp Br

0 0.25 0.5 1 1.5
Miles

1:50,342

Map Projection: Transverse Mercator
Horizontal Datum: North American Datum 1983
Grid Coordinate System: State Plane Coordinates, Alabama East
Planar Distance Units: Survey Feet (U.S.)

Name: RSAWatershed(11X17)

Classification: Unclassified Limited Distribution

For official use. For general location purposes only.

Map Author: Lawrence Crawford
US Army Garrison-Redstone (256) 876-5682

Directorate of Public Works - Environmental Mgt
US Army Garrison - Redstone
Redstone Arsenal, AL 35898

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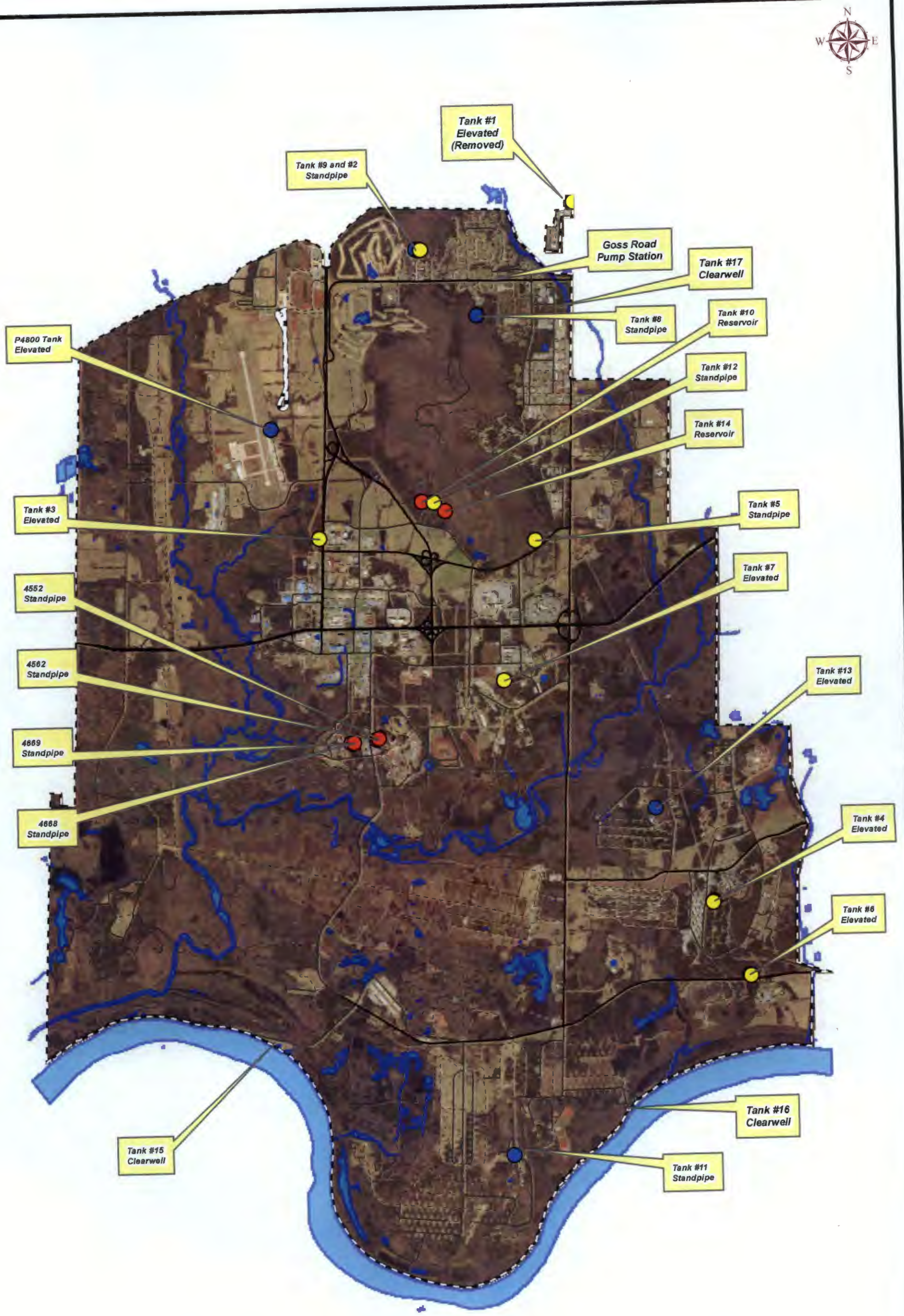

Redstone Arsenal, AL

RemovedTanks
Non-Potable
Potable

Map Projection: Transverse Mercator
Horizontal Datum: North American Datum 1983
Grid Coordinate System: State Plane Coordinates, Alabama East
Planar Distance Units: Survey Feet (U.S.)

Name: DSNTankSites(11X17Overview)
Classification: Unclassified Limited Distribution
For official use. For general location purposes only.
Map Author: Lawrence Crawford
US Army Garrison-Redstone (256) 876-5682

Directorate of Public Works - Environmental Mgt
US Army Garrison - Redstone
Redstone Arsenal, AL 35898

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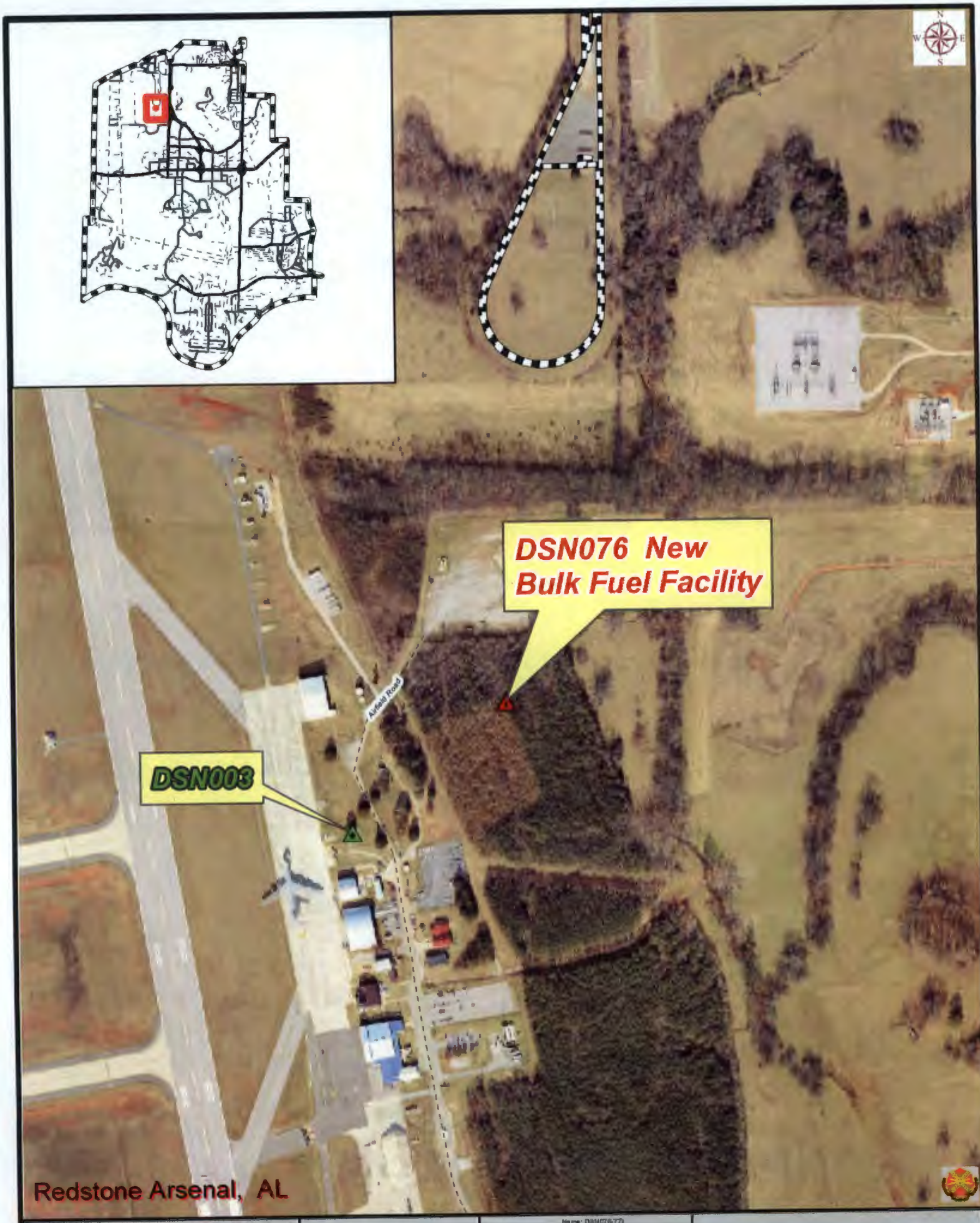

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DSN001: Storm water Runoff From the DDT Remedation Area

Parameter	Flow	pH	TSS	DDT
MIN	-	Monitor	-	-
MAX	Monitor	Monitor	Monitor	Monitor
MO.AVG	Monitor	-	Monitor	0.001
FREQ	1/month	1/month	1/month	1/month
UNITS	MGD	s.u	mg/l	ug/l
January 2017	NODI=c	NODI=c	NODI=c	NODI=c
February 2017	NODI=c	NODI=c	NODI=c	NODI=c
March 2017	NODI=c	NODI=c	NODI=c	NODI=c
April 2017	NODI=c	NODI=c	NODI=c	NODI=c
May 2017	NODI=c	NODI=c	NODI=c	NODI=c
June 2017	NODI=c	NODI=c	NODI=c	NODI=c
July 2017	NODI=c	NODI=c	NODI=c	NODI=c
August 2017	NODI=c	NODI=c	NODI=c	NODI=c
Sept. 2017	NODI=c	NODI=c	NODI=c	NODI=c
October. 2017	NODI=c	NODI=c	NODI=c	NODI=c
November 2017	NODI=c	NODI=c	NODI=c	NODI=c
December 2017	NODI=c	NODI=c	NODI=c	NODI=c
January 2016	NODI=c	NODI=c	NODI=c	NODI=c
February 2016	NODI=c	NODI=c	NODI=c	NODI=c
March 2016	NODI=c	NODI=c	NODI=c	NODI=c
April 2016	NODI=c	NODI=c	NODI=c	NODI=c
May 2016	NODI=c	NODI=c	NODI=c	NODI=c
June 2016	NODI=c	NODI=c	NODI=c	NODI=c
July 2016	NODI=c	NODI=c	NODI=c	NODI=c
August 2016	NODI=c	NODI=c	NODI=c	NODI=c
Sept. 2016	NODI=c	NODI=c	NODI=c	NODI=c
October. 2016	NODI=c	NODI=c	NODI=c	NODI=c
November 2016	NODI=c	NODI=c	NODI=c	NODI=c
December 2016	NODI=c	NODI=c	NODI=c	NODI=c
January 2015	NODI=c	NODI=c	NODI=c	NODI=c
February 2015	NODI=c	NODI=c	NODI=c	NODI=c
March 2015	NODI=c	NODI=c	NODI=c	NODI=c
April 2015	NODI=c	NODI=c	NODI=c	NODI=c
May 2015	NODI=c	NODI=c	NODI=c	NODI=c
June 2015	NODI=c	NODI=c	NODI=c	NODI=c
July 2015	NODI=c	NODI=c	NODI=c	NODI=c
August 2015	NODI=c	NODI=c	NODI=c	NODI=c
Sept. 2015	NODI=c	NODI=c	NODI=c	NODI=c
October. 2015	NODI=c	NODI=c	NODI=c	NODI=c
November 2015	NODI=c	NODI=c	NODI=c	NODI=c
December 2015	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Average	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Maximum	NODI=c	NODI=c	NODI=c	NODI=c

DSN002: Waste Water from Testing of Rocket Engines and Storm water Runoff

Parameter	Flow	pH	TSS	COD	O/G	Perchlorate	Biomonitor
MIN	-	6.0	-	-	-	-	-
MAX	Monitor	8.5	Monitor	Monitor	15	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-
FREQ	1/month	1/month	1/month				1/month
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l	-
January '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Feb '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
March '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
April '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
May '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
June '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
July '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
August '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Sept. '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
October '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Nov '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Dec '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
January '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Feb '17	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
March '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
April '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
May '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
June '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
July '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
August '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Sept. '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
October '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Nov '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Dec '16	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
January '15	0.297	7.19	18.0	42.9	5.0	0.002	Pass
Feb '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
March '15	12.667	7.26	4.0	14.4	5.0	0.002	N/A
April '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
May '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
June '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
July '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
August '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Sept. '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Oct '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Nov '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
Dec '15	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Ave.	6.482	7.23	11	28.65	5.0	0.002	Pass
3 yr Max.	12.667	7.26	18	42.9	5.0	0.002	Pass

DSN003-DSN005: Vehicle wash and storm water runoff from fuel storage and handling areas

DSN003					
Parameter	Flow	pH	TSS	O&G	BETX
Min	-	6	-	-	-
MAX	Monitor	8.5	Monitor	15	Monitor
MO.AVG	Monitor	-	Monitor	Monitor	Monitor
FREQ	1/quarter	1/quarter	1/quarter	1/quarter	1/quarter
UNITS	MGD	s.u	mg/l	mg/l	ug/l
1Q 2017	0.148	7.02	5.0	5.0	1
2Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2017	0.148	7.75	5.0	5.0	1.0
4Q 2017	1.041	7.03	5.0	5.0	1.0
1Q 2016	0.066	7.43	5.0	5.0	0.5
2Q 2016	0.192	8.56	5.0	5.0	0.5
3Q 2016	0.521	7.68	5.0	5.0	1.0
4Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
1Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2015	0.172	7.02	5.0	< 5.0	< 2.0
3Q 2015	0.034	7.41	5.0	5.0	0.5
4Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3 yr Average	0.29025	7.49	5	5	0.9375
3 yr Maximum	1.041	8.56	5	5	2.0
DSN004					
Parameter	Flow	pH	TSS	O&G	BETX
Min	-	6	-	-	-
MAX	Monitor	8.5	Monitor	15	Monitor
MO.AVG	Monitor	-	Monitor	Monitor	Monitor
FREQ	1/quarter	1/quarter	1/quarter	1/quarter	1/quarter
UNITS	MGD	s.u	mg/l	mg/l	ug/l
1Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
4Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
1Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
4Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
1Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
4Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3 yr Average	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3 yr Maximum	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C

DSN005					
Parameter	Flow	pH	TSS	O&G	BETX
Min	-	6	-	-	-
MAX	Monitor	8.5	Monitor	15	Monitor
MO.AVG	Monitor	-	Monitor	Monitor	Monitor
FREQ	1/quarter	1/quarter	1/quarter	1/quarter	1/quarter
UNITS	MGD	s.u	mg/l	mg/l	ug/l
1Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Average	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Maximum	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit.

c= No Discharge

DSN003-DSN005: Vehicle wash and storm water runoff from fuel storage and handling areas

DSN003					
Parameter	Naphthalene	DDT	COD	MTBE	P, T
Min	-	-	-	-	_
MAX	Report	Report	Report	Report	Report
MO.AVG	-	-	-	-	-
FREQ	1/quarter	1/quarter	1/quarter	1/quarter	1/quarter
UNITS	MGD	s.u	mg/l	ug/l	
1Q 2017	1	0.956	0.1	1	0.1
2Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2017	20	0.05	83.1	1.0	0.8
4Q 2017	20	0.05	5.0	1.0	0.1
1Q 2016	20.0	0.05	9.57	0.5	0.1
2Q 2016	20.0	0.05	9.39	0.5	0.1
3Q 2016	20	0.05	16.4	1.0	0.1
4Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
1Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2015	5.0	0.05	35.2	5.0	0.1
3Q 2015	20.0	0.05	18.9	0.5	0.1
4Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3 yr Average	15.75	0.16325	22.2075	1.312	0.188
3 yr Maximum	20	0.956	83.1	5.0	0.8

DSN004					
Parameter	Flow	pH	TSS	Naphthalene	P, T
Min	-	6	-		
MAX	Report	8.5	Report	Report	Report
MO.AVG	-	-	-	-	-
FREQ	1/quarter	1/quarter	1/quarter	1/quarter	1/quarter
UNITS	MGD	s.u	mg/l	ug/l	mg/l
1Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
4Q 2017	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
1Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
4Q 2016	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
1Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
2Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
4Q 2015	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3 yr Average	NODI=C	NODI=C	NODI=C	NODI=C	NODI=C
3 yr Maximum	NODI=C	NODI=C	NODI=C		

DSN005					
Parameter	Flow	pH	TSS		
Min	-	6	-		
MAX	Monitor	8.5	Monitor		
MO.AVG	Monitor	-	Monitor		
FREQ	1/quarter	1/quarter	1/quarter		
UNITS	MGD	s.u	mg/l		
1Q 2017	NODI=C	NODI=C	NODI=C		
2Q 2017	NODI=C	NODI=C	NODI=C		
3Q 2017	NODI=C	NODI=C	NODI=C		
4Q 2017	NODI=C	NODI=C	NODI=C		
1Q 2016	NODI=C	NODI=C	NODI=C		
2Q 2016	NODI=C	NODI=C	NODI=C		
3Q 2016	NODI=C	NODI=C	NODI=C		
4Q 2016	NODI=C	NODI=C	NODI=C		
1Q 2015	NODI=C	NODI=C	NODI=C		
2Q 2015	NODI=C	NODI=C	NODI=C		
3Q 2015	NODI=C	NODI=C	NODI=C		
4Q 2015	NODI=C	NODI=C	NODI=C		
3 yr Average	NODI=C	NODI=C	NODI=C		
3 yr Maximum	NODI=C	NODI=C	NODI=C		

Note shaded cells indicate the detection limit value. The true value was below the detection limit.

c= No Discharge

DSN010: Storm water runoff associated with airport operations and waste storage areas

Parameter	Flow	pH	COD	TSS	O/G	BETX	Naphthalene	MTBE	DDT
MIN	-	6	-	-	-	-	-	-	-
MAX	Report	8.5	Report	Report	15	-	-	Report	report
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

DSN011: Storm water runoff from fuel storage area

Parameter	Flow	pH	TEMP	TRC	
MIN	-	6	-	-	
MAX	Monitor	8.5	86	0.019	
MO.AVG	-	-	-	-	
FREQ	1/QTR	1/QTR	1/QTR	1/QTR	
UNITS	MGD	s.u	mg/l	mg/l	
1Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	
2Q 2017	0.003	7.17	73.9	0.05	
3Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	
4Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	
1Q 2016	0.254	7.02	60.6	0.05	
2Q 2016	0.078	6.52	52.7	0.05	
3Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	
4Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	
1Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	
2Q 2015	0.139	6.74	64.4	0.05	
3Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	
4Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	
3 yr Avg.	0.1185	6.8625	62.9	0.05	
3 yr Max	0.254	7.17	73.9	0.05	

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN011: Storm water runoff from fuel storage area

Parameter	Flow	MTBE	TSS	O/G	BETX	Napht	*COD*	*PCB*	*DDT*
MIN	-	-	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	15	155	620	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/QTR	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	MGD	ug/l	ug/l	ug/l	ug/l	ug/l	s.u	mg/l	mg/l
1S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1S 2016	0.189	1.0	2.0	5.0	1.0	1.0	5	0.01	0.05
2S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.189	1.0	2.0	5	1.0	1.0	5	0.01	0.05
3 yr Max	0.189	1.0	2.0	5	1.0	1.0	5	0.01	0.05

Note shaded cells indicate the detection limit value. The true value was below the detection limit.

c= No Discharge

DSN013: Storm water runoff from the construction, debris landfill, inert landfill, and sand storage area

Parameter	Flow	pH	TSS	O/G	COD	DDT
MIN	-	6	-	-	-	-
MAX	Monitor	8.5	Monitor	15	Monitor	Monitor
MO.AVG	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	MGD	s.u	mg/l	mg/l	mg/l	ug/l
1st S 2017	0.362	6.67	15.0	5.0	12.5	0.05
2nd S 2017	0.349	7.06	18	5.0	42.4	0.050
1st S 2016	0.569	7.58	2.0	5	5.74	0.05
2nd S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.4266	7.103	11.666	5.0	20.213	0.05
3 yr Max	0.569	7.580	18.0	5.0	42.4	0.05

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN015: Storm water runoff from the NE and Western Demolition Area (propellant and propellant Wastes disposal) and simulated chemical training area

Parameter	Flow	pH	COD	TSS	TCE	1,1,1-TCE	1,1,2-TCE	GC/MS	CLO4
MIN	-	6	-	-	-	-	-	-	-
MAX	Monitor	8.5	Monitor	Monitor	15	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Parameter	NO3&NO2	TNT	RDX	Hg,T
MIN	-	6	-	-
MAX	Monitor	8.5	Monitor	Monitor
MO.AVG	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c

DSN016: Storm water runoff from former chemical storage, demolition areas, hazardous waste storage buildings and test pad

Parameter	Flow	pH	COD	TSS	O/G	CLO4	NO3&NO2	CL, T	As, TR
MIN	-	6	-	-	-	-	-	-	-
MAX	Monitor	8.5	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	ug/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN017: Storm water runoff from maintenance shop and scrap yard, cooling tower blow down, boiler blow down, and non-contact cooling water

Parameter	Flow	pH	TSS	O/G	P	Zinc	Lead	Cu, TR	Toluene
MIN	-	6	-	-	-	-	-	-	-
MAX	Monitor	8.5	Monitor	15	Monitor	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l
1st S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

DSN017: Storm water runoff from maintenance shop and scrap yard, cooling tower blow down, boiler blow down, and non-contact cooling water

Parameter	Benzene	Ethylbenzene	Naphthalene	TDS	Mercury	COD	Xylene
MIN	-	-					
MAX	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	ug/l
1st S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN017: Storm water runoff from maintenance shop and scrap yard, cooling tower blow down, boiler blow down, and non-contact cooling water

Parameter	Flow	pH	TEMP	TRC	TDS
MIN	-	6.0	-	-	-
MAX	Report	8.5	86 F	0.019	Report
MO.AVG	-	-	-	0.011	-
FREQ	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	s.u.	F	mg/l	mg/l
1st Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

DSN020: Storm water runoff from former DDT plant site, storage yard for transformers, cooling tower blow down, boiler blow down and non-contact cooling water

Parameter	Flow	pH	TEMP	TRC	TDS	P,T
MIN	-	6	-	-	-	-
MAX	Monitor	8.5	86 F	0.019	Monitor	Monitor
MO.AVG	-	-	-	-	-	-
FREQ	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l
1st Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2016	NODO=c	NODO=c	NODO=c	NODO=c	NODO=c	NODO=c
3rd Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1stQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit

Parameter	Flow	O/G	TSS	COD	pH	DDT
MIN	-	-	-	-	6	-
MAX	Monitor	15	155	Monitor	8.5	Monitor
MO.AVG	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo		
UNITS	MGD	mg/l	mg/l	mg/l		
1st S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2017	0.089	5.0	5.0	27.6	7.90	0.050
1st S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.089	5.0	5.0	27.6	7.9	0.050
3 yr Max	0.089	5.0	5.0	27.6	7.9	0.050

DSN021: Storm water runoff from closed disposal impoundments, a former lewisite manufacturing site and waste accumulation area, cooling tower blow down, boiler blow down and non- contact cooling water

Parameter	Flow	pH	TEMP	TRC	TDS	P,T
MIN	-	6	-	-	-	-
MAX	Monitor	8.5	86 F	0.019	Monitor	Monitor
MO.AVG	-	-	-	0.011	-	-
FREQ	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l
1st Q 2017	0.722	7.58	68.2	0.05	162	0.10
2ndQ 2017	0.539	7.47	79.4	0.05	118	0.10
3rd Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2017	1.78	7.42	57.5	0.05	151	0.10
1st Q 2016	0.352	7.83	50.7	0.05	136	0.119
2ndQ 2016	4.791	7.62	56.4	0.05	149	0.10
3rd Q 2016	0.064	7.45	77.9	0.05	179	0.18
4th Q 2016	0.034	7.04	61.0	0.05	187	0.377
1stQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2015	0.022	7.11	76.1	0.05	136	0.10
3rd Q 2015	2.96	7.24	71.4	0.05	132	0.10
4th Q 2015	1.26	6.97	59.9	0.05	130	0.10
3 yr Avg.	1.2535	7.373	65.85	0.05	148	0.1376
3 yr Max	4.791	7.83	77.9	0.05	187	0.377

Note shaded cells indicate the detection limit value. The true value was below the detection limit

Parameter	Flow	CL, T	TSS	COD	Arsenic	DDT	pH
MIN	-	-	-	-	-	-	Monitor
MAX	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/QTR	
UNITS	MGD	mg/l	mg/l	mg/l	mg/l	ug/l	
1st S 2017	0.28	8	5.0	23.5	0.05	0.078	7.53
2nd S 2017	0.003	27.5	5.0	22.0	0.027	0.05	7.58
1st S 2016	1.163	7.5	5.0	10.0	0.016	0.05	7.37
2nd S 2016	0.767	20.0	5.0	8.68	0.05	0.05	7.16
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.55325	15.75	5.0	16.045	0.03575	0.057	7.41
3 yr Max	1.163	20.0	5.0	23.5	0.027	0.05	7.58

DSN022: Storm water runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown, and non-contact cooling water

Parameter	Flow	pH	TEMP	TRC	TDS
MIN	-	6	-	-	-
MAX	Monitor	8.5	86 F	0.019	Monitor
MO.AVG	-	-	-	-	-
FREQ	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	s.u	mg/l	mg/l	mg/l
1st Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2016	0.040	8.08	55.7	0.05	233
3rd Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1stQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2008	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.040	8.08	55.7	0.05	233
3 yr Max	0.040	8.08	55.7	0.05	233

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN022: Storm water runoff from motor pool, maintenance and paint shops, cooling tower blowdown, boiler blowdown, and non-contact cooling water

Parameter	Flow	pH	COD	TSS	BETX	Naphthalene	O/G
MIN	-	6	-	-	-	-	-
MAX	Monitor	8.5	Monitor	Monitor	15	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l	ug/l
CY 2017	1.538	7.95	16.03	11	1.0	1.0	5.0
CY 2016	0.046	7.99	5.0	1.0	1.0	2.0	5.0
CY 2008	0.198	6.83	17.1	4.0	0.005	0.005	0.005
3 yr Avg.	0.594	7.59	12.71	5.3333	0.668	1.00166	3.335
3 yr Max	1.538	7.99	16.03	11	1.0	2.0	5.0

DSN027: Boiler blow-down and non-contact cooling water

Parameter	Flow	TEMP	TRC	Phosphorous
MIN	-	-	-	
MAX	Monitor	86	0.019	
MO.AVG	-	-	-	
FREQ	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	F	mg/l	mg/l
1st Q 2017	0.462	74.2	0.05	0.10
2ndQ 2017	0.014	82.3	0.05	0.10
3rd Q 2017	0.061	78.3	0.05	0.10
4th Q 2017	0.185	63.4	0.05	0.10
1st Q 2016	0.051	66.6	0.05	0.10
2ndQ 2016	0.137	62.8	0.05	0.10
3rd Q 2016	0.0003	81.5	0.05	0.10
4th Q 2016	0.0023	66.4	0.05	0.10
1st Q 2015	0.076	59.4	0.05	0.10
2ndQ 2015	0.552	69.8	0.05	0.10
3rd Q 2015	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2005	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.15406	70.47	0.05	0.10
3 yr Max	0.462	82.3	0.05	0.10

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN031- DSN054: Potable/Industrial water tank releases

Parameter	Flow	TRC
MIN	-	-
MAX	Monitor	0.019
MO.AVG	-	-
FREQ	1/QTR	1/QTR
UNITS	mg/l	mg/l
1st Q 2017	NODI=c	NODI=c
2ndQ 2017	NODI=c	NODI=c
3rd Q 2017	NODI=c	NODI=c
4th Q 2017	NODI=c	NODI=c
1st Q 2016	NODI=c	NODI=c
2ndQ 2016	NODI=c	NODI=c
3rd Q 2016	NODI=c	NODI=c
4th Q 2016	NODI=c	NODI=c
1st Q 2015	NODI=c	NODI=c
2ndQ 2015	NODI=c	NODI=c
3rd Q 2015	NODI=c	NODI=c
4th Q 2008	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c

DSN057-DSN058: Storm water runoff from motor pool area

Parameter	Flow	pH	TSS	O/G	BETX	COD
MIN	-	Monitor	-	-	-	-
MAX	Monitor	Monitor	Monitor	15	155	620
MO.AVG	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	ug/l	mg/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	1.54	8.68	84	5.0	1.0	19.6
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	1.54	8.68	84	5.0	1.0	19.6
3 yr Max	1.54	8.68	84	5.0	1.0	19.6

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN059: Storm water runoff from public service station

Parameter	Flow	pH	TSS	O/G	BETX	MTBE	COD
MIN	-	Monitor	-	-	-	-	
MAX	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	ug/l	ug/l	mg/l
CY 2017	0.26	7.79	12	5.0	1.0	1.0	47.0
CY 2016	0.478	7.03	5.0	5.0	1.0	1.0	22.6
CY 2015	3.93	7.03	5.0	5.0	1.0	1.0	22.6
3 yr Avg.	1.556	7.28	7.33	5.0	1.0	1.0	30.73
3 yr Max	3.93	7.79	12	5.0	1.0	1.0	47.0

DSN060, DSN062, & DSN069: Storm Water runoff from equipment storage yard

DSN060									
Parameter	Flow	pH	TSS	O/G	Cd, TR	Cu, TR	Pd, TR	Hg, T	Zn, TR
MIN	-	Monitor	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

DSN062									
Parameter	Flow	pH	TSS	O/G	Cd, TR	Cu, TR	Pd, TR	Hg, T	Zn, TR
MIN	-	Monitor	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN069									
Parameter	Flow	pH	TSS	O/G	Cd, TR	Cu, TR	Pd, TR	Hg, T	Zn, TR
MIN	-	Monitor	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l
CY 2017	69.8	7.58	5.0	5.0	0.002	0.014	0.012	0.001	0.024
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2008	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	69.8	7.58	5.0	5.0	0.002	0.014	0.012	0.001	0.024
3 yr Max	69.8	7.58	5.0	5.0	0.002	0.014	0.012	0.001	0.024

DSN061: Storm water runoff from motor pool and maintenance shop

Parameter	Flow	pH	TSS	O/G	BETX	Naphth	COD
MIN	-	Monitor	-	-	-	-	
MAX	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	ug/l	ug/l	
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	0.134	7.45	3.0	5.0	1.0	1.0	4.97
CY 2008	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.134	7.45	3.0	5.0	1.0	1.0	4.97
3 yr Max	0.134	7.45	3.0	5.0	1.0	1.0	4.97

DSN063 & 064: Storm water runoff from inert landfill

Parameter	Flow	pH	COD	TSS	O/G	DDT
MIN	-	Monitor	-	-	-	-
MAX	Monitor	Monitor		Monitor	15	Monitor
MO.AVG	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	MGD	s.u	F	mg/l	mg/l	ug/l
1st S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2017	0.002	7.00	38.1	24	5.0	0.050
1st S 2016	0.004	8.38	5.0	63.0	5.0	0.050
2nd S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.003	7.69	21.55	43.5	5.0	0.050
3 yr Max	0.004	8.38	38.1	63.0	5.0	0.050

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN068 & 070: Storm water runoff from boiler plants

Parameter	Flow	pH	TSS	O/G
MIN	-	Monitor	-	-
MAX	Monitor	Monitor	Monitor	15
MO.AVG	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c
CY 2008	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c

DSN071: Storm water runoff from the Western Demolition Area (propellant and propellant Wastes disposal) and simulated chemical training area

Parameter	Flow	pH	COD	TSS	TCETHY	1,1,1-TCE	1,1,2-TCE	GC/MS	CLO4
MIN	-	6	-	-	-	-	-	-	-
MAX	Monitor	8.5	Monitor	Monitor	15	Monitor	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Parameter	NO3&NO2	TNT	RDX	Hg,T
MIN	-	6	-	-
MAX	Monitor	8.5	Monitor	Monitor
MO.AVG	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr
UNITS	mg/l	mg/l	mg/l	mg/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	NODI=c	NODI=c	NODI=c	NODI=c
CY 2015	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN072: Storm water runoff from maintenance shop, former chemical storage area

Parameter	Flow	pH	TSS	O/G	COD	BETX	Naphth	CLO4	CL, T
MIN	-	Monitor	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	15	Monitor	155	620	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr	1/yr
UNITS	MGD	s.u	mg/l	mg/l	mg/l	ug/l	ug/l	mg/l	mg/l
CY 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
CY 2016	0.485	7.6	5.0	5.0	5.0	1.0	1.0	0.002	5.0
CY 2008	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	0.485	7.6	5.0	5.0	5.0	1.0	1.0	0.002	5.0
3 yr Max	0.485	7.6	5.0	5.0	5.0	1.0	1.0	0.002	5.0

DSN073: Airplane wash waters and storm water runoff

Parameter	Flow	pH	COD	Phosphorus	TSS	O/G	BETX	Naphth	DDT
MIN	-	Monitor	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	Monitor	Monitor	15	Monitor	Monitor	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	MGD	s.u	F	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l
1st S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2017	2.60	7.03	19.5	0.127	5.0	5.0	1.0	20.0	0.05
1st S 2016	0.410	7.98	2.8	0.10	13.0	5.0	1.0	1.0	0.05
2nd S 2016	7.63	7.25	3	5.0	1.0	5.0	1.0	1.0	0.05
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	3.5466	7.42	8.4333	1.74233	6.3333	5.0	1.0	7.3333	0.05
3 yr Max	2.60	7.98	19.500	5.0	13.000	5.0	1.0	20.00	0.05

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN074: Non-contact cooling water and storm water runoff from maintenance shop and equipment storage yard

Parameter	Flow	Temp	O/G	TRC	TDS
MIN	-	6	-	-	-
MAX	Monitor	8.5	15	Monitor	15
MO.AVG	-	-	-	-	-
FREQ	1/6 mo	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	s.u	mg/l	mg/l	mg/l
1st Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1stQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

DSN074: Non-contact cooling water and storm water runoff from maintenance shop and equipment storage yard

Parameter	Flow	pH	COD	TRC	TSS	O/G	BETX	Naphth	Mercury
MIN	-	Monitor	-	-	-	-	-	-	-
MAX	Monitor	Monitor	Monitor	0.019	Monitor	15	155	620	Monitor
MO.AVG	-	-	-	-	-	-	-	-	-
FREQ	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo	1/6 mo
UNITS	MGD	s.u	F	mg/l	mg/l	mg/l	ug/l	ug/l	ug/l
1st S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2nd S 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit

DSN075: Vehicle wash waters and storm water runoff

Parameter	Flow	pH	P	TSS	O/G	BETX	Naphth	COD
MIN	-	6	-	-	-	-	-	-
MAX	Monitor	8.5	0.019	Monitor	15	155	620	Monitor
MO.AVG	-	-	-	-	-	-	-	-
FREQ	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR	1/QTR
UNITS	MGD	s.u	mg/l	mg/l	mg/l	ug/l	ug/l	mg/l
1st Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2017	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1st Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2016	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
1stQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
2ndQ 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3rd Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
4th Q 2015	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Avg.	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c
3 yr Max	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c	NODI=c

Note shaded cells indicate the detection limit value. The true value was below the detection limit.

Note shaded cells indicate the detection limit value. The true value was below the detection limit

GUARDIAN SYSTEMS, INC.

1108 Ashville Road
P.O. Box 190
Leeds, Alabama 35094

Telephone 205/ 699-6647
Wats 866/729-7211
Fax 205/699-3882

25 February 2015

Wolf Creek Federal Services: Redstone Arsenal
Attn: Mr. George Masters
Post Office Box 8200
Redstone Arsenal, AL 35808

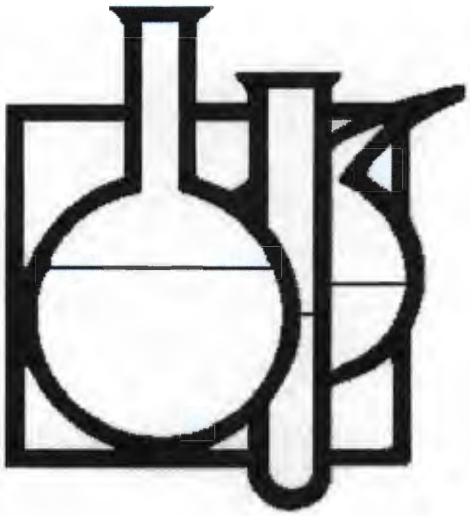
Work Orders: 1501-331-1
Effluent toxicity sample submitted for 7 Day Toxicity on 27 January 2015

Analysis Performed by: Christy Fantow

Report Generated by: Christy Fantow

Report Reviewed by: Donna R

Final Report Approved by: Linda Miller



Guardian Systems, Inc.

1108 Ashville Road
Leeds, Al 35094

[Phone] *1.205.699.6647* [Fax] *1.205.699.3882* [Web] *www.gsilab.com*

Wolf Creek Federal Services
Redstone Arsenal

Toxicity Report for
January 2015

Prepared By: Christine Santoro
Completed: 25 February 2015

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

TOXICITY TEST REPORT SUMMARY

1. GENERAL:

NPDES Permit Number: **AL0000019** DSN: **002** COUNTY: **Madison**

Permittee: **US Army Aviation and Missile Command**

Facility Name: **IMSE-RED-PWE Redstone Arsenal, Alabama**

Agent Submitting Report: **Mr. Ramzi Makkouk**

Lab Conducting Toxicity Test(s): **Guardian Systems, Inc.**

Month Toxicity Test(s) Required: **January** Scheduled Test(s): **X** Accelerated Test(s):

Test Type Required: _____48-Hr Acute Screening: _____24-Hr Acute Screening

__X__ Short-term Chronic Screening _____Other (specify) _____

	Test Organism: Ceriodaphnia dubia			Test Organism: Pimephales promelas		
Sample #	Date/Time Start MM/DD/YY HH:MM	Date/Time Ended MM/DD/YY HH:MM	Control Valid	Date/Time Start MM/DD/YY HH:MM	Date/Time Ended MM/DD/YY HH:MM	Control Valid
1	01/27/15 16:30	02/03/15 15:50	YES	01/27/15 16:45	02/03/15 15:10	YES
2						
3						
4						

2A. SUMMARY OF RESULTS FOR SCREENING TESTS:

Test Org.	Effluent Conc.	Test Number 1			Test Number 2			Test Number 3			Test Number 4		
		Surv.	Repr.	Grow	Surv.	Repr.	Grow	Surv.	Repr.	Grow	Surv.	Repr.	Grow
P.p.	100%	Pass	N/A	Pass									
C.d.	100%	Pass	Pass	N/A									

2.B SUMMARY OF RESULTS FOR DEFINITIVE TEST:

Test Org.	Test Solution Concentration (%)							LC50	NOEC	Not Determined

3. LABORATORY ANALYSIS OF UNDILUTED SAMPLES:

Sample ID	BOD_5 mg/L	TSS mg/L	NH_3 mg/L	pH s.u.	TRC mg/L	Alkalinity mg/L	Hardness mg/L	Conductivity µS
1501-331-1	N/A	N/A	<0.1	6.47	<0.1	20	18	55

Municipal Facilities Only

Sample ID	Arsenic µg/L	Cadmium µg/L	Chromium µg/L	Copper µg/L	Lead µg/L	Hexavalent Chromium µg/L

Sample ID	Mercury µg/L	Nickel µg/L	Silver µg/L	Zinc µg/L	Total Cyanide µg/L	Other(s) µg/L

Chemical Analyses Performed By (LAB): **GUARDIAN SYSTEMS, Inc.**

Instantaneous Flow: (1) GPM (2) GPM (3) GPM

Total 24-Hour Flow: (1) **0.297** MGD (2) MGD (3) MGD

Comments:

I Certify under the penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____ DATE: _____

4. SAMPLE COLLECTION:

Split Samples: N/A: X YES: (Explain)

Samples Collected as Specified in the NPDES Permit: YES: X NO: (Explain)

Receiving Water: **Tennessee River**

Design Flow: (MGD)

Sample ID	Sample(s) Collected MM/DD/YY - MM/DD/YY	Arrival Temp. °C	Used in Test(s) MM/DD/YY - MM/DD/YY
1501-331-1	01/26/15 – 01/27/15	4.0	01/27/15 – 02/03/15

5. CONTROL / DILUTION WATER:

Type	Prepared MM/DD/YY	Begin Use MM/DD/YY	Initial Water Chemistries				
			Hard.	Alk.	pH	Cond.	@ C
MHSF	01/05/15	01/06/15	92	60	7.62	291	25.0
MHSF	01/19/15	01/20/15	78	57	7.45	293	25.0
MHSF	01/22/15	01/23/15	81	58	7.52	300	25.0

6. TOXICITY TEST INFORMATION:

Test Species	Organism Age	Organism Source	Test Solution Concentrations (%)					
P.p.	<24 Hours	Aquatox, Inc	Control	100%				
C.d.	<24 Hours	Stock	Control	100%				

Test Species	Test Vessel Type	Vessel Vol. (mL)	Solution Vol. (mL)	Org. / Test Vessel	Replicates Per Conc.
P.p.	Plastic Beaker	500	250	10	4
C.d.	Plastic Beaker	25	20	1	10

Test Species	Temp. Range C	D.O. Range (mg/L)	pH Range (SU)	Light In. Av. (ft.-c)
P.p.	24.1 – 25.4	5.4 – 8.2	6.45 – 7.63	75
C.d.	24.8 – 25.4	7.7 – 8.3	6.99 – 7.65	75

7. FEEDING:

Not Fed: Fed Daily: X Fed Irregular: (Explain in comments below)
Brine Shrimp: Fed **0.15** g Suspension of Newly Hatched Larvae **2** Times Daily.
YCT: Fed **0.12** mL Suspension Containing **1.9** g/L TS Daily.
Algae: Fed **0.12** mL Suspension Containing **3.5×10^7** Algal Cells/mL Daily.

COMMENTS:

8. REFFERENCE TOXICANT TESTS:

TOXICANT: **NaCl (Sodium Chloride)** SOURCE: **Fisher Scientific** CAS#: **7647-14-5**

Solution Concentration Unit: mg/L g/L **X** % Other(specify)

Chronic:

Test Org.	Test Date MM/DD - MM/DD	Control Water	Reference Test Solution Concentrations (From Control to Highest Concentration)						
P.p.	01/20/15 – 01/27/15	MHSF	Cont.	1.0	2.0	3.0	4.0	5.0	6.0
C.d.	01/20/15 – 01/27/15	MHSF	Cont.	0.25	0.50	1.00	1.50	2.00	

Test Org.	Endpoint	NOEC (g/L)	CUSUM Chart Control Limit	Number (n)
P.p.	Survival	2.0	0.79 – 4.04	24
P.p.	Growth	3.0	0.81 – 4.69	24
C.d.	Survival	1.0	0.282 – 1.801	24
C.d.	Reproduction	1.0	0.656 – 0.823	24

Test Org.	LC50 Survival	Lower 95%	Upper 95%	CUSUM LCL	CUSUM UCL	Number (n)
P.p.	3.39	2.52	4.32	2.58	5.91	24
C.d.	1.38	1.04	1.99	0.63	1.97	24

Acute:

Test Org.	Test Date MM/DD - MM/DD	Control Water	Reference Test Solution Concentrations (From Control to Highest Concentration)						
P.p.	01/20/15 – 01/22/15	MHSF	Cont.	5	6	7	8	9	10
C.d.	01/20/15 – 01/22/15	MHSF	Cont.	1.25	1.50	1.75	2.00	2.25	

Test Org.	LC50 Results	Lower 95%	Upper 95%	CUSUM LCL	CUSUM UCL	Number (n)
P.p.	6.94	6.59	7.30	6.214	8.544	24
C.d.	2.06	1.73	2.44	1.695	2.074	24

9. TEST CONDITION VARIABILITY:

9.A. Deviations From Standard test Conditions: **None**

9.B. Test Solution Manipulations or Test Modifications: **None**

10. REQUIRED REPORT ATTACHMENTS:

Attach Copies of Chain-Of-Custody Forms, Reference Toxicant Tests, and Raw Data (Bench Sheets) Pertaining To Physical, Chemical, and Biological Measurements For All Tests. Include Suspended, Interrupted, or Discontinued Toxicity Tests Data.

COMMENTS:

11. C CHRONIC SCREENING TOXICITY TESTS RESULTS (Freshwater):

TEST ORGANISM: ***Ceriodaphnia dubia***
Were Neonates Used to Begin the Test Within 8 hours of the same age?: **Yes**
Did 60% of the CONTROL Females Produce Their Third Brood? YES: **X** NO:
SURVIVAL
CHRONIC TOXICITY INDICATED: YES: NO: **X**
NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: **X**
CONTROL (0%): 24h: **100%** 48h: **100%** END: **100%** EFFLUENT(100%): 24h: **100%** 48h: **100%** End: **100%**
Fishers Exact Test: A = , B = , a = , b =

REPRODUCTION (Average Neonates/Female)
CHRONIC TOXICITY INDICATED: YES: NO: **X**
CONTROL (0%): **17.8** EFFLUENT (100%): **19.4**
NO REPRODUCTION STATISTICAL ANALYSIS NECESSARY:
Normally Distributed: YES: **X** NO:
Test Statistic: **-0.89** Critical Value: **1.74** (Parametric)
Equal Variance: Unequal Variance:
F Statistic: **1.28** Critical F: **6.54**
t Test Statistic: **0.964** t Test Critical Value: **0.868**
Sample Rank Sum: #Reps.: Critical Rank Sum: (Non-Parametric)

COMMENTS:

TEST ORGANISM: ***Pimephales promelas***
MORTALITY
CHRONIC TOXICITY INDICATED: YES: NO: **X**
CONTROL (0%): 24h: **100%** 48h: **100%** End: **97.5%** EFFLUENT (100%): 24h: **100%** 48h: **100%** End: **95%**
NO MORTALITY STATISTICAL ANALYSIS NECESSARY:
Normally Distributed: YES: NO: **X**
Test Statistic: **0.7168** Critical Value: **0.749** (Parametric)
Equal Variance: Unequal Variance:
F Statistic: **3.4995** Critical F: **47.47**
t Test Statistic: **0.1058** t Test Critical Value: **1.944**
Sample Rank Sum: #Reps.: Critical Rank Sum: (Non-Parametric)

GROWTH - Mean Dry Weight (mg)
CHRONIC TOXICITY INDICATED: YES: NO: **X**
CONTROL(0%): **0.531 mg** EFFLUENT(100%): **0.538 mg**
NO GROWTH STATISTICAL ANALYSIS NECESSARY:
Normally Distributed: YES: **X** NO:
Test Statistic: **0.9559** Critical Value: **0.749** (Parametric)
Equal Variance: Unequal Variance:
F Statistic: **2.8704** Critical F: **47.47**
t Test Statistic: **-0.1077** t Test Critical Value: **1.944**
Sample Rank Sum: #Reps.: Critical Rank Sum: (Non-Parametric)

COMMENTS:

SURVIVAL AND REPRODUCTION TEST

Test Date: 1/27/15 BIOLOGIST: C.Santoro
2/3/15

Wolf Creek Federal Services
Redstone Arsenal

ONE TAILED T-TEST

Y1 :MEAN OF THE CONTROL
Y2 :MEAN OF THE EFFLUENT
V1 :VARIANCE OF THE CONTROL
V2 :VARIANCE OF THE EFFFLUENT
N1 :NUMBER OF REPLICATES IN CONTROL
N2 :NUMBER OF REPLICATES IN EFFLUENT

$$T = \frac{Y1 - Y2}{SP * \sqrt{(1/N1) + (1/N2)}}$$

SP :SQRT(((N1-1)*V1 + (N2-1)*V2)/(N1+N2-2))

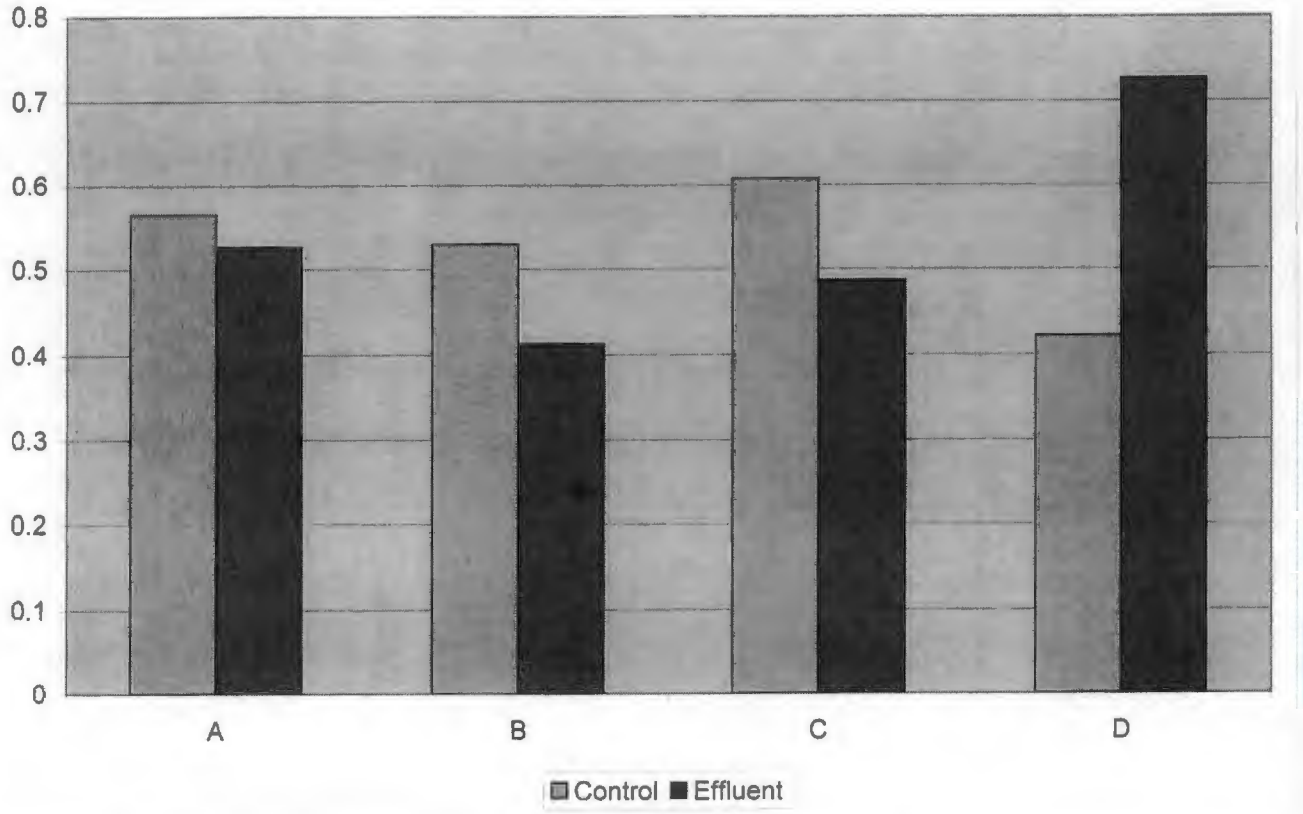
Y1=	17.8
Y2=	19.4
V1=	18.16
V2=	14.24
N1=	10
N2=	10
SP=	4.0249
T=	-0.8889

FOR 18 DEGREES OF FREEDOM AT K=1
THE CRITICAL T VALUE IS 1.74

-0.89 < 1.74 THEREFORE, THE TEST FINDS THAT REPRODUCTION IN THE EFFLUENT IS NOT SIGNIFICANTLY LOWER THAN IN THE CONTROL.

Fathead Minnow Growth
Wolf Creek Federal Services 100%

01/27/15
to
02/03/15



	Control	Effluent
A	0.564	0.526
B	0.529	0.413
C	0.607	0.486
D	0.422	0.726

Pimephales promelas

LARVALS GROWTH TEST

Wolf Creek Federal Services
Redstone Arsenal

Test Date: 01/27/15
02/03/15

SHAPIRO-WILKS TEST

	MEAN DRY WGT mg	MEAN OBSERV.	CENTERED OBSERV.	(Xi - X)²		
CONTROL	0.5640	0.5305	0.0335	0.0335	0.0000	0.0011
	0.5290	0.5305	-0.0015	-0.0015	0.0000	0.0000
	0.6070	0.5305	0.0765	0.0765	0.0000	0.0059
	0.4220	0.5305	-0.1085	-0.1085	0.0000	0.0118
mean	0.5305	center mean	0.0000	4		
std. dev.	0.0685	std. dev.	0.0685	$\sum_{i=1}^{r} (Xi - X)^2$ =		0.0188
var.	0.0047	var.	0.0047			
EFFLUENT	0.5260	0.5378	-0.0117	-0.0117	0.0000	0.0001
	0.4130	0.5378	-0.1248	-0.1248	0.0000	0.0156
	0.4860	0.5378	-0.0518	-0.0518	0.0000	0.0027
	0.7260	0.5378	0.1883	0.1883	0.0000	0.0354
mean	0.5378	center mean	0.0000	4		
std dev.	0.1160	std. dev.	0.1160	$\sum_{i=1}^{r} (Xi - X)^2$ =		0.0538
var.	0.0135	var.	0.0135			
				THEREFORE D=		0.0726

	ORDERED OBSERVATION	ai	Xn-		Xi
N=1	-0.1248	0.6052	0.1883	-0.1248	0.1894
N=2	-0.1085	0.3164	0.0765	-0.1085	0.0585
N=3	-0.0518	0.1743	0.0335	-0.0518	0.0149
N=4	-0.0117	0.0561	-0.0015	-0.0117	0.0006
N=5	-0.0015	4			
N=6	0.0335	$[\sum_{i=1}^{r} ai\,(Xn-i+1 - Xi)]^2$ =			0.0694
N=7	0.0765				
N=8	0.1883				

0.0694
W= 0.0726

THE CRITICAL VALUE AT 0.01 LEVEL IS 0.749
0.9559 > 0.749 THEREFORE, THE
CONCLUSION OF THE TEST IS THAT
THE DATA ARE NORMALLY DISTRIBUTED

W= 0.9559

Pimephales promelas LARVAL GROWTH TEST

Wolf Creek Federal Services Test Date: 1/27/15
Redstone Arsenal 2/3/15

TWO TAILED F-TEST AT 0.005

	MEAN DRY WGT.mg		MEAN DRY WGT.mg
CONTROL	0.5640	EFFLUENT	0.5260
	0.5290		0.4130
	0.6070		0.4860
	0.4220		0.7260
mean	0.5305	mean	0.5378
std.dev.	0.0685	std.dev.	0.1160
var.	0.0047	var.	0.01345

$$F = \frac{0.01345}{0.00469}$$

$$F = 2.87038$$

DEGREES OF FREEDOM: 3 AND CITICAL f VALUE: 47.47
2.8704 < 47.47
THEREFORE, THE CONCLUSION OF THIS TEST IS THAT THE VARIANCES OF THE CONTROL AND THE EFFLUENT ARE HOMOGENEOUS.

Pimephales promelas LARVAL GROWTH TEST

Wolf Creek Federal Services
Redstone Arsenal

Test Date: 01/27/15
02/03/15

ONE TAILED T-TEST

Y1 :MEAN OF THE CONTROL
Y2 :MEAN OF THE EFFLUENT
V1 :VARIANCE OF THE CONTROL
V2 :VARIANCE OF THE EFFFLUENT
N1 :NUMBER OF REPLICATES IN CONTROL
N2 :NUMBER OF REPLICATES IN EFFLUENT

$$T = \frac{Y1 - Y2}{SP^* \sqrt{(1/N1) + (1/N2)}}$$

SP :SQRT(((N1-1)*V1 + (N2-1)*V2)/(N1+N2-2))

Y1=	0.5305
Y2=	0.5378
V1=	0.00469
V2=	0.01345
N1=	4
N2=	4
SP=	0.0952
T=	-0.1077

FOR 6 DEGREES OF FREEDOM AT K=1
THE CRITICAL T VALUE IS 1.944

-0.1077 < 1.944 THEREFORE THE TEST
FINDS THAT GROWTH IN THE EFFLUENT
IS NOT SIGNIFICANTLY LOWER THAN IN THE CONTROL

Pimephales promelas

LARVALS SURVIVIAL TEST

Wolf Creek Federal Services
Redstone Arsenal

Test Date: 01/27/15
02/03/15

SHAPIRO-WILKS TEST

		Control	Effluent
Proportion	A	1	1
	B	1	0.8
	C	1	1
	D	0.9	1

ARC SINE TRANSFORMATION	A	1.4120	1.4120
	B	1.4120	1.1071
	C	1.4120	1.4120
	D	1.2490	1.4120

	MEAN DRY WGT mg	MEAN OBSERV.	CENTERED OBSERV.	$(Xi - X)^2$		
CONTROL	1.4120	1.3713	0.0407	0.0407	0.0000	0.0017
	1.4120	1.3713	0.0407	0.0407	0.0000	0.0017
	1.4120	1.3713	0.0407	0.0407	0.0000	0.0017
	1.2490	1.3713	-0.1222	-0.1222	0.0000	0.0149
mean	1.3713	center mean	0.0000	4		
std. dev.	0.0706	std. dev.	0.0706	$\sum_{i=1}^{4} M (Xi - X)^2 =$		0.0200
var.	0.0050	var.	0.0050			
EFFLUENT	1.4120	1.3358	0.0762	0.0762	0.0000	0.0058
	1.1071	1.3358	-0.2287	-0.2287	0.0000	0.0523
	1.4120	1.3358	0.0762	0.0762	0.0000	0.0058
	1.4120	1.3358	0.0762	0.0762	0.0000	0.0058
mean	1.3358	center mean	0.0000	4		
std dev.	0.1320	std. dev.	0.1320	$\sum_{i=1}^{4} M (Xi - X)^2 =$		0.0697
var.	0.0174	var.	0.0174			
				THEREFORE D=		0.0897

	ORDERED OBSERVATION	ai	Xn-i+		Xi
N=3	-0.2287	0.6052	0.0762	-0.2287	0.1845
N=2	-0.1222	0.3164	0.0762	-0.1222	0.0628
N=6	0.0407	0.1743	0.0762	0.0407	0.0062
N=4	0.0407	0.0561	0.0407	0.0407	0.0000
N=7	0.0407	4			
N=5	0.0762	$[\sum_{i=1}^{4} M\ ai\ (Xn-i+ - Xi)]^2$ =			0.0643
N=8	0.0762				
N=1	0.0762				

0.0643

W= 0.0897

THE CRITICAL VALUE AT 0.01 LEVEL IS **0.749**
0.7168 < 0.749 THEREFORE, THE
CONCLUSION OF THE TEST IS THAT
THE DATA ARE NOT NORMALLY DISTRIBUTED

W= 0.7168

Pimephales promelas LARVAL SURVIVAL TEST

Wolf Creek Federal Services Test Date: 1/27/15
Redstone Arsenal 2/3/15

TWO TAILED F-TEST AT 0.005

	MEAN DRY WGT.mg		MEAN DRY WGT.mg
CONTROL	1.4120	EFFLUENT	1.4120
	1.4120		1.1071
	1.4120		1.4120
	1.2490		1.4120
mean	1.3713	mean	1.3358
std.dev.	0.0706	std.dev.	0.1320
var.	0.0050	var.	0.01743

$$F = \frac{0.01743}{0.00498}$$

$$F = 3.49949$$

DEGREES OF FREEDOM: 3 AND CITICAL f VALUE: 47.47
3.4995 < 47.47
THEREFORE, THE CONCLUSION OF THIS TEST IS THAT THE VARIANCES OF THE CONTROL AND THE EFFLUENT ARE HOMOGENEOUS.

Pimephales promelas

LARVAL SURVIVAL TEST

Wolf Creek Federal Services
Redstone Arsenal

Test Date: 01/27/15
02/03/15

ONE TAILED T-TEST

Y1 :MEAN OF THE CONTROL
Y2 :MEAN OF THE EFFLUENT
V1 :VARIANCE OF THE CONTROL
V2 :VARIANCE OF THE EFFFLUENT
N1 :NUMBER OF REPLICATES IN CONTROL
N2 :NUMBER OF REPLICATES IN EFFLUENT

SP :SQRT(((N1-1)*V1 + (N2-1)*V2)/(N1+N2-2))

$$T = \frac{Y1 - Y2}{SP^* \, SQRT((1/N1) + (1/N2))}$$

Y1=	1.3713
Y2=	1.3358
V1=	0.00498
V2=	0.01743
N1=	4
N2=	4
SP=	0.1058
T=	0.1058

FOR 6 DEGREES OF FREEDOM AT K=1
THE CRITICAL T VALUE IS 1.944

0.1058 < 1.944 THEREFORE THE TEST
FINDS THAT SURVIVAL IN THE EFFLUENT
IS NOT SIGNIFICANTLY LOWER THAN IN THE CONTROL

GUARDIAN SYSTEMS, INC. Chronic Toxicity Test Data

7 DAY FATHEAD MINNOW TOXICITY TEST--EPA METHOD 1000.0

Customer: Wolf Creek Federal Services: Redstone

Date Start: 27-Jan-15
Date End: 3-Feb-15
Lab ID #s: 1501-331-1

Concentration: Control

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	1/27/15 16:45	7.77	8.4	24.9	1/27/15 16:45	CFS
1	10	10	10	10	40	8:30	1/28/15 16:00	7.97 / 7.90	8.4 / 8.4	24.8 / 24.3	1/28/15 16:20	CFS
2	10	10	10	10	40	8:00	1/29/15 15:40	7.91 / 7.35	8.3 / 6.3	25.0 / 24.4	1/29/15 16:00	CFS
3	10	10	10	10	40	8:00	1/30/15 15:50	7.50 / 7.46	8.5 / 6.9	25.0 /24.3	1/30/15 16:20	CFS
4	10	10	10	10	40	8:10	1/31/15 15:10	7.94 / 7.27	8.3 / 6.2	25.2 / 24.4	1/31/15 15:50	CFS
5	10	10	10	10	40	8:00	2/01/15 14:45	7.86 / 7.50	8.1 / 6.0	25.2 / 24.3	2/01/15 15:10	CFS
6	10	10	10	10	40	8:15	2/02/15 15:20	7.71 / 7.43	8.4 / 6.4	25.3 / 24.2	2/02/15 15:45	CFS
7	10	10	10	9	39	-	2/03/15 15:10	6.95	6.3	24.0	2/03/15 15:10	CFS
							Range	6.95 - 7.97	6.0 - 8.5	24.0 - 25.3		

Concentration: 100%

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	1/27/15 16:45	7.55	8.1	25.4	1/27/15 16:45	CFS
1	10	10	10	10	40	8:30	1/28/15 16:00	7.63 / 7.54	8.2 / 8.1	24.8 / 24.4	1/28/15 16:20	CFS
2	10	10	10	10	40	8:00	1/29/15 15:40	7.43 / 6.82	7.9 / 5.8	25.1 / 24.7	1/29/15 16:00	CFS
3	10	10	10	10	40	8:00	1/30/15 15:50	7.42 / 7.18	8.1 / 6.3	24.9 / 24.5	1/30/15 16:20	CFS
4	10	10	10	10	40	8:10	1/31/15 15:10	7.19 / 6.84	7.8 / 5.7	25.3 / 24.1	1/31/15 15:50	CFS
5	10	10	10	10	40	8:00	2/01/15 14:45	7.25 / 6.95	8.0 / 5.4	25.2 / 24.2	2/01/15 15:10	CFS
6	10	8	10	10	38	8:15	2/02/15 15:20	7.33 / 6.98	7.7 / 6.0	24.9 / 24.3	2/02/15 15:45	CFS
7	10	8	10	10	38	-	2/03/15 15:10	6.45	6.1	24.3	2/03/15 15:10	CFS
							Range	6.45 - 7.63	5.4 - 8.2	24.1 - 25.4		

GUARDIAN SYSTEMS, INC. Chronic Toxicity Test Data

7 DAY FATHEAD MINNOW TOXICITY TEST--EPA METHOD 1000.0

Customer: Wolf Creek Federal Services

Date Start: 27 Jan 15
Date End: 3 Feb 15
Lab ID #s: 1501-331-1

Concentration: Control

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1645 27 Jan 15	7.77	8.4	24.9	1645 27 Jan 15	CFB
1	10	10	10	10	40	830	1600 28 Jan 15	7.97 / 7.90	8.4 / 8.4	24.8 / 24.3	1620 28 Jan 15	CFB
2	10	10	10	10	40	800	1540 29 Jan 15	7.91 / 7.35	8.3 / 6.3	25.0 / 24.4	1600 29 Jan 15	CFB
3	10	10	10	10	40	800	1550 30 Jan 15	7.50 / 7.46	8.5 / 6.9	25.0 / 24.3	1620 30 Jan 15	CFB
4	10	10	10	10	40	810	1540 31 Jan 15	7.94 / 7.27	8.3 / 6.2	25.2 / 24.4	1550 31 Jan 15	CFB
5	10	10	10	10	40	800	1445 1 Feb 15	7.86 / 7.50	8.1 / 6.0	25.2 / 24.3	1510 1 Feb 15	CFB
6	10	10	10	10	40	815	1520 2 Feb 15	7.71 / 7.43	8.4 / 6.4	25.3 / 24.2	1545 2 Feb 15	CFB
7	10	10	10	9	39	—	1510 3 Feb 15	6.95	6.3	24.0	1510 3 Feb 15	CFB
							Range	6.95 – 7.97	6.0 – 8.5	24.0 – 25.3		

Concentration: 100%

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1645 27 Jan 15	7.55	8.1	25.4	1645 27 Jan 15	CFB
1	10	10	10	10	40	830	1600 28 Jan 15	7.63 / 7.54	8.2 / 8.1	24.8 / 24.4	1620 28 Jan 15	CFB
2	10	10	10	10	40	800	1540 29 Jan 15	7.43 / 6.82	7.9 / 5.8	25.1 / 24.7	1600 29 Jan 15	CFB
3	10	10	10	10	40	800	1550 30 Jan 15	7.42 / 7.18	8.1 / 6.3	24.9 / 24.5	1620 30 Jan 15	CFB
4	10	10	10	10	40	810	1540 31 Jan 15	7.15 / 6.84	7.8 / 5.7	25.3 / 24.1	1550 31 Jan 15	CFB
5	10	10	10	10	40	800	1445 1 Feb 15	7.25 / 6.95	8.0 / 5.4	25.3 / 24.2	1510 1 Feb 15	CFB
6	10	8	10	10	38	815	1520 2 Feb 15	7.33 / 6.98	7.7 / 6.0	24.9 / 24.3	1545 2 Feb 15	CFB
7	10	8	10	10	38	—	1510 3 Feb 15	6.45	6.1	24.3	1510 3 Feb 15	CFB
							Range	6.45 – 7.63	5.4 – 8.2	24.1 – 25.4		

GUARDIAN SYSTEMS, INC. CHRONIC TOXICIY TEST DATA
7 DAY FATHEAD MINNOW TOXICITY TEST – EPA METHOD 1000.0

WEIGH DATA FOR *PIMEPHALES PROMELAS*

Discharger: Wolf Creek Federal Services: Red Stone **Test Dates:** 01/27/2015 – 02/03/2015 **Dry Temp:** 110°C

Test ID: 1501-331-1 **Weighing Date:** 02/04/2015 **Dry Time:** 18 hrs

Conc.	Rep. No.	Weight of Boat (g)	Dry Weight Boat + Larvae (g)	Weight of Larvae Total (mg)	# of Larvae	Mean Dry Weight of Larvae (mg)	Average for Conc.
Control	1	1.19080	1.19644	5.64	10	0.564	0.531
	2	1.19082	1.19611	5.29	10	0.526	
	3	1.18129	1.18736	6.07	10	0.607	
	4	1.19871	1.20293	4.22	9	0.422	
100%	1	1.21780	1.22306	5.26	10	0.526	0.538
	2	1.21757	1.22170	4.13	8	0.413	
	3	1.20459	1.20945	4.86	10	0.486	
	4	1.22060	1.22786	7.26	10	0.726	

GUARDIAN SYSTEMS, INC. CHRONIC TOXICIY TEST DATA
7 DAY FATHEAD MINNOW TOXICITY TEST – EPA METHOD 1000.0

WEIGH DATA FOR *PIMEPHALES PROMELAS*

Discharger: Wolf Creek Fed. Sew. **Test Dates:** 27 Feb 15 - 3 Feb 15 **Dry Temp:** 110°C

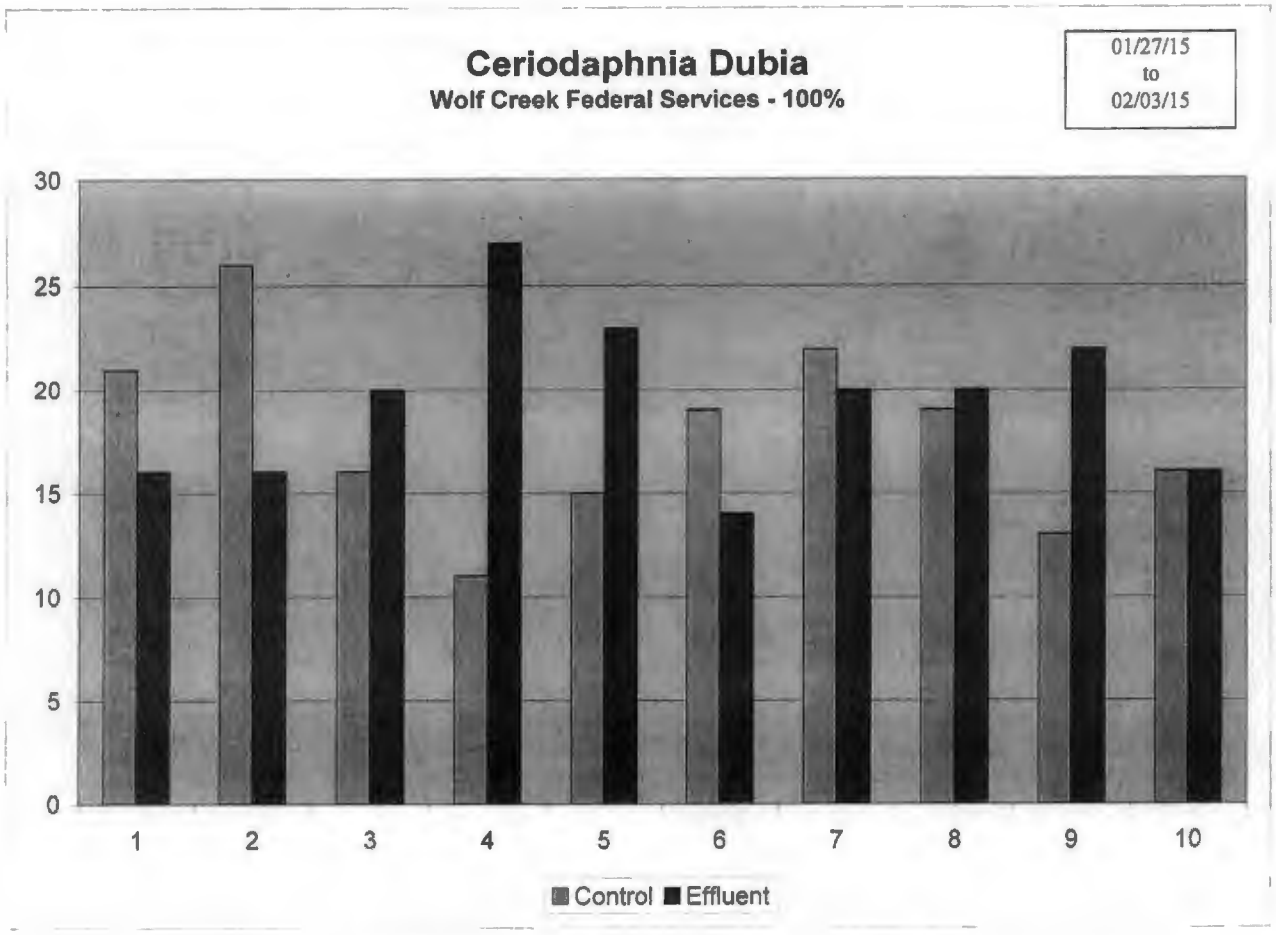
Test ID: 1501-331-1 **Weighing Date:** 4 Feb 15 **Dry Time:** 18 hrs

Conc.	Rep. No.	Weight of Boat (g)	Dry Weight Boat + Larvae (g)	Weight of Larvae Total (mg)	# of Larvae	Mean Dry Weight of Larvae (mg)	Average for Conc.
Control	1	1.19080	1.19644	5.64	10	0.564	0.531
	2	1.19082	1.19611	5.29	10	0.529	
	3	1.18729	1.18736	6.07	10	0.607	
	4	1.19871	1.20293	4.22	9	0.422	
100%	1	1.21780	1.22306	5.26	10	0.526	0.536
	2	1.21757	1.22170	4.13	8	0.413	
	3	1.20459	1.20945	4.86	10	0.486	
	4	1.22060	1.22786	7.26	10	0.726	

1.1908	1.19644	5.640	0.531
1.19082	1.19611	5.290	
1.18129	1.18736	6.070	**CNT**
1.19871	1.20293	4.220	
1.2178	1.22306	5.260	0.538
1.21757	1.2217	4.130	
1.20459	1.20945	4.860	**EFF**
1.2206	1.22786	7.260	

Wolf Creek 01/27/15

BIOLOGIST: C.Santoro



Control	
Replicate	Young
1	21
2	26
3	16
4	11
5	15
6	19
7	22
8	19
9	13
10	16

Effluent	
Replicate	Young
1	16
2	16
3	20
4	27
5	23
6	14
7	20
8	20
9	22
10	16

Ceriodaphnia dubia SURVIVAL AND REPRODUCTION TEST

Test Date: 1/27/15
2/3/15

Wolf Creek Federal Services BIOLOGIST: C.Santoro
Redstone Arsenal

SHAPIRO-WILKS TEST

	NO. OF YOUNG	MEAN OF OBSERVA.	CENTERED OBSERVA.		$(Xi - \bar{X})^2$	
CONTROL	21	17.80	3.20	3.2000	0.0000	10.2400
	26	17.80	8.20	8.2000	0.0000	67.2400
	16	17.80	-1.80	-1.8000	0.0000	3.2400
	11	17.80	-6.80	-6.8000	0.0000	46.2400
	15	17.80	-2.80	-2.8000	0.0000	7.8400
	19	17.80	1.20	1.2000	0.0000	1.4400
	22	17.80	4.20	4.2000	0.0000	17.6400
	19	17.80	1.20	1.2000	0.0000	1.4400
	13	17.80	-4.80	-4.8000	0.0000	23.0400
	16	17.80	-1.80	-1.8000	0.0000	3.2400
mean	17.80	center mean	0.00	10		
std dev.	4.26	std. dev.	4.26		$\sum(Xi - \bar{X})^2 =$	181.6000
var.	18.16	var.	18.16	i=1		

EFFLUENT	16	19.40	-3.40	-3.4000	0.0000	11.5600
	16	19.40	-3.40	-3.4000	0.0000	11.5600
	20	19.40	0.60	0.6000	0.0000	0.3600
	27	19.40	7.60	7.6000	0.0000	57.7600
	23	19.40	3.60	3.6000	0.0000	12.9600
	14	19.40	-5.40	-5.4000	0.0000	29.1600
	20	19.40	0.60	0.6000	0.0000	0.3600
	20	19.40	0.60	0.6000	0.0000	0.3600
	22	19.40	2.60	2.6000	0.0000	6.7600
	16	19.40	-3.40	-3.4000	0.0000	11.5600
mean	19.40	center mean	0.00	10		
std dev.	3.77	std. dev.	3.77		$\sum(Xi - \bar{X})^2 =$	142.4000
var.	14.24	var.	14.24	i=1		

THEREFORE D=	324.0000

Ceriodaphnia dubia SURVIVAL AND REPRODUCTION TEST

Test Date: 1/27/15
2/3/15

Wolf Creek Federal Services
Redstone Arsenal

BIOLOGIST: C. Santoro

	ORDERED OBSERVATION
N=1	-6.8000
N=2	-5.4000
N=3	-4.8000
N=4	-3.4000
N=5	-3.4000
N=6	-3.4000
N=7	-2.8000
N=8	-1.8000
N=9	-1.8000
N=10	0.6000
N=11	0.6000
N=12	0.6000
N=13	1.2000
N=14	1.2000
N=15	2.6000
N=16	3.2000
N=17	3.6000
N=18	4.2000
N=19	7.6000
N=20	8.2000

	a	X n-i+	Xi	
	0.4734	8.2000	-6.8000	7.1010
	0.3211	7.6000	-5.4000	4.1743
	0.2565	4.2000	-4.8000	2.3085
	0.2085	3.6000	-3.4000	1.4595
	0.1686	3.2000	-3.4000	1.1128
	0.1334	2.6000	-3.4000	0.8004
	0.1013	1.2000	-2.8000	0.4052
	0.0711	1.2000	-1.8000	0.2133
	0.0422	0.6000	-1.8000	0.1013
	0.014	0.6000	0.6000	0.0000

$$\sum_{i=1}^{10} a_i (X_{n-i+} - X_i)]^2 = 312.4516$$

$$W = \frac{312.5}{324.0}$$

$$W = 0.964$$

THE CRITICAL VALUE AT 0.01 IS 0.8680
0.964 > 0.868 THEREFORE, THE
CONCLUSION OF THE TEST IS:
DATA ARE NORMALLY DISTRIBUTED

Ceriodaphnia dubia SURVIVAL AND REPRODUCTION TEST

Test Date: 1/27/15
2/3/15

BIOLOGIST: C.Santoro

Wolf Creek Federal Services
Redstone Arsenal

TWO TAILED F-TEST AT 0.005

CONTROL		EFFLUENT	
	21		16
	26		16
	16		20
	11		27
	15		23
	19		14
	22		20
	19		20
	13		22
	16		16
mean	17.80	mean	19.40
std.dev.	4.26	std.dev.	3.77
var.	18.16	var.	14.24

$$F = \frac{18.16}{14.24}$$

$$F = 1.28$$

DEGREES OF FREEDOM: 9 AND
CRITICAL F VALUE: 6.54

1.28 < 6.54
THEREFORE, THE CONCLUSION OF THE TEST IS THAT THE VARIANCES OF THE CONTROL AND THE EFFLUENT ARE HOMOGENEOUS

GUARDIAN SYSTEMS, INC. Chronic Toxicity Test Data

7 DAY CERIODAPHNIA DUBIA TOXICITY TEST -- EPA METHOD 1000.2

Customer: Wolf Creek Federal Services: Redstone

Date Start: 27-Jan-15

Date End: 3-Feb-15

Concentration: Control

Lab ID #s: 1501-331-1

Test Day	Replicate Number										Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
	1	2	3	4	5	6	7	8	9	10							
0	1	1	1	1	1	1	1	1	1	1	10	1/27/15 16:30	7.77	8.4	24.9	1/27/15 16:30	CFS
1	1	1	1	1	1	1	1	1	1	1	10	1/28/15 16:30	7.97 / 8.01	8.4 / 8.2	24.8 / 24.8	1/28/15 16:45	CFS
2	1	1	1	1	1	1	1	1	1	1	10	1/29/15 16:10	7.91 / 7.97	8.3 / 8.0	25.0 / 25.3	1/29/15 16:30	CFS
3	1	1	1	1	1	1	1	1	1	1	10	1/30/15 16:30	7.50 / 8.05	8.5 / 8.2	25.0 / 25.2	1/30/15 16:30	CFS
4	1	1	1	1	1	1	1	1	1	1	10	1/31/15 16:00	7.94 / 8.11	8.3 / 8.2	25.2 / 25.3	1/31/15 16:30	CFS
5	1/1	1/7	1/4	1/2	1/1	1/1	1/5	1/2	1/4	1/3	10/30	2/01/15 115:30	7.86 / 7.99	8.1 / 8.1	25.2 / 25.4	2/01/15 16:10	CFS
6	1/14	1/6	1/10	1/6	1/6	1/13	1/7	1/7	1/8	1/9	10/86	2/02/15 16:00	7.71 / 7.78	8.4 / 7.8	25.3 / 25.3	2/02/15 16:30	CFS
7	1/6	1/13	1/2	1/3	1/8	1/5	1/10	1/10	1/1	1/4	10/62	2/03/15 15:50	7.28	7.7	24.7	2/03/15 15:50	CFS
8																	
Neonates	21	26	16	11	15	19	22	19	13	16	17.8	**Range**	7.28 - 8.11	7.7 - 8.5	24.7 - 25.4		

GUARDIAN SYSTEMS, INC. Chronic Toxicity Test Data

7 DAY CERIODAPHNIA DUBIA TOXICITY TEST -- EPA METHOD 1000.2

Customer: Wolf Creek Federal Services: Redstone **Lab ID #s:** 1501-331-1

Concentration: 100%

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1/27/15 16:30	7.55	8.1	25.4	1/27/15 16:30	CFS
1	1	1	1	1	1	1	1	1	1	1	10	1/28/15 16:30	7.63 / 7.65	8.2 / 8.3	24.8 / 24.8	1/28/15 16:45	CFS
2	1	1	1	1	1	1	1	1	1	1	10	1/29/15 16:10	7.43 / 7.31	7.9 / 7.8	25.1 / 25.3	1/29/15 16:30	CFS
3	1	1	1	1	1	1	1	1	1	1	10	1/30/15 16:30	7.42 / 7.47	8.1 / 8.2	24.9 / 25.2	1/30/15 16:30	CFS
4	1	1	1	1	1	1	1	1	1	1	10	1/31/15 16:00	7.19 / 7.25	7.8 / 8.0	25.3 / 25.2	1/31/15 16:30	CFS
5	1/5	1/6	1/2	1/4	1/3	1/4	1/2	1/3	1/5	1/2	10/36	2/01/15 115:30	7.25 / 7.38	8.0 / 8.1	25.2 / 25.4	2/01/15 16:10	CFS
6	1/7	1/8	1/8	1/10	1/8	1/7	1/6	1/8	1/6	1/8	10/76	2/02/15 16:00	7.33 / 7.38	7.7 / 7.8	24.9 / 25.3	2/02/15 16:30	CFS
7	1/4	1/2	1/10	1/13	1/12	1/3	1/12	1/9	1/11	1/6	10/82	2/03/15 15:50	6.99	7.9	24.9	2/03/15 15:50	CFS
8																	
Neonates	16	16	20	27	23	14	20	20	22	16	19.4	Range	6.99 - 7.65	7.7 - 8.3	24.8 - 25.4		

GUARDIAN SYSTEMS, INC. Chronic Toxicity Test Data

7 DAY CERIODAPHNIA DUBIA TOXICITY TEST -- EPA METHOD 1000.2

Customer: Wolf Creek Federal Services **Date Start:** 27 Jan 15

Date End: 3 Feb 15

Concentration: Control **Lab ID #s:** 1501-331-1

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1630 27Jan15	7.77	8.4	24.9	1630 27Jan15	CFS
1	1	1	1	1	1	1	1	1	1	1	10 / —	1630 28Jan	7.97 / 8.01	8.4 / 8.2	24.8 / 24.8	1645 28Jan	CFS
2	1	1	1	1	1	1	1	1	1	1	10 / —	1610 29Jan15	7.91 / 7.97	8.3 / 8.0	25.0 / 25.3	1650 29Jan15	CFS
3	1	1	1	1	1	1	1	1	1	1	10 / —	1630 30Jan15	7.80 / 8.05	8.5 / 8.2	25.0 / 25.2	1650 30Jan15	CFS
4	1	1	1	1	1	1	1	1	1	1	10 / —	1600 31Jan	7.94 / 8.11	8.3 / 8.2	25.2 / 25.3	1630 31Jan15	CFS
5	1/1	1/1	1/4	1/2	1/1	1/1	1/5	1/2	1/4	1/3	10 / 30	1530 1Feb	7.86 / 7.99	8.1 / 8.1	25.2 / 25.4	1610 1Feb15	CFS
6	1/4	1/6	1/10	1/6	1/6	1/13	1/7	1/7	1/8	1/9	10 / 86	1600 2Feb	7.71 / 7.78	8.4 / 7.8	25.3 / 25.3	1630 2Feb15	CFS
7	1/6	1/13	1/2	1/3	1/8	1/5	1/10	1/10	1/1	1/4	10 / 62	1550 3Feb	7.28	7.7	24.7	1550 3Feb15	CFS
8											/	/	/	/	/	/	
Neonates	21	26	16	11	15	19	22	19	13	16	17.8	Range	7.28 - 8.11	7.7 - 8.5	24.7 - 25.4		

GUARDIAN SYSTEMS, INC. Chronic Toxicity Test Data

7 DAY CERIODAPHNIA DUBIA TOXICITY TEST -- EPA METHOD 1000.2

Customer: Wolf Creek Federal Services **Lab ID #s:** 1501-331-1

Concentration: 100%

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1630 27 Jan 15	7.55	8.1	25.4	1630 27 Jan 15	CJS
1	1	1	1	1	1	1	1	1	1	1	10 / —	1630 28 Jan 15	7.63 / 7.65	8.2 / 8.3	24.8 / 24.8	1641 28 Jan 15	CJS
2	1	1	1	1	1	1	1	1	1	1	10 / —	1610 29 Jan 15	7.43 / 7.31	7.9 / 7.8	25.1 / 25.3	1630 29 Jan 15	CJS
3	1	1	1	1	1	1	1	1	1	1	10 / —	1630 30 Jan 15	7.42 / 7.47	8.1 / 8.2	24.9 / 25.2	1650 30 Jan 15	CJS
4	1	1	1	1	1	1	1	1	1	1	10 / —	1600 31 Jan 15	7.19 / 7.25	7.8 / 8.0	25.3 / 25.2	1630 31 Jan 15	CJS
5	1/5	1/6	1/3	1/4	1/3	1/4	1/2	1/3	1/5	1/2	10 / 56	1530 1 Feb 15	7.25 / 7.38	8.0 / 8.1	25.2 / 25.4	1610 1 Feb 15	CJS
6	1/7	1/8	1/8	1/10	1/8	1/7	1/6	1/8	1/6	1/8	10 / 76	1600 2 Feb 15	7.33 / 7.38	7.7 / 7.8	24.9 / 25.3	1630 2 Feb 15	CJS
7	1/4	1/2	1/10	1/13	1/12	1/3	1/12	1/9	1/11	1/6	10 / 82	1550 3 Feb 15	6.99 /	7.9 /	24.9 /	1550 3 Feb 15	CJS
8											/	/	/	/	/	/	
Neonates	16	16	20	27	23	14	20	20	22	16	19.4	Range	6.99 - 7.65	7.7 - 8.3	24.8 - 25.4		

FLEA BROODS ADDITION TABLE: Wolf Creek Federal 01/27/15

Control

1	2	3	4	5	6	7	8	9	10		
1	7	4	2	1	1	5	2	4	3		**30**
14	6	10	6	6	13	7	7	8	9		**86**
6	13	2	3	8	5	10	10	1	4		**62**
21	**26**	**16**	**11**	**15**	**19**	**22**	**19**	**13**	**16**	**178**	**178**

Effluent

1	2	3	4	5	6	7	8	9	10		
5	6	2	4	3	4	2	3	5	2		**36**
7	8	8	10	8	7	6	8	6	8		**76**
4	2	10	13	12	3	12	9	11	6		**82**
16	**16**	**20**	**27**	**23**	**14**	**20**	**20**	**22**	**16**	**194**	**194**

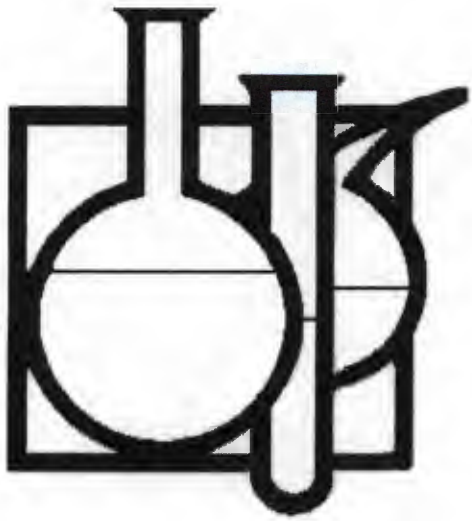
GUARDIAN SYSTEMS, INC. CHRONIC TOXICITY TEST DATA

Toxicity Test Bench Sheet -- Undiluted Sample Measurements

CLIENT: Wolf Creek Federal Services **Start: 27-Jan-2015** **End: 3-Feb-2015**

Sample ID	pH (SU)	DO (mg/L)	Date/Time	Analyst
#1				
1501-331-1	6.47	13.8	1/27/2015 16:10	CFS
#2				
#3				

Test Day	0	1	2	3	4	5	6	7	8	Range
Incubator Thermometer 1:	24.7	24.7	24.5	24.5	24.7	24.5	24.6	24.6		24.5 - 24.7
Incubator Thermometer 2:	24.8	24.9	24.8	24.7	25.2	25.0	25.3	25.5		24.7 - 25.5



Reference Toxicity Data

Wolf Creek Federal Services
Redstone Arsenal

Toxicity Report for
January 2015

SUMMARY DATA FOR *PIMEPHALES PROMELAS* TEST

Laboratory: GSI **Test Dates:** 01/20/15 to 01/27/15

Test ID: January 2015 7 Day Salt Reference **Analyst:** [illegible]

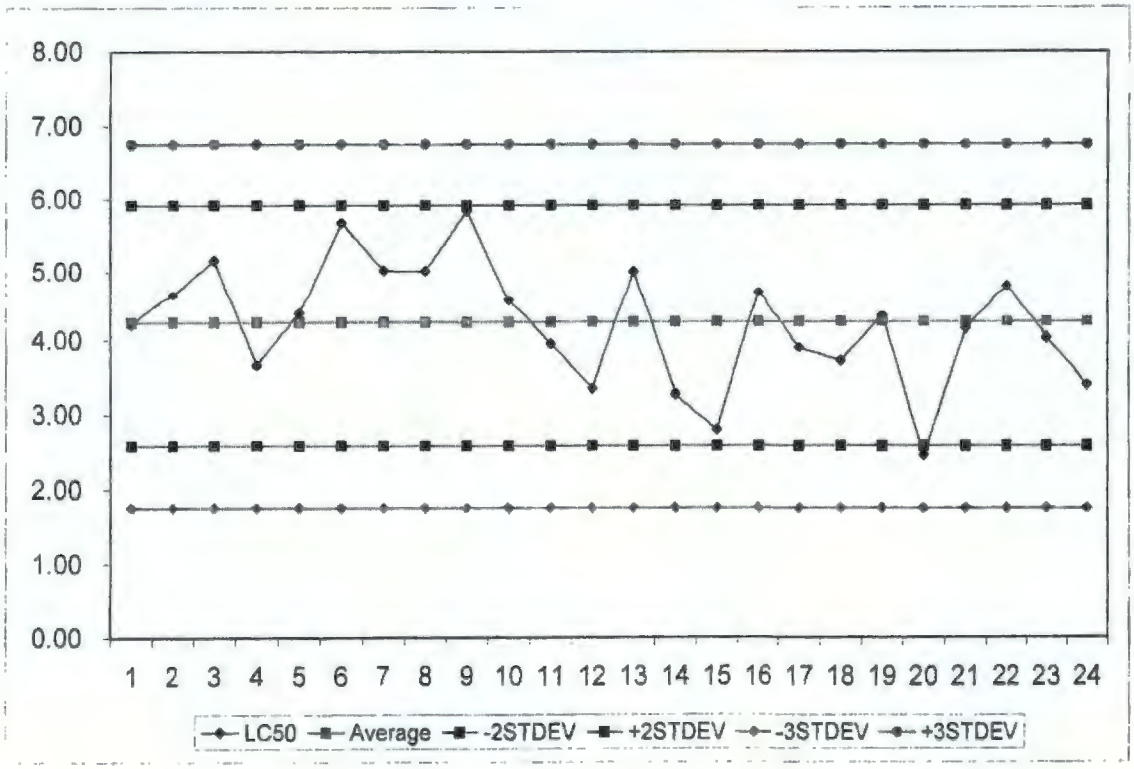
g/L	Control	1.0	2.0	3.0	4.0	5.0	6.0
No. Live Larvae	40	40	35	18	17	14	2
Survival (%)	100	100	87.5	45	42.5	35	5
Mean Dry Wgt of Larvae (mg)	0.360	0.348	0.315	0.167	0.153	0.143	0.029
Temperature Range (°C)	24.0 – 24.7	24.1 – 24.7	24.0 – 24.6	24.0 – 24.5	24.0 – 25.1	24.0 – 25.0	24.0 – 24.9
Dissolved Oxygen Range (mg/L)	6.5 – 8.4	6.5 – 8.3	6.5 – 8.3	6.3 – 8.3	6.4 – 8.3	6.3 – 8.3	6.5 – 8.3
pH Range	7.59 – 8.20	7.60 – 8.16	7.39 – 8.19	7.41 – 8.18	7.60 – 8.15	7.62 – 8.13	7.60 – 8.13

COMMENTS:

LC50 CHRONIC REFERENCE TOXICANT DATA FOR Pimephales promelas

Survival

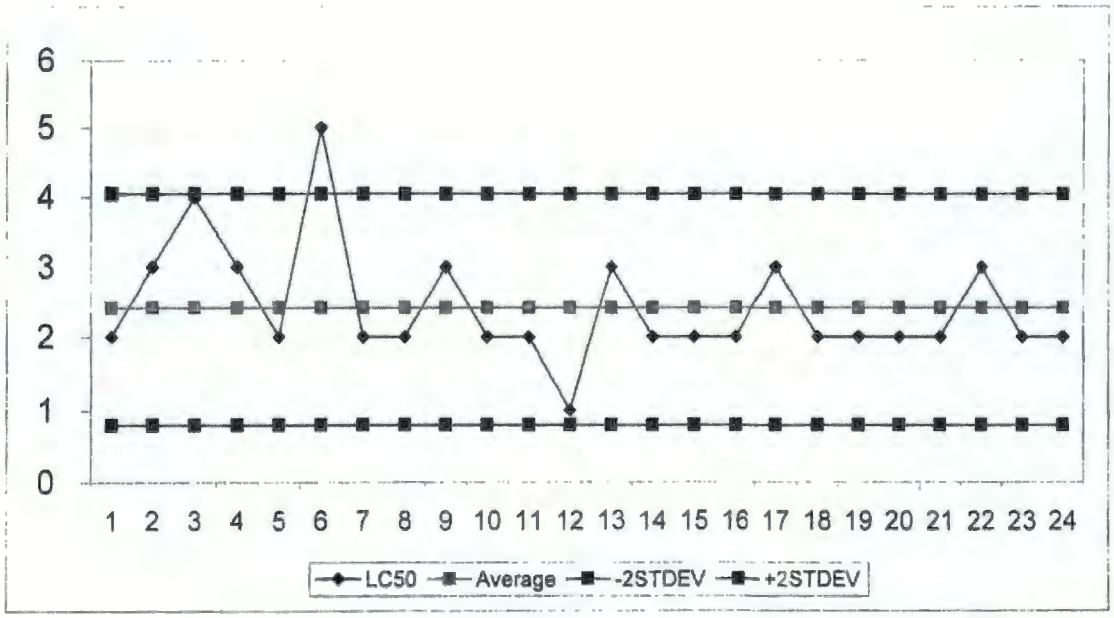
	DATE	LC50	LCL	UCL			low cusum	up cusum		
1	9/26/2010	4.22	3.92	4.43	7 Days	**4.245**	2.579	5.912	1.746	6.745
2	11/9/2010	4.66	4.28	5.16		**4.245**	2.579	5.912	1.746	6.745
3	1/27/2011	5.15	4.49	6.37		**4.245**	2.579	5.912	1.746	6.745
4	2/8/2011	3.65	3.35	3.97		**4.245**	2.579	5.912	1.746	6.745
5	5/11/2011	4.37	3.50	5.28		**4.245**	2.579	5.912	1.746	6.745
6	8/9/2011	5.67	5.40	5.95		**4.245**	2.579	5.912	1.746	6.745
7	11/15/2011	5.01	4.47	5.87		**4.245**	2.579	5.912	1.746	6.745
8	2/21/2012	5.01	4.49	5.81		**4.245**	2.579	5.912	1.746	6.745
9	3/13/2012	5.83	5.03	7.44		**4.245**	2.579	5.912	1.746	6.745
10	5/9/2012	4.57	4.02	5.16		**4.245**	2.579	5.912	1.746	6.745
11	6/19/2012	3.95	1.98	17.05		**4.245**	2.579	5.912	1.746	6.745
12	8/24/2012	3.33	1.23	6.84		**4.245**	2.579	5.912	1.746	6.745
13	11/13/2012	5.00	4.47	5.82		**4.245**	2.579	5.912	1.746	6.745
14	2/12/2013	3.26	2.32	4.18		**4.245**	2.579	5.912	1.746	6.745
15	5/7/2013	2.79	2.49	3.06		**4.245**	2.579	5.912	1.746	6.745
16	6/4/2013	4.70	3.16	18.12		**4.245**	2.579	5.912	1.746	6.745
17	8/21/2013	3.89	2.54	5.45		**4.245**	2.579	5.912	1.746	6.745
18	10/22/2013	3.71	3.23	4.20		**4.245**	2.579	5.912	1.746	6.745
19	11/19/2013	4.33	3.87	4.93		**4.245**	2.579	5.912	1.746	6.745
20	12/10/2013	2.45	1.72	3.10		**4.245**	2.579	5.912	1.746	6.745
21	5/6/2014	4.15	2.84	6.81		**4.245**	2.579	5.912	1.746	6.745
22	9/9/2014	4.79	3.82	7.44		**4.245**	2.579	5.912	1.746	6.745
23	11/11/2014	4.03	3.58	4.60		**4.245**	2.579	5.912	1.746	6.745
24	1/20/2015	3.39	2.52	4.32		**4.245**	2.579	5.912	1.746	6.745
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**		**low cusum**	**up cusum**		
		4.25	**3.45**	**6.31**	**0.83**		**2.58**	**5.91**		



NOEC CHRONIC REFERENCE TOXICANT DATA FOR Pimephales promelas

Survivial

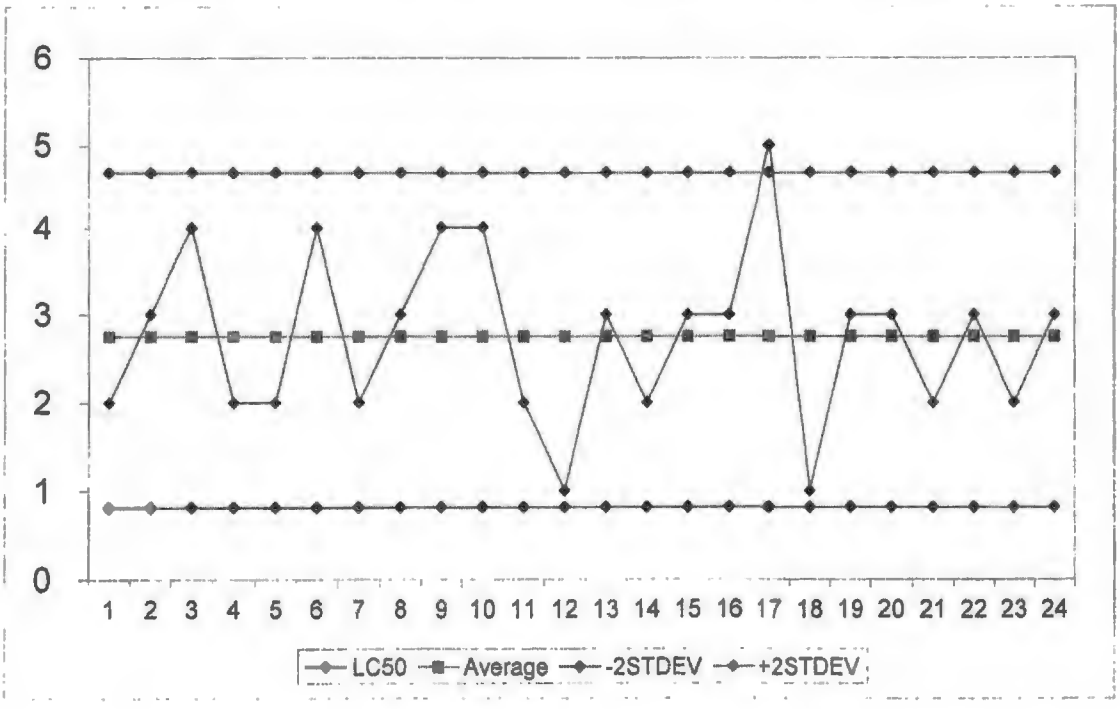
	DATE	NOEC	LCL	UCL	Average
1	9/26/2010	2	0.792	4.041	2.417
2	11/9/2010	3	0.792	4.041	2.417
3	1/27/2011	4	0.792	4.041	2.417
4	2/8/2011	3	0.792	4.041	2.417
5	5/11/2011	2	0.792	4.041	2.417
6	8/9/2011	5	0.792	4.041	2.417
7	11/15/2011	2	0.792	4.041	2.417
8	2/21/2012	2	0.792	4.041	2.417
9	3/13/2012	3	0.792	4.041	2.417
10	5/9/2012	2	0.792	4.041	2.417
11	6/19/2012	2	0.792	4.041	2.417
12	8/14/2012	1	0.792	4.041	2.417
13	11/13/2012	3	0.792	4.041	2.417
14	2/13/2013	2	0.792	4.041	2.417
15	5/7/2013	2	0.792	4.041	2.417
16	6/4/2013	2	0.792	4.041	2.417
17	8/21/2013	3	0.792	4.041	2.417
18	10/22/2013	2	0.792	4.041	2.417
19	11/19/2013	2	0.792	4.041	2.417
20	12/10/2013	2	0.792	4.041	2.417
21	5/6/2014	2	0.792	4.041	2.417
22	9/9/2014	3	0.792	4.041	2.417
23	11/11/2014	2	0.792	4.041	2.417
24	1/20/2015	2	0.792	4.041	2.417
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**
		2.42	**0.79**	**4.04**	**0.81**



NOEC CHRONIC REFERENCE TOXICANT DATA FOR Pimephales promelas

Growth

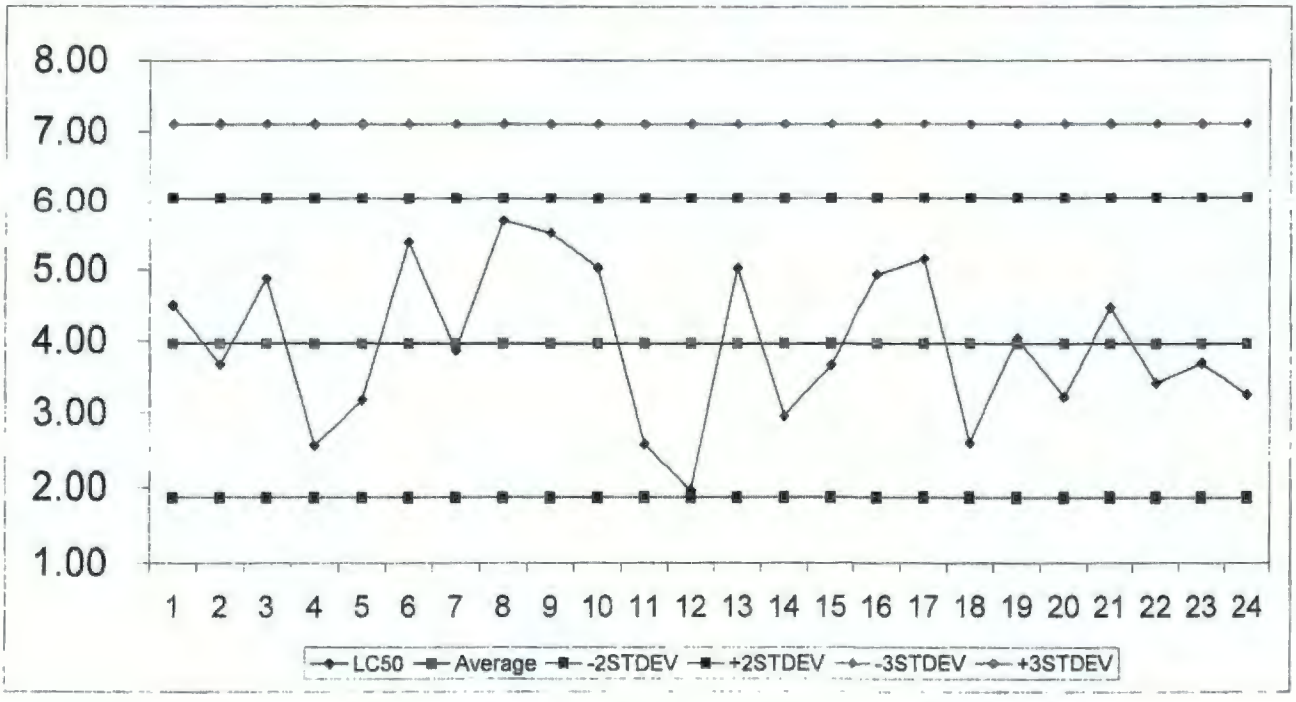
	DATE	NOEC	LCL	UCL	Average
1	9/26/2010	2	0.814	4.686	2.750
2	11/9/2010	3	0.814	4.686	2.750
3	1/27/2011	4	0.814	4.686	2.750
4	2/8/2011	2	0.814	4.686	2.750
5	5/11/2011	2	0.814	4.686	2.750
6	8/9/2011	4	0.814	4.686	2.750
7	11/15/2011	2	0.814	4.686	2.750
8	2/21/2012	3	0.814	4.686	2.750
9	3/13/2012	4	0.814	4.686	2.750
10	5/9/2012	4	0.814	4.686	2.750
11	6/19/2012	2	0.814	4.686	2.750
12	8/14/2012	1	0.814	4.686	2.750
13	11/13/2012	3	0.814	4.686	2.750
14	2/12/2013	2	0.814	4.686	2.750
15	5/7/2013	3	0.814	4.686	2.750
16	6/4/2013	3	0.814	4.686	2.750
17	8/21/2013	5	0.814	4.686	2.750
18	10/22/2013	1	0.814	4.686	2.750
19	11/19/2013	3	0.814	4.686	2.750
20	12/10/2013	3	0.814	4.686	2.750
21	5/6/2014	2	0.814	4.686	2.750
22	9/9/2014	3	0.814	4.686	2.750
23	11/11/2014	2	0.814	4.686	2.750
24	1/20/2015	3	0.814	4.686	2.750
		Mean NOEC	Mean low 95	Mean Up 95	Std Dev
		2.73	0.81	4.69	0.93



LC50 REFERENCE TOXICANT DATA FOR Pimephales promelas

Growth

	DATE	IC50	LCL	UCL			low cusum	up cusum		
1	9/26/2010	4.49	4.36	4.61	7 Days	3.962	1.866	6.058	0.817	7.107
2	11/9/2010	3.67	2.94	4.43		3.962	1.866	6.058	0.817	7.107
3	1/27/2011	4.87	4.67	5.23		3.962	1.866	6.058	0.817	7.107
4	2/8/2011	2.56	2.47	2.63		3.962	1.866	6.058	0.817	7.107
5	5/11/2011	3.17	2.86	3.46		3.962	1.866	6.058	0.817	7.107
6	8/9/2011	5.37	5.15	5.56		3.962	1.866	6.058	0.817	7.107
7	11/15/2011	3.87	3.34	4.39		3.962	1.866	6.058	0.817	7.107
8	2/21/2012	5.68	5.51	5.86		3.962	1.866	6.058	0.817	7.107
9	3/13/2012	5.51	5.21	5.80		3.962	1.866	6.058	0.817	7.107
10	5/9/2012	5.02	4.56	5.47		3.962	1.866	6.058	0.817	7.107
11	6/19/2012	2.57	1.81	3.34		3.962	1.866	6.058	0.817	7.107
12	8/14/2012	1.96	1.71	2.72		3.962	1.866	6.058	0.817	7.107
13	11/13/2012	5.02	4.80	5.30		3.962	1.866	6.058	0.817	7.107
14	2/12/2013	2.95	2.76	3.41		3.962	1.866	6.058	0.817	7.107
15	5/7/2013	3.66	3.06	4.28		3.962	1.866	6.058	0.817	7.107
16	6/4/2013	4.93	4.53	5.76		3.962	1.866	6.058	0.817	7.107
17	8/21/2013	5.14	3.82	5.80		3.962	1.866	6.058	0.817	7.107
18	10/22/2013	2.59	2.34	2.78		3.962	1.866	6.058	0.817	7.107
19	11/19/2013	4.03	3.81	4.59		3.962	1.866	6.058	0.817	7.107
20	12/10/2013	3.21	2.65	4.09		3.962	1.866	6.058	0.817	7.107
21	5/6/2014	4.47	3.56	4.76		3.962	1.866	6.058	0.817	7.107
22	9/9/2014	3.40	2.99	3.79		3.962	1.866	6.058	0.817	7.107
23	11/11/2014	3.69	3.23	4.03		3.962	1.866	6.058	0.817	7.107
24	1/20/2015	3.25	2.62	4.58		3.962	1.866	6.058	0.817	7.107
		Mean LC50	Mean low 95	Mean Up 95	Std Dev		low cusum	up cusum		
		3.96	3.53	4.44	1.05					



Pimephales promelas, Reference Toxicity Growth Data - 7days

Test Dates: 01/20/15 01/27/15
BIOLOGIST: C.Santoro

			Concentration g/L					
	Replicate	Control	1.0	2.0	3.0	4.0	5.0	6.0
	A	0.289	0.322	0.277	0.186	0.215	0.099	0.087
Raw	B	0.366	0.267	0.373	0.025	0.117	0.184	0
	C	0.471	0.366	0.258	0.245	0.128	0.178	0.031
	D	0.314	0.437	0.353	0.211	0.155	0.11	0
	mean	0.360	0.348	0.315	0.167	0.154	0.143	0.030
	S2	0.0065	0.0052	0.0032	0.0095	0.0019	0.0020	0.0017
	Ln(S)	-5.0352	-5.2667	-5.7550	-4.6549	-6.2543	-6.2262	-6.3872
	i	1	2	3	4	5	6	7

Center Obersvations for Shapiro-Wilks

	Control	1.0	2.0	3.0	4.0	5.0	6.0
A	-0.071	-0.026	-0.038	0.019	0.061	-0.044	0.058
B	0.006	-0.081	0.058	-0.142	-0.037	0.041	-0.030
C	0.111	0.018	-0.057	0.078	-0.026	0.035	0.002
D	-0.046	0.089	0.038	0.044	0.001	-0.033	-0.030
mean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
$(Xi - X)^2$ =	0.005	0.001	0.001	0.000	0.004	0.002	0.003
	0.000	0.007	0.003	0.020	0.001	0.002	0.001
	0.012	0.000	0.003	0.006	0.001	0.001	0.000
	0.002	0.008	0.001	0.002	0.000	0.001	0.001
Sum	0.020	0.015	0.010	0.029	0.006	0.006	0.005

D =	0.090

Shapiro- Wilks continued

n	Ordered Observations	a	Xn-i+1	Xi	a(Xn-i+1-Xi)
1	-0.142	0.4328	0.111	-0.142	0.109
2	-0.081	0.2992	0.089	-0.081	0.051
3	-0.071	0.251	0.078	-0.071	0.037
27	-0.057	0.2151	0.061	-0.057	0.025
4	-0.046	0.1857	0.058	-0.046	0.019
5	-0.044	0.1601	0.058	-0.044	0.016
6	-0.038	0.1372	0.044	-0.038	0.011
7	-0.037	0.1162	0.041	-0.037	0.009
8	-0.033	0.0965	0.038	-0.033	0.007
9	-0.030	0.0778	0.035	-0.030	0.005
10	-0.030	0.0598	0.019	-0.030	0.003
11	-0.026	0.0424	0.018	-0.026	0.002
12	-0.026	0.0253	0.006	-0.026	0.001
13	0.001	0.0084	0.002	0.001	0.000
14	0.002				
15	0.006	[□r Λai (Xn-i+□ - Xi)]² =			0.088
16	0.018	i=1			
17	0.019				
18	0.035				0.088
19	0.038			W=	0.090
20	0.041				
21	0.044			**W=**	**0.979**
22	0.058				
23	0.058				
26	0.061				
28	0.078				
24	0.089				
25	0.111				

THE CRITICAL VALUE AT 0.01 LEVEL IS **0.896**
0.979 > 0.896 THEREFORE, THE CONCLUSION OF THE TEST IS THAT THE DATA ARE NORMALLY DISTRIBUTED

Bartlett's Test

Degrees of Freedom for each concentration (Vi)	3
number of concentrations (p)	7
number of replicates (ni)	4

S2 =	0.004276	3*(@SUM(F25..L25))/(G84*G85)
C =	1.126984	1+((3*(G85-1))^-1)*(((1/3)*7)-((21)^-1))
B =	3.715274	((21*@LN(E92))-(3*@SUM(F26..L26)))/E96

DEGREES OF FREEDOM: 6 AND CRITICAL VALUE: 16.8

3.7153 < 47.47
THEREFORE, THE CONCLUSION OF THIS TEST IS THAT THE VARIANCES OF THE CONTROL AND THE EFFLUENT ARE HOMOGENEOUS.

Pimephales promelas,

Reference Toxicity Survival Data - 7days

Test Dates: 01/20/15 01/27/15
BIOLOGIST: C.Santoro

Arc Sine Transformation

		Concentrations g/L						
	Replicate	Control	1.0	2.0	3.0	4.0	5.0	6.0
Proportion Survival	A	1	1	0.7	0.7	0.6	0.2	0.1
	B	1	1	0.9	0.1	0.3	0.6	0
	C	1	1	0.9	0.5	0.3	0.4	0.1
	D	1	1	1	0.5	0.5	0.2	0
Arc Sine	A	1.412	1.412	0.991	0.991	0.886	0.464	0.322
	B	1.412	1.412	1.249	0.322	0.580	0.886	0.000
	C	1.412	1.412	1.249	0.785	0.580	0.685	0.322
	D	1.412	1.412	1.412	0.785	0.785	0.464	0.000
	mean	1.412	1.412	1.225	0.721	0.708	0.625	0.161
	S^2	0.000	0.000	0.030	0.080	0.024	0.041	0.035
	Ln(S^2)	1.000	1.000	-3.498	-2.523	-3.749	-3.188	-3.367
	i	1	2	3	4	5	6	7

Center Obersvations for Shapiro-Wilks

	Control	1.0	2.0	3.0	4.0	5.0	6.0
A	0.000	0.000	-0.234	0.270	0.178	-0.161	0.161
B	0.000	0.000	0.024	-0.399	-0.128	0.262	-0.161
C	0.000	0.000	0.024	0.064	-0.128	0.060	0.161
D	0.000	0.000	0.187	0.064	0.078	-0.161	-0.161
mean	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
$(Xi - X)^2 =$	0.000	0.000	0.055	0.073	0.032	0.026	0.026
	0.000	0.000	0.001	0.159	0.016	0.068	0.026
	0.000	0.000	0.001	0.004	0.016	0.004	0.026
	0.000	0.000	0.035	0.004	0.006	0.026	0.026
Sum	0.000	0.000	0.091	0.241	0.071	0.124	0.104

D =	0.629

Shapiro-Wilk's continued

i	Ordered Observations	a	Xn-i+1	Xi	a(Xn-i+1-Xi)
1	-0.399	0.4328	0.270	-0.399	0.290
2	-0.234	0.2992	0.262	-0.234	0.148
3	-0.161	0.251	0.187	-0.161	0.087
4	-0.161	0.2151	0.178	-0.161	0.073
5	-0.161	0.1857	0.161	-0.161	0.060
6	-0.161	0.1601	0.161	-0.161	0.052
7	-0.128	0.1372	0.078	-0.128	0.028
8	-0.128	0.1162	0.064	-0.128	0.022
9	0.000	0.0965	0.064	0.000	0.006
10	0.000	0.0778	0.060	0.000	0.005
11	0.000	0.0598	0.024	0.000	0.001
12	0.000	0.0424	0.024	0.000	0.001
13	0.000	0.0253	0.000	0.000	0.000
14	0.000	0.0084	0.000	0.000	0.000
15	0.000				
16	0.000			sum a(Xn-i+1-Xi)	0.598
17	0.024				
18	0.024				
19	0.060				0.598
20	0.064			W=	0.629
21	0.064				
22	0.078			**W=**	**0.950**
23	0.161				
24	0.161				
25	0.178				
26	0.187				
27	0.262				
28	0.270				

THE CRITICAL VALUE AT 0.01 LEVEL IS **0.896**
0.950 > 0.896 THEREFORE, THE
CONCLUSION OF THE TEST IS THAT
THE DATA ARE NORMALLY DISTRIBUTED

Bartlett's Test

Degrees of Freedom for each concentration (V_i)	3
number of concentrations (p)	7
number of replicates (n_i)	4

S^2 =	0.0300	3*(@SUM(S^2))/(V*p)
C =	1.127	1+((3*(p-1))^-1)*(((1/3)*7)-((21)^-1))
B =	-27.228	((21*@LN(S^2))-(3*@SUM(S^2)))/C

DEGREES OF FREEDOM: 6 AND CRITICAL VALUE: 16.8

-27.228 < 16.8
THEREFORE, THE CONCLUSION OF THIS TEST IS THAT THE
VARIANCES OF THE CONTROL AND THE EFFLUENT ARE
HOMOGENEOUS.

EPA PROBIT ANALYSIS PROGRAM
USED FOR CALCULATING LC/EC VALUES
Version 1.5

EPA PROBIT ANALYSIS PROGRAM
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USED FOR CALCULATING LC/EC VALUES
Version 1.5

Janury 2015 Pimephales promelas

Conc.	Number Exposed	Number Resp.	Observed Proportion Responding	Proportion Responding Adjusted for Controls
1.0000	40	0	0.0000	0.0000
2.0000	40	5	0.1250	0.1250
3.0000	40	22	0.5500	0.5500
4.0000	40	23	0.5750	0.5750
5.0000	40	26	0.6500	0.6500
6.0000	40	38	0.9500	0.9500

Chi - Square for Heterogeneity (calculated) = 10.649
Chi - Square for Heterogeneity
(tabular value at 0.05 level) = 9.488

****
* WARNING *
*
* The tabular chi-square value exceeds the calculated *
* chi-square value for heterogeneity. This is evidence that *
* the probit model may not be appropriate for these data. *
* The results reported for this data set may not be valid, *
* and should be interpreted with appropriate caution. *
****

Janury 2015 Pimephales promelas

Estimated LC/EC Values and Confidence Limits

Point	Exposure Conc.	95% Confidence Limits Lower	Upper
LC/EC 1.00	1.050	0.224	1.685
LC/EC 50.00	3.385	2.515	4.324

January 2015 Pimephales promelas Survival

Summary Statistics and ANOVA

Transformation = None

Conc.	n	Mean	s.d.	cv%
1 = control	4	10.0000	.0000	.0
2	4	10.0000	.0000	.0
3	4	8.7500	1.2583	14.4
4*	4	4.5000	2.5166	55.9
5*	4	4.2500	1.5000	35.3
6*	4	3.5000	1.9149	54.7
7*	4	.5000	.5774	115.5

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -2.464540
This difference corresponds to -24.65 percent of control

Between concentrations
sum of squares = 325.357143 with 6 degrees of freedom.

Error mean square = 2.023810 with 21 degrees of freedom.

```
************************************************
*                                              *
* Warning - the test for equality of variances *
* could not be computed as 1 or more of the    *
* variances is zero.                           *
*                                              *
************************************************
```

Conc. ID	1	2	3	4	5	6	7
Conc. Tested	0.0	1.0	2.0	3.0	4.0	5.0	6.0
Response 1	10	10	7	7	6	2	1
Response 2	10	10	9	1	3	6	0
Response 3	10	10	9	5	3	4	1
Response 4	10	10	10	5	5	2	0

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: NaCl
Test Start Date: 01/20/15 Test Ending Date: 01/27/15
Test Species: Pimephales promelas
Test Duration: 7 Day
DATA FILE: janfis.icp

Conc. ID	Number Replicates	Concentration g/L	Response Means	Std. Dev.	Pooled Response Means
1	4	0.000	10.000	0.000	10.000
2	4	1.000	10.000	0.000	10.000
3	4	2.000	8.750	1.258	8.750
4	4	3.000	4.500	2.517	4.500
5	4	4.000	4.250	1.500	4.250
6	4	5.000	3.500	1.915	3.500
7	4	6.000	0.500	0.577	0.500

The Linear Interpolation Estimate: 2.8824 Entered P Value: 50

Number of Resamplings: 80
The Bootstrap Estimates Mean: 3.1283 Standard Deviation: 0.4587
Original Confidence Limits: Lower: 2.7091 Upper: 4.1429
Expanded Confidence Limits: Lower: 2.6051 Upper: 4.8992
Resampling time in Seconds: 0.00 Random_Seed: -831118525

January 2015 Pimephales promelas Growth

Summary Statistics and ANOVA

Transformation = None

Conc.	n	Mean	s.d.	cv%
1 = control	4	.3600	.0807	22.4
2	4	.3480	.0718	20.6
3	4	.3153	.0563	17.9
4*	4	.1668	.0975	58.5
5*	4	.1530	.0447	29.2
6*	4	.1428	.0445	31.1
7*	4	.0295	.0410	139.1

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -.113423
This difference corresponds to -31.51 percent of control

Between concentrations
sum of squares = .378206 with 6 degrees of freedom.

Error mean square = .004286 with 21 degrees of freedom.

Bartlett's test p-value for equality of variances = .714

Conc. ID	1	2	3	4	5	6	7
Conc. Tested	0.0	1.0	2.0	3.0	4.0	5.0	6.0
Response 1	0.289	0.322	0.277	0.186	0.215	0.099	0.087
Response 2	0.366	0.267	0.373	0.025	0.117	0.184	0
Response 3	0.471	0.366	0.258	0.245	0.158	0.178	0.031
Response 4	0.314	0.437	0.353	0.211	0.155	0.11	0

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: NaCl
Test Start Date: 01/20/15 Test Ending Date: 01/27/15
Test Species: Pimephales promelas
Test Duration: 7 Day
DATA FILE: janfig.icp

Conc. ID	Number Replicates	Concentration g/L	Response Means	Std. Dev.	Pooled Response Means
1	4	0.000	0.360	0.081	0.360
2	4	1.000	0.348	0.072	0.348
3	4	2.000	0.315	0.056	0.315
4	4	3.000	0.167	0.098	0.167
5	4	4.000	0.161	0.040	0.161
6	4	5.000	0.143	0.044	0.143
7	4	6.000	0.030	0.041	0.030

The Linear Interpolation Estimate: 2.9108 Entered P Value: 50

Number of Resamplings: 80
The Bootstrap Estimates Mean: 3.2642 Standard Deviation: 0.5999
Original Confidence Limits: Lower: 2.6244 Upper: 4.5847
Expanded Confidence Limits: Lower: 2.4526 Upper: 5.5891
Resampling time in Seconds: 0.00 Random_Seed: 116409318

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Customer: GSI **Date Start:** 20-Jan-15

Concentration: Control **Date End:** 27-Jan-15

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	01/20/15 15:00	8.07	8.4	24.2	01/20/15 15:00	CFS
1	10	10	10	10	40	8:00	01/21/15 15:00	8.03 / 7.65	8.3 / 7.0	24.4 / 24.0	01/21/15 15:50	CFS
2	10	10	10	10	40	8:30	01/22/15 14:45	8.14 / 7.70	8.4 / 7.4	24.7 / 24.4	01/22/15 15:30	CFS
3	10	10	10	10	40	8:10	01//23/15 14:30	8.10 / 7.81	8.2 / 6.8	24.5 / 24.1	01//23/15 15:15	CFS
4	10	10	10	10	40	8:20	01/24/15 14:45	8.09 / 7.75	8.1 / 6.7	24.7 / 24.3	01/24/15 15:40	CFS
5	10	10	10	10	40	8:30	01/25/15 15:20	8.15 / 7.59	8.3 / 6.5	24.6 / 24.2	01/25/15 16:00	CFS
6	10	10	10	10	40	8:10	01/26/15 15:30	8.20 / 7.63	8.2 / 6.9	24.5 / 24.3	01/26/15 16:00	CFS
7	10	10	10	10	40	-	01/27/15 14:00	7.75	7.8	24.3	01/27/15 14:00	CFS
							Range	7.59 - 8.20	6.5 - 8.4	24.0 - 24.7		

Concentration: 1 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	01/20/15 15:00	7.94	8.3	24.6	01/20/15 15:00	CFS
1	10	10	10	10	40	8:00	01/21/15 15:00	8.03 / 7.60	8.2 / 7.1	24.5 / 24.1	01/21/15 15:50	CFS
2	10	10	10	10	40	8:30	01/22/15 14:45	7.98 / 7.67	8.3 / 7.4	24.5 / 24.2	01/22/15 15:30	CFS
3	10	10	10	10	40	8:10	01//23/15 14:30	8.10 / 7.65	8.3 / 6.9	24.4 / 24.3	01//23/15 15:15	CFS
4	10	10	10	10	40	8:20	01/24/15 14:45	8.08 / 7.80	8.2 / 6.7	24.6 / 24.2	01/24/15 15:40	CFS
5	10	10	10	10	40	8:30	01/25/15 15:20	8.13 / 7.63	8.1 / 6.6	24.7 / 24.2	01/25/15 16:00	CFS
6	10	10	10	10	40	8:10	01/26/15 15:30	8.16 / 7.70	8.0 / 6.5	24.6 / 24.2	01/26/15 16:00	CFS
7	10	10	10	10	40	-	01/27/15 14:00	7.84	7.8	24.4	01/27/15 14:00	CFS
							Range	7.60 - 8.16	6.5 - 8.3	24.1 - 24.7		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Concentration: 2 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	**10**	**10**	**10**	**10**	**40**	-	01/20/15 15:00	7.91	8.3	24.4	01/20/15 15:00	CFS
1	10	10	10	10	40	8:00	01/21/15 15:00	8.00 / 7.60	8.2 / 7.3	24.6 / 24.1	01/21/15 15:50	CFS
2	10	10	10	10	40	8:30	01/22/15 14:45	7.96 / 7.58	8.3 / 7.1	24.4 / 24.3	01/22/15 15:30	CFS
3	10	10	10	10	40	8:10	01//23/15 14:30	8.06 / 7.39	8.1 / 6.9	24.3 / 24.1	01//23/15 15:15	CFS
4	10	10	10	10	40	8:20	01/24/15 14:45	8.13 / 7.46	8.0 / 6.5	24.5 / 24.2	01/24/15 15:40	CFS
5	9	10	10	10	39	8:30	01/25/15 15:20	8.04 / 7.60	8.1 / 6.5	24.6 / 24.2	01/25/15 16:00	CFS
6	8	10	9	10	37	8:10	01/26/15 15:30	8.19 / 7.70	8.0 / 6.8	24.4 / 24.0	01/26/15 16:00	CFS
7	7	9	9	10	35	-	01/27/15 14:00	7.81	7.6	24.4	01/27/15 14:00	CFS
							Range	7.39 - 8.19	6.5 - 8.3	24.0 - 24.6		

Concentration: 3 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	**10**	**10**	**10**	**10**	**40**	-	01/20/15 15:00	7.88	8.3	24.3	01/20/15 15:00	CFS
1	10	10	10	10	40	8:00	01/21/15 15:00	8.02 / 7.59	8.3 / 7.1	24.4 / 24.2	01/21/15 15:50	CFS
2	10	8	10	9	37	8:30	01/22/15 14:45	7.95 / 7.72	8.2 / 7.8	24.4 / 24.2	01/22/15 15:30	CFS
3	9	8	9	9	35	8:10	01//23/15 14:30	8.04 / 7.41	8.0 / 6.8	24.5 / 24.3	01//23/15 15:15	CFS
4	8	8	9	8	33	8:20	01/24/15 14:45	8.10 / 7.50	8.1 / 6.4	24.4 / 24.1	01/24/15 15:40	CFS
5	7	5	8	8	28	8:30	01/25/15 15:20	8.00 / 7.63	8.2 / 6.3	24.3 / 24.0	01/25/15 16:00	CFS
6	7	2	8	7	24	8:10	01/26/15 15:30	8.18 / 7.69	8.1 / 6.5	24.2 / 24.2	01/26/15 16:00	CFS
7	7	1	5	5	18	-	01/27/15 14:00	7.67	7.2	24.4	01/27/15 14:00	CFS
							Range	7.41 - 8.18	6.3 - 8.3	24.0 - 24.5		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Concentration: 4g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	01/20/15 15:00	7.88	8.3	24.5	01/20/15 15:00	CFS
1	10	10	9	10	39	8:00	01/21/15 15:00	8.01 / 7.69	8.2 / 7.0	24.5 / 24.0	01/21/15 15:50	CFS
2	10	9	9	10	38	8:30	01/22/15 14:45	7.97 / 7.66	8.2 / 7.7	24.8 / 25.1	01/22/15 15:30	CFS
3	8	9	9	9	35	8:10	01//23/15 14:30	8.08 / 7.60	8.3 / 6.9	24.5 / 24.3	01//23/15 15:15	CFS
4	8	7	7	8	30	8:20	01/24/15 14:45	8.12 / 7.78	8.2 / 7.0	24.4 / 24.2	01/24/15 15:40	CFS
5	7	6	6	8	27	8:30	01/25/15 15:20	8.11 / 7.65	8.1 / 6.8	24.5 / 24.1	01/25/15 16:00	CFS
6	6	6	6	7	25	8:10	01/26/15 15:30	8.15 / 7.71	8.1 / 6.4	24.6 / 24.2	01/26/15 16:00	CFS
7	6	3	3	5	17	-	01/27/15 14:00	7.8	7.5	24.5	01/27/15 14:00	CFS
							Range	7.60 - 8.15	6.4 - 8.3	24.0 - 25.1		

Concentration: 5 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	01/20/15 15:00	7.88	8.2	24.4	01/20/15 15:00	CFS
1	8	9	10	10	37	8:00	01/21/15 15:00	8.03 / 7.64	8.3 / 7.1	24.4 / 24.1	01/21/15 15:50	CFS
2	6	8	8	8	30	8:30	01/22/15 14:45	7.96 / 7.70	8.1 / 7.6	24.7 / 25.0	01/22/15 15:30	CFS
3	6	8	8	8	30	8:10	01//23/15 14:30	8.10 / 7.62	8.2 / 6.8	24.5 / 24.1	01//23/15 15:15	CFS
4	6	7	7	6	26	8:20	01/24/15 14:45	8.09 / 7.74	8.3 / 7.0	24.3 / 24.3	01/24/15 15:40	CFS
5	5	7	5	5	22	8:30	01/25/15 15:20	8.10 / 7.63	8.2 / 6.7	24.4 / 24.0	01/25/15 16:00	CFS
6	3	6	4	4	17	8:10	01/26/15 15:30	8.13 / 7.69	8.1 / 6.3	24.5 / 24.3	01/26/15 16:00	CFS
7	2	6	4	2	14	-	01/27/15 14:00	7.85	7.5	24.5	01/27/15 14:00	CFS
							Range	7.62 - 8.13	6.3 - 8.3	24.0 - 25.0		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST – EPA METHOD 1000.1

Concentration: 6 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	-	01/20/15 15:00	7.9	8.2	24.6	01/20/15 15:00	CFS
1	6	8	5	8	27	8:00	01/21/15 15:00	8.00 / 7.63	8.2 / 7.2	24.4 / 24.0	01/21/15 15:50	CFS
2	2	5	1	5	13	8:30	01/22/15 14:45	7.96 / 7.64	8.1 / 7.5	24.7 / 24.9	01/22/15 15:30	CFS
3	2	3	1	3	9	8:10	01//23/15 14:30	8.06 / 7.80	8.2 / 7.0	24.6 / 24.4	01//23/15 15:15	CFS
4	2	1	1	2	6	8:20	01/24/15 14:45	8.10 / 7.76	8.3 / 6.6	24.3 / 24.1	01/24/15 15:40	CFS
5	1	0	1	2	4	8:30	01/25/15 15:20	8.13 / 7.60	8.2 / 6.8	24.4 / 24.3	01/25/15 16:00	CFS
6	1	0	1	1	3	8:10	01/26/15 15:30	8.12 / 7.63	8.0 / 6.5	24.5 / 24.2	01/26/15 16:00	CFS
7	1	0	1	0	2	-	01/27/15 14:00	7.88	7.3	24.4	01/27/15 14:00	CFS
							Range	7.60 - 8.13	6.5 - 8.3	24.0 - 24.9		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Customer: GSI Date Start: 20 Jan 15

Concentration: Control Date End: 27 Jan 15

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1500 20 Jan 15	8.01	8.4	24.2	1500 20 Jan 15	CFS
1	10	10	10	10	40	800 21 Jan	1500 21 Jan	8.03 / 7.60	8.3 / 7.0	24.4 / 24.0	1550 21 Jan	CFS
2	10	10	10	10	40	830 22 Jan	1445 22 Jan	8.14 / 7.70	8.4 / 7.4	24.7 / 24.4	1530 22 Jan	CFS
3	10	10	10	10	40	810 23 Jan	1450 23 Jan	8.10 / 7.81	8.2 / 6.8	24.5 / 24.1	1515 23 Jan	CFS
4	10	10	10	10	40	820	1445 24 Jan	8.09 / 7.75	8.1 / 6.7	24.7 / 24.3	1543 24 Jan	CFS
5	10	10	10	10	40	830	1520 25 Jan	8.15 / 7.54	8.3 / 6.5	24.6 / 24.2	1600 25 Jan	CFS
6	10	10	10	10	40	810	1530 26 Jan	8.20 / 7.63	8.2 / 6.9	24.5 / 24.3	1600 26 Jan	CFS
7	10	10	10	10	40	—	27 Jan 1400	7.75	7.8	24.3	1400 27 Jan	CFS
							Range	7.59 - 8.20	6.5 - 8.4	24.0 - 24.7		

Concentration: 1 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1500 20 Jan 15	7.94	8.3	24.6	1500 20 Jan 15	CFS
1	10	10	10	10	40	800	1520 21 Jan	8.03 / 7.60	8.2 / 7.1	24.5 / 24.1	1550 21 Jan	CFS
2	10	10	10	10	40	830	1445 22 Jan	7.95 / 7.67	8.3 / 7.4	24.5 / 24.3	1530 22 Jan	CFS
3	10	10	10	10	40	810	1430 23 Jan	8.10 / 7.65	8.3 / 6.9	24.4 / 24.3	1515 23 Jan	CFS
4	10	10	10	10	40	820	1441 24 Jan	8.00 / 7.80	8.2 / 6.7	24.6 / 24.2	1540 24 Jan	CFS
5	10	10	10	10	40	830	1500 25 Jan	8.13 / 7.63	8.1 / 6.6	24.7 / 24.2	1600 25 Jan	CFS
6	10	10	10	10	40	810	1530 26 Jan	8.16 / 7.70	8.0 / 6.5	24.6 / 24.2	1600 26 Jan	CFS
7	10	10	10	10	40	—	1440 27 Jan	7.84	7.8	24.4	1400 27 Jan	CFS
							Range	7.60 - 8.16	6.5 - 8.3	24.1 - 24.7		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Concentration: 2 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1500 20 Jan 11	7.91	8.3	24.4	1500 20 Jan 11	CFP
1	10	10	10	10	40	830	1530 21 Jan 11	8.00 / 7.60	8.2 / 7.3	24.6 / 24.1	1535 21 Jan	CFP
2	10	10	10	10	40	830	22 Jan 1445	7.96 / 7.98	8.3 / 7.1	24.4 / 24.3	1530 22 Jan	CFP
3	10	10	10	10	40	810	1430 23 Jan 11	8.06 / 7.39	8.1 / 6.9	24.3 / 24.1	1515 23 Jan	CFP
4	10	10	10	10	40	820	1445 24 Jan	8.13 / 7.46	8.0 / 6.5	24.5 / 24.0	1540 24 Jan	CFP
5	9	10	10	10	39	830	1520 25 Jan	8.04 / 7.60	8.1 / 6.5	24.6 / 24.2	1600 25 Jan	CFP
6	8	10	9	10	37	810	1530 26 Jan	8.10 / 7.70	8.0 / 6.8	24.4 / 24.0	1600 26 Jan	CFP
7	7	9	9	10	35	—	27 Jan 1400	7.81	7.6	24.4	1400 27 Jan	CFP
							Range	7.81 - 8.13	6.5 - 8.3	24.0 - 24.6		

Concentration: 3 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1500 20 Jan 11	7.88	8.3	24.3	1500 20 Jan 11	CFP
1	10	10	10	10	40	830	1520 21 Jan	8.02 / 7.59	8.3 / 7.1	24.4 / 24.2	1530 21 Jan	CFP
2	10	8	10	9	37	830	1445 22 Jan	7.95 / 7.72	8.2 / 7.2	24.4 / 24.2	1530 22 Jan	CFP
3	9	8	9	9	35	810	1430 23 Jan	8.04 / 7.41	8.0 / 6.8	24.3 / 24.3	1515 23 Jan	CFP
4	8	8	9	8	33	820	1445 24 Jan	8.10 / 7.50	8.1 / 6.4	24.4 / 24.1	1540 24 Jan	CFP
5	7	5	8	8	28	830	1500 25 Jan	8.00 / 7.63	8.0 / 6.3	24.3 / 24.0	1600 25 Jan	CFP
6	7	2	8	7	24	810	1530 Jan	8.18 / 7.69	8.1 / 6.5	24.2 / 24.2	1600 26 Jan	CFP
7	7	1	5	5	18	—	1400 27 Jan	7.67	7.2	24.4	1400 27 Jan	CFP
							Range	7.67 - 8.18	6.3 - 8.3	24.0 - 24.5		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Concentration: 4g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1500 20 jan15	7.88	8.5	24.1	1500 20jan15	CF
1	10	10	9	10	39	820	1560 21jan15	8.01 / 7.69	8.2 / 7.0	24.5 / 24.0	1550 21jan	CF
2	10	9	9	10	38	840	1445 22jan15	7.97 / 7.64	8.3 / 7.7	24.8 / 25.1	1930 22jan	CF
3	9	9	9	9	35	810	1438 23jan15	8.03 / 7.60	8.3 / 6.9	24.5 / 24.3	1515 23jan	CF
4	8	7	7	8	30	820	1445 24jan15	8.12 / 7.78	8.2 / 7.0	24.4 / 24.2	1540 24jan	CF
5	7	6	6	8	27	830	1530 25jan15	8.11 / 7.65	8.1 / 6.8	24.5 / 24.1	1600 25jan	CF
6	6	6	6	7	25	810	1530 26jan15	8.15 / 7.71	8.1 / 6.4	24.6 / 24.2	1600 26jan	CF
7	6	5	3	5	17	—	1400 27jan15	/ 7.80	/ 7.5	/ 24.5	1400 27jan	CF
							Range	7.80 - 8.15	6.4 - 8.3	24.0 - 25.1		

Concentration: 5 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	—	1500 20jan15	7.88	8.2	24.4	1500 20jan15	CF
1	8	9	10	10	37	800	1500 21jan15	8.03 / 7.64	8.3 / 7.1	24.4 / 24.1	1550 21jan	CF
2	6	8	8	8	30	830	1445 22jan15	7.96 / 7.70	8.1 / 7.6	24.7 / 25.0	1530 22jan	CF
3	6	8	8	8	30	810	1430 23jan15	8.10 / 7.62	8.2 / 6.8	24.5 / 24.1	1515 23jan	CF
4	6	7	7	6	26	820	1445 24jan15	8.09 / 7.74	8.3 / 7.0	24.3 / 24.3	1540 24jan	CF
5	5	7	5	5	22	830	1520 25jan15	8.10 / 7.63	8.2 / 6.7	24.4 / 24.0	1600 25jan	CF
6	3	6	4	4	17	810	1530 26jan15	8.13 / 7.69	8.1 / 6.3	24.5 / 24.3	1600 26jan	CF
7	2	6	4	2	14	—	1400 27jan15	/ 7.85	/ 7.0	/ 24.3	1400 27jan	CF
							Range	7.62 - 8.13	6.3 - 8.3	24.0 - 25.0		

7 DAY FATHEAD MINNOW REFERENCE TOXICITY TEST -- EPA METHOD 1000.1

Concentration: 6 g/L

Test Day	Replicate Number 1	2	3	4	Survivors	A.M. Feed time	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	10	10	10	10	40	--	1320 20 juin	7.96	8.2	24.6	1520 20 juin	CFF
1	6	8	5	8	27	830	1500 21 juil	8.02 / 7.63	8.2 / 7.2	24.4 / 24.0	1550 21 ju	CFF
2	2	5	1	5	13	830	1445 22 juil	7.96 / 7.64	8.1 / 7.5	24.7 / 24.9	1530 22 ju	CFF
3	2	3	1	3	9	810	1430 23 juil	8.06 / 7.80	8.2 / 7.0	24.6 / 24.4	1515 23 ju	CFF
4	2	1	1	2	6	820	1445 24 juil	8.10 / 7.76	8.3 / 6.6	24.3 / 24.1	1540 24 ju	CFF
5	1	Ø	1	2	4	830	1520 25 juil	8.13 / 7.60	8.2 / 6.8	24.4 / 24.3	1100 25 ju	CFF
6	1	Ø	1	1	3	8110	1530 26 juil	8.12 / 7.63	8.0 / 6.5	24.5 / 24.2	1100 26 ju	CFF
7	1	Ø	1	Ø	2	—	1400 27 juil	/ 7.88	/ 7.3	/ 24.4	1400 27 ju	CFF
							Range	7.60 – 8.13	6.5 – 8.3	24.0 – 24.9		

WEIGH DATA FOR *PIMEPHALES PROMELAS*

Discharger: GSI **Test Dates:** 20 Jan 15 to 27 Jan 15 **Dry Temp:** 110°C
Test ID: January 2015 Salt Reference **Weighing Date:** 28 Jan 15 **Dry Time:** 20 hrs

Conc.	Rep. No.	Weight of Boat (g)	Dry Weight Boat + Larvae (g)	Weight of Larvae Total (mg)	# of Larvae	Mean of Larvae (mg) Dry	Avg for Conc.
Control	1	1.10454	1.10743	2.89	10	0.289	0.360
	2	1.17572	1.17938	3.66	10	0.366	
	3	1.05574	1.06045	4.71	10	0.471	
	4	1.13969	1.14283	3.14	10	0.314	
1 g/L	1	1.08329	1.08651	3.22	10	0.322	0.348
	2	1.06504	1.06771	2.67	10	0.267	
	3	1.04317	1.04683	3.66	10	0.366	
	4	1.14767	1.15204	4.37	10	0.437	
2 g/L	1	1.10234	1.10511	2.77	7	0.277	0.315
	2	1.11233	1.11606	3.73	9	0.373	
	3	1.17527	1.17785	2.58	9	0.258	
	4	1.06733	1.07086	3.53	10	0.353	
3 g/L	1	1.01440	1.01626	1.86	7	0.186	0.167
	2	1.04311	1.04336	0.25	1	0.025	
	3	1.04999	1.05244	2.45	5	0.245	
	4	1.08217	1.08428	2.11	5	0.211	
4 g/L	1	1.08580	1.08795	2.15	6	0.215	0.154
	2	1.03977	1.04094	1.17	3	0.117	
	3	1.06476	1.06604	1.28	3	0.128	
	4	1.03004	1.03159	1.55	5	0.155	
5 g/L	1	1.02865	1.02964	0.99	2	0.099	0.143
	2	1.10857	1.11041	1.84	6	0.184	
	3	1.12692	1.12870	1.78	4	0.178	
	4	1.09040	1.09150	1.10	2	0.110	
6 g/L	1	1.08697	1.08784	0.87	1	0.087	0.029
	2	1.06865	1.06865	0.00	0	0.000	
	3	1.12172	1.12203	0.31	1	0.031	
	4	1.09387	1.09387	0.00	0	0.000	

WEIGH DATA FOR *PIMEPHALES PROMELAS*

Discharger:	GSI	**Test Dates:**	20 Jan 15 to	**Dry Temp:**	110°C
Test ID:	January 2015		27 Jan 15		
	Salt Reference	**Weighing Date:**	28 Jan 15	**Dry Time:**	20 hrs

Conc.	Rep. No.	Weight of Boat (g)	Dry Weight Boat + Larvae (g)	Weight of Larvae Total (mg)	# of Larvae	Mean of Larvae (mg) Dry	Avg for Conc.
Control	1	1.10454	1.10743	2.89	10	0.289	0.360
	2	1.17572	1.17938	3.66	10	0.366	
	3	1.05574	1.06045	4.71	10	0.471	
	4	1.13969	1.14283	3.14	10	0.314	
1 g/L	1	1.08329	1.08651	3.22	10	0.322	0.348
	2	1.06504	1.06771	2.67	10	0.267	
	3	1.04317	1.04683	3.66	10	0.366	
	4	1.14767	1.15204	4.37	10	0.437	
2 g/L	1	1.10234	1.10511	2.77	7	0.277	0.315
	2	1.11233	1.11606	3.73	9	0.373	
	3	1.17527	1.17785	2.58	9	0.258	
	4	1.06733	1.07086	3.53	10	0.353	
3 g/L	1	1.01440	1.01626	1.86	7	0.186	0.107
	2	1.04311	1.04336	0.25	1	0.025	
	3	1.04999	1.05244	2.45	5	0.245	
	4	1.08217	1.08428	2.11	5	0.211	
4 g/L	1	1.08580	1.08795	2.15	6	0.215	0.154
	2	1.03977	1.04094	1.17	3	0.117	
	3	1.06476	1.06604	1.28	3	0.128	
	4	1.03004	1.03159	1.55	5	0.155	
5 g/L	1	1.02865	1.02964	0.99	2	0.099	0.143
	2	1.10857	1.11041	1.84	6	0.184	
	3	1.12692	1.12870	1.78	4	0.178	
	4	1.09040	1.09150	1.10	2	0.110	
6 g/L	1	1.08697	1.08784	0.87	1	0.087	0.029
	2	1.06865	1.06865	0.00	0	0.00	
	3	1.12172	1.12203	0.31	1	0.031	
	4	1.09387	1.09387	0.00	0	0.00	

1.10454	1.10743	2.890	0.360		cnt
1.17572	1.17938	3.660		Test Date:	
1.05574	1.06045	4.710			
1.13969	1.14283	3.140			
1.08329	1.08651	3.220	0.348		1
1.06504	1.06771	2.670			
1.04317	1.04683	3.660			
1.14767	1.15204	4.370			
1.10234	1.10511	2.770	0.315		2
1.11233	1.11606	3.730			
1.17527	1.17785	2.580			
1.06733	1.07086	3.530			
1.0144	1.01626	1.860	0.167		3
1.04311	1.04336	0.250			
1.04999	1.05244	2.450			
1.08217	1.08428	2.110			
1.0858	1.08795	2.150	0.154		4
1.03977	1.04094	1.170			
1.06476	1.06604	1.280			
1.03004	1.03159	1.550			
1.02865	1.02964	0.990	0.143		5
1.10857	1.11041	1.840			
1.12692	1.1287	1.780			
1.0904	1.0915	1.100			
1.08697	1.08784	0.870	0.029		6
1.06865	1.06865	0.000			
1.12172	1.12203	0.310			
1.09387	1.09387	0.000			

SUMMARY DATA FOR *CERIODAPHNIA DUBIA* TEST

Laboratory: GSI **Test Dates:** 01/20/15 to 01/27/15

Test ID: January 2015
7 Day Salt Reference **Analyst:**

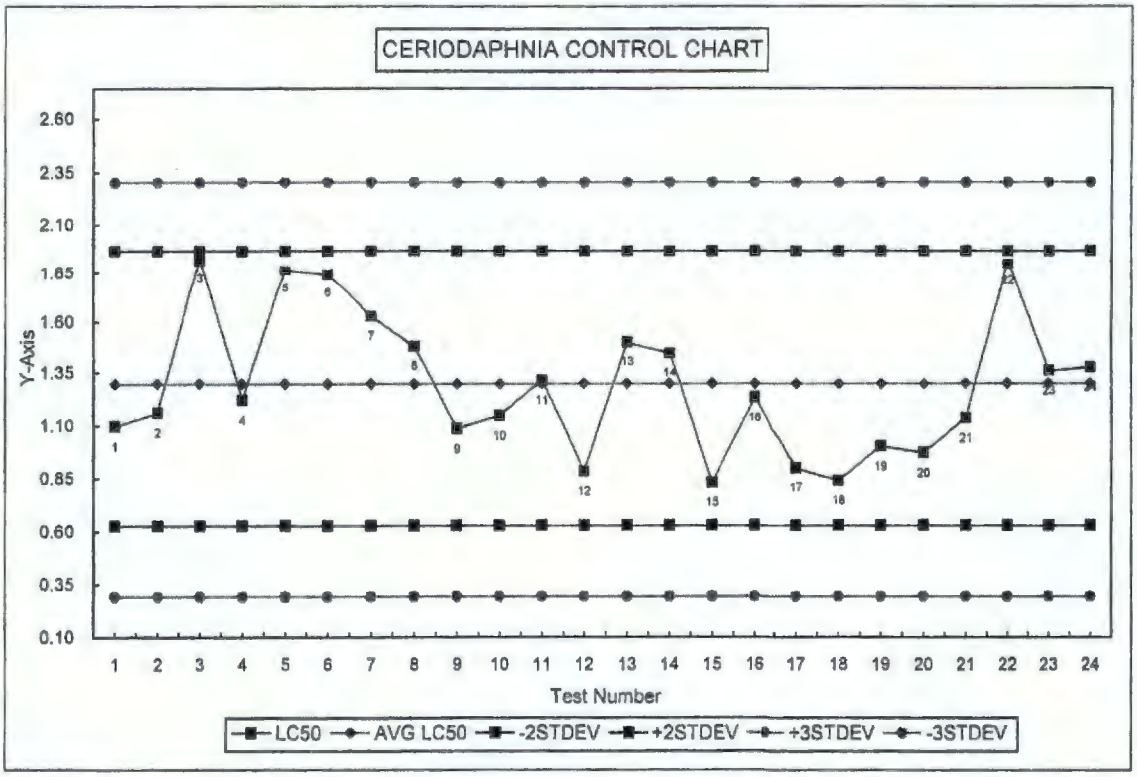
g/L	Control	0.25	0.50	1.00	1.50	2.00	
No. Live Fleas	10	10	9	8	6	1	
Survival (%)	100	100	90	80	60	10	
Neonates /Survivor	21.1	14.1	12.6	12.0	9.0	5	
Temperature Range (°C)	24.1 – 25.2	24.3 – 25.2	24.3 – 25.2	24.2 – 25.3	24.4 – 25.1	24.5 – 25.2	
Dissolved Oxygen Range (mg/L)	8.1 – 8.7	8.0 -8.3	7.8 – 8.2	7.9 – 8.3	7.9 – 8.3	7.9 – 8.3	
pH Range	7.63 – 8.10	7.80 – 8.05	7.81 – 8.06	7.80 – 8.03	7.85 – 8.03	7.89 – 8.03	

COMMENTS:

LC50 CHRONIC REFERENCE TOXICANT DATA FOR CERIODAPHNIA DUBIA

Survivial

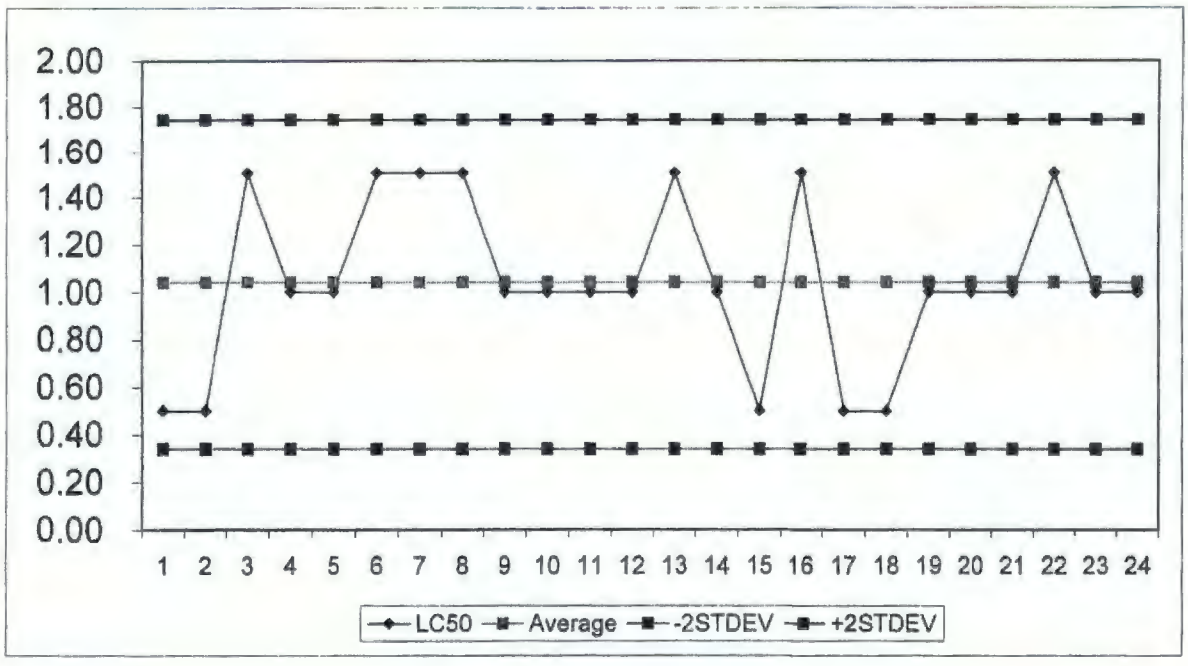
	DATE	LC50	LCL	UCL			low cusum	up cusum		
1	11/09/10	1.10	0.36	1.40	7 Day	**1.298**	0.628	1.968	0.293	2.303
2	01/27/11	1.16	0.70	1.41		**1.298**	0.628	1.968	0.293	2.303
3	02/08/11	1.92	1.12	1.29		**1.298**	0.628	1.968	0.293	2.303
4	05/12/11	1.22	1.07	1.50		**1.298**	0.628	1.968	0.293	2.303
5	08/09/11	1.86	1.54	3.59		**1.298**	0.628	1.968	0.293	2.303
6	11/15/11	1.84	1.62	2.21		**1.298**	0.628	1.968	0.293	2.303
7	02/02/12	1.63	0.89	1.92		**1.298**	0.628	1.968	0.293	2.303
8	03/13/12	1.48	1.10	1.85		**1.298**	0.628	1.968	0.293	2.303
9	05/09/12	1.09	0.61	1.80		**1.298**	0.628	1.968	0.293	2.303
10	06/19/12	1.15	0.77	1.98		**1.298**	0.628	1.968	0.293	2.303
11	08/14/12	1.32	0.65	1.62		**1.298**	0.628	1.968	0.293	2.303
12	11/13/12	0.88	0.63	1.18		**1.298**	0.628	1.968	0.293	2.303
13	02/12/13	1.50	1.25	1.80		**1.298**	0.628	1.968	0.293	2.303
14	05/07/13	1.45	1.22	1.68		**1.298**	0.628	1.968	0.293	2.303
15	06/04/13	0.83	0.48	1.37		**1.298**	0.628	1.968	0.293	2.303
16	08/21/13	1.23	0.07	2.16		**1.298**	0.628	1.968	0.293	2.303
17	10/22/13	0.90	0.57	1.44		**1.298**	0.628	1.968	0.293	2.303
18	11/19/13	0.84	0.53	1.30		**1.298**	0.628	1.968	0.293	2.303
19	12/10/13	1.00	0.70	1.45		**1.298**	0.628	1.968	0.293	2.303
20	04/22/14	0.97	0.71	1.29		**1.298**	0.628	1.968	0.293	2.303
21	05/06/14	1.14	0.85	1.45		**1.298**	0.628	1.968	0.293	2.303
22	09/09/14	1.90	1.11	3.89		**1.298**	0.628	1.968	0.293	2.303
23	11/11/14	1.36	1.12	1.60		**1.298**	0.628	1.968	0.293	2.303
24	01/20/15	1.38	1.04	1.99		**1.298**	0.628	1.968	0.293	2.303
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**		**low cusum**	**up cusum**		
		1.30	**0.86**	**1.80**	**0.34**					



NOEC REFERENCE TOXICANT DATA FOR Ceriodaphnia Dubia

Survivial

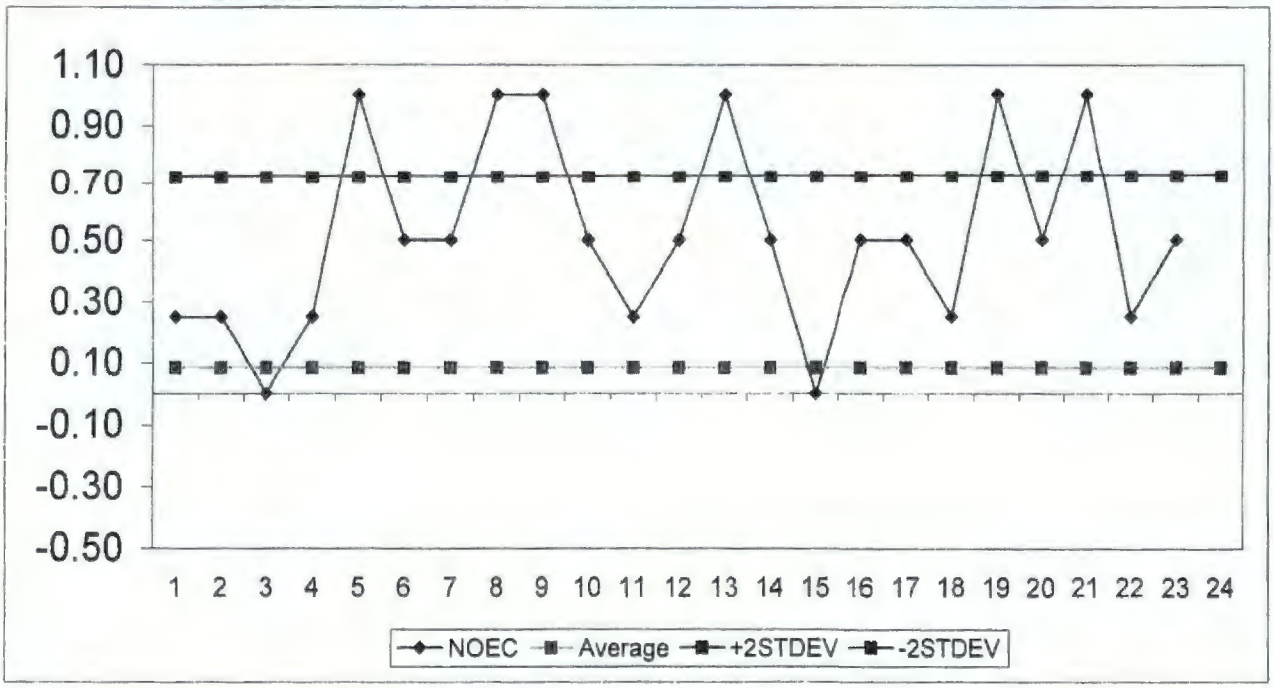
	DATE	NOEC	LCL	UCL	Average
1	11/9/2010	0.50	0.339	1.744	**1.042**
2	1/27/2011	0.50	0.339	1.744	**1.042**
3	2/8/2011	1.50	0.339	1.744	**1.042**
4	5/12/2011	1.00	0.339	1.744	**1.042**
5	8/9/2011	1.00	0.339	1.744	**1.042**
6	11/15/2011	1.50	0.339	1.744	**1.042**
7	2/21/2012	1.50	0.339	1.744	**1.042**
8	3/13/2012	1.50	0.339	1.744	**1.042**
9	5/9/2012	1.00	0.339	1.744	**1.042**
10	6/19/2012	1.00	0.339	1.744	**1.042**
11	8/14/2012	1.00	0.339	1.744	**1.042**
12	11/13/2012	1.00	0.339	1.744	**1.042**
13	2/12/2013	1.50	0.339	1.744	**1.042**
14	5/7/2013	1.00	0.339	1.744	**1.042**
15	6/4/2013	0.50	0.339	1.744	**1.042**
16	8/21/2013	1.50	0.339	1.744	**1.042**
17	10/22/2013	0.50	0.339	1.744	**1.042**
18	11/19/2013	0.50	0.339	1.744	**1.042**
19	12/10/2013	1.00	0.339	1.744	**1.042**
20	4/22/2014	1.00	0.339	1.744	**1.042**
21	5/6/2014	1.00	0.339	1.744	**1.042**
22	9/9/2014	1.50	0.339	1.744	**1.042**
23	11/11/2014	1.00	0.339	1.744	**1.042**
24	1/20/2015	1.00	0.339	1.744	**1.042**
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**
		1.04	**0.34**	**1.74**	**0.35**



NOEC REFERENCE TOXICANT DATA FOR Ceriodaphnia Dubia

Reproduction

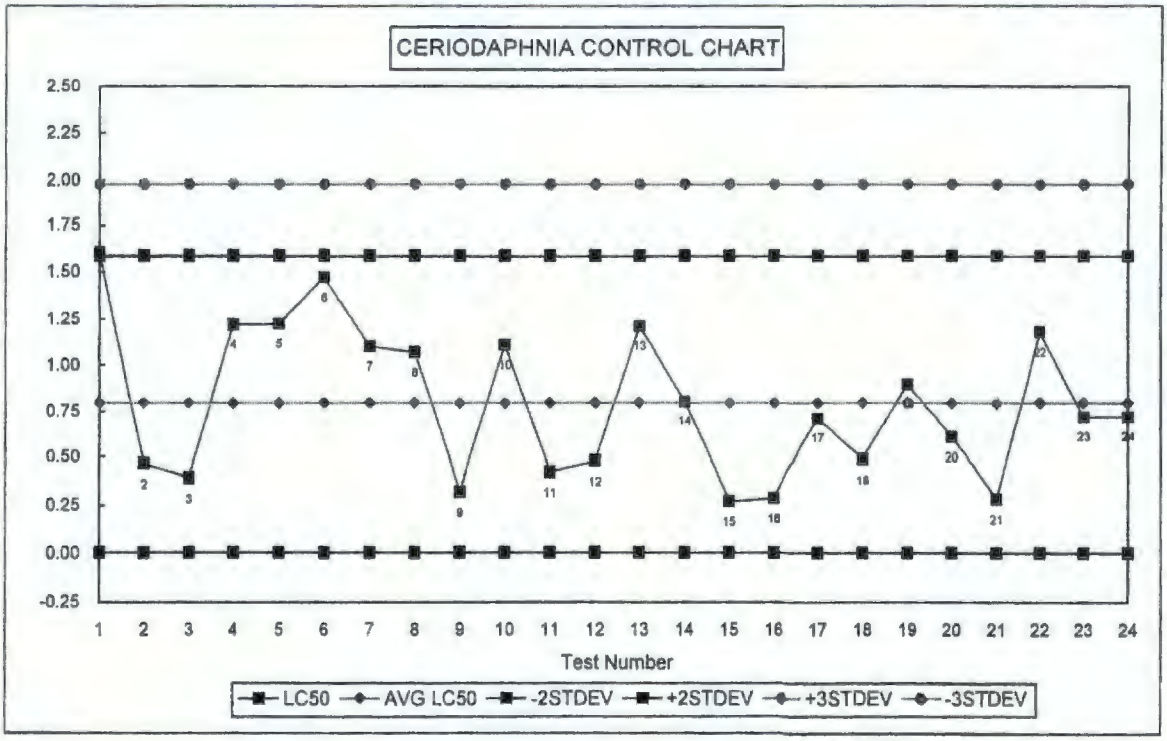
	DATE	NOEC	LCL	UCL	Average
1	11/09/10	0.25	-0.554	0.720	**0.083**
2	01/27/11	0.25	-0.554	0.720	**0.083**
3	02/08/11	0.00	-0.554	0.720	**0.083**
4	05/12/11	0.25	-0.554	0.720	**0.083**
5	08/09/11	1.00	-0.554	0.720	**0.083**
6	11/15/11	0.50	-0.554	0.720	**0.083**
7	02/21/12	0.50	-0.554	0.720	**0.083**
8	03/13/12	1.00	-0.554	0.720	**0.083**
9	05/09/12	1.00	-0.554	0.720	**0.083**
10	06/19/12	0.50	-0.554	0.720	**0.083**
11	08/14/12	0.25	-0.554	0.720	**0.083**
12	11/13/12	0.50	-0.554	0.720	**0.083**
13	02/12/13	1.00	-0.554	0.720	**0.083**
14	05/30/13	0.50	-0.554	0.720	**0.083**
15	06/04/13	0.00	-0.554	0.720	**0.083**
16	08/21/13	0.50	-0.554	0.720	**0.083**
17	10/22/13	0.50	-0.554	0.720	**0.083**
18	11/19/13	0.25	-0.554	0.720	**0.083**
19	12/10/13	1.00	-0.554	0.720	**0.083**
20	04/22/14	0.50	-0.554	0.720	**0.083**
21	05/06/14	1.00	-0.554	0.720	**0.083**
22	09/09/14	0.25	-0.554	0.720	**0.083**
23	11/11/14	0.50	-0.554	0.720	**0.083**
24	01/20/15	0.25	-0.554	0.720	**0.083**
		Mean NOEC	**Mean low 95**	**Mean Up 95**	**Std Dev**
		0.52	**-0.55**	**0.72**	**0.32**



LC50 CHRONIC REFERENCE TOXICANT DATA FOR CERIODAPHNIA DUBIA

Reproduction

	DATE	IC50	LCL	UCL			low cusum	up cusum		
1	09/26/10	1.60	1.38	1.71	7 Day	0.794	0.004	1.584	-0.391	1.979
2	11/09/10	0.47	0.24	0.70		0.794	0.004	1.584	-0.391	1.979
3	01/27/11	0.39	0.18	0.81		0.794	0.004	1.584	-0.391	1.979
4	02/08/11	1.22	1.07	1.50		0.794	0.004	1.584	-0.391	1.979
5	08/09/11	1.22	1.08	1.38		0.794	0.004	1.584	-0.391	1.979
6	11/15/11	1.47	1.18	1.61		0.794	0.004	1.584	-0.391	1.979
7	02/21/12	1.10	0.81	1.26		0.794	0.004	1.584	-0.391	1.979
8	03/13/12	1.07	0.82	1.37		0.794	0.004	1.584	-0.391	1.979
9	05/09/12	0.32	0.18	0.70		0.794	0.004	1.584	-0.391	1.979
10	06/19/12	1.11	0.40	1.68		0.794	0.004	1.584	-0.391	1.979
11	08/14/12	0.42	0.21	1.03		0.794	0.004	1.584	-0.391	1.979
12	11/13/12	0.48	0.35	0.67		0.794	0.004	1.584	-0.391	1.979
13	02/12/13	1.21	0.48	1.51		0.794	0.004	1.584	-0.391	1.979
14	05/07/13	0.80	0.41	1.28		0.794	0.004	1.584	-0.391	1.979
15	06/04/13	0.27	0.18	0.70		0.794	0.004	1.584	-0.391	1.979
16	08/21/13	0.29	0.17	0.63		0.794	0.004	1.584	-0.391	1.979
17	10/22/13	0.71	0.24	1.10		0.794	0.004	1.584	-0.391	1.979
18	11/19/13	0.49	0.35	0.69		0.794	0.004	1.584	-0.391	1.979
19	12/10/13	0.90	0.62	1.17		0.794	0.004	1.584	-0.391	1.979
20	04/22/14	0.61	0.41	0.92		0.794	0.004	1.584	-0.391	1.979
21	05/06/14	0.28	0.20	0.52		0.794	0.004	1.584	-0.391	1.979
22	09/09/14	1.18	0.93	1.41		0.794	0.004	1.584	-0.391	1.979
23	11/11/14	0.72	0.59	0.90		0.794	0.004	1.584	-0.391	1.979
24	01/20/15	0.72	0.38	1.14		0.794	0.004	1.584	-0.391	1.979
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**		**low cusum**	**up cusum**		
		0.79	**0.53**	**1.10**	**0.39**		**0.004**	**1.584**		



Ceriodaphnia Dubia

Reference Tox Reproduction - 7 Day

Test Start: 1/20/2015

Test End: 1/27/2015

Reproduction Observations

Replicate	Control	0.25 g/L	0.50 g/L	1.0 g/L	1.5 g/L	2.0 g/L
1	22	18	15	10	0	0
2	20	11	16	18	8	3
3	23	16	13	14	4	0
4	21	9	11	7	0	0
5	20	13	4	4	12	0
6	20	21	15	4	0	0
7	15	17	15	14	8	0
8	29	13	0	5	10	2
9	23	11	14	10	5	0
10	18	12	10	10	7	0
Mean	**21.1**	**14.1**	**11.3**	**9.6**	**5.4**	**0.5**
S^2	13.43333333	14.1	28.4555556	22.266667	18.933333	1.166667
LN(S^2)	2.59773918	2.6461748	3.34834342	3.1030908	2.940924	1
Vi*Si^2	120.9	126.9	256.1	200.4	170.4	10.5
i	1	2	3	4	5	6

Centered Observations "X(i)"

Replicate i	Control	0.25 g/L	0.50 g/L	1.00 g/L	1.50 g/L	2.00 g/L
1	0.9	3.9	3.7	0.4	-5.4	-0.5
2	-1.1	-3.1	4.7	8.4	2.6	2.5
3	1.9	1.9	1.7	4.4	-1.4	-0.5
4	-0.1	-5.1	-0.3	-2.6	-5.4	-0.5
5	-1.1	-1.1	-7.3	-5.6	6.6	-0.5
6	-1.1	6.9	3.7	-5.6	-5.4	-0.5
7	-6.1	2.9	3.7	4.4	2.6	-0.5
8	7.9	-1.1	-11.3	-4.6	4.6	1.5
9	1.9	-3.1	2.7	0.4	-0.4	-0.5
10	-3.1	-2.1	-1.3	0.4	1.6	-0.5
Mean	**0.0**	**0**	**0**	**0**	**0**	**0**

Ceriodaphnia Dubia

Reference Tox Reproduction - 7 Day

Ordered Observations

i	X(i)	[X(i)]^2
1	-19.1	364.81
2	-18.9	357.21
3	-18.1	327.61
4	-11.5	132.25
5	-10.5	110.25
6	-9.9	98.01
7	-9.5	90.25
8	-9.5	90.25
9	-9.5	90.25
10	-9.1	82.81
11	-5.7	32.49
12	-5.7	32.49
13	-4.7	22.09
14	-4.5	20.25
15	-3.7	13.69
16	-3.5	12.25
17	-2.7	7.29
18	-2.5	6.25
19	-2.5	6.25
20	-1.9	3.61
21	-1.5	2.25
22	0.5	0.25
23	1.3	1.69
24	1.3	1.69
25	1.3	1.69
26	1.5	2.25
27	2.1	4.41
28	2.5	6.25
29	2.5	6.25
30	2.9	8.41
31	3.1	9.61
32	3.1	9.61
33	4.1	16.81
34	4.1	16.81
35	4.5	20.25
36	4.9	24.01
37	5.1	26.01
38	6.3	39.69
39	6.9	47.61
40	6.9	47.61
41	7.5	56.25
42	7.5	56.25
43	7.9	62.41
44	7.9	62.41
45	8.9	79.21
46	9.1	82.81
47	10.5	110.25
48	10.5	110.25
49	12.3	151.29
50	17.5	306.25
D =		3270.90

Table of Coefficients & Differences

i	a	X(n-i+1) - X(i)	a(X(n-i+1)-X(i))
1	0.3751	36.6	13.72866
2	0.2574	31.2	8.03088
3	0.2260	28.6	6.4636
4	0.2032	22.0	4.4704
5	0.1847	19.6	3.62012
6	0.1691	18.8	3.17908
7	0.1554	17.4	2.70396
8	0.1430	17.4	2.4882
9	0.1317	17.0	2.2389
10	0.1212	16.6	2.01192
11	0.1113	12.6	1.40238
12	0.1020	12.6	1.2852
13	0.0932	11.0	1.0252
14	0.0846	9.6	0.81216
15	0.0764	8.6	0.65704
16	0.0685	8.0	0.548
17	0.0608	6.8	0.41344
18	0.0532	6.6	0.35112
19	0.0459	5.6	0.25704
20	0.0386	5.0	0.193
21	0.0314	4.4	0.13816
22	0.0244	2.0	0.0488
23	0.0174	1.2	0.02088
24	0.0104	0.8	0.00832
25	0.0035	0.2	0.0007
			55.43026 =sum a(x(n-i+1)-x(i))
			3072.513724 = sum^2
			0.939348107 = calculated W
			0.888 = **critical W**

0.939 > **0.888**

Therefore, the data IS normally distributed.

Ceriodaphnia Dubia

Reference Tox Reproduction - 7 Day

Bartlett's Test

Degrees of Freedom for each concentration (V_i)	9
number of concentrations (p)	6
number of replicates (n_i)	10

S(bar)^2 = 16.39259259

C = 1.388888889

B = 7.417689354

DEGREES OF FREEDOM: 5 AND CRITICAL VALUE: 15.09

7.42 < 15.09
THEREFORE, THE CONCLUSION OF THIS TEST IS THAT THE VARIANCES OF THE CONTROL AND THE EFFLUENT ARE HOMOGENOUS

EPA PROBIT ANALYSIS PROGRAM
USED FOR CALCULATING LC/EC VALUES
Version 1.5

January 2015 Ceriodaphnia dubia

Conc.	Number Exposed	Number Resp.	Observed Proportion Responding	Proportion Responding Adjusted for Controls
0.2500	10	0	0.0000	0.0000
0.5000	10	1	0.1000	0.1000
1.0000	10	2	0.2000	0.2000
1.5000	10	4	0.4000	0.4000
2.0000	10	9	0.9000	0.9000

Chi - Square for Heterogeneity (calculated) = 3.687
Chi - Square for Heterogeneity
(tabular value at 0.05 level) = 7.815

January 2015 Ceriodaphnia dubia

Estimated LC/EC Values and Confidence Limits

Point	Exposure Conc.	95% Confidence Limits Lower	Upper
LC/EC 1.00	0.358	0.056	0.598
LC/EC 50.00	1.380	1.039	1.988

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	0.25	0.50	1.0	1.50	2.0
Response 1	1	1	1	1	0	0
Response 2	1	1	1	1	0	1
Response 3	1	1	1	1	1	0
Response 4	1	1	1	1	0	0
Response 5	1	1	1	0	1	0
Response 6	1	1	1	1	0	0
Response 7	1	1	1	1	1	0
Response 8	1	1	0	1	1	0
Response 9	1	1	1	0	1	0
Response 10	1	1	1	1	1	0

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: NaCl
Test Start Date: 01/20/15 Test Ending Date: 01/27/15
Test Species: Ceriodaphnia dubia
Test Duration: 7 Day
DATA FILE: janfls.icp

Conc. ID	Number Replicates	Concentration g/L	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	1.000	0.000	1.000
2	10	0.250	1.000	0.000	1.000
3	10	0.500	0.900	0.316	0.900
4	10	1.000	0.800	0.422	0.800
5	10	1.500	0.600	0.516	0.600
6	10	2.000	0.100	0.316	0.100

The Linear Interpolation Estimate: 1.6000 Entered P Value: 50

Number of Resamplings: 80
The Bootstrap Estimates Mean: 1.5381 Standard Deviation: 0.1634
Original Confidence Limits: Lower: 1.1250 Upper: 1.7500
Resampling time in Seconds: 0.00 Random_Seed: 446500250

January 2015 Ceriodaphnia dubia Survival

Summary Statistics and ANOVA

Transformation = None

Conc.	n	Mean	s.d.	cv%
1 = control	10	1.0000	.0000	.0
2	10	1.0000	.0000	.0
3	10	.9000	.3162	35.1
4	10	.8000	.4216	52.7
5*	10	.6000	.5164	86.1
6*	10	.1000	.3162	316.2

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -.337101
This difference corresponds to -33.71 percent of control

tween concentrations
sum of squares = 5.933333 with 5 degrees of freedom.

Error mean square = .107407 with 54 degrees of freedom.

```
**************************************************
*                                                *
* Warning - the test for equality of variances *
* could not be computed as 1 or more of the    *
* variances is zero.                             *
*                                                *
**************************************************
```

Conc. ID	1	2	3	4	5	6
Conc. Tested	0.0	0.25	0.50	1.0	1.50	2.0
Response 1	22	18	15	10	0	0
Response 2	20	11	16	18	8	3
Response 3	23	16	13	14	4	0
Response 4	21	9	11	7	0	0
Response 5	20	13	4	4	12	0
Response 6	20	21	15	4	0	0
Response 7	15	17	15	14	8	0
Response 8	29	13	0	5	10	2
Response 9	23	11	14	10	5	0
Response 10	18	12	10	10	7	0

*** Inhibition Concentration Percentage Estimate ***
Toxicant/Effluent: NaCl
Test Start Date: 01/20/15 Test Ending Date: 01/27/15
Test Species: Ceriodaphnia dubia
Test Duration: 7 Day
DATA FILE: janflr.icp

Conc. ID	Number Replicates	Concentration g/L	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	21.100	3.665	21.100
2	10	0.250	14.100	3.755	14.100
3	10	0.500	11.300	5.334	11.300
4	10	1.000	9.600	4.719	9.600
5	10	1.500	5.400	4.351	5.400
6	10	2.000	0.500	1.080	0.500

The Linear Interpolation Estimate: 0.7206 Entered P Value: 50

Number of Resamplings: 80
The Bootstrap Estimates Mean: 0.6953 Standard Deviation: 0.2399
Original Confidence Limits: Lower: 0.3778 Upper: 1.1098
Resampling time in Seconds: 0.00 Random_Seed: -82884480

7 DAY CERIODAPHNIA DUBIA REFERENCE TOXICITY TEST -- EPA METHOD 1002.0

Customer: GSI **Test Start:** 20-Jan-15

Concentration: Control **Test End:** 27-Jan-15

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	01/20/15 14:00	7.72	8.7	24.1	01/20/15 14:00	CFS
1	1	1	1	1	1	1	1	1	1	1	10	01/21/15 14:00	8.01 / 7.95	8.3 / 8.1	24.3 / 24.7	01/21/15 14:40	CFS
2	1	1	1	1	1	1	1	1	1	1	10	01/22/15 13:50	8.10 / 8.04	8.2 / 8.2	24.9 / 24.9	01/22/15 14:30	CFS
3	1	1	1	1	1	1	1	1	1	1	10	01/23/15 13:30	8.00 / 7.90	8.4 / 8.2	24.6 / 25.0	01/23/15 14:20	CFS
4	1	1	1	1	1	1	1	1	1	1	10	01/24/15 13:30	7.89 / 7.81	8.2 / 8.1	24.5 / 25.1	01/24/15 14:10	CFS
5	1/6	1/7	1/2	1/3	1/5	1/5	1/4	1/7	1/4	1/5	10/48	01/25/15 13:00	7.93 / 7.89	8.1 / 8.3	24.6 / 25.0	01/25/15 13:50	CFS
6	1/9	1/13	1/16	1/10	1/12	1/10	1/8	1/14	1/17	1/9	10/118	01/26/15 13:45	8.04 / 7.94	8.1 / 8.2	24.7 / 25.0	01/26/15 14:30	CFS
7	1/7	1	1/5	1/8	1/3	1/5	1/3	1/8	1/2	1/4	10/45	01/27/15 13:30	7.63	8.1	25.2	01/27/15 13:30	CFS
8																	
Neonates	22	20	23	21	20	20	15	29	23	18	21.1	Range	7.63 - 8.10	8.1 - 8.7	24.1 - 25.2		

Concentration: 0.25 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	01/20/15 14:00	7.93	8.3	24.3	01/20/15 14:00	CFS
1	1	1	1	1	1	1	1	1	1	1	10	01/21/15 14:00	8.00 / 7.94	8.2 / 8.0	24.4 / 24.6	01/21/15 14:40	CFS
2	1	1	1	1	1	1	1	1	1	1	10	01/22/15 13:50	8.05 / 8.01	8.3 / 8.1	24.6 / 25.2	01/22/15 14:30	CFS
3	1	1	1	1	1	1	1	1	1	1	10	01/23/15 13:30	7.98 / 7.86	8.2 / 8.1	24.5 / 25.1	01/23/15 14:20	CFS
4	1	1	1	1	1	1	1	1	1	1	10	01/24/15 13:30	7.92 / 7.80	8.3 / 8.2	24.6 / 24.9	01/24/15 14:10	CFS
5	1/2	1/3	1/6	1	1/7	1/6	1/3	1/4	1	1	10/31	01/25/15 13:00	7.90 / 7.89	8.1 / 8.1	24.5 / 25.0	01/25/15 13:50	CFS
6	1/12	1/8	1/3	1/3	1/3	1/5	1/10	1/6	1/4	1/5	10/59	01/26/15 13:45	8.00 / 7.90	8.2 / 8.0	24.6 / 24.8	01/26/15 14:30	CFS
7	1/4	1	1/7	1/6	1/3	1/10	1/4	1/3	1/7	1/7	10/51	01/27/15 13:30	7.85	8.0	24.9	01/27/15 13:30	CFS
8																	
Neonates	18	11	16	9	13	21	17	13	11	12	14.1	Range	7.80 - 8.05	8.0 - 8.3	24.3 - 25.2		

7 DAY CERIODAPHNIA DUBIA REFERENCE TOXICITY TEST -- EPA METHOD 1002.0

Concentration: 0.50 g/L

Test Day	Replicate Number										Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
	1	2	3	4	5	6	7	8	9	10							
0	1	1	1	1	1	1	1	1	1	1	10	01/20/15 14:00	7.94	8.2	24.5	01/20/15 14:00	CFS
1	1	1	1	1	1	1	1	1	1	1	10	01/21/15 14:00	8.03 / 7.93	8.0 / 8.0	24.3 / 24.6	01/21/15 14:40	CFS
2	1	1	1	1	1	1	1	0	1	1	9	01/22/15 13:50	8.06 / 8.00	8.2 / 8.2	25.2 / 25.0	01/22/15 14:30	CFS
3	1	1	1	1	1	1	1	0	1	1	9	01/23/15 13:30	8.04 / 7.90	8.1 / 7.9	24.7 / 25.0	01/23/15 14:20	CFS
4	1	1	1	1	1	1	1	0	1	1	9	01/24/15 13:30	7.90 / 7.81	8.1 / 8.0	24.5 / 24.9	01/24/15 14:10	CFS
5	1/6	1/7	1/3	1/4	1	1/3	1	0	1/10	1	9/33	01/25/15 13:00	7.91 / 7.83	8.0 / 8.1	24.8 / 25.0	01/25/15 13:50	CFS
6	1/5	1/4	1/6	1/5	1/4	1/10	1/12	0	1/2	1/8	9/56	01/26/15 13:45	7.95 / 7.89	8.1 / 8.0	24.6 / 24.9	01/26/15 14:30	CFS
7	1/4	1/5	1/4	1/2	1	1/2	1/3	0	1/2	1/2	9/24	01/27/15 13:30	7.82	7.8	25.1	01/27/15 13:30	CFS
8																	
Neonates	15	16	13	11	4	15	15	0	14	10	12.6	Range	7.81 - 8.06	7.8 - 8.2	24.3 - 25.2		

Concentration: 1.0 g/L

Test Day	Replicate Number										Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
	1	2	3	4	5	6	7	8	9	10							
0	1	1	1	1	1	1	1	1	1	1	10	01/20/15 14:00	7.94	8.2	24.2	01/20/15 14:00	CFS
1	1	1	1	1	1	1	1	1	1	1	10	01/21/15 14:00	8.00 / 7.90	8.1 / 8.2	24.4 / 24.8	01/21/15 14:40	CFS
2	1	1	1	1	1	1	1	1	1	1	10	01/22/15 13:50	8.03 / 7.99	8.2 / 8.1	25.1 / 25.3	01/22/15 14:30	CFS
3	1	1	1	1	1	1	1	1	1	1	10	01/23/15 13:30	8.01 / 7.93	8.0 / 8.3	24.8 / 25.1	01/23/15 14:20	CFS
4	1	1	1	1	1	1	1	1	1	1	10	01/24/15 13:30	7.96 / 7.80	8.1 / 8.1	24.7 / 24.8	01/24/15 14:10	CFS
5	1/6	1/6	1/4	1	1	1	1/3	1/1	1	1	10/20	01/25/15 13:00	7.89 / 7.86	8.2 / 8.0	24.5 / 24.9	01/25/15 13:50	CFS
6	1/4	1/3	1/9	1/4	1/4	1/2	1/7	1	0/10	1/8	9/51	01/26/15 13:45	7.94 / 7.91	8.1 / 7.9	24.7 / 25.1	01/26/15 14:30	CFS
7	1	1/9	1/1	1/3	0	1/2	1/4	1/4	0	1/2	8/25	01/27/15 13:30	7.88	7.9	24.9	01/27/15 13:30	CFS
8																	
Neonates	10	18	14	7	4	4	14	5	10	10	12.0	Range	7.80 - 8.03	7.9 - 8.3	24.2 - 25.3		

7 DAY CERIODAPHNIA DUBIA REFERENCE TOXICITY TEST – EPA METHOD 1002.0

Concentration: 1.50 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	01/20/15 14:00	7.94	8.2	24.4	01/20/15 14:00	CFS
1	1	1	1	1	1	0	1	1	1	1	9	01/21/15 14:00	8.02 / 7.89	8.0 / 8.3	24.6 / 24.9	01/21/15 14:40	CFS
2	0	1	1	0	1	0	1	1	1	1	7	01/22/15 13:50	8.01 / 7.99	8.2 / 8.0	25.1 / 25.0	01/22/15 14:30	CFS
3	0	1	1	0	1	0	1	1	1	1	7	01/23/15 13:30	8.03 / 7.90	8.1 / 8.2	24.9 / 25.1	01/23/15 14:20	CFS
4	0	1	1	0	1	0	1	1/4	1	1	7/4	01/24/15 13:30	8.01 / 7.85	8.2 / 8.1	24.5 / 24.8	01/24/15 14:10	CFS
5	0	1/4	0/4	0	1/3	0	1/2	1	1	1/3	6/16	01/25/15 13:00	8.03 / 7.89	8.2 / 8.0	24.4 / 25.0	01/25/15 13:50	CFS
6	0	1	0	0	1/6	0	1/5	1/2	1/4	1/4	6/21	01/26/15 13:45	8.00 / 7.93	8.1 / 7.9	24.5 / 24.8	01/26/15 14:30	CFS
7	0	1/4	0	0	1/3	0	1/1	1/4	1/1	1	6/13	01/27/15 13:30	7.93	8.0	24.8	01/27/15 13:30	CFS
8																	
Neonates	0	8	4	0	12	0	8	10	5	7	9.0	Range	7.85 - 8.03	7.9 - 8.3	24.4 - 25.1		

Concentration: 2.0 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	01/20/15 14:00	7.94	8.2	24.5	01/20/15 14:00	CFS
1	1	1	1	1	1	0	1	1	0	1	8	01/21/15 14:00	8.01 / 7.91	8.0 / 8.0	24.7 / 25.0	01/21/15 14:40	CFS
2	1	1	1	0	0	0	1	1	0	1	6	01/22/15 13:50	8.02 / 8.01	8.3 / 8.1	25.1 / 25.2	01/22/15 14:30	CFS
3	1	1	1	0	0	0	1	1	0	0	5	01/23/15 13:30	8.00 / 7.90	8.1 / 8.3	24.9 / 25.0	01/23/15 14:20	CFS
4	1	1	0	0	0	0	0	1	0	0	3	01/24/15 13:30	7.98 / 7.89	8.0 / 8.1	24.6 / 24.7	01/24/15 14:10	CFS
5	0	1	0	0	0	0	0	1	0	0	2	01/25/15 13:00	8.03 / 7.91	7.9 / 8.2	24.5 / 24.9	01/25/15 13:50	CFS
6	0	1/3	0	0	0	0	0	0/2	0	0	1/5	01/26/15 13:45	8.00 / 7.90	8.0 / 8.0	24.6 / 24.8	01/26/15 14:30	CFS
7	0	1	0	0	0	0	0	0	0	0	1	01/27/15 13:30	7.91	7.9	24.9	01/27/15 13:30	CFS
8																	
Neonates	0	3	0	0	0	0	0	2	0	0	5.0	Range	7.89 - 8.03	7.9 - 8.3	24.5 - 25.2		

7 DAY CERIODAPHNIA DUBIA REFERENCE TOXICITY TEST -- EPA METHOD 1002.0

Customer: GSI **Test Start:** 20jan15

Concentration: Control **Test End:** 27jan15

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	20jan15 1400	7.72	8.7	24.1	20jan15 1400	CFS
1	1	1	1	1	1	1	1	1	1	1	10	21jan 1400	8.01 / 7.95	8.3 / 8.1	24.3 / 24.7	21jan 1440	CFS
2	1	1	1	1	1	1	1	1	1	1	10	22jan 1350	8.10 / 8.14	8.2 / 8.2	24.5 / 24.7	~~24.9~~ 22jan 1430	CFS
3	1	1	1	1	1	1	1	1	1	1	10	23jan 1330	8.00 / 7.90	8.4 / 8.2	24.6 / 25.0	23jan 1420	CFS
4	1	1	1	1	1	1	1	1	1	1	10	24jan 1330	7.89 / 7.81	8.2 / 8.1	24.5 / 25.1	24jan 1410	CFS
5	1/6	1/7	1/2	1/3	1/5	1/5	1/4	1/7	1/4	1/5	10	25jan 1350	7.93 / 7.89	8.1 / 8.3	24.6 / 25.0	25jan 1350	CFS
6	1/11	1/13	1/6	1/10	1/13	1/10	1/8	1/4	1/17	1/9	10	26jan 1341	8.04 / 7.94	8.1 / 8.2	24.7 / 25.0	26jan 1430	CFS
7	1/7	1	1/5	1/8	1/3	1/5	1/3	1/8	1/2	1/4	10	27jan 1330	7.63	8.1	25.2	27jan 1330	CFS
8																	
Neonates	12	12	23	21	20	20	15	29	23	18	21.1	Range	7.63 - 8.10	8.1 - 8.7	24.1 - 25.1		

22jan15 1430

Concentration: 0.25 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	20jan15 1400	7.93	8.3	24.3	20jan15 1400	CFS
1	1	1	1	1	1	1	1	1	1	1	10	1400 21jan	8.00 / 7.94	8.2 / 8.0	24.4 / 24.6	1400 21jan	CFS
2	1	1	1	1	1	1	1	1	1	1	10	1350 22jan	8.05 / 8.01	8.3 / 8.1	24.6 / 25.2	1430 22jan	CFS
3	1	1	1	1	1	1	1	1	1	1	10	1330 23jan	7.98 / 7.86	8.2 / 8.1	24.5 / 25.1	1420 23jan	CFS
4	1	1	1	1	1	1	1	1	1	1	10	1330 24jan	7.92 / 7.80	8.3 / 8.2	24.6 / 24.9	1410 24jan	CFS
5	1/2	1/3	1/6	1	1/7	1/6	1/3	1/4	1	1	10	31 1300 25jan	7.90 / 7.89	8.1 / 8.1	24.5 / 25.0	1350 25jan	CFS
6	1/12	1/8	1/3	1/3	1/3	1/5	1/10	1/6	1/4	1/5	10	59 1345 26jan	8.00 / 7.90	8.2 / 8.0	24.6 / 24.8	1430 26jan	CFS
7	1/4	1	1/7	1/6	1/3	1/10	1/4	1/3	1/7	1/7	10	51 1330 27jan	7.35	8.0	24.9	1330 27jan	CFS
8																	
Neonates	15	11	16	9	13	21	17	13	11	13	14.1	Range	7.80 - 8.05	8.0 - 8.3	24.3 - 25.2		

7 DAY CERIODAPHNIA DUBIA REFERENCE TOXICITY TEST -- EPA METHOD 1002.0

Concentration: 0.50 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1400 20Jan15	7.94	8.2	24.5	1400 20Jan15	CB
1	1	1	1	1	1	1	1	1	1	1	10 —	21Jan 1400	8.03 / 7.93	8.0 / 8.0	24.3 / 24.6	NHB 21Jan	CB
2	1	1	1	1	1	1	1	0	1	1	9 —	22Jan 1350	8.06 / 8.00	8.2 / 8.2	25.2 / 25.0	22Jan 1430	CB
3	1	1	1	1	1	1	1	1	1	1	9 —	23Jan 1330	8.04 / 7.90	8.1 / 7.9	24.7 / 25.0	23Jan 1420	CB
4	1	1	1	1	1	1	1	1	1	1	9 —	24Jan 1330	7.90 / 7.81	8.1 / 8.0	24.3 / 24.9	24Jan 1410	CB
5	1/6	1/7	1/3	1/4	1	1/5	1	1	1/10	1	9 33	25Jan 1300	7.91 / 7.83	8.0 / 8.1	24.8 / 25.0	25Jan 1330	CB
6	1/5	1/4	1/6	1/5	1/4	1/10	1/12	1	1/2	1/8	9 54	26Jan 1345	7.95 / 7.89	8.1 / 8.0	24.6 / 24.9	26Jan 1430	CB
7	1/4	1/5	1/4	1/2	1	1/2	1/3	↓	1/2	1/2	9 24	27Jan 1330	7.83	7.8	25.1	27Jan 1330	CB
8																	
Neonates	15	16	13	11	4	15	15	0	14	10	12.6	Range	7.81 – 8.06	7.9 – 8.2	24.3 – 25.2		

Concentration: 1.0 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1400 20Jan15	7.94	8.2	24.2	1400 20Jan15	CB
1	1	1	1	1	1	1	1	1	1	1	10 —	21Jan 1400	8.00 / 7.90	8.1 / 8.2	24.4 / 24.8	21Jan 1440	CB
2	1	1	1	1	1	1	1	1	1	1	10 —	22Jan 1350	8.03 / 7.99	8.2 / 8.1	25.1 / 25.3	22Jan 1430	CB
3	1	1	1	1	1	1	1	1	1	1	10 —	23Jan 1330	8.01 / 7.93	8.0 / 8.3	24.8 / 25.1	23Jan 1430	CB
4	1	1	1	1	1	1	1	1	1	1	10 —	24Jan 1330	7.96 / 7.80	8.1 / 8.1	24.7 / 24.8	24Jan 1410	CB
5	1/2	1/4	1/4	1	1	1	1/3	1/1	1	1	10 20	25Jan 1300	7.89 / 7.86	8.2 / 8.0	24.5 / 24.9	25Jan 1330	CB
6	1/4	1/3	1/9	1/4	1/4	1/2	1/7	1	9/10	1/8	9 51	26Jan 1345	7.94 / ~~7.91~~	8.1 / 7.9	24.7 / 25.1	26Jan 1430	CB
7	1	1/9	1/1	1/3	0	1/2	1/4	1/4	0	1/2	8 25	27Jan 1330	7.88	7.9	24.9	27Jan 1330	CB
8																	
Neonates	10	18	14	7	4	4	14	5	10	10	12.0	Range	7.80 – 8.03	7.9 – 8.3	24.2 – 25.3		

7 DAY CERIODAPHNIA DUBIA REFERENCE TOXICITY TEST -- EPA METHOD 1002.0

Concentration: 1.50 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1400 20Jan15	7.94	8.2	24.4	1400 20Jan15	CFF
1	1	1	1	1	1	C	1	1	1	1	9 —	21Jan 1400	8.03 7.89	8.0 8.3	24.6 24.9	21Jan 1440	CFF
2	C	1	1	C	1	|	1	1	1	1	7 —	22Jan 1350	8.01 7.94	8.2 8.0	25.1 25.0	22Jan 1430	CFF
3	|	1	1	|	1	|	1	1	1	1	7 —	23Jan 1330	8.03 7.90	8.1 8.2	24.9 25.1	23Jan 1420	CFF
4	|	1	1	|	1	|	1	1/4	1	1	7 4	24Jan 1350	8.01 7.85	8.2 8.1	24.5 24.8	24Jan 1410	CFF
5	|	1/4	1/4	|	1/3	|	1/2	1	1	1/3	5 16	25Jan 1300	8.03 7.89	8.2 8.0	24.4 25.0	25Jan 1350	CFF
6	|	1	|	|	1/6	|	1/5	1/2	1/4	1/4	5 21	26Jan 1345	8.00 7.93	8.1 7.9	24.5 24.8	26Jan 1430	CFF
7	↓	1/4	↓	↓	1/3	↓	1/1	1/4	1/1	1	6 13	27Jan 1330	7.93	8.0	24.8	27Jan 1330	CFF
8																	
Neonates	0	8	4	0	12	0	8	10	5	7	9.00	Range	7.85 - 8.03	7.9 - 8.3	24.4 - 25.1		

Concentration: 2.0 g/L

Test Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Survivors/ Neonates	Water Change Date/Time	pH	DO (mg/L)	Temp. (°C)	Feed Date/Time	Initials
0	1	1	1	1	1	1	1	1	1	1	10	1400 20Jan15	7.94	8.2	24.5	1400 20Jan15	CFF
1	1	1	1	1	1	C	1	1	0	1	8 —	21Jan 1400	8.01 7.91	8.0 8.0	24.7 25.0	21Jan 1440	CFF
2	1	1	1	C	C	|	1	1	|	1	6 —	22Jan 1350	8.03 8.01	8.3 8.1	25.1 25.2	22Jan 1430	CFF
3	1	1	1	|	1	|	1	1	|	0	5 —	23Jan 1320	8.00 7.90	8.1 8.3	24.9 25.0	23Jan 1430	CFF
4	1	1	0	|	|	|	0	1	|	|	3 —	24Jan 1330	7.98 7.89	8.0 8.1	24.6 24.7	24Jan 1410	CFF
5	0	1	|	|	|	|	|	1	|	|	2 —	25Jan 1320	8.03 7.91	7.9 8.2	24.5 24.5	25Jan 1350	CFF
6	|	1/3	|	|	|	|	|	0/2	|	|	1 5	26Jan 1345	8.00 7.90	8.0 8.0	24.6 24.9	26Jan 1450	CFF
7	↓	1	↓	↓	↓	↓	↓	↓	↓	↓	1 —	27Jan 1320	7.91	7.9	24.9	27Jan 1320	CFF
8																	
Neonates	0	3	0	0	0	0	0	1	0	0	5.0	Range	7.89 - 8.03	7.9 - 8.3	24.5 - 25.2		

FLEA BROODS ADDITION TABLE

Control

1	2	3	4	5	6	7	8	9	10		
6	7	2	3	5	5	4	7	4	5		**48**
9	13	16	10	12	10	8	14	17	9		**118**
7	0	5	8	3	5	3	8	2	4		**45**
22	**20**	**23**	**21**	**20**	**20**	**15**	**29**	**23**	**18**	**211**	**211**

0.25

1	2	3	4	5	6	7	8	9	10		
2	3	6	0	7	6	3	4	0	0		**31**
12	8	3	3	3	5	10	6	4	5		**59**
4	0	7	6	3	10	4	3	7	7		**51**
18	**11**	**16**	**9**	**13**	**21**	**17**	**13**	**11**	**12**	**141**	**141**

0.50

1	2	3	4	5	6	7	8	9	10		
6	7	3	4	0	3	0	0	10	0		**33**
5	4	6	5	4	10	12	0	2	8		**56**
4	5	4	2	0	2	3	0	2	2		**24**
15	**16**	**13**	**11**	**4**	**15**	**15**	**0**	**14**	**10**	**113**	**113**

1.00

1	2	3	4	5	6	7	8	9	10		
6	6	4	0	0	0	3	1	0	0		**20**
4	3	9	4	4	2	7	0	10	8		**51**
0	9	1	3	0	2	4	4	0	2		**25**
10	**18**	**14**	**7**	**4**	**4**	**14**	**5**	**10**	**10**	**96**	**96**

1.50

1	2	3	4	5	6	7	8	9	10		
0	0	0	0	0	0	0	4	0	0		**4**
0	4	4	0	3	0	2	0	0	3		**16**
0	0	0	0	6	0	5	2	4	4		**21**
0	4	0	0	3	0	1	4	1	0		**13**
0	**8**	**4**	**0**	**12**	**0**	**8**	**10**	**5**	**7**	**54**	**54**

2.00

1	2	3	4	5	6	7	8	9	10		
0	0	0	0	0	0	0	0	0	0		**0**
0	3	0	0	0	0	0	2	0	0		**5**
0	0	0	0	0	0	0	0	0	0		**0**
0	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**5**	**5**

SUMMARY DATA FOR *PIMEPHALES PROMELAS* TEST

Laboratory: GSI **Test Dates:** 20 Jan 15 to 22 Jan 15

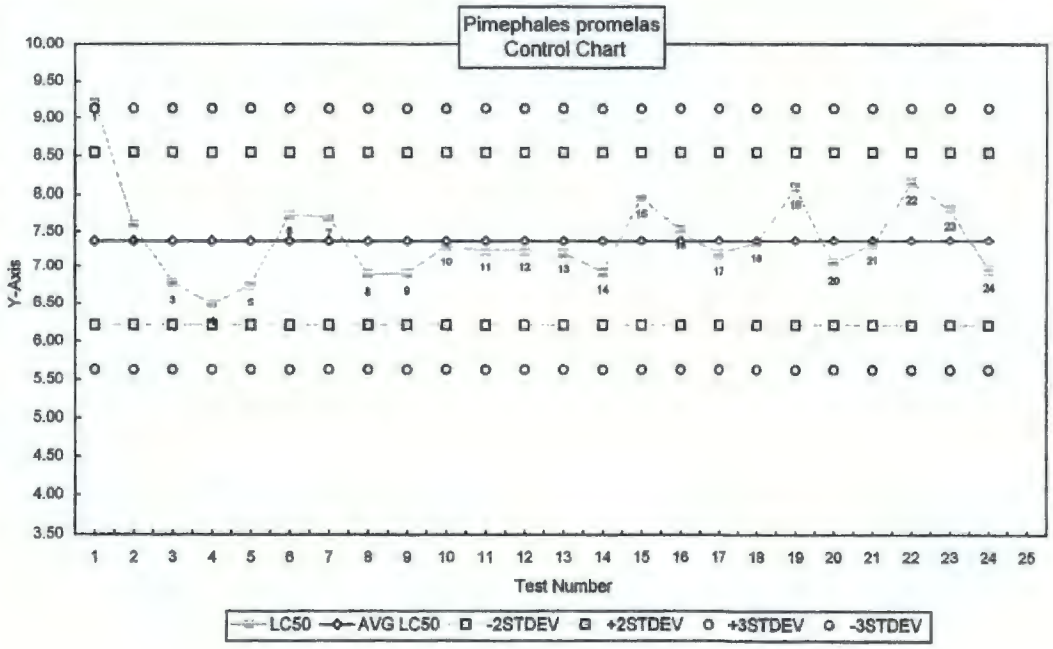
Test ID: January 2015
48 Hr Salt Reference Test **Analyst:**

g/L	Control	5.0	6.0	7.0	8.0	9.0	10.0
No. Live Larvae	20	20	16	9	5	1	0
Survival (%)	100	100	80	45	25	5	0
Mean Dry Wgt of Larvae (mg)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature Range (°C)	24.0 – 24.6	24.2 – 24.5	24.3 – 24.6	24.3 – 24.7	24.2 – 24.7	24.2 – 24.7	24.1 – 24.7
Dissolved Oxygen Range (mg/L)	8.2 – 8.8	8.1 – 8.3	8.0 – 8.2	8.0 – 8.3	7.7 – 8.2	7.8 – 8.2	7.9 – 8.1
pH Range	7.30 – 8.01	7.47 – 8.00	7.50 – 8.03	7.46 – 8.01	7.44 – 8.02	7.40 – 8.00	7.38 – 8.01

COMMENTS:

LC50 ACUTE REFERENCE TOXICANT DATA FOR Pimephales promelas

	DATE	LC50	LCL	UCL			low cusum	up cusum		
1	1/16/2013	9.23	8.34	10.21		7.379	6.214	8.544	5.631	9.127
2	2/5/2013	7.60	7.20	8.02		7.379	6.214	8.544	5.631	9.127
3	3/6/2013	6.77	6.47	7.08		7.379	6.214	8.544	5.631	9.127
4	4/23/2013	6.49	6.10	6.90		7.379	6.214	8.544	5.631	9.127
5	5/15/2013	6.73	6.40	7.09		7.379	6.214	8.544	5.631	9.127
6	6/4/2013	7.73	7.33	8.15		7.379	6.214	8.544	5.631	9.127
7	7/16/2013	7.70	7.31	8.12		7.379	6.214	8.544	5.631	9.127
8	8/28/2013	6.88	6.61	7.16		7.379	6.214	8.544	5.631	9.127
9	9/10/2013	6.89	6.51	7.29		7.379	6.214	8.544	5.631	9.127
10	10/9/2013	7.26	6.88	7.71		7.379	6.214	8.544	5.631	9.127
11	11/20/2013	7.21	6.84	7.60		7.379	6.214	8.544	5.631	9.127
12	12/11/2013	7.21	6.82	7.61		7.379	6.214	8.544	5.631	9.127
13	1/15/2014	7.18	6.79	7.60		7.379	6.214	8.544	5.631	9.127
14	2/11/2014	6.91	6.59	7.25		7.379	6.214	8.544	5.631	9.127
15	3/5/2014	7.97	7.55	8.42		7.379	6.214	8.544	5.631	9.127
16	4/2/2014	7.51	7.19	7.85		7.379	6.214	8.544	5.631	9.127
17	5/20/2014	7.15	6.77	7.56		7.379	6.214	8.544	5.631	9.127
18	6/24/2014	7.33	7.03	7.63		7.379	6.214	8.544	5.631	9.127
19	7/30/2014	8.10	7.74	8.48		7.379	6.214	8.544	5.631	9.127
20	8/12/2014	7.03	6.65	7.43		7.379	6.214	8.544	5.631	9.127
21	9/3/2014	7.30	6.96	7.65		7.379	6.214	8.544	5.631	9.127
22	10/29/2014	8.16	7.82	8.51		7.379	6.214	8.544	5.631	9.127
23	11/18/2014	7.80	7.39	8.22		7.379	6.214	8.544	5.631	9.127
24	1/20/2015	6.94	6.59	7.30		7.379	6.214	8.544	5.631	9.127
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**		**low cusum**	**up cusum**		
		7.38	**7.00**	**7.79**	**0.58**		**6.214**	**8.544**		



TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 01/20/15 TEST NUMBER: 1 DURATION: 48 H
TOXICANT : NaCl
SPECIES: Pimephales promelas

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
5.00	20	0
6.00	20	4
7.00	20	11
8.00	20	15
9.00	20	19
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 6.94
95% LOWER CONFIDENCE: 6.59
95% UPPER CONFIDENCE: 7.30

Reference Toxicant Test Data

Toxicant: **NaCl**
Test Date
Start: 20-Jan-15
End: 22-Jan-15

Test Organism: ***Pimephales promelas***
Age: **< 24 hrs**
Source: **Aquatox, Inc.**
Dilution water: **MHFW** Prepared: 19-Jan-15

Analyst:

Concent.	Chamber #	Number of Survivors			pH			Dissolved Oxygen			Temperature		
g/L		0	24	48	0	24	48	0	24	48	0	24	48
Control	1	**10**	10	10	7.99	8.01		8.3	8.2		24.0	24.3	
	2	**10**	10	10		7.51	7.30		8.4	8.8		24.4	24.6
5.0	1	**10**	10	10	7.92	8.00		8.3	8.1		24.2	24.4	
	2	**10**	10	10		7.47	7.61		8.2	8.1		24.2	24.5
6.0	1	**10**	10	9	7.93	8.03		8.2	8.2		24.3	24.3	
	2	**10**	9	7		7.50	7.61		8.1	8.0		24.5	24.6
7.0	1	**10**	8	5	7.91	8.01		8.2	8.3		24.3	24.3	
	2	**10**	7	4		7.46	7.63		8.0	8.0		24.4	24.7
8.0	1	**10**	5	3	7.93	8.02		8.2	8.2		24.3	24.2	
	2	**10**	6	2		7.44	7.59		8.0	7.7		24.4	24.7
9.0	1	**10**	4	1	7.92	8.00		8.1	8.2		24.4	24.3	
	2	**10**	3	0		7.40	7.66		8.1	7.8		24.2	24.7
10.0	1	**10**	2	0	7.90	8.01		8.1	8.1		24.4	24.2	
	2	**10**	0	0		7.38	7.66		8.0	7.9		24.1	24.7
	Time:	13:30	13:00	13:45									

Reference Toxicant Test Data

Toxicant: **NaCl**
Test Date
Start: 22 Jan 15
End: 23 Jan 15

Test Organism: ***Pimephales promelas***
Age: **< 24 hrs**
Source: **Aquatox, Inc.**
Dilution water: **MHFW** Prepared: 19 Jan 15

Analyst: [signature]

Concent.	Chamber #	Number of Survivors			pH			Dissolved Oxygen			Temperature		
g/L		0	24	48	0	24	48	0	24	48	0	24	48
Control	1	**10**	10	10	7.99	8.01		8.3	8.2		24.0	24.3	
	2	**10**	10	10		7.91	7.36		8.4	8.8		24.4	24.6
5.0	1	**10**	10	10	7.92	8.00		8.3	8.1		24.2	24.4	
	2	**10**	10	10		7.97	7.61		8.2	8.1		24.2	24.5
6.0	1	**10**	10	9	7.93	8.03		8.2	8.2		24.3	24.3	
	2	**10**	9	7		7.90	7.61		8.1	8.0		24.5	24.6
7.0	1	**10**	8	5	7.91	8.01		8.2	8.3		24.3	24.3	
	2	**10**	7	4		7.96	7.63		8.0	8.0		24.4	24.7
8.0	1	**10**	5	3	7.93	8.02		8.2	8.2		24.3	24.2	
	2	**10**	6	2		7.94	7.59		8.0	7.7		24.4	24.7
9.0	1	**10**	4	1	7.92	8.00		8.1	8.2		24.4	24.3	
	2	**10**	3	0		7.90	7.66		8.1	7.8		24.2	24.7
10.0	1	**10**	2	0	7.90	8.01		8.1	8.1		24.4	24.2	
	2	**10**	0	0		7.88	7.66		8.0	7.9		24.1	24.7
	Time:	1330	1300	1345									

SUMMARY DATA FOR *CERIODAPHNIA DUBIA* TEST

Laboratory: GSI **Test Dates:** 20 Jan 15 to 22 Jan 15

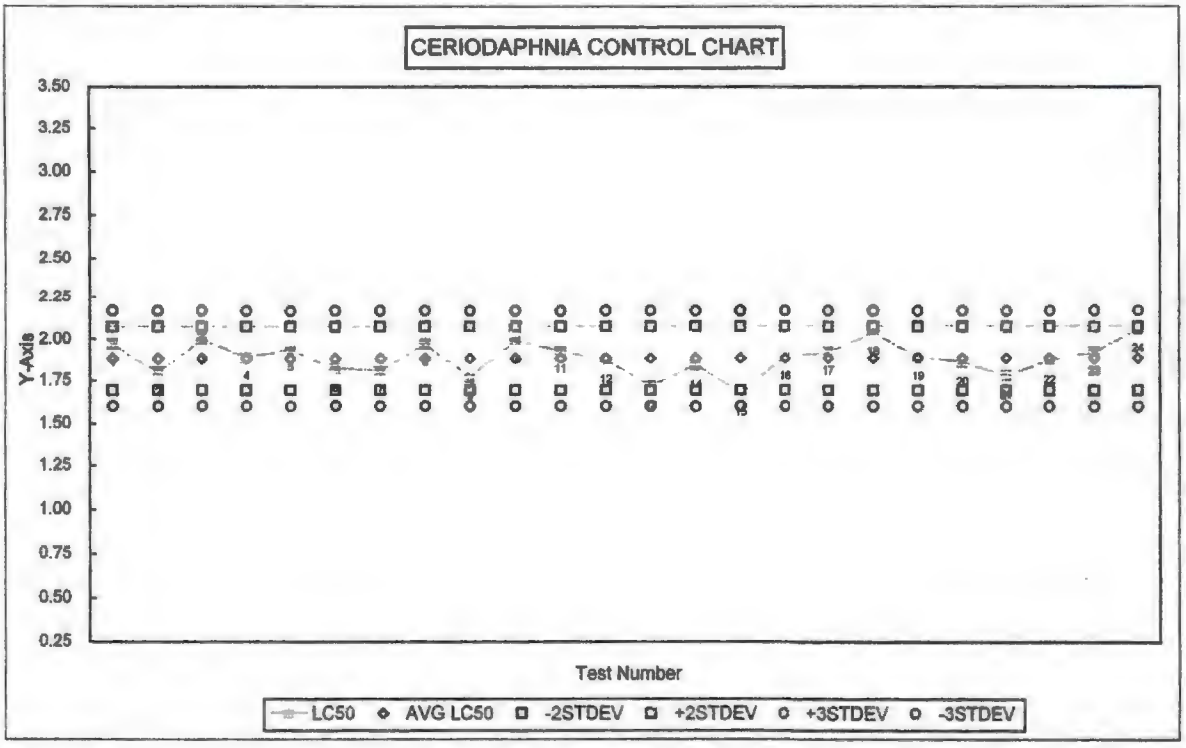
Test ID: January 2015
48 Hr Salt Reference **Analyst:** Christopher

g/L	Control	1.25	1.50	1.75	2.0	2.25	
No. Live Fleas	20	20	15	12	11	8	
Survival (%)	100	100	75	60	55	40	
Neonates /Survivor	N/A	N/A	N/A	N/A	N/A	N/A	
Temperature Range (°C)	24.1 – 24.9	24.2 – 24.7	24.1 – 24.7	24.3 – 24.9	24.3 – 24.9	24.2 – 24.9	
Dissolved Oxygen Range (mg/L)	8.2 – 8.4	8.1 – 8.4	8.2 – 8.4	8.0 – 8.4	8.0 – 8.4	8.1 – 8.4	
pH Range	8.00 – 8.20	7.90 – 8.09	7.86 – 8.06	7.85 – 8.02	7.85 – 8.01	7.87 – 8.05	

COMMENTS:

LC50 ACUTE REFERENCE TOXICANT DATA FOR CERIODAPHNIA DUBIA

	DATE	LC50	LCL	UCL			low cusum	up cusum		
1	1/16/2013	1.97	1.83	2.12		1.885	1.695	2.074	1.601	2.168
2	2/20/2013	1.80	1.67	1.93		1.885	1.695	2.074	1.601	2.168
3	3/6/2013	2.00	1.85	2.16		1.885	1.695	2.074	1.601	2.168
4	4/23/2013	1.89	1.79	2.01		1.885	1.695	2.074	1.601	2.168
5	5/15/2013	1.94	1.82	2.07		1.885	1.695	2.074	1.601	2.168
6	6/4/2013	1.82	1.71	1.95		1.885	1.695	2.074	1.601	2.168
7	7/16/2013	1.81	1.65	1.98		1.885	1.695	2.074	1.601	2.168
8	8/28/2013	1.97	1.82	2.14		1.885	1.695	2.074	1.601	2.168
9	9/10/2013	1.77	1.55	2.02		1.885	1.695	2.074	1.601	2.168
10	10/9/2013	1.99	1.78	2.22		1.885	1.695	2.074	1.601	2.168
11	11/20/2013	1.93	1.82	2.04		1.885	1.695	2.074	1.601	2.168
12	12/11/2013	1.87	1.72	2.04		1.885	1.695	2.074	1.601	2.168
13	1/15/2014	1.72	1.59	1.87		1.885	1.695	2.074	1.601	2.168
14	2/11/2014	1.84	1.74	1.95		1.885	1.695	2.074	1.601	2.168
15	3/18/2014	1.68	1.57	1.78		1.885	1.695	2.074	1.601	2.168
16	4/9/2014	1.89	1.74	2.05		1.885	1.695	2.074	1.601	2.168
17	5/20/2014	1.92	1.81	2.04		1.885	1.695	2.074	1.601	2.168
18	6/24/2014	2.04	1.88	2.22		1.885	1.695	2.074	1.601	2.168
19	7/30/2014	1.89	1.78	1.99		1.885	1.695	2.074	1.601	2.168
20	8/12/2014	1.86	1.75	1.98		1.885	1.695	2.074	1.601	2.168
21	9/3/2014	1.78	1.69	1.87		1.885	1.695	2.074	1.601	2.168
22	10/29/2014	1.87	1.76	1.99		1.885	1.695	2.074	1.601	2.168
23	11/18/2014	1.92	1.76	2.09		1.885	1.695	2.074	1.601	2.168
24	1/20/2015	2.06	1.73	2.44		1.885	1.695	2.074	1.601	2.168
		Mean LC50	**Mean low 95**	**Mean Up 95**	**Std Dev**		**low cusum**	**up cusum**		
		1.88	**1.74**	**2.04**	**0.09**		**1.695**	**2.074**		



TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 01/20/15 TEST NUMBER: 1 DURATION: 48 H
TOXICANT : NaCl
SPECIES: Ceriodaphnia dubia

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.25	20	0
1.50	20	5
1.75	20	8
2.00	20	9
2.25	20	12

SPEARMAN-KARBER TRIM: 40.00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.06
95% LOWER CONFIDENCE: 1.73
95% UPPER CONFIDENCE: 2.44

Reference Toxicant Test Data

Toxicant: **NaCl**

Test Date

Start: 20-Jan-15

End: 22-Jan-15

Test Organism: ***Ceriodaphnia dubia***

Age: **<24 hrs.**

Source: **Stock**

Dilution water: **MHSF** Prepared: 19-Jan-15

Analyst:

Concent. g/L	Chamber #	Number of Survivors			pH			Dissolved Oxygen			Temperature		
		0	24	48	0	24	48	0	24	48	0	24	48
Control	1	5	5	5	8.01	8.00		8.3	8.2		24.1	24.3	
	2	5	5	5									
	3	5	5	5									
	4	5	5	5		8.13	8.20		8.3	8.4		24.6	24.9
1.25	1	5	5	5	7.90	8.03		8.2	8.1		24.3	24.2	
	2	5	5	5									
	3	5	5	5									
	4	5	5	5		8.09	8.01		8.3	8.4		24.5	24.7
1.50	1	5	5	5	7.86	8.00		8.2	8.2		24.1	24.3	
	2	5	5	3									
	3	5	4	3									
	4	5	5	4		8.01	8.06		8.3	8.4		24.6	24.7
1.75	1	5	5	4	7.85	8.02		8.1	8.1		24.3	24.4	
	2	5	4	3									
	3	5	4	2									
	4	5	3	3		8.00	8.01		8.0	8.4		24.6	24.9
2.00	1	5	4	3	7.85	8.01		8.2	8.0		24.4	24.3	
	2	5	3	2									
	3	5	5	3									
	4	5	4	3		7.99	8.01		8.1	8.4		24.7	24.9
2.25	1	5	3	1	7.87	8.00		8.1	8.1		24.3	24.2	
	2	5	5	3									
	3	5	4	2									
	4	5	3	2		7.98	8.05		8.2	8.4		24.6	24.9
	Time:	13:00	13:50	13:10									

Reference Toxicant Test Data

Toxicant: **NaCl**
Test Date
Start: 20 Jan 15
End: 24 Jan 15

Test Organism: ***Ceriodaphnia dubia***
Age: **<24 hrs.**
Source: **Stock**
Dilution water: **MHSF** Prepared: 19 Jan 15

Analyst: [signature]

Concent. g/L	Chamber #	Number of Survivors			pH			Dissolved Oxygen			Temperature		
		0	24	48	0	24	48	0	24	48	0	24	48
Control	1	5	5	5	8.01	8.00		8.3	8.2		24.1	24.3	
	2	5	5	5									
	3	5	5	5									
	4	5	5	5		8.13	8.20		8.3	8.4		24.6	24.9
1.25	1	5	5	5	7.90	8.03		8.2	8.1		24.3	24.2	
	2	5	5	5									
	3	5	5	5									
	4	5	5	5		8.09	8.01		8.3	8.4		24.5	24.7
1.50	1	5	3	5	7.86	8.00		8.2	8.2		24.1	24.3	
	2	5	5	3									
	3	5	4	3									
	4	5	5	4		8.01	8.00		8.3	8.4		24.6	24.7
1.75	1	5	5	4	7.85	8.02		8.1	8.1		24.3	24.4	
	2	5	4	3									
	3	5	4	2									
	4	5	3	3		8.00	8.01		8.0	8.4		24.6	24.9
2.00	1	5	4	3	7.85	8.01		8.2	8.0		24.4	24.3	
	2	5	3	2									
	3	5	5	3									
	4	5	4	3		7.99	8.01		8.1	8.4		24.7	24.9
2.25	1	5	3	1	7.87	8.00		8.1	8.1		24.3	24.2	
	2	5	5	3									
	3	5	4	2									
	4	5	3	2		7.98	8.05		8.2	8.4		24.6	24.9
	Time:	1300	1350	1310									

GUARDIAN SYSTEMS, INC.

1108 Ashville Road
P.O. Box 190
Leeds, Alabama 35094

Telephone (205) 699-6647
Toll Free (866) 729-7211
Fax (205) 699-3882

Guardian Systems
1108 Ashville Road
Leeds, AL 35094

Attention:

Report Date: 01/09/2015
Receive Date: 01/06/2015
Receive Time: 10:54

Control No : 1501-00039 Sample # 001
Sampler : CFS
Sample ID: MHSF 1/5/15

Sample Date: 01/06/2015
Sample Time: 8:30

Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
pH	7.62	SU	CFS	01/06/2015	8:30	150.1	(1)
Specific Conductance	291.	umhos	MJN	01/09/2015	10:45	120.1	(1)
Alkalinity, Total mg/L	60.	mg/L	LSC	01/09/2015	11:30	310.1	(1)
Dissolved Oxygen (DO)	8.0	mg/L	CFS	01/06/2015	8:30	360.1	(1)
Nitrogen, Ammonia	<0.1	mg/L	TLB	01/07/2015	15:38	350.2	(1)
Calcium	13.9	mg/L	DRH	01/08/2015	14:30	200.7	(1)
Magnesium	13.9	mg/L	DRH	01/08/2015	14:30	200.7	(1)
Hardness, Total	92.	mg/L	DRH	01/08/2015	14:30	200.7	

Approved By:

METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18th, 19th, 20th, and 22nd Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3rd Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Anaytical Methods, 4th Edition, May 1996

GUARDIAN SYSTEMS, INC.

1108 Ashville Road
P.O. Box 190
Leeds, Alabama 35094

Telephone (205) 699-6647
Toll Free (866) 729-7211
Fax (205) 699-3882

Guardian Systems
1108 Ashville Road
Leeds, AL 35094

Report Date: 01/27/2015
Receive Date: 01/20/2015
Receive Time: 11:47

Attention:

Control No : 1501-00211 Sample # 001
Sampler : CFS
Sample ID: MHSF 1/19/15

Sample Date: 01/20/2015
Sample Time: 8:30

Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
pH	7.45	SU	CFS	01/20/2015	8:30	150.1	(1)
Specific Conductance	293.	umhos	LSC	01/23/2015	10:30	120.1	(1)
Alkalinity, Total mg/L	57.	mg/L	LSC	01/23/2015	10:30	310.1	(1)
Dissolved Oxygen (DO)	8.5	mg/L	CFS	01/20/2015	8:30	360.1	(1)
Nitrogen, Ammonia	<0.1	mg/L	TLB	01/23/2015	15:29	350.2	(1)
Calcium	12.1	mg/L	DRH	01/26/2015	11:30	200.7	(1)
Magnesium	11.7	mg/L	DRH	01/26/2015	11:30	200.7	(1)
Hardness, Total	78.	mg/L	DRH	01/26/2015	11:30	200.7	

Approved By:

METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18th, 19th, 20th, and 22nd Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3rd Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Anaytical Methods, 4th Edition, May 1996

GUARDIAN SYSTEMS, INC.

1108 Ashville Road
P.O. Box 190
Leeds, Alabama 35094

Telephone (205) 699-6647
Toll Free (866) 729-7211
Fax (205) 699-3882

Guardian Systems
1108 Ashville Road
Leeds, AL 35094

Report Date: 01/27/2015
Receive Date: 01/23/2015
Receive Time: 9:00

Attention:

Control No : 1501-00260 Sample # 001
Sampler : CFS
Sample ID: MHSF 1/22/15

Sample Date: 01/23/2015
Sample Time: 8:45

Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
pH	7.52	SU	CFS	01/23/2015	8:45	150.1	(1)
Specific Conductance	300.	umhos	LSC	01/23/2015	10:30	120.1	(1)
Alkalinity, Total mg/L	58.	mg/L	LSC	01/23/2015	10:30	310.1	(1)
Dissolved Oxygen (DO)	8.6	mg/L	CFS	01/23/2015	8:45	360.1	(1)
Nitrogen, Ammonia	<0.1	mg/L	TLB	01/23/2015	15:29	350.2	(1)
Calcium	12.5	mg/L	DRH	01/26/2015	11:30	200.7	(1)
Magnesium	12.0	mg/L	DRH	01/26/2015	11:30	200.7	(1)
Hardness, Total	81.	mg/L	DRH	01/26/2015	11:30	200.7	

Approved By:

METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18th, 19th, 20th, and 22nd Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3rd Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Anaytical Methods, 4th Edition, May 1996

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1108 Ashville Road
P.O. Box 190
Leeds, Alabama 35094

Telephone (205) 699-6647
Toll Free (866) 729-7211
Fax (205) 699-3882

Wolf Creek Federal Services
Contract # W9124P-15-C-001
P.O. Box 8200
Redstone Arsenal, AL 35808-0200
Attention: Mr.George Masters Jr.

Report Date: 02/27/2015
Receive Date: 01/27/2015
Receive Time: 15:30

Control No : 1501-00331 Sample # 001
Sampler : JB
Sample ID: Pond Outflow 7day Toxicity

Sample Date: 01/27/2015
Sample Time: 12:10

Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
pH, Electrometric (lab)	6.47	SU	CFS	01/27/2015	16:10	150.1	(1)
ygen, Dissolved	13.8	mg/L	CFS	01/27/2015	16:10	360.1	(1)
Chlorine, Total Residual	<0.1	mg/L	LSC	01/27/2015	17:00	330.5	(1)
Nitrogen, Ammonia	<0.1	mg/L	TLB	01/28/2015	13:45	350.2	(1)
Conductance, Sp. (lab)RCRA	55.	umhos	LSC	01/30/2015	13:30	120.1	
Alkalinity, Total mg/L	20.	mg/L	LSC	01/30/2015	14:30	310.1	(1)
Calcium	5.71	mg/L	DRH	02/02/2015	12:00	200.7	(1)
Magnesium	<1.0	mg/L	DRH	02/02/2015	12:00	200.7	(1)
Hardness, Total	18.	mg/L	DRH	02/02/2015	12:00	200.7	

Approved By:

METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18th, 19th, 20th, and 22nd Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3rd Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Anaytical Methods, 4th Edition, May 1996

Guardian Systems, Inc.
1108 Ashville Road, P.O. Box 190
Leeds, Alabama 35094
(205) 699-6647 (205) 699-3882 Fax
email: lbrymer@gsilab.com www.gsilab.com

Chain of Custody Record/ Analysis Report

Client:	**George Masters**	**Phone:**	**(256) 876-4062**
Company:	**Wolf Creek Federal Services**	**Fax:**	**(256) 955-7064**
Address:	**P.O. Box 8200**	**P.O. #**	**BPAGS001** **Email:gmasters@chugach.com**
	Redstone Arsenal, AL 35808	**Project:**	

Sample ID	Sample Description	Sample Date	Sample Time	Sample: Comp.*	Sample: Grab	Bottle: Glass	Bottle: Plastic	Preservative: HCl	Preservative: HNO_3	Preservative: H_2SO_4	Preservative: NaOH	Preservative: Cool 4°C	Preservative: Other **	Analysis Requested
1501032-01	DSN002 water	1/27/2015		X			X					X		Biomonitoring

Sampled by: BIFF Anderson Biff Anderson Relinquished by: Biff Anderson Date: 1/27/15 Time: 1205

Received by: (PRINT) Jeff Blair (SIGN) Date: 27 Jan 15 Time: 12:05 Relinquished by: Jeff Blair Date: 27 Jan 15 Time: 15:30

Received for Laboratory by: Lori Brymer Date: 27 Jan 15 Time: 1530

Was Shipped Container intact when received? Yes ✓ No ___ Initials LB Seals intact? Yes NA No ___

Were all samples properly preserved? Yes ✓ No ___ Initials LB Sample temp. 4 °C

Put an "X" in the appropriate column for sample type and sample preservative. Write in analysis requested.

* For **composite samples** include start and stop date and time in comments section **Write in preservative used in comments

-dian Systems, Inc.
Ashville Road, P.O. Box 190
Leeds, Alabama 35094
(205) 699-6647
email: lbrymer@gsilab.com
(205) 699-3882 Fax
www.gsilab.com

Chain of Custody Record/ Analysis Report

Contact: George Masters	Phone:
Company: Wolf Creek Federal Services	Fax:
Address:	P.O.#:
Address:	Email Address:
	Project: Annual TA-5 Pond Monitoring

Sample ID	Sample Description	Sample Date	Sample Time	Sample: Comp.*	Sample: Grab	Bottle: Glass	Bottle: Plastic	Preservative: HCl	Preservative: HNO_3	Preservative: H_2SO_4	Preservative: NaOH	Preservative: Cool 4°C	Preservative: Other**	Analysis Requested					
	Pond Outflow	27 Jan 15	12:10	X			X					X		Toxicity					

Sampled by: Jeff Blair Jeff Blair Relinquished by: Jeff Blair Date: 27 Jan 15 Time: 15:30

Received by: Date: Time: Relinquished by: Date: Time:

Received by: Date: Time: Relinquished by: Date: Time:

Received for Laboratory by: Lou Brymer Date 27 Jan 15 Time 1530

Was Shipped Container intact when received? Yes ✓ No ___ Initials LB Seals intact? Yes NA No LB

Were all samples properly preserved? Yes ✓ No ___ Initials LB Sample temp. 4 °C

Comments: Composite Sampler Started 26 Jan 15 @ 10:15
Composite Sampler Stopped 27 Jan 15 @ 12:05

Time On Site -	
Time Off Site -	

Put an "X" in the appropriate column for sample type and sample preservative. Write in analysis requested.

* For composite samples include start and stop date and time in comments section **Write in preservative used in comments

United States Army Garrison - Redstone

National Pollutant Discharge Elimination System

Permit Renewal Application

Permit Number AL0000019

U. S. ARMY GARRISON – REDSTONE

September 5, 2018

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, REDSTONE
4488 MARTIN ROAD
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

SEP 28 2018

Directorate of Public Works

Ms. Rachel Stanaland
Alabama Department of Environmental Management
Industrial/Mining Permitting Section
Water Division
Post Office Box 301463
Montgomery, Alabama 36130-1463

Dear Ms. Stanaland:

Reference the National Pollutant Discharge Elimination System Permit Renewal for Redstone Arsenal Permit Number AL0000019. Enclosed are two (2) signed copies of the NPDES permit renewal application, as requested. This application is submitted as required by 40 CFR 122.26. Electronic payment of the application is in process.

My point of contact is Mr. Ramzi Makkouk, Storm Water Program Manager, Environmental Management Division, Directorate of Public Works, 256-955-8501, or ramzi.s.makkouk.civ@mail.mil,.

Sincerely,

Kelsey A. Smith
Colonel, US Army
Garrison Commander

Enclosures