

Alabama Department of Environmental Management adem.alabama.gov

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JUNE 24, 2020

Montgomery, Alabama 36130-1463 (334) 271-7700 FAX (334) 271-7950

ROY MALONE, DIRECTOR, OFFICE OF CENTER OPERATIONS GEORGE C MARSHALL SPACE FLIGHT MAIL CODE: AS01, MARSHALL FLIGHT CENTER HUNTSVILLE AL 35812

RE:

REVISED DRAFT PERMIT

NPDES PERMIT NUMBER AL0000221

Dear Mr. Malone:

Transmitted herein is a revised 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 you are currently utilizing the Department's web-based electronic environmental (E2) reporting system for submittal of discharge monitoring reports (DMRs). Your E2 DMRs will automatically update on the effective date of this permit, if issued.

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





NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

PERIVITTEE.	NASA MARSHALL FLIGHT SPACE CENTER
FACILITY LOCATION:	REDSTONE ARSENAL, MARSHALL FLIGHT CENTER HUNTSVILLE, AL 35812
PERMIT NUMBER:	AL0000221
RECEIVING WATERS:	DSN008, DSN010, DSN012, DSN013, DSN015, DSN031, DSN032, & DSN033: UNNAMED TRIBUTARY TO HUNTSVILLE SPRING BRANCH
	DSN016-DSN020, DSN023, & DSN035: UNNAMED TRIBUTARY TO INDIAN CREEK
	DSN025: UNNAMED TRIBUTARY TO WHEELER LAKE
	DSN021, DSN022, & DSN034: INDIAN CREEK
Pollution Control Act, as amended, Cod Alabama 1975, §§22-22A-1 to 22-22A	provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. IS 1251-1388 (the "FWPCA"), the Alabama Water The of Alabama 1975, IS 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of 17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the rege into the above-named receiving waters.
ISSUANCE DATE:	
EFFECTIVE DATE:	
EXPIRATION DATE:	

INDUSTRIAL SECTION NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

TABLE OF CONTENTS

PART I	DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS	
A.	DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS	
В.	DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS	22
	1. Representative Sampling	
	2. Test Procedures	
	Recording of Results Records Retention and Production	
	5. Monitoring Equipment and Instrumentation	
C.	DISCHARGE REPORTING REQUIREMENTS	23
	1. Reporting of Monitoring Requirements	
	2. Noncompliance Notification.	
D.	OTHER REPORTING AND NOTIFICATION REQUIREMENTS	25
	1. Anticipated Noncompliance	
	2. Termination of Discharge	
	3. Updating Information	
	5. Cooling Water and Boiler Water Additives	26
	6. Permit Issued Based On Estimated Characteristics	26
E.	SCHEDULE OF COMPLIANCE	27
PART II	OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES	28
A.	OPERATIONAL AND MANAGEMENT REQUIREMENTS	28
	1. Facilities Operation and Maintenance	
	2. Best Management Practices	28
	3. Spill Prevention, Control, and Management.	
В.	OTHER RESPONSIBILITIES	
	I. Duty to Mitigate Adverse Impacts	
_	2. Right of Entry and Inspection.	
C.	BYPASS AND UPSET	
	1. Bypass	
D.	DUTY TO COMPLY WITH PERMIT, RULES, AND STATUTES	
υ.		
	1. Duty to Comply	
	3. Loss or Failure of Treatment Facilities	30
	4. Compliance with Statutes and Rules	
E.	PERMIT TRANSFER, MODIFICATION, SUSPENSION, REVOCATION, AND REISSUANCE	
	1. Duty to Reapply or Notify of Intent to Cease Discharge	30
	2. Change in Discharge	
	3. Transfer of Permit	
	5. Permit Termination	32
	6. Permit Suspension	32
_	7. Request for Permit Action Does Not Stay Any Permit Requirement	
F.	COMPLIANCE WITH TOXIC POLLUTANT STANDARD OR PROHIBITION	
G.	DISCHARGE OF WASTEWATER GENERATED BY OTHERS	
PART III	OTHER PERMIT CONDITIONS	
Α.	CIVIL AND CRIMINAL LIABILITY	
B.	OIL AND HAZARDOUS SUBSTANCE LIABILITY	
C.	PROPERTY AND OTHER RIGHTS	
D.	AVAILABILITY OF REPORTS	
E.	EXPIRATION OF PERMITS FOR NEW OR INCREASED DISCHARGES	
F.	COMPLIANCE WITH WATER QUALITY STANDARDS	
G.	GROUNDWATER	
H.	DEFINITIONS	
I.	SEVERABILITY	
PART IV	ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS	38
A.	BEST MANAGEMENT PRACTICES (BMP) PLAN REQUIREMENTS	38
В.	STORMWATER FLOW MEASUREMENT AND SAMPLING REQUIREMENTS	39
C.	COOLING WATER INTAKE STRUCTURE (CWIS) REQUIREMENTS	40

PART I DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN008S: Stormwater from above ground storage tank (AST) dike drainage and industrial activities 3/4/

Such discharge shall be limited and monitored by the permittee as specified below:

_	DISCHARGE	LIMITATION	<u>s</u>			MONITORING F	REQUIREMENTS 1/	
	Monthly	<u>Daily</u>	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	Maximum	<u>Minimum</u>	Average	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
pΗ	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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.

DSN010S: Stormwater from industrial activities and test stand area 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

- · · · · · · · · · · · · · · · · · · ·	DISCHARGE		MONITORING REQUIREMENTS 1/					
	Monthly	<u>Daily</u>	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement		
<u>EFFLUENT CHARACTERISTIC</u>	<u>Average</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	Maximum	Frequency 2/	Sample Type	<u>Seasonal</u>
рH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	•	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 3 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN0121: Test stand overflow, hydraulic motor non-contact cooling water, and stormwater from industrial activities and test stand area 3/

Such discharge shall be limited and monitored by the permittee as specified below:

G	DISCHARGE		MONITORING REQUIREMENTS 1/					
EFFLUENT CHARACTERISTIC pH	Monthly Average -	<u>Daily</u> <u>Maximum</u> -	<u>Daily</u> <u>Minimum</u> 6.0 S.U.	Monthly Average	<u>Daily</u> <u>Maximum</u> 8.5 S.U.	Measurement Frequency 2/ Monthly	Sample Type Grab	Seasonal -
Oil & Grease		-	-	-	15.0 mg/l	Monthly	Grab	-
Flow, In Conduit or Thru Treatment Plant	REPORT MGD	REPORT MGD	-	•	-	Monthly	Estimate	•

- 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/ This outfall is to be sampled during a non-storm event.

NPDES PERMIT NUMBER AL0000221 PART I Page 4 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN012S: Test stand overflow, hydraulic motor non-contact cooling water, and stormwater from industrial activities and test stand area 3/

Such discharge shall be limited and monitored by the permittee as specified below:

<u> </u>	DISCHARGE		MONITORING REQUIREMENTS 1/					
	Monthly	Daily	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	Maximum	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
рН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-

- 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.

NPDES PERMIT NUMBER AL0000221 PART I Page 5 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN013S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

	DISCHARGE		MONITORING REQUIREMENTS 1/					
EFFLUENT CHARACTERISTIC	Monthly Average	<u>Daily</u> Maximum	<u>Daily</u> Minimum	Monthly Average	<u>Daily</u> Maximum	Measurement Frequency 2/	Sample Type	Seasonal
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	•	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 6 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN015S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

-	DISCHARGE		MONITORING REQUIREMENTS 1/					
	<u>Monthly</u>	Daily	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	<u>Average</u>	Maximum	<u>Minimum</u>	Average	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
pН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	•	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

DSN016S: Stormwater from above ground storage tanks (AST) drainage dike, industrial activities, and test stand area 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

· ·	DISCHARGE		MONITORING REQUIREMENTS 1/					
EFFLUENT CHARACTERISTIC pH	Monthly Average	<u>Daily</u> <u>Maximum</u> -	<u>Daily</u> <u>Minimum</u> REPORT S.U.	Monthly Average	<u>Daily</u> <u>Maximum</u> REPORT S.U.	Measurement Frequency 2/ Semi-Annually	Sample Type Grab	<u>Seasonal</u> -
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN008 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 8 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN017S: Stormwater from above ground storage tanks (AST) drainage dike, and industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

	DISCHARGE		MONITORING REQUIREMENTS 1/					
	Monthly	<u>Daily</u>	Daily	Monthly	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	<u>Maximum</u>	Minimum	<u>Average</u>	<u>Maximum</u>	Frequency 2/	Sample Type	Seasonal
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	•	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN008 is deemed representative of this outfall, therefore no sampling is required.

DSN018S: Stormwater from above ground storage tanks (AST) drainage dike, underground storage tank (UST) loading/unloading areas, and industrial activities 3/4/

Such discharge shall be limited and monitored by the permittee as specified below:

-	DISCHARGE	LIMITATIONS	MONITORING REQUIREMENTS 1/					
	Monthly	<u>Daily</u>	<u>Daily</u>	Monthly	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	Maximum	<u>Minimum</u>	Average	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	

- 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.

DSN0191:Process water from test stand overflow and treated TCE contaminated groundwater from basement dewatering activities; and stormwater from above ground storage tank (AST) dike drainage, industrial activities, and test stand area 3/4/

Such discharge shall be limited and monitored by the permittee as specified below:

I	DISCHARGE	LIMITATIONS				MONITORING I	REQUIREMENTS 1/	
EFFLUENT CHARACTERISTIC pH	Monthly Average	<u>Daily</u> <u>Maximum</u> -	<u>Daily</u> <u>Minimum</u> 6.0 S.U.	Monthly Average	<u>Daily</u> <u>Maximum</u> 8.5 S.U.	Measurement Frequency 2/ Monthly	Sample Type Grab	<u>Seasonal</u> -
Oil & Grease	•	-	-	-	15.0 mg/l	Monthly	Grab	-
Trichloroethylene	-	-	-	17.5 ug/l	REPORT ug/l	Monthly	Grab	-
Flow, In Conduit or Thru Treatment Plant	REPORT MGD	REPORT MGD	-	-	-	Monthly	Estimate	-

- 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/ This outfall is to be sampled during a non-storm event.

DSN019S:Process water from test stand overflow and treated TCE contaminated groundwater from basement dewatering activities; and stormwater from above ground storage tank (AST) dike drainage, industrial activities, and test stand area 3/4/

Such discharge shall be limited and monitored by the permittee as specified below:

DISCHARGE LIMITATIONS						MONITORING R		
EFFLUENT CHARACTERISTIC pH	Monthly Average	<u>Daily</u> <u>Maximum</u> -	<u>Daily</u> <u>Minimum</u> REPORT S.U.	Monthly Average -	<u>Daily</u> <u>Maximum</u> REPORT S.U.	Measurement Frequency 2/ Semi-Annually	<u>Sample Type</u> Grab	Seasonal -
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Trichloroethylene	-	-	-	-	REPORT ug/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-

- 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.

DSN020S: Stormwater from above ground storage (AST) drainage dike and industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

<u> </u>	DISCHARGE		MONITORING REQUIREMENTS 1/					
EFFLUENT CHARACTERISTIC pH	Monthly Average	<u>Daily</u> <u>Maximum</u> -	<u>Daily</u> <u>Minimum</u> REPORT S.U.	Monthly Average -	<u>Daily</u> <u>Maximum</u> REPORT S.U.	Measurement Frequency 2/ Semi-Annually	Sample Type Grab	<u>Seasonal</u> -
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	•	-	-	Semi-Annually	Estimate	-

- 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/ DSN008 is deemed representative of this outfall, therefore no sampling is required.

DSN021S: Stormwater from above ground storage (AST) drainage dike and industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS 1/				
	Monthly	Daily	<u>Daily</u>	Monthly	<u>Daily</u>	Measurement				
<u>EFFLUENT_CHARACTERISTIC</u>	<u>Average</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>		
pН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-		
Solids, Total Suspended	•	-	•	-	REPORT mg/l	Semi-Annually	Grab	-		
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-		
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-		

- 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/ DSN008 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 14 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN022S: Stormwater from above ground storage (AST) drainage dike and industrial activities 3/4/

Such discharge shall be limited and monitored by the permittee as specified below:

	MONITORING REQUIREMENTS 1/							
	Monthly 1	Daily	<u>Daily</u>	Monthly	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	<u>Maximum</u>	<u>Minimum</u>	Average	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
pН	-	-	REPORT S.U.	· -	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	. -	-		•	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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.

DSN023S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

	DISCHARGE	LIMITATIONS	<u>1</u>			MONITORING F	REQUIREMENTS 1/	
	Monthly	Daily	Daily	Monthly	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	Maximum	Minimum	<u>Average</u>	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
pН	-	-	REPORT S.U.	•	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

DSN025S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

	DISCHARGE		MONITORING REQUIREMENTS 1/					
EFFLUENT CHARACTERISTIC	Monthly Average	<u>Daily</u> Maximum	<u>Daily</u> <u>Minimum</u>	<u>Monthly</u> Average	<u>Daily</u> <u>Maximum</u>	Measurement Frequency 2/	Sample Type	<u>Seasonal</u>
pH	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	- ,	-	•	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 17 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN031S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

	DISCHARGE	LIMITATIONS	MONITORING REQUIREMENTS 1/					
	Monthly	Daily	Daily	Monthly	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	<u>Average</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
рН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/1	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 18 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN032S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

_		DISCHARGE	LIMITATIONS	<u>3</u>			MONITORING F	REQUIREMENTS_1/	
		Monthly	<u>Daily</u>	<u>Daily</u>	Monthly	<u>Daily</u>	Measurement		
EFFLUENT CHARAC	TERISTIC	Average	Maximum	Minimum	Average	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
рН		•	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended		-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease		-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thro Plant	u Treatment	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

NPDES PERMIT NUMBER AL0000221 PART I Page 19 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN033S: Stormwater runoff associated with industrial activities 3/4/

Such discharge shall be limited and monitored by the permittee as specified below:

· ·	DISCHARGE	LIMITATIONS	3			MONITORING F	REQUIREMENTS 1/	
	Monthly	<u>Daily</u>	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	Average	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>	Frequency 2/	Sample Type	<u>Seasonal</u>
pН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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.

NPDES PERMIT NUMBER AL0000221 PART I Page 20 of 40

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 the following point source(s) outfall(s), described more fully in the permittee's application:

DSN034S: Stormwater runoff associated with industrial activities 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

_	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS 1/				
	Monthly	<u>Daily</u>	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement				
EFFLUENT CHARACTERISTIC	<u>Average</u>	Maximum	<u>Minimum</u>	Average	<u>Maximum</u>	Frequency 2/	Sample Type	Seasonal		
рН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-		
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-		
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-		
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-		

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

DSN035S: Stormwater runoff associated with industrial activities and test stand area 3/4/5/

Such discharge shall be limited and monitored by the permittee as specified below:

-	MONITORING REQUIREMENTS 1/							
	Monthly	<u>Daily</u>	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>	Measurement		
EFFLUENT CHARACTERISTIC	<u>Average</u>	<u>Maximum</u>	<u>Minimum</u>	Average	<u>Maximum</u>	Frequency 2/	Sample Type	Seasonal
pН	-	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	-
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	-
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	-
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	-

- 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/ DSN033 is deemed representative of this outfall, therefore no sampling is required.

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;
- 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 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.

- 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 by utilizing the Department's web-based Electronic Environmental (E2) Reporting System.
 - (1) If the permittee is unable to complete the electronic submittal of DMR data due to technical problems originating with the Department's E2 Reporting 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 E2 Reporting 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 E2 Reporting System resuming operation, the permittee shall enter the data into the E2 Reporting System, unless an alternate timeframe is approved by the Department. An attachment should be included with the E2 DMR submittal verifying the

original submittal date (date of the fax, copy of the dated e-mail, or hand-delivery stamped date), if applicable.

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
Permits and Services Division
Environmental Data Section
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
Permits and Services Division
Environmental Data Section
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:

- 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;
- 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
- 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.1 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
 - 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.

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;
 - (2) quantities to be used;
 - (3) frequencies of use;
 - (4) 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.

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

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

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:

- 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

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.

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.

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.

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.

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.

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 <u>Code of Alabama</u> 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

- 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.
- Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
- CBOD means the five-day measure of the pollutant parameter carbonaceous biochemical oxygen demand.
- 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.
- Daily minimum means the lowest value of any individual sample result obtained during a day.
- Day means any consecutive 24-hour period.
- 12. Department means the Alabama Department of Environmental Management.
- 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.
- 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 <u>Code of Alabama</u> 1975, Section 22-22-1(b)(3) and those effluent characteristics specified in Provision I. A. of this permit.
- 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:
 - 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
 - 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.

- 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.
- 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.

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:
 - 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;

- 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

- 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 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. COOLING WATER INTAKE STRUCTURE (CWIS) REQUIREMENTS

1. The entity providing water to 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 this permit condition.

ADEM PERMIT RATIONALE

PREPARED DATE: April 18, 2020 PREPARED BY: Rachel Lounsberry REVISED DATE: June 19, 2020 REVISED BY: Rachel Lounsberry

Permittee Name:

NASA Marshall Flight Space Center

Facility Name:

George C Marshall Space Flight

Permit Number:

AL0000221

PERMIT IS REISSUANCE DUE TO EXPIRATION

DISCHARGE SERIAL NUMBERS & DESCRIPTIONS:

DSN008:

Stormwater from above ground storage tank (AST) dike drainage and industrial activities

DSN010:

Stormwater from industrial activities and test stand area

DSN012:

Test stand overflow, hydraulic motor non-contact cooling water, and stormwater from industrial

activities and test stand area

DSN013:

Stormwater runoff associated with industrial activities

DSN015:

Stormwater runoff associated with industrial activities

DSN016:

Stormwater from above ground storage tanks (AST) drainage dike, industrial activities, and test

stand area

DSN017:

Stormwater from above ground storage tanks (AST) drainage dike, and industrial activities

DSN018:

Stormwater from above ground storage tanks (AST) drainage dike, underground storage tank

(UST) loading/unloading areas, and industrial activities

DSN019:

Process water from test stand overflow and treated TCE contaminated groundwater from basement

dewatering activities, and stormwater from above ground storage tank(AST) dike drainage,

industrial activities, and test stand area

DSN020:

Stormwater from above ground storage (AST) drainage dike and industrial activities

DSN021:

Stormwater from above ground storage (AST) drainage dike and industrial activities

DSN022:

Stormwater from above ground storage (AST) drainage dike and industrial activities

DSN023:

Stormwater runoff associated with industrial activities

DSN025:

Stormwater runoff associated with industrial activities

DSN031:

Stormwater runoff associated with industrial activities

DSN032:

Stormwater runoff associated with industrial activities

DSN033:

Stormwater runoff associated with industrial activities

DSN034:

Stormwater runoff associated with industrial activities

DSN035:

Stormwater runoff associated with industrial activities and test stand area

INDUSTRIAL CATEGORY: NON-CATEGORICAL

MAJOR:

N

STREAM INFORMATION:

Receiving Stream:

DSN021, DSN022, and DSN0034 discharge to Indian Creek

Classification:

Fish and Wildlife

River Basin:

Tennessee River Basin

7Q10:

0.6 cfs

7Q2:

1.42 cfs

1Q10:

0.49 cfs

Annual Average Flow: 24.1 cfs

0.47 613

303(d) List:

YES

Impairment:

Pathogens, Nutrients

TMDL:

NO

STREAM INFORMATION:

Receiving Stream:

DSN016, DSN017, DSN018, DSN019, DSN020, DSN023, and DSN035 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 and Nutrients

TMDL:

NO

STREAM INFORMATION:

Receiving Stream:

DSN008, DSN010, DSN012, DSN013, DSN015, DSN031, DSN032 and DSN033

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:

DSN025 discharge into Unnamed Tributary to Wheeler Lake

Classification:

Fish and Wildlife

River Basin:

Tennessee River Basin

7Q10:

0 cfs

303(d) List:

YES

Impairment:

Wheeler Lake is impaired for Nutrients

TMDL:

NO

DISCUSSION:

George C. Marshall Space Flight Center (MSFC) is a NASA operated research and development facility, located on land granted to NASA by the Department of the Army for irrevocable use and occupancy. The facility is used to design, manufacture, and test rocket vehicles, engines, and space craft components. In addition, support operations in propellant handing, process development, and basic research are conducted in the related aerospace activities of communications, environment, and energy development.

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 new or expanded discharge. Therefore, the applicant is not required to demonstrate that the discharge is necessary for economic and social development.

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.

	Monthly Avg	Daily Max	<u>Daily Min</u>	<u>Monthly Avg</u>	<u>Daily Max</u>	<u>Sample</u>	Sample Type	
<u>Parameter</u>	<u>Loading</u>	<u>Loading</u>	Concentration	<u>Concentration</u>	<u>Concentration</u>	<u>Frequency</u>		Basis*
pН	-	-	REPORT S.U.	· -	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	_	*	-	- -	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease			-	-	15.0 mg/l	Semi-Annually	Grab	ВРЈ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-		Semi-Annually	Estimate	BPJ

010S:

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pH	_	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	ВРЈ
Solids, Total Suspended	_		-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	_	-	-	-	15.0 mg/l	Semi-Annually	Grab	ВРЈ
Flow, In Conduit or Thru Treatment Plant		REPORT MGD				Semi-Annually	Estimate	BPJ

0121:

<u>Parameter</u>	Monthly Avg Loading	Daily Max Loading	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	Daily Max Concentration	<u>Sample</u> <u>Frequency</u>	Sample Type	Basis*
рН	-	-	6.0 S.U.	-	8.5 S.U.	Monthly	Grab	BPJ
Oil & Grease	-	-	-	-	15.0 mg/l	Monthly	Grab	ВРЈ
Flow, In Conduit or Thru Treatment Plant	REPORT MGD	REPORT MGD	-	•	•	Monthly	Estimate	ВРЈ

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> Concentration	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	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	-	{ }	_	_	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	ВРЈ
Chemical Oxygen Demand (COD)		- 1	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ

013S:

Parameter	Monthly Avg Loading	Daily Max Loading	<u>Daily Min</u> Concentration	Monthly Avg Concentration	<u>Daily Max</u> Concentration	Sample Frequency	Sample Type	Basis*
pH	Loading -	- Dodding	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	- manual		-	<u> </u>	REPORT mg/l	Semi-Annually	Grab	ВРЈ
Oil & Grease	-	_		-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant		REPORT MGD	-	-	-	Semi-Annually	Estimate	ВРЈ

	Monthly Avg	Daily Max	Daily Min	Monthly Avg	Daily Max	Sample	Sample Type	
Parameter	Loading	Loading	Concentration	Concentration	Concentration	Frequency		Basis*
pH	_	-	REPORT S.U.	<u>-</u>	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	1 -	-	-	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	; ••	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant		REPORT MGD	-		-	Semi-Annually	Estimate	ВРЈ

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pH	-	_	REPORT S.U.	<u>-</u>	REPORT S.U.	Semi-Annually	Grab	ВРЈ
Solids, Total Suspended	-	-	-	_	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	_	-	_	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant		REPORT MGD	-	-		Semi-Annually	Estimate	ВРЈ

017S:

Parameter	Monthly Avg Loading	<u>Daily Max</u> Loading	<u>Daily Min</u> Concentration	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	<u>Sample</u> <u>Frequency</u>	Sample Type	Basis*
рН	_	.	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	_	_	_	_	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	_	_	_	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	ВРЈ

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	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	•	_	_	_	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	ВРЈ

0191:

<u>Parameter</u>	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> Concentration	Monthly Avg Concentration	Daily Max Concentration	Sample Frequency	Sample Type	Basis*
рН	-	-	6.0 S.U.	-	8.5 S.U.	Monthly	Grab	BPJ
Oil & Grease	-	-	-	-	15.0 mg/l	Monthly	Grab	BPJ
Trichloroethylene	-	-	-	17.5 ug/l	REPORT ug/l	Monthly	Grab	WQBEL
Flow, In Conduit or Thru Treatment Plant	REPORT MGD	REPORT MGD	-	A		Monthly	Estimate	BPJ

019S:

<u>Parameter</u>	<u>Monthly Avg</u> <u>Loading</u>	Daily Max Loading	<u>Daily Min</u> Concentration	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pН		-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	_	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-		-	_	15.0 mg/l	Semi-Annually	Grab	BPJ
Trichloroethylene	-	-	_	-	REPORT ug/l	Semi-Annually	Grab	ВРЈ
Flow, In Conduit or Thru Treatment Plant		REPORT MGD		-	-	Semi-Annually	Estimate	BPJ
Chemical Oxygen Demand (COD)	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	ВРЈ

<u>Parameter</u>	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	Daily Min Concentration	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	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	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	BPJ	
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	•	-		Semi-Annually	Estimate	ВРЈ	

	Monthly Avg	Daily Max	Daily Min	Monthly Avg	Daily Max	Sample	Sample Type	Dogio*
<u>Parameter</u>	Loading	<u>Loading</u>	Concentration	<u>Concentration</u>	<u>Concentration</u>	<u>Frequency</u>	m m = n	<u>Basis*</u>
рН	<u>-</u>	!	REPORT S.U.	<u>-</u>	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended			-	-	REPORT mg/l	Semi-Annually	Grab	ВРЈ
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	ВРЈ

022S:

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pH	_	_	REPORT S.U.	<u>-</u>	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	_	_	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD		-	-	Semi-Annually	Estimate	ВРЈ

	Monthly Avg	<u>Daily Max</u>	Daily Min	<u>Monthly Avg</u>	Daily Max	<u>Sample</u>	Sample Type	
<u>Parameter</u>	<u>Loading</u>	<u>Loading</u>	<u>Concentration</u>	Concentration	<u>Concentration</u>	<u>Frequency</u>		<u>Basis*</u>
pН	-	_	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	-	-	-	-	REPORT mg/l	Semi-Annually	Grab	ВРЈ
Oil & Grease	-	-	•	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ

<u>Parameter</u>	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	<u>Sample</u> <u>Frequency</u>	Sample Type	Basis*
pН		_	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended		•	_	-	REPORT mg/l	Semi-Annually	Grab	ВРЈ
Oil & Grease	_	-	_	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	<u> </u>	REPORT MGD	-	-	-	Semi-Annually	Estimate	BPJ

031S:

Parameter	Monthly Avg Loading	Daily Max Loading	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	<u>Sample</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>	<u>Basis*</u>
pH	-	-	REPORT S.U.	_	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended		_	_	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	-	-	-	-	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	_	REPORT MGD		_		Semi-Annually	Estimate	ВРЈ

Parameter	Monthly Avg Loading	Daily Max Loading	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	<u>Sample</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>	Basis*
pН	-	_	REPORT S.U.	_	REPORT S.U.	Semi-Annually	Grab	ВРЈ
Solids, Total Suspended	-	-	!	_	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	_		1.		15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	:	REPORT MGD	-	- -	_	Semi-Annually	Estimate	BPJ

Λ	17	7		
···	J	J	v	

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pН	_	_	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	ВРЈ
Solids, Total Suspended		_	-	_	REPORT mg/l	Semi-Annually	Grab	ВРЈ
Oil & Grease	-	-	-	•	15.0 mg/l	Semi-Annually	Grab	ВРЈ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	ВРЈ

Parameter	Monthly Avg Loading	<u>Daily Max</u> <u>Loading</u>	Daily Min Concentration	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pH	_	-	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	i i	• •	.	-	REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease	•		_	_	15.0 mg/l	Semi-Annually	Grab	ВРЈ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	- -	-	Semi-Annually	Estimate	ВРЈ

Parameter	Monthly Avg Loading	Daily Max Loading	<u>Daily Min</u> <u>Concentration</u>	Monthly Avg Concentration	<u>Daily Max</u> <u>Concentration</u>	Sample Frequency	Sample Type	Basis*
pН	-	_	REPORT S.U.	-	REPORT S.U.	Semi-Annually	Grab	BPJ
Solids, Total Suspended	_	_	-		REPORT mg/l	Semi-Annually	Grab	BPJ
Oil & Grease		-	-	_	15.0 mg/l	Semi-Annually	Grab	BPJ
Flow, In Conduit or Thru Treatment Plant	-	REPORT MGD	-	-	-	Semi-Annually	Estimate	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

Requested Modifications

Various operations and site layouts have changed within MSFC's drainage basin and MSFC has re-evaluated its storm water drainage basin and reconfigured the outfalls based on the new storm water flow. In addition, most non-process wastewater has been rerouted to wastewater treatment facilities, and all floor drains and sumps have been plugged or rerouted to wastewater treatment facilities. Due to these changes, MSFC has requested the following modifications:

Chemical Oxygen Demand (COD)

COD monitoring was required for all outfalls with sink and floor drains. The drains have been plugged or rerouted to wastewater treatment facilities. MSFC has requested that COD monitoring be removed from DSN008, DSN017, DSN018, DSN022, DSN025, and DSN032

DSN001

DSN001 has been removed from the permit due to the discharge pipe that drained to this outfall being plugged with concrete.

DSN024

DSN024 has been removed from the permit because the storm water runoff drains to outfall DSN019. There has been no measureable flow from DSN024 for several years.

DSN026

DSN026 has been removed from the permit because it was determined that the drainage basin for the outfall did not have any industrial activity.

DSN010, DSN013, DSN015

DSN010, DSN013, and DSN015 were removed in the previous permit cycle because there was not potential point source for pollution. MSFC has requested that these outfalls be reinstated. It was determined during the re-evaluation that the drainage basins for these outfalls have the potential to include storm water associated with industrial activities such as storage yards, scrap metal yards, and oil-filled equipment.

DSN0008, DSN016, DSN018, DSN022

DSN0008, DSN016, DSN018, and DSN022 had sources of pollution other than stormwater that included, cooling water, floor drains, laboratory sinks, test stand overflow, and boiler blowdown. These sources have been eliminated and the only source of pollution is stormwater due to industrial activity. MSFC requests that non-storm event sampling be removed from the permit.

<u>Stormwater Outfalls: DSN008, DSM010, DSN013, DSN015, DSN016, DSN017, DSN018, DSN020, DSN021, DSN022, DSN023, DSN025, DSN031, DSN032, DSN033, DSN034, and DSN035</u>

Best Professional Judgment (BPJ)

The parameters of concern for this facility are based on the parameters of concern listed in EPA form 2F 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:

<u>pH</u>

Based on BPJ, the pH as the result of the storm water discharge is not expected to affect the receiving stream; therefore, the pH will be monitored with no limits stipulated.

<u>Flow</u>

A stormwater sample shall be monitored to quantify the volume of storm water runoff leaving the facility through the permitted outfall.

Oil & Grease

The daily maximum limit of 15.0 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 Suspended Solids (TSS)

Given that monitoring for TSS is an indicator of Best Management Practices and a measure of the BMPs effectiveness, TSS will be monitored with no limits stipulated.

Process Water Outfalls DSN012 and DSN019

<u>DSN012:</u> Test stand overflow, hydraulic motor non-contact cooling water, and stormwater from industrial activities and test stand area

(DSN0121-non storm event samples and DSN012S-storm event samples)

DSN0121

\mathbf{pH}

ADEM Administrative Code, Division 6 Regulations, specifically 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."

Flow

A sample shall be monitored to quantify the volume of wastewater leaving the facility through the permitted outfall.

Oil & Grease

Based on BPJ, the daily maximum limit of 15.0 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.

This outfall discharges to a pond and therefore temperature and TRC are not parameters of concern.

DSN012S

Flow

A stormwater sample shall be monitored to quantify the volume of storm water runoff leaving the facility through the permitted outfall.

<u>рН</u>

Based on BPJ, the pH as the result of the storm water discharge is not expected to affect the receiving stream; therefore, the pH will be monitored with no limits stipulated.

Oil & Grease

Based on BPJ, the daily maximum limit of 15.0 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 Suspended Solids (TSS)

Given that monitoring for TSS is an indicator of Best Management Practices and a measure of the BMPs effectiveness, TSS will be monitored with no limits stipulated.

Chemical Oxygen Demand (COD)

Due to the nature of the processes in contact with the stormwater runoff, COD is a pollutant of concern. Therefore, based on BPJ, a "Monitor Only" requirement is proposed.

<u>DSN019</u>: Process water from test stand overflow and treated TCE contaminated groundwater from basement dewatering activities, and stormwater from above ground storage tank(AST) dike drainage, industrial activities, and test stand area

(DSN0191-non storm event samples and DSN019S-storm event samples)

DSN0191

pН

ADEM Administrative Code, Division 6 Regulations, specifically 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."

Flow

A sample shall be monitored to quantify the volume of wastewater leaving the facility through the permitted outfall.

Oil & Grease

Based on BPJ, the daily maximum limit of 15.0 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.

Trichloroethylene

It was noted in the review of the permittee's application that there was reasonable potential for trichloroethylene to be discharged above the water quality criteria. Therefore, the human health criteria for fish consumption only will be employed since TCE is a carcinogen.

This outfall discharges to a pond and therefore temperature and TRC are not parameters of concern.

DSN019S

Flow

A stormwater sample shall be monitored to quantify the volume of storm water runoff leaving the facility through the permitted outfall.

pΗ

Based on BPJ, the pH as the result of the storm water discharge is not expected to affect the receiving stream; therefore, the pH will be monitored with no limits stipulated.

Oil & Grease

Based on BPJ, the daily maximum limit of 15.0 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 Suspended Solids (TSS)

Given that monitoring for TSS is an indicator of Best Management Practices and a measure of the BMPs effectiveness, TSS will be monitored with no limits stipulated.

Chemical Oxygen Demand (COD)

Due to the nature of the processes in contact with the stormwater runoff, COD is a pollutant of concern. Therefore, based on BPJ, a "Monitor Only" requirement is proposed.

Trichloroethylene

Due to the nature of the processes in contact with the stormwater runoff, and per noted reportable quantities from the application; TCE is pollutants of concern. Therefore, based on BPI, monitor only requirements are proposed. (see attached reasonable potential spreadsheet)

303(d) List of Impaired Waters

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

Cooling Water Intake Structure (CWIS) Requirements

The entity providing water to 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 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.

REVISION

The facility requested the following revisions:

Chemical Oxygen Demand (COD) has been removed from the stormwater Outfalls DSN012S and DSN019S. However, due to the nature of the processes in contact with the stormwater runoff, COD is a pollutant of concern. Therefore, COD shall be monitored at these Outfalls.

Stormwater sampling for DSN010, DSN013, DSN015, DSN023, DSN025, DSN031, DSN032, DSN034, and DSN035 shall be represented by DSN0033.

Stormwater sampling for DSN016, DSN017, DSN020, and DSN021 shall be represented by DSN008.

NPDES No.: AL0002887

	$Q_d*C_d+Q_{d2}*$	Cd2 +	Qs*C	Sackground	Background	Background		Enter Max. Daily Discharge as	Enter Avg Daily Discharge as	Partition
Ð	Pollutant	Carcinoger 'yes'	Type	from upstream source (C _{d2})	from upstream source (C ₆₂)	Instream (C ₁) Daily	Background Instream (C _s): Honthly Ave	reported by Applicant (C _{dmax})	reported by Applicant (C _{davg})	(Street
			Metals	Delly Mass sig/I	Monthly Ave.	Max uq/l	ua/i	w0/l	. Now	
2	Antimony Arsenic*,**	YES	Metals	0	a	0	0	0	0	0.57
	Berylium Cadmium**		Metals Metals	0	0	0	0	0	0	0.23
5	Chromium / Chromium III**	-	Metals	0	0	0	. 0	0	0	0.21
5	Chromium / Chromium VI** Copper**		Metals Metals	0	0	0	0	0	0	0.38
8	Lead**		Metals	0	0	0	0	0	0	0.46
	Mercury** Nickel**		Metals Metals	0	0	0	0	0	0	0.00
	Selenium		Metals	0	0	. 0	D	0	0	0.5
	Silver		Metals	0	0	. 0	0	0	0	-
	Thallium Zinc**	-	Metals Metals	0	0	0	0	0	0	0.3
5	Cyanide		Metals	0	0	0	A 1111	0	a	
5	Total Phenolic Compounds Hardness (As CaCO3)		Metals Metals	0	0	0	0	0	0	:
	Acrolein		VOC	0	0	0	. 0	0	0	
	Acrylonitrile* Aldrin	YES YES	VOC	0	0	0	0	0	0	-
	Benzene*	YES	VOC	0	0	0	8	0	0	
	Bromoform*	YES	VOC	0	0	0	0	0	0	
	Carbon Tetrachloride* Chlordane	YES	VOC	0	0	0	0	0	0	-
5	Clorobenzene		voc	0	0	0	0	0	0	
	Chlorodibromo-Methane* Chloroethane	YES	VOC	0	0	0	0	0	0	
	2-Chloro-Ethylvinyl Ether		VOC	0	0	0	0	0	o	
	ChioroForm* 4,4'-DDD	YES	VOC	0	0	0	0	0	0	
1	4,4'-DDE	YES	VOC	0	0	0	0	0	0	
2	4.4'-DDT Dichlorobromo-Methane*	YES	VOC	0	0	0	9	. 0	0	
	1, 1-Dichloroethane		VOC	0	0	0	0	0	0	
5	1, 2-Dichloroethane*	YES	VOC	0	0	G '	0 D	0	0	
	Trans-1, 2-Dichloro-Ethylene 1, 1-Dichloro-thylene*	YES	VOC	0	0	0	0	0	0	1
8	1, 2-Dichloropropane		voc	0	0	0_	0	a	0	
	1, 3-Dichloro-Propylene Dieldrin	YES	VOC	0	0	0	0	0	0	
1	Ethylbenzene		VOC	0	0	•	0	0	0	-
3	Methyl Bromide Methyl Chloride		VOC	0	0	0	0	0	0	
+	Methylene Chloride*	YES	VOC	0	0	0	0	0	0	-
5	1, 1, 2, 2-Tetrachioro-Ethane* Tetrachioro-Ethylene*	YES	VOC	0	0	0	0	0	0	
7	Toluene		VOC	0	0	0	0	0	0	
8	Toxaphene Tributyltine (TBT)	YES YES	VOC	0	0	6	0	0	0	
0	1, 1, 1-Trichloroethane	165	VOC	0	o	D	0	0	0	
1	1, 1, 2-Trichloroethane*	YES	VOC	0	0	0	0	0	0	
3	Trichlorethylene* Vinyl Chloride*	YES	VOC	0	0	0	0	77	4.75	
	P-Chloro-M-Cresol		Acids	0	C C	0	· ·	0	0	
5	2-Chlorophenol 2, 4-Dichlorophenol		Acids Acids	0	0	0	0	0	0	
	2, 4-Dimethylphenol		Acids	0	0	0	0	0	0	
8	4, 6-Dinitro-O-Cresol 2, 4-Dinitrophenol		Acids Acids	0	0	0	0	0	0	
50	4,6-Dintro-2-methylophenol	YES	Acids	0	0	0	0	0	0	-
	Diexin (2,3,7,8-TCDD) 2-Nitrophenol	YES	Acids Acids	0	0	0	0	0	0	
	4-Nitrophenol		Acids	o	0	0	0	0	0	
	Pentachlorophenoi* Phenoi	YES	Acids Acids	0	8 0	6	0	0	0	
55 56	2, 4, 6-Trichkrophenol*	YES	Acids	ő	0	0	D	0	0	1
	Acenaphthene		Bases Bases	0	0	0	0	0	0	-
59	Acenaphthylene Anthracene		Bases	0	0	0	0	o	0	
70	Benzidine Benzo(A)Anthracene*	YES	Bases Bases	0	0	0	0	0	0	
2	Benzo(A)Pyrene*	YES	Bases	0	. 0	0		o	0	
73	3, 4 Benzo-Fluoranthene Benzo(GHI)Perviene		Bases Bases	0	0	0	0	0	0	
75	Benzo(K)Ruoranthene		Bases	0	0	0		0	0	
6	Bis (2-Chloroethoxy) Methane	YES	Bases Bases	0	0	0	0	0	0	
	Bis (2-Chloroethyl)-Ether* Bis (2-Chloroiso-Propyl) Ether	TES	Bases	0	0	0	0	0	0	1
9	Bis (2-Ethylhexyl) Phthalate*	YES	Bases Bases	0	0	0	0	0	0	-
1	4-Bromophenyl Phenyl Ether Butyl Benzyl Phthalate	1	Bases	0	0	0	D	0	0	
	2-Chloronaphthalene		Bases Bases	0	0	0	0	0	0	1
13	Chrysene*	YES	Bases	D	0	0	0	0	0	
	Di-N-Butyl Phthalate	-	Bases Bases	0	0	0	0	0	0	:
37	Di-N-Octyl Phthalate Dibenzo(A,H)Anthracene*	YES	Bases	0	0	0 05	0	0	0	
	1, 2-Dichlorobenzene		Bases Bases	0	0	0	0	0	0	:
ю	3-Dichlorobenzene 4-Dichlorobenzene		Bases	0	0	0	0	0	0	
1	3, 3-Dichlerobenzene* Diethyl Phthalate	YES	Bases Bases	0	0	0	0	0	0	
13	Dimethyl Phthalate		Bases	0	0	0	0	0	0	
14	2, 4-Dinitrotoluene ⁴ 2, 6-Dinitrotoluene	YES	Bases Bases	0	0	0	0	0	0	1
6	1,2-Diphenylhydrazine		Bases	0	0	0	0	0	0	
	Endosulfan (alpha)	YES YES	Bases Bases	0	0	0	0	0	0	
99	Endosulfan (beta) Endosulfan sulfate	YES	Bases	0	0	0	0	0	0	-
Ю	Endrin Endrin Aldeyhide	YES	Bases	0	. 0	0	0	0	0	
12	Fluoranthene	YES	Bases Bases		0	0	0	0	0	
13	Fluorene		Bases	0	0	0	0	0	0	
	Heptochlor Heptachlor Epoxide	YES	Bases Bases	0	0	0	0	0	0] :
6	Hexachlorobenzene*	YES	Bases	0	0	0	0	0	0	1
	Hexachlorobutadiene* Hexachlorocyclohexan (alpa)	YES YES	Bases Bases	0	0	0	0	0	0	
9	Hexachlorocyclohexan (beta)	YES	Bases	0	0	D	0	0	0	
0	Hexachiorocyclohexan (gamma) HexachiorocycloPentadiene	YES	Bases Bases	0	0	0	0	0	0	
2	Hexachloroethane		Bases	0	0	0	0	0	0	
3	Indeno(1, 2, 3-CK)Pyrene*	YES	Bases	0	0	0	0	0	0	
	Isophorone Naphthalene		Bases Bases	0	0	0	0	0	0	
6	Nitrobenzene		Bases	0	0	0 1	Q	0	0	
7	N-Nitrosodi-N-Propylamine* N-Nitrosodi-N-Methylamine*	YES	Bases Bases	0	0	0	0	0	0	
	N-Nitrosodi-N-Phenylamine*	YES	Bases	0	0	D	0	0	0	
0	PCB-1016	YES	Bases	0	0	0	0	0	0	
	PCB-1221 PCB-1232	YES	Bases Bases	0	0	0	0	0	0	
3	PCB-1242	YES	Bases	0	0	D.	0	0	0	
	PCB-1248 PCB-1254	YES	Bases Bases	0	0	a o	0	0	0	1
	PCB-1254 PCB-1260	YES	Bases	0	0	0	. 0	0	0	
26										
26	Phenanthrene Pyrene		Bases	0	0	0	0	0	0	

2.22	Enter Q _d = wastewater discharge flow from facility (MGD)
3.434648	Q_{α} wastewater discharge flow (cfs) (this value is caluctated from the MGD)
0	Enter or estimated, Qd2 = background stream flow from upstream source (cfs)
0	Enter 7Q10, Q _q = background stream flow in cfs above point of discharge
0	Enter or estimated, 1Q10, Q _e = background stream flow in cfs above point of discharge (1Q10 estimated at 75% of 7Q10)
0	Enter flow from upstream discharge Qd2 = background stream flow in MGD above point of discharge
0	Enter Mean Annual Flow, Q _a = background stream flow in cfs above point of discharge
0	Enter 7Q2, Q, * background stream flow in cfs above point of discharge (For LWF class streams)
Enler to	Enter C, = background in-stream pollutant concentration in µg/l (assuming this is zero "0" unless there is deta)
Q ₄ +Qd2+Q ₄	Q, = resultant in-stream flow, after discharge
on other sheets	C _r = resultant in-stream pollutant concentration in µg/t 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

I memy remine.	re-to-community opinion i light wante	
AIDDES No.	AL 0002887	

Packground Background			Max Daily	Fresh	water Aculo (µ	g/l) Q, =1Q10			Avg Daily	Freshv	water Chronic ((Not) Q = 7010)	Carcinogen Q _s = Annual Average Non-Carcinogen Q _s = 7Q10					
D	Polkdard	RP7	Carcinogen	Background from upstream source (Cd2) Dely Max	Discharge as reported by Applicant (Cause)	Water Ounkly Criteria (C.)	Draft Permit Limit (C _{dres})	20% of Draft Permit Limit	RP7	Background from upstream source (Cd2) Monthly Ave	Discharge as reported by Applicant (Corry)	Water Quality Criteria (C _r)	Draft Permit Limit (G _{eorp})	20% of Draft Permit Limit	RP?	Water Quality Criteria (C _s)	Draft Permit Limit (Cara)	20% of Draft Pennit Limit	
2	Antimony Arsenic		YES	0	0	592.334	592 334	118.467	No	0	0	261.324	261.324	52 265	No	3.73E+02 3.03E-01	3.73E+02 3.03E-01	7.47E+01 6.06E-02	
4	Berylium Cadmium			0	0	8.533	8.533	1.707	No	0	0	1.042	1.042	0.200	No	:	:		
6	Chromium/ Chromium III Chromium/ Chromium VI Copper			0	0	2713.159 16.000 34.637	2713.159 16.000 34.637	542.632 3.200 6.927	No No	0	0	352 928 11.000 23.082	352.926 11.000 23.082	70.585 2.200 4.616	No No	1.30E+03	1.30E+03	2.60E+02	
8	Lead	-		0	0	138.290	138.290	27.658	No No	0	0	5.389	5.389 0.012	1.078	No No	4.24E-02	4.24E-02	8.48E-03	
0	Nickel Selenium			0	0	927.200 20.000	927.200	185.440 4.000	No No	0	0	102.983 5.000	102.983 5.000	20.587	No No	9.93E+02 2.43E+03	9.93E+02 2.43E+03	1.99E+02 4.86E+02	
	Silver Thailium			0	0	3.217	3.217	0.643	No	0	0	:	-	-	:	2.74E-01	2.74E-01	5.47E-02	
5	Zinc Cyanide			0	0	355.092 22.000	355.092 22.000	71.018 4.400	No No	0	0	357.997 5.200	357.997 5.200	71.599 1.040	No No	1.49E+04 9.33E+03	1.49E+04 9.33E+03	2.90E+03 1.87E+03	
	Total Phenolic Compounds Hardness (As CaCO3)			0	0				-:	0	0		:-	:	-				
	Acrolein Acrylonitrile	1	YES	0	0		:-		1	0	0		-	:	1	5.43E+00 1.44E-01	5.43E+00 1.44E-01	1.09E+00 2.88E-02	
1			YES	0	0	3.000	3.000	0.600	No -	0	0	1.300	1.300	0.260	No -	2.94E-05 1.55E+01	2.94E-05 1.55E+01	5.88E-06 3.09E+00	
3	Bromoform Carbon Tetrachloride		YES	0	0	:-	:-			0	0	:	1 200			7.88E+01 9.57E-01	7.88E+01 9.57E-01	1.58E+01 1.91E-01	
	Chlordane Clorobenzene		YES	0	0	2.400	2.400	0.480	No	0	0	0.004	0.004	0.001	No	4.73E-04 9.06E+02	4.73E-04 9.06E+02	9.46E-05 1.81E+02	
7	Chlorodibromo-Methane Chloroethane		YES	0	0		-	-	-	0	0	-:	-:			7.41E+00	7.41E+00	1.48E+00	
	2-Chloro-Ethylvinyl Ether ChloroForm		YES	0	0	:	-:-	-	:	0	0	:		-:		1.02E+02	1.02E+02	2.04E+01	
	4,4' - DDD 4,4' - DDE		YES	0	0	:	- :	:		0	0	1		- :	:	1.81E-04 1.28E-04	1.81E-04 1.28E-04	3.63E-05 2.56E-05	
	4,4" - DDT Dichlorobromo-Methane		YES YES	0	0	:		- :		0	0	- ;	- : -	- :		1.28E-04 1.00E+01	1.28E-04 1.00E+01	2.56E-05 2.01E+00	
	1, 1-Dichloroethane 1, 2-Dichloroethane		YES	0	0	: -	:-		- 1	0	0	-	:	:	1	2.14E+01	2.14E+01	4.27E+00	
	Trans-1, 2-Dichloro-Ethylene 1, 1-Dichloroethylene		YES	0	0	:	:	:	:	0	0	-:			1	5.91E+03 4.17E+03	5.91E+03 4.17E+03	1.18E+03 8.33E+02	
	1, 2-Dichloropropane 1, 3-Dichloro-Propylene			0	0	:	:	-		0	0	:			:	8.49E+00 1.23E+01	8.49E+00 1.23E+01	1.70E+00 2.46E+00	
	Dieldrin Ethylbenzene		YES	0	0	0.240	0.240	0.048	No -	0	0	0.058	0.056	0.011	No •	3.12E-05 1.24E+03	3.12E-05 1.24E+03	6.25E-06 2.49E+02	
	Methyl Bromide Methyl Chloride			0	0	:	:	. :		0	0	1	:	-	0	8.71E+02	8.71E+02	1.74E+02	
ļ	Methylene Chloride 1, 1, 2, 2-Tetrachloro-Ethane		YES YES	0	0	:-	-:	:	-	0	0	:	-:-	-	-	3.46E+02 2.33E+00	3.46E+02 2.33E+00	6.91E+01 4.67E-01	
	Tetrachloro-Ethylene Toluene		YES	0	0	:	- :	1	-	0	0	-:-		. :	1	1.92E+00 8.72E+03	1.92E+00 8.72E+03	3.83E-01 1.74E+03	
	Toxaphene Tributyttin (TBT)		YES YES	0	0	0.730	0.730	0.146	No No	0	0	0.0002	0.000	0.000	No No	1.62E-04	1.62E-04	3.24E-05	
	1, 1, 1-Trichloroethane 1, 1, 2-Trichloroethane		YES	0	0			:		0	0	- :		-		9.10E+00	9.10E+00	1.82E+00	
	Trichiorethylene Vinyl Chloride	YES	YES	0	13			-:-	- 1	0	4.75					1.75E+01 1.42E+00	1.75E+01 1.42E+00	3.49E+00 2.85E-01	
į	P-Chloro-M-Cresol 2-Chlorophenol			0	0		-		-	0	0				-	8.71E+01	8.71E+01	1.74E+01	
	2, 4-Dichlorophenol 2, 4-Dimethylphenol			0	0		-		-	0	0				-	1.72E+02 4.98E+02	1.72E+02 4.98E+02	3.44E+01 9.95E+01	
	4, 6-Dinitro-O-Cresol 2, 4-Dinitrophenol			0	0		-	-		0	0		-	-		3.11E+03	3.11E+03	6.22E+02	
	4,6-Dinitro-2-methylphenol Diaxin (2,3,7,8-TCDD)		YES	0	0			-	-	0	0	1	-	-	-	1.65E+02 2.67E-08	1.65E+02 2.67E-08	3.31E+01 5.33E-09	
	2-Nitrophenol		163	0	0			-		0	0				-	2.075-06	2.076-08	3.332-08	
	Pentachiorophenol	1	YES	0	0	5.723	8.723	1.745	No	0	0	6.693	6.690	1.339	No	1.77E+00 5.00E+05	1.77E+00 5.00E+05	3.54E-01 1.00E+05	
	2, 4, 6-Trichlorophenol Acenaphthene	-	YES	0	0				-	0	0	-				1.41E+00 5.79E+02	1.41E+00 5.79E+02	2.83E-01 1.16E+02	
	Acenaphthylene Anthracene			0	0		:_	-		0	0		-			2.33E+04	2.33E+04	4.67E+03	
	Benzidine		MEG	0	. 0					0	0					1.16E-04	1.16E-04	2.32E-05	
	Benzo(A)Anthracene Benzo(A)Pyrene		YES	0	0			:	1	0	0			- :	-	1.07E-02 1.07E-02	1.07E-02 1.07E-02	2.13E-03 2.13E-03	
	3, 4 Benzo-Fluoranthene Benzo(GHI)Perylene	1		0	0				-	0	0			1	:	1.07E-02	1.07E-02	2.13E-03	
	Benzo(K)Fluoranthene Bis (2-Chloroethoxy) Methane	1		0	0	1	:	1		0	0	:	:		-	1.07E-02	1.07E-02	2.13E-03	
	Bis (2-Chloroethyl)-Ether Bis (2-Chloroiso-Propyl) Ether		YES	0	0	:	-:		1	0	0					3.07E-01 3.78E+04	3.07E-01 3.78E+04	6.15E-02 7.58E+03	
	Bis (2-Ethylhexyl) Phthalate 4-Bromophenyl Phenyl Ether		YES	0	0	1	:		1	0	0		1	÷		1.28E+00	1.28E+00	2.56E-01	
	Butyl Benzyl Phthalate 2-Chloronaphthalene			0	0	:	:	:		0	0		-			1.13E+03 9.24E+02	1.13E+03 9.24E+02	2.25E+02 1.85E+02	
	4-Chlorophenyl Phenyl Ether Chrysene	1	YES	0	0	:	-:	:		0	0	- :		- :	:	1.07E-02	1.07E-02	2.13E-03	
	Di-N-Butyl Phthalate Di-N-Octyl Phthalate		7.76	0	0		:		:	0	0	1	:	-	1	2.62E+03	2.62E+03	5.24E+02	
	Dibenzo(A,H)Anthracene 1, 2-Dichlorobenzene		YES	0	0		:	:		0	0				1	1.07E-02 7.55E+02	1.07E-02 7.55E+02	2.13E-03 1.51E+02	
	1, 3-Dichlorobenzene 1, 4-Dichlorobenzene	1		0	0	-:-	-	-	:	0	0	:		_:		5.62E+02 1.12E+02	5.62E+02 1.12E+02	1.12E+02 2.25E+01	
2	3, 3-Dichlorobenzene Diethyl Phthalate		YES	0	0	:	_ :		:	0	0	:	-:	-	:	1.66E-02 2.56E+04	1.66E-02 2.56E+04	3.32E-03 5.11E+03	
	Dimethyl Phthalate 2, 4-Dinitrotoluene		YES	0	0				1	0	0	:	-	1		6.48E+05 1.98E+00	6.48E+05 1.98E+00	1.30E+05 3.96E-01	
5	2, 6-Dinitrotoluene 1,2-Diphenylhydrazine			0	0		-			0	0	:	-			1.17E-01	1.17E-01	2.34E-02	
9	Endosulfan (alpha) Endosulfan (beta)	1	YES	0	0	0.22	0.220	0.044	No No	0	0	0.056	0.056	0.011	No No	5.19E+01 5.19E+01	5.19E+01 5.19E+01	1.04E+01	
)	Endosulfan sulfate Endrin	1	YES	0	0	0.086	0.086	0.017	No	0	0	0.036	0.036	0.007	No	5.19E+01 3.53E-02	5.19E+01 3.53E-02	1.04E+01 7.05E-03	
2	Endrin Aldeyhde Fluoranthene		YES	0	0	-:	1			0	0	:		-:	:	1.76E+00 8.12E+01	1.76E+00 8.12E+01	3.53E-01 1.62E+01	
ļ	Fluorene Heptochlor	-	YES	0	0	0.52	0.520	0.104	No	0	0	0.004	0.004	0.001	No	3.11E+03 4.63E-05	3.11E+03 4.63E-05	5.22E+02 9.26E-06	
5	Heptachlor Epoxide Hexachloroberizene		YES YES	0	0	0.52	0.520	0.104	No.	0	0	0.004	0.004	0.001	No	2.29E-05 1.68E-04	2.29E-05 1.68E-04	4.58E-06 3.36E-05	
8	Hexachlorobutadiene Hexachlorocyclohexan (alpha)		YES YES	0	0	: -	-:			0	0	:		:	1	1.08E+01 2.85E-03	1.06E+01 2.65E-03	2.15E+00 5.70E-04	
9	Hexachlorocyclohexan (beta) Hexachlorocyclohexan (gamma)		YES	0	0	0.95	0.950	0.190	No.	0	0	:	:	:	:	9.97E-03 1.06E+00	9.97E-03 1.08E+00	1.99E-03 2.15E-01	
	HexachlorocycloPentadiene Hexachloroethane			0	0	1			1	0	0	:		:	:	6.45E+02 1.92E+00	6.45E+02 1.92E+00	1.29E+02 3.84E-01	
3	Indeno(1, 2, 3-CK)Pyrene Isophorone		YES	0	0	:		-	1	0	0	:	-		:	1.07E-02 5.61E+02	1.07E-02 5.61E+02	2.13E-03 1.12E-02	
	Naphthalene Nitrobenzene			0	0	1			1	0	0	:	-	:	:	4.04E+02	4.04E+02	8.07E+01	
	N-Nitrosodi-N-Propytamine N-Nitrosodi-N-Methylamine	-	YES	0	0	:	-	:	:	0	0				:	2.95E-01 1.76E+00	2.95E-01 1.76E+00	5.90E-02 3.52E-01	
	N-Nitrosodi-N-Phenylamine PCB-1016	1	YES	0	0		-			0	0	0.014	0.014	0.003	No	3.50E+00 3.74E-05	3.50E+00 3.74E-05	7.00E-01 7.48E-06	
	PC8-1016 PC8-1221 PC8-1232	1	YES YES	0	0			-	1	0	0	0.014	0.014	0.003	No No	3.74E-05 3.74E-05	3.74E-05 3.74E-05	7.48E-06 7.48E-06	
	PCB-1232 PCB-1242 PCB-1248		YES YES	0	0			-		0	0	0.014	0.014	0.003	No No	3.74E-05 3.74E-05 3.74E-05	3.74E-05 3.74E-05	7.48E-06 7.48E-06	
	PC8-1254	1	YES	0	0		-:	-		0	0	0.014	0.014 0.014 0.014	0.003	No No	3.74E-05 3.74E-05 3.74E-05	3.74E-05 3.74E-05	7.48E-06 7.48E-06	
	PCB-1260 Phenanthrene		YES	0	0			-	-	0	0	0.014	0.014	-					
J	B Pyrene. 9 1, 2, 4-Trichlorobenzene		-	0	0	1			:	0	0	-		- 1	1	2.33E+03 4.09E+01	2.33E+03 4.09E+01	4.67E+02 8.19E+00	

George C. Marshall Space Flight Center Marshall Space Flight Center, AL 35812



June 15, 2020

AS10

TO:

Ms. Rachel Lounsberry

Alabama Department of Environmental Management

Water Division Industrial Section P.O. Box 301463

Montgomery, AL 36130-1463

FROM:

Mr. Farley Davis

National Aeronautics and Space Administration

Marshall Space Flight Center

Environmental Engineering & Occupational Health Office

Mail Code AS10 Huntsville, AL 35812

SUBJECT:

NASA Marshall Space Flight Center, NPDES Permit AL0000221 Draft

Review Comments

NASA Marshall Space Flight Center (MSFC) in Huntsville, Alabama, is submitting these comments on the Draft National Pollutant Discharge Elimination System (NPDES) Permit AL0000221. MSFC appreciates the opportunity to review the draft permit and rationale. We have completed our review and are providing the following comments for ADEM's consideration; those comments follow:

- 1. The chemical oxygen demand (COD) sampling requirement was retained at Outfalls 012 and 019. There are no benchmarks that would be used to assess this data, nor a water quality standard for COD. MSFC requests that this parameter be removed.
- 2. Representative sampling of stormwater outfalls is included in the current NPDES permit but has been removed in the draft permit. MSFC requests that representative sampling be reinstated for stormwater outfalls based on the similarity in operations throughout the facility. Considering potential stormwater pollutant sources and stormwater drainage basin sizes, MSFC has determined which outfalls are representative. In this analysis, we considered similarity of operations within the basins, and the relative size of those basins. The attached table includes information on each outfall and lays out the logic for the representative outfalls. The following outfalls are suggested for permit sampling consideration:

- DSN010, DSN13, DSN015, DSN023, DSN025, DSN031, DSN032, DSN033, DSN034, DSN035 DSN033 has been determined to be representative of these stormwater outfalls
- DSN008, DSN016, DSN017, DSN020, DSN021 DSN008 has been determined to be representative of these stormwater outfalls
 - o DSN018 Due to the relatively large size of this drainage area compared to other MSFC stormwater outfalls, representative sampling is not requested for this outfall
 - o DSN022 Due to the sandblasting operations that may occur within this drainage area, representative sampling is not requested for this outfall
 - o DSN012, DSN019 These outfalls were not selected for representative stormwater sampling because they are also listed as wastewater outfalls

If you have any questions or comments, please contact Lyndsey Winslette at <u>lyndsey.m.winslette@nasa.gov</u> or 321-591-2299. We would appreciate the opportunity to review the revised draft based on these comments or other changes ADEM may make before the permit is issued for public notice.

ELBERT DAVIS Digitally signed by ELBERT DAVIS Date: 2020.06.16 08:48:54 -05'00'

Farley Davis
Manager
Environmental Engineering & Occupational Health Office
Marshall Space Flight Center

Cc: Mr. Scott Ramsey/ADEM

Cc: JP Martin/Jacobs

Representative Stormwater Outfalls

NASA MSFC 2020 NPDES Permit Renewal

				Indus
Outfall	Representative Stormwater Outfall	Acreage	Permit Description	Test Stand Operations
DSN008	Repr. Outfall	66	Stormwater from above ground storage tank (AST) dike drainage and industrial activities	
DSN010	033	82	Stormwater from industrial activities and test stand area	
DSN012	NA.	58	Test stand overflow, hydraulic motor non-contact cooling water, and stormwater from industrial activities and test stand area	×
DSN013	033	25	Stormwater runoff associated with industrial activities	
DSN015	033	3.5	Stormwater runoff associated with industrial activities	
DSN016	008	191	Stormwater from above ground storage tanks (AST) drainage dike, industrial activities, and test stand area	
DSN017	008	17_	Stannate from above ground storage tanks (AST) drainage dike, and industrial activities	
DSN018	NA	697	Stannate from above ground storage tanks (AST) drainage dike, underground storage tank (UST) loading/unloading areas, and industrial activities	
DSN019	NA NA	41	Process water from test stand overflow and treated TCE contaminated groundwater from basement dewatering activities; and stormwater from above ground storage tank (AST) dike drainage, industrial activities, and test stand area	×
DSN020	008	57	Stormwater from above ground storage (AST) drainage dike and industrial activities	
DSN021	008	12	Stormwater from above ground storage (AST) drainage dike and industrial activities	
DSN022	NA	312	Stormwater from above ground storage (AST) drainage dike and industrial activities	
DSN023	033	11	Stormwater runoff associated with industrial activities	
DSN025	033	9	Stormwater runoff associated with industrial activities	
DSN031	033	1.15	Stormwater runoff associated with industrial activities	
DSN032	033	1.84	Stormwater runoff associated with industrial activities	
DSN033	Repr. Outfall	24	Stormwater runoff associated with industrial activities	
DSN034	033	55	Stormwater runoff associated with industrial activities	
DSN035	033	7 _	Stormwater runoff associated with industrial activities and test stand area	

red = Outfalls selected for sampling

trial activities within drainage basin											
	AST/UST										
	(or	Vehicle									
	Portable	Fueling	Test								
Sandblasting	Tanks)	Area	Stands								
	×	×									
			×								
	×		X								
			-								
		l '									
			X								
	 ^										
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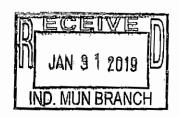


CH2M

4121 Carmichael Road Suite 400 Montgomery, AL 36106 O +1 334 271-1444 F +1 277-5763 www.ch2m.com

January 30, 2019

Ms. Rachel Stanaland
Environmental Engineer
Alabama Department of Environmental Management
Water Division, Industrial Branch
1400 Coliseum Boulevard
Montgomery, AL 36130-1463



Subject:

NASA Marshall Space Flight Center, NPDES Permit Number AL0000221,

Renewal Application Addendum Pages

Dear Ms. Stanaland:

The National Aeronautics and Space Administration (NASA) submitted a National Pollutant Discharge Elimination System (NPDES) permit renewal application to the Alabama Department of Environmental Management (ADEM) in September 2018 for permit number AL0000221 for the Marshall Space Flight Center (MSFC). As stated in NASA's e-mail dated August 7, 2018, the permit application was submitted without some stormwater analytical data due to dry weather conditions and ADEM's request to add additional stormwater sampling locations to the permit requirements. The representative stormwater analytical data have since been collected for all stormwater outfalls and are provided on the enclosed U.S. Environmental Protection Agency (EPA) Form 2F as an addendum to the previously submitted permit application.

Please contact Malene McElroy at MSFC at (256) 544-0858 or malene.a.mcelroy@nasa.gov if you have questions or comments about this addendum.

Simple

JP Martin, P.E. Vice President

CH2M HILL, Inc. (now Jacobs Engineering Group Inc.)

Enclosures

copy: Farley Davis/NASA MSFC

Malene McElroy/NASA MSFC

Ellie Gerow/Jacobs Glen Davis/Jacobs

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.

		um Values ide units)		erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	5.26 mg/L	N/A	ND		6.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	7.70 mg/L	3.20 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	230	19.2 mg/L	105		6.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	468	114 mg/L	98		6.00	Stormwater from industrial activity
Total Nitrogen	0.320 mg/L	0.306 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	8.96 mg/L	1.94 mg/L			1.00	Stormwater from industrial activity
рН	Minimum 5.00	Maximum 7.70	Minimum 5.00	Maximum 7.70	6.00	Stormwater from industrial activity

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.

requi	rements.			<u> </u>		
Maximum Values (include units)				erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	< 0.00100 mg/L	< 0.00100 mg/L			1.00	Stormwater from industrial activity
		PETEIVE				
EDA Form 3510-2E		1411 0 4	Page	\/II.1		Continue on Reverse

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		wn in Table 2F-2, 2F-3 e one table for each ou		ou know or have reason to	believe	is preser	nt. See the instru	ctions for additional	details and	
		um Values de units)		erage Values eclude units)	Nu	mber				
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	St Ev	of torm ents mpled	So	ources of Poliutants		
Nitrate/Nitrite	0.320 mg/L	0.306 mg/L			1.00		Stormwater f	rom industrial	activity	
Copper, T	0.00586 mg/L	0.00560 mg/L			1.00		Stormwater f	rom industrial	activity	
Iron, T	3.06 mg/L	7.68 mg/L			1.00		Stormwater f	rom industrial	activity	
Sulfate	2.73 mg/L	2.48 mg/L			1.00		Stormwater f	rom industrial	activity	
Zinc, T	0.0520 mg/L	0.0615 mg/L			1.00			rom industrial		
Fecal Coliform	3600 col/100mL				1.00			rom industrial		
				<u> </u>	 					
					 					
					<u> </u>					
					<u> </u>					
Part D - Pro	ovide data for the sto	orm event(s) which resu	Ited in the maxim	um values for the flow wei	ghted co	omposite s	ample.			
1	2	3.		4.			5.			
1. Date of	2. Duration	3. Total rain	nfall	Number of hours between beginning of storm meas			flow rate during in event	6. Total flow	from	
Storm	of Storm Event	during storm	event	and end of previous		(gallor	s/minute or	rain eve	រាt	
Event	(in minutes)	(in inche	95)	measurable rain ever	-+		cify units)	(gallons or spe	city units)	
09/26/2018	170	1.05		>72	1	5.24		147,124		
7. Provide a	description of the me	ethod of flow measurem	ent or estimate.							
c.c.uc. PC	tional Method Equation.									

*Due to a sampling error, TKN was not collected and Total Nitrogen could not be calculated for the composite sample for this outfall. The nitrate/nitrite result has been entered as an estimated Total Nitrogen result.

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)		um Values ude units)		erage Values aclude units)	Number		
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants	
Oil and Grease	<7.69 mg/L	N/A			1.00	Stormwater from industrial activity	
Biological Oxygen Demand (BOD5)	5.00 mg/L	4.40 mg/L			1.00	Stormwater from industrial activity	
Chemical Oxygen Demand (COD)	68.8 mg/L	55.6 mg/L			1.00	Stormwater from industrial activity	
Total Suspended Solids (TSS)	14.5 mg/L	6.00 mg/L			1.00	Stormwater from industrial activity	
Total Nitrogen	<1.5 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity	
Total Phosphorus	3.42 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity	
рН	Minimum 7.30	Maximum 7.30	Minimum	Maximum	1.00	Stormwater from industrial activity	

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 Part B requirements.

	Maxin (incl	num Values lude units)	Ave (ir	erage Values aclude units)	Number		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants	
CE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity	
			-				
	-		-		-		
			-				
					1		
		-			-		
		-			-		
	1						
					-		
					-		
PA Form 3510-2F	(1-92)	JAN 3 1 2019	Page				

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requirements. Complete one table for each outfall. Maximum Values (include units) (include units) Number										
Pollutant and CAS Number (if available)			(in Grab Sample Taken During First 20 Minutes	clude units) Flow-Weighted Composite	S	umber of Storm ivents impled	s	ources of Pollutants		
Nitrate/Nitrice	<0.260 mg/L	<0.260 mg/L			1.00		Stormwater	from industrial activity		
Copper, T	0.00206 mg/L	0.00476 mg/L			1.00		Stormwater	from industrial activity		
Iron, T	0.584 mg/L	0.635 mg/L			1.00		Stormwater	from industrial activity		
Fecal Coliform	6000 col/100mL				1.00			rom industrial activity		
Sulfate	<0.400 mg/L	0.418 mg/L			1.00			rom industrial activity		
Zinc, T	<0.0100 mg/L	0.0109 mg/L			1.00			rom industrial activity		
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Part D - Pro	ovide data for the sto	orm event(s) which resu	Ited in the maxim	um values for the flow wei	ighted c	omposite s	sample.			
1.	2.	3.		4.		Manda	5.	6.		
Date of Storm Event	Duration of Storm Event (in minutes)	Total rain during storm (in inche	event	Number of hours betwee beginning of storm meas and end of previous measurable rain ever	sured	ra (gallor	flow rate during in event as/minute or cify units)	Total flow from rain event (gallons or specify units)		
9/26/18	170	0.48		>72	2	9.023	,,	76,317		
7 Provide a	tescription of the me	ethod of flow measurem	ent or estimate.							

Rational Method Equation

*Due to a sampling error, TKN was not collected and Total Nitrogen could not be calculated for the composite sample for this outfall. The nitrate/nitrite result has been entered as an estimated Total Nitrogen result.

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.

		um Values ide units)		erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.25 mg/L	N/A	<6.25 mg/L		7.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<2.00 mg/L	3.40 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	803 mg/L	<10.0 mg/L	158 mg/L		7.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	1,090 mg/L	5.50 mg/L	213 mg/L		7.00	Stormwater from industrial activity
Total Nitrogen	2.50 mg/L	2.21 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
рH	Minimum 5.00	Maximum 7.80	Minimum	Maximum	7.00	Stormwater from industrial activity

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.

requi	rements.					
	(incl	num Values lude units)	Ave (in	erage Values sclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes Flow-Weighted Composite		of Storm Events Sampled	Sources of Pollutants
TCE	0.00199 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
					 	
	 					
	 				 	
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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. Maximum Values Average Values (include units) (include units) Number Pollutant Grab Sample Grab Sample of Storm and Taken During Taken During CAS Number First 20 Flow-Weighted First 20 Flow-Weighted Events Sampled Sources of Pollutants (if available) Minutes Minutes Composite Composite Nitrate/Nitrite Stormwater from industrial activity 2.07 mg/L 1.00 2.21 mg/L 1.00 <0.00100 mg/L <0.00100 mg/L Stormwater from industrial activity Copper 1.00 Iron 0.345 mg/L 0.668 mg/L Stormwater from industrial activity 1.00 Fecal Coliform <10 col/100mL Stormwater from industrial activity Sulfate 1.00 Stormwater from industrial activity 24.7 mg/L 24.1 mg/L Zinc <0.0100 mg/L <0.0100 mg/L 1.00 Stormwater from industrial activity Part D -Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. 2 Number of hours between Maximum flow rate during 6. beginning of storm measured Total rainfall Total flow from Date of Duration rain event (gallons/minute or and end of previous rain event Storm of Storm Event during storm event measurable rain event (gallons or specify units) (in inches) specify units) Event (in minutes) 11/30/2018 5.794 45,433 7. Provide a description of the method of flow measurement or estimate.

Rational Method Equation

*Due to a sampling error, TKN was not collected and Total Nitrogen could not be calculated for the composite sample for this outfall. The nitrate/nitrite result has been entered as an estimated Total Nitrogen result.

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.

	Maximum Values (include units)		Average Values (include units)		Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<5.81 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	12.0 mg/L	12.0 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	161 mg/L	156 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	396 mg/L	588 mg/L	-1		1.00	Stormwater from industrial activity
Total Nitrogen	5.73 mg/L	<0.0600 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
рН	Minimum 7.60	Maximum 7.60	Minimum	Maximum	1.00	Stormwater from industrial activity

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	
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
CE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activit
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	ma	ECEIVE			T	
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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. Maximum Values Average Values (include units) (include units) Number Pollutant Grab Sample of Grab Sample and Taken During Storm Taken During CAS Number First 20 First 20 Flow-Weighted Events Flow-Weighted (if available) Sampled Sources of Pollutants Minutes Minutes Composite Composite Nitrate/Nitrite <0.0600 mg/L <0.0600 mg/L 1.00 Stormwater from industrial activity 1.00 Copper, T 0.00896 mg/L 0.00694 mg/L Stormwater from industrial activity Iron, T 14.2 mg/L 16.1 mg/L 1.00 Stormwater from industrial activity 1.00 Fecal Coliform 6800 col/100mL Stormwater from industrial activity 1.00 Sulfate 0.527 mg/L 0.700 mg/L Stormwater from industrial activity Zinc, T 0.110 mg/L 1.00 Stormwater from industrial activity 0.112 mg/L Part D -Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. 6. Maximum flow rate during Number of hours between Total rainfall Total flow from Date of Duration beginning of storm measured rain event Storm of Storm Event during storm event and end of previous (gallons/minute or rain event (gallons or specify units) Event (in minutes) (in inches) measurable rain event specify units) 1.406 13,580 12/8/2018 160 0.29 7. Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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.

		um Values ide units)	1	erage Values aclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<5.88 mg/L	N/A		•-	1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<2.00 mg/L	5.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	<10.0 mg/L	<10.0 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	4.00 mg/L	35.0 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	4.89 mg/L	<0.0600 mg/L		~-	1.00	Stormwater from industrial activity
Total Phosphorus	1.02 mg/L	1.15 mg/L			1.00	Stormwater from industrial activity
рН	Minimum 7.00	Maximum 7.00	Minimum	Maximum	1.,00	Stormwater from industrial activity

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 Part B -

	(incli	num Values ude units)	Ave (in	rage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
CE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activit
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Part C - Lis	t each pollutant sho juirements. Complet	wn in Table 2F-2, 2F-3 e one table for each ou	, and 2F-4 that yo	ou know or have reason to	believe	is preser	t. See the instru	ctions for additional details and
	(inclu	um Values de units)		erage Values clude units)		mber		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	St Ev	of corm ents npled	So	ources of Pollutants
Nitrate/Nitrite	<0.0600 mg/L	<0.0600 mg/L			1.00		Stormwater f	rom industrial activity
Copper, T	<0.00100 mg/L	0.00188 mg/L			1.00		Stormwater f	rom industrial activity
Iron, T	0.727 mg/L	1.07 mg/L			1.00		Stormwater f	rom industrial activity
Fecal Coliform	10 col/100 mL				1.00		Stormwater f	rom industrial activity
Sulfate	<0.400 mg/L	1.84 mg/L			1.00		Stormwater f	rom industrial activity
Zinc, T	<0.0100 mg/L	<0.0100 mg/L			1.00		Stormwater f	rom industrial activity
								
Part D - Pro	ovide data for the sto	orm event(s) which resu	Ited in the maxim	um values for the flow wei	ghted co	mposite s	ample. 5.	
1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rain during storm (In inche	event	Number of hours betwee beginning of storm meas and end of previous measurable rain ever	sured	rai (gallon	flow rate during n event s/minute or cify units)	6. Total flow from rain event (gallons or specify units)
12/08/2018	160	0.30		>72	0	.248		2,396
	description of the me	ethod of flow measurem	ent or estimate.					

Rational Method Equation

VII. Discharge information (Continued from page 3 of Form 2F)

IND. MUN BRANCH

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.

		um Values ude units)		erage Values oclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	10.1	N/A	1.7		7.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	2.60 mg/L	<4.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	<10.0 mg/L	17.0 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	1,840 mg/L	40.0 mg/L	332 mg/L		7.00	Stormwater from industrial activity
Total Nitrogen	0.204 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	1.41 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
Hq	Minimum 7.10	Maximum 6.10	Minimum	Maximum	7.00	Stormwater from industrial activity

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 Part B -

Maximum Values Grab Sample Grab Sample Taken During First 20 Fish During Fish Du	requir	rements.			·		
Pollutant and CAS Number Flow-Weighted Carlo Sample Flow-Weighted Composite Flow-Weighte		Maxim (incl	num Values ude units)	Ave (in	erage Values sclude units)	Number	
	and CAS Number	Grab Sample Taken During First 20	Flow-Weighted Composite	Grab Sample Taken During First 20		of Storm Events	Sources of Pollutants
	TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
						 	
						 	
			 			 	
						 	
							
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EPA Form 3510-2F (1-92) JAN 3 1 2019 Page VII-1 Continue on Reverse	FDA F 0546 05 1	100	IAN S PAGE				0 " -

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. Maximum Values Average Values (include units) (include units) Number Pollutant Grab Sample Grab Sample of Storm and Taken During Taken During CAS Number Events First 20 Flow-Weighted First 20 Flow-Weighted (if available) Sampled Sources of Pollutants Minutes Composite Minutes Composite Nitrate/Nitrit 0.204 mg/L <0.260 mg/L 1.00 Stormwater from industrial activity Copper 0.00128 mg/L 0.00658 mg/L 1.00 Stormwater from industrial activity 1.00 Iron 16.2 mg/L 16.7 mg/L Stormwater from industrial activity Fecal Coliform 600 col/100mL 1.00 Stormwater from industrial activity Sulfate 6.85 mg/L 6.58 mg/L 1.00 Stormwater from industrial activity 1.00 Zinc 0.0116 mg/L 0.0881 mg/L Stormwater from industrial activity Part D -Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. 4. 5. 1. Number of hours between Maximum flow rate during Date of Duration Total rainfall beginning of storm measured Total flow from rain event

Storm of Storm Event during storm event and end of previous (gallons/minute or rain event Event (in minutes) (in inches) measurable rain event (gallons or specify units) specify units) 09/26/2018 572 0.46 16.86 162,805

7. Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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.

	Maximum Values (include units)			erage Values sclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<5.88 mg/L	N/A	<5.88 mg/L		7.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	2.70 mg/L	2.10 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	33.3 mg/L	20.9 mg/L	20.53 mg/L		7.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	44 mg/L	26.5 mg/L	21.71 mg/L		7.00	Stormwater from industrial activity
Total Nitrogen	<1.50 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
pН	Minimum 1,007.00	Maximum 7.90	Minimum	Maximum	7.00	Stormwater from industrial activity

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.

requir	ements.					
	(inclu	num Values ude units)	Ave (in	erage Values eclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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EPA Form 3510-2F (1-92)

Page VII-1

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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

	(inclu	um Values de units)		erage Values clude units)	N	umber		•
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	E	of Storm Events ampled	So	ources of Pollutants
itrate/Nitrit	<0.260 mg/L	<0.260 mg/L			1.00		Stormwater f	rom industrial activit
opper	0.00100 mg/L	0.00246 mg/L			1.00		Stormwater f	rom industrial activit
ron	0.735 mg/L	2.04 mg/L			1.00		Stormwater f	rom industrial activit
ecal Coliform	3800 col/100mL				1.00		Stormwater f	rom industrial activit
ulfate	<0.400 mg/L	0.658 mg/L			1.00		Stormwater f	rom industrial activit
inc	<0.0100 mg/L	0.0511 mg/L			1.00		Stormwater f	rom industrial activit
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art D – Pr	ovide data for the sto	orm event(s) which resu	ilted in the maxim	um values for the flow we	eighted o	composite	sample.	
1. Date of	2. Duration	3. Total rain		4. Number of hours between the beginning of storm mea	veen	Maximun	5. If flow rate during ain event	6. Total flow from

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)
09/26/2018	360	0.78	>72	1.365	29,729

^{7.} Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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.

		Maximum Values (include units)		Average Values (include units)		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6:10	N/A	<6.10		7.00	
Biological Oxygen Demand (BOD5)	<3.00 mg/L	<3.00 mg/L			1.00	
Chemical Oxygen Demand (COD)	39 mg/L	14.4 mg/L	20.7 mg/L		7.00	
Total Suspended Solids (TSS)	110 mg/L	<2.5 mg/L	25 mg/L		7.00	
Total Nitrogen	<0.260 mg/L	<0.260 mg/L			1.00	
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	
рН	Minimum 7.20	Maximum 8.20	Minimum	Maximum	7.00	

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.

requir	ements.			· · · · · · · · · · · · · · · · · · ·		
	Maxim (inclu	ium Values ide units)	Ave (in	erage Values oclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L		•-	1.00	
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		um Values ide units)	Ave (in	erage Values sclude units)	Γ,	Number			
Pollutant and CAS Number (if available)	Grab Sample Taken During	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		of Storm Events Sampled	So	ources of Pollutants	
itrate/Nitrite	<0.260 mg/L	<0.260 mg/L			1.00	0			
Copper, T	<0.00100 mg/L	0.00122 mg/L			1.00	0			
ron, T	0.314 mg/L	0.301 mg/L			1.00	0			
ecal Coliform	20 col/100mL				1.00	0			
ulfate	11.1 mg/L	12.0 mg/L			1.00	0			
inc, T	<0.0100 mg/L	<0.0100 mg/L			1.00	0			
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art D - Pre	ovide data for the sto		Ited in the maxim	um values for the flow we	eighted	composite	sample		
1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rain during stom (in inch	n event	Number of hours betw beginning of storm mea and end of previou measurable rain eve	sured IS	ra (gallo:	flow rate during in event ns/minute or cify units)	6. Total flow from rain event (gallons or specify uni	
/16/2018	120	0.28		>72 hours		58.422		424,144	

7. Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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,

	Maximum Values (include units)			erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.67 mg/L	N/A	<6.67 mg/L		7.00	
Biological Oxygen Demand (BOD5)	<3.00 mg/L	<3.00 mg/L			1.00	
Chemical Oxygen Demand (COD)	22.5 mg/L	<10.0 mg/L	17.9 mg/L		7.00	
Total Suspended Solids (TSS)	26.7 mg/L	4.00 mg/L	8.9 mg/L		7.00	
Total Nitrogen	4.57 mg/L	0.612 mg/L			1.00	
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	
pН	Minimum 7.20	Maximum 7.90	Minimum	Maximum	7.00	

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.

requir	ements.	<u> </u>		<u> </u>		
	Maximum Values (include units)		Ave (in	erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L	ND		7.00	
		100	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
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EPA Form 3510-2F (1-92)

Page VII-1

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		e one table for each ou um Values	Ave	erage Values					
Pollutant and CAS Number (if available)		de units) Flow-Weighted Composite	(in Grab Sample Taken During First 20 Minutes	clude units) Flow-Weighted Composite		lumber of Storm Events ampled	Sc	Sources of Pollutants	
itrate/Nitrite	0.565 mg/L	0.612 mg/L			1.00				
Copper, T	<0.00100 mg/L	<0.00100 mg/L			1.00				
ron, T	0.242 mg/L	0.224 mg/L			1.00				
ecal Coliform	130 col/100mL				1.00				
Sulfate	9.63 mg/L	10.7 mg/L			1.00				
Zinc, T	<0.0100 mg/L	<0.0100 mg/L			1.00				
Part D - Pro	ovide data for the sto	orm event(s) which resu	ited in the maxim	um values for the flow we	eighted	composite:			
1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rain during storm (in inche	event	4. Number of hours between the storm mea and end of previou measurable rain eve	sured S	ra (gailoi	5. flow rate during in event or cify units)	6, Total flow from rain event (gallons or specify units)	
0/16/18	120	0.28		>72 hours		3,318		24,089	

Rational Method Equation

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.

	Maximum Values (include units)		Average Values (include units)		Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.25 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<2.00 mg/L	<2.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	<10.0 mg/L	<10.0 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	140 mg/L	57.0 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	1.48 mg/L	0.727 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	0.284 mg/L	0.190 mg/L			1.00	Stormwater from industrial activity
pН	Minimum 9.10	Maximum 9.10	Minimum	Maximum	1.00	Stormwater from industrial activity

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.

	(incli	num Values ude units)	Ave (in	erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
rce	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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	uirements. Complet	e one table for each ou	tfall.		o believe	is preser	nt. See the instru	ctions for additional details an
Pollutant	(inclu Grab Sample	um Values de units)	(in Grab Sample	erage Values clude units)	1	imber of		
and CAS Number (if available)	Taken During First 20 Minutes	Flow-Weighted Composite	Taken During First 20 Minutes	Flow-Weighted Composite	Ev	torm vents mpled	s	ources of Pollutants
Nitrate/Nitrite	0.378 mg/L	0.727 mg/L			1.00		Stormwater :	rom industrial activit
Copper, T	0.00379 mg/L	0.00271 mg/L			1.00		Stormwater:	rom industrial activit
Iron, T	1.34 mg/L	0.881 mg/L			1.00		Stormwater :	rom industrial activit
Fecal Coliform	4000 col/100mL				1.00		Stormwater	rom industrial activit
Sulfate	10.8 mg/L	14.8 mg/L			1.00		Stormwater :	rom industrial activit
Zinc, T	0.162 mg/L	0.0892 mg/L			1.00		Stormwater	rom industrial activit
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Part D - Pro	ovide data for the sto	orm event(s) which resu	Ited in the maxim	um values for the flow we	ighted co	omposite s	ample.	
1.	2.	3.		4. Number of hours betw			5. flow rate during	6.
Date of Storm Event	Duration of Storm Event (in minutes)	Total rain during storm (in inche	event	beginning of storm meas and end of previous measurable rain eve	s	(gallor	in event ns/minute or cify units)	Total flow from rain event (gallons or specify units)
11/30/2018		0.20		>72	-+	.1020		21,993
7. Provide a	description of the me	ethod of flow measurem	ent or estimate.					

Rational Method Equation

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.

	Maximum Values (include units)			Average Values (include units)		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<5.75 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<3.00 mg/L	<3.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	23.5 mg/L	21.2 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	80.0 mg/L	115 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	1.04 mg/L	1.01 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
рН	Minimum 7.30	Maximum 7.30	Minimum	Maximum	1.00	Stormwater from industrial activity

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.

requi	rements.					
	Maxim (incli	num Values ude units)	Ave (in	erage Values oclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
					 	
					 	
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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. Average Values Maximum Values (include units) (include units) Number Pollutant Grab Sample Grab Sample of Taken During and Taken During Storm CAS Number First 20 Flow-Weighted First 20 Flow-Weighted Events (if available) Sampled Sources of Pollutants Minutes Minutes Composite Composite Nitrate/Nitrite 1.04 mg/L 1.01 mg/L 1.00 Stormwater from industrial activity 1.00 Copper, T 0.00279 mg/L 0.00224 mg/L Stormwater from industrial activity Iron, T 3.51 mg/L 2.24 mg/L 1.00 Stormwater from industrial activity Fecal Coliforn 350 col/100mL 1.00 Stormwater from industrial activity Sulfate 1.00 4.56 mg/L 4.96 mg/L Stormwater from industrial activity Zinc, T 0.0167 mg/L 0.0119 mg/L 1.00 Stormwater from industrial activity Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. Part D -4. 5. 6. Number of hours between Maximum flow rate during Total rainfall Date of Duration beginning of storm measured rain event Total flow from Storm of Storm Event during storm event and end of previous (gallons/minute or rain event Event (in minutes) (in inches) measurable rain event specify units) (gallons or specify units) 10/16/2018 0.28 >72 hours 0.14 7.318

7	Provide a	description	of the	method a	of flow	measurement	or estimate

Rational Method Equation

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.

	Maxim (inclu		Average Values (include units)		Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.58 mg/L	N/A	ND		7.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	7.80 mg/L	7.60 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	198 mg/L	39.0 mg/L	87 mg/L		7.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	432 mg/L	152 mg/L	120 mg/L		7.00	Stormwater from industrial activity
Total Nitrogen	4.27 mg/L	4.278 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	2.50 mg/L			1.00	Stormwater from industrial activity
рН	Minimum 7.10	Maximum 7.80	Minimum	Maximum	7.00	Stormwater from industrial activity

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.

requir	rements.			· ·		
	(incli	num Values ude units)	Ave (in	erage Values eclude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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(in				rage Values clude units) No		Number		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	1	of Storm Events ampled	Sc	ources of Pollutants
Nitrate/Nitrite	0.470 mg/L	0.208 mg/L			1.00)	Stormwater E	rom industrial activit
Copper, T	0.0223 mg/L	0.0142 mg/L			1.00)	Stormwater f	rom industrial activit
fron, T	14.5 mg/L	4.80 mg/L			1.00)	Stormwater f	rom industrial activit
ecal Coliform	10000col/100mL				1.00)	Stormwater f	rom industrial activit
Sulfate	1.69 mg/L	1.10 mg/L			1.00)	Stormwater f	rom industrial activit
Zinc, T	0.120 mg/L	0.0705 mg/L			1.00)	Stormwater f	rom industrial activit
Cadmium, T	<0.00100 mg/L	<0.00100 mg/L			1.00)	Stormwater f	rom industrial activit
Chromium, T	0.0222 mg/L	0.0110 mg/L			1.00)	Stormwater f	rom industrial activit
Lead, T	0.0165 mg/L	0.00830 mg/L			1.00)	Stormwater f	rom industrial activit
Nickel, T	0.00914 mg/L	0.00496 mg/L			1.00)	Stormwater f	rom industrial activit
Cyanide, T	<0.00500 mg/L	<0.00500 mg/L			1.00)	Stormwater f	rom industrial activit
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Part D - Pr	ovide data for the sto	orm event(s) which resu	ilted in the maxim	um values for the flow we	eighted	composite		
1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rair during storn (in inche	event	4. Number of hours betw beginning of storm mea and end of previou measurable rain eve	sured s	ra (galio	5. Iflow rate during ain event or existence or existence or exist units)	6. Total flow from rain event (gallons or specify units)
1/1/2018	240	1.18		<72		53.93		783,006
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7. Decide	description of the con-	athod of flour	ant or ortimate	<u></u>		L		
	thod Equation	ethod of flow measurem	tent or estimate.					
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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.

	Maximum Values (include units)			Average Values (include units)		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<5.26 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	2.60 mg/L	<3.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	<10.0 mg/L	10.8 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	17.0 mg/L	3.67 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	<1.50 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	4.47 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
рH	Minimum 7.70	Maximum 7.70	Minimum	Maximum	1.00	Stormwater from industrial activity

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 Part B -

requi	rements.					
	(incli	num Values ude units)	(in	erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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	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.										
	Maximum Values (include units)	Average Values (include units)	Number								

red	requirements. Complete one table for each outfall.									
		um Values ide units)	Ave (in	erage Values oclude units)	Number					
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants				
Nitrate/Nitrit	<0.260 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity				
Copper	0.00138 mg/L	0.00105 mg/L			1.00	Stormwater from industrial activity				
Iron	0.412 mg/L	0.205 mg/L			1.00	Stormwater from industrial activity				
Fecal Coliform	2400 col/100mL				1.00	Stormwater from industrial activity				
Sulfate	<0.400 mg/L	<0.400 mg/L			1.00	Stormwater from industrial activity				
Zinc	0.0474 mg/L	0.0488 mg/L			1.00	Stormwater from industrial activity				
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Bot D Dr	avida data for the etc	orm overt(a) which soci	ilted in the maxim	um valuae for the flavour	ighted composite	sample				

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 dunng 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)
09/26/2018	372	0.29	>72	0.295	6,632

^{7.} Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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.

	Maximum Values Average Values (include units) (include units)		Number			
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	5.56 mg/L	N/A	5.56 mg/L		7.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<2.00 mg/L	<2.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	55.3 mg/L	12.1 mg/L	32 mg/L		7.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	235 mg/L	42.5 mg/L	61.1 mg/L		7.00	Stormwater from industrial activity
Total Nitrogen	<1.50 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	4.60 mg/L	<1.00 mg/L	l		1.00	Stormwater from industrial activity
рН	Minimum 6.60	Maximum 8.30	Minimum	Maximum	7.00	Stormwater from industrial activity

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.

require	ements.					
	(inclu	um Values ide units)	Ave (in	erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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EPA Form 3510-2F (1-92)		Page	VII-1		Continue on Reverse

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	Maxim	e one table for each out um Values	Ave	erage Values	T		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Numl of Stor Ever Samp	m nts	Sources of Pollutants
Nitrate/Nitrit	<0.260 mg/L	<0.260 mg/L			1.00	Stormwater	from industrial activity
Copper	0.00176 mg/L	0.00239 mg/L			1.00	Stormwater	from industrial activity
Iron	0.772 mg/L	2.36 mg/L			1.00	Stormwater	from industrial activity
ecal Coliform	800 col/100mL				1.00	Stormwater	from industrial activity
Sulfate	0.595 mg/L	0.527 mg/L			1.00		from industrial activit
Zinc	0.0106 mg/L	0.0654 mg/L			1.00		from industrial activit
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Part D - Pro	ovide data for the sto	orm event(s) which resu	Ited in the maxim	um values for the flow we	ighted com		
1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rain during storm (in inche	event	4. Number of hours betw beginning of storm mea: and end of previous measurable rain eve	sured	5. eximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
09/26/2018	300	1.28		>72 hours	1.2		22,767
7. Provide a	description of the me	ethod of flow measurem	ent or estimate.				

Rational Method Equation

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	um Values ide units)		erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.67 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<3.00 mg/L	<3.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	10.8 mg/L	<10.0 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	22.0 mg/L	314 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	7.15 mg/L	<0.260 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
pН	Minimum 7.60	Maximum 7.60	Minimum	Maximum	1.00	Stormwater from industrial activity

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.

Maximum Values (include units)				Number	
Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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	Grab Sample Taken During First 20 Minutes <0.00100 mg/L	Grab Sample Taken During First 20 Minutes Composite Co.00100 mg/L Co.00100 mg/L Composite	Grab Sample Taken During First 20 Minutes Composite C	Grab Sample Taken During First 20 Minutes Composite Composite Composite Flow-Weighted Composite Composite Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes Composite Composite Flow-Weighted Composite Composite Flow-Weighted Composite Flow-Weighted Composite 1.00 In the composite of Storm Events Sampled Composite In the composite of Storm Events Sampled Composite In the composite of Storm Events Sampled Composite In the composite of Storm Events Sampled Composite of Storm Events

EPA Form 3510-2F (1-92)

JAN 3 1 2019 IND, MUN BRANCH

Page VII-1

Part C - Lis	uirements. Complet	e one table for each ou	tfall.		o believe is p	resent. See the instru	ctions for additional details and
Pollutant	(inclu	um Values ide units)	(in	erage Values clude units)	Number	r	
and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Storm Events Sample	:]	ources of Pollutants
Nitrate/Nitrit	<0.260 mg/L	<0.260 mg/L			1.00	Stormwater f	rom industrial activity
Copper	0.00516 mg/L	0.00470 mg/L			1.00	Stormwater f	rom industrial activity
Iron	0.342 mg/L	1.56 mg/L			1.00	Stormwater f	rom industrial activity
Fecal Coliform	<10 col/100mL				1.00	Stormwater f	rom industrial activity
Sulfate	0.618 mg/L	1.56 mg/L			1.00	Stormwater f	rom industrial activity
Zinc	6.67 mg/L	0.564 mg/L			1.00	Stormwater f	rom industrial activity
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Part D - Pro	ovide data for the sto	orm event(s) which resu	Ited in the maxim	um values for the flow wei	ghted compo	site sample.	
1.	2.	3.		4.		5.	6.
Date of	Duration	Total rain		Number of hours between beginning of storm meas	ured	mum flow rate during rain event	Total flow from
Storm Event	of Storm Event (in minutes)	during storm (in inche		and end of previous measurable rain ever		gallons/minute or specify units)	rain event
							(gallons or specify units)
11/01/2018	240	1.18		>72	0.093	3	1,349
7. Provide a	description of the me	ethod of flow measurem	ent or estimate.				
	thod Equation						

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.

	Maximum Values (include units)		Average Values (include units)		Number		
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants	
Oil and Grease	<5.49 mg/L	N/A	-		1.00	Stormwater from industrial activity	
Biological Oxygen Demand (BOD5)	3.00 mg/L	7.70 mg/L			1.00	Stormwater from industrial activity	
Chemical Oxygen Demand (COD)	13.0 mg/L	<10.0 mg/L			1.00	Stormwater from industrial activity	
Total Suspended Solids (TSS)	93.0 mg/L	25.0 mg/L			1.00	Stormwater from industrial activity	
Total Nitrogen	4.13 mg/L	<0.260 mg/L			1.00 '	Stormwater from industrial activity	
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity	
рН	Minimum 7.70	Maximum 7.70	Minimum	Maximum	1.00	Stormwater from industrial activity	

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.

	Maximum Values (include units)			rage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
CE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activit
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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. Maximum Values Average Values (include units) (include units) Number Pollutant Grab Sample Grab Sample of and Storm Taken During Taken During CAS Number Events First 20 Flow-Weighted First 20 Flow-Weighted (if available) Sampled Sources of Pollutants Minutes Composite Minutes Composite Nitrate/Nitrite 0.675 mg/L <0.260 mg/L 1.00 Stormwater from industrial activity 0.0041 mg/L 0.00309 mg/L 1.00 Stormwater from industrial activity Copper, T Iron, T 0.828 mg/L 1.08 mg/L 1.00 Stormwater from industrial activity Fecal Coliform 730 col/100mL 1.00 Stormwater from industrial activity Sulfate 1.00 10.8 mg/L 2.35 mg/L Stormwater from industrial activity Zinc, T 1.00 0.0546 mg/L 0.856 mg/L Stormwater from industrial activity Part D -Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. 4. 5. 1. Maximum flow rate during 6. Number of hours between Date of Duration Total rainfall beginning of storm measured Total flow from rain event of Storm Event during storm event and end of previous Storm (gallons/minute or rain event Event (in minutes) (in inches) measurable rain event (gallons or specify units) specify units) 11/01/2018 1.18 0.093

7	Provide a	description	of the methor	d of flow mas	asurement o	r estimate

Rational Method Equation

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.

		um Values ide units)	Average Values (include units)		Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<5.88 mg/L	N/A	<5.88 mg/L		7.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	3.00 mg/L	2.20 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	15.2 mg/L	25.1 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	107 mg/L	8.33 mg/L	36.07 mg/L		7.00	Stormwater from industrial activity
Total Nitrogen	<1.50 mg/L	<0.260 mg/L		'	1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
рН	Minimum 6.80	Maximum 8.00	Minimum	Maximum	7.00	Stormwater from industrial activity

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.

requi	rements.					
	Maximum Values (include units)		Ave (in	erage Values clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
						
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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. Average Values Maximum Values (include units) (include units) Number Pollutant Grab Sample Grab Sample of Taken During and Taken During Storm CAS Number First 20 Flow-Weighted First 20 Flow-Weighted Events (if available) Sampled Sources of Pollutants Minutes Composite Minutes Composite Nitrace/Nitrit <0.260 mg/L <0.260 mg/L 1.00 Stormwater from industrial activity Copper 0.00242 mg/L 0.00268 mg/L 1.00 Stormwater from industrial activity Iron 0.260 mg/L 0.243 mg/L 1.00 Stormwater from industrial activity Pecal Coliform 800 col/100mL 1.00 Stormwater from industrial activity Sulfate 1.00 2.37 mg/L 3.13 mg/L Stormwater from industrial activity Zinc <0.0100 mg/L <0.0100 mg/L 1.00 Stormwater from industrial activity Part D -Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. 5. Number of hours between Maximum flow rate during Duration Total rainfall Date of beginning of storm measured rain event Total flow from of Storm Event Storm during storm event and end of previous (gallons/minute or rain event Event (in minutes) (in inches) measurable rain event specify units) (gallons or specify units) 9/26/2018 0.46 >72 hours 2.559 24,713

7. Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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	um Values ide units)	Average Values (include units)		Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.10 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	<3.00 mg/L	2.20 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	16.7 mg/L	35.0 mg/L	- -		1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	63 mg/L	235 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	0.828 mg/L	1.09 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	<1.00 mg/L	<1.00 mg/L			1.00	Stormwater from industrial activity
ρΗ	Minimum 7.60	Maximum 7.60	Minimum	Maximum	1.00	Stormwater from industrial activity

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.

requir	ements.						
	Maximum.Values (include units)		Ave (in	erage Values oclude units)	Number		
Pollulant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants	
TCE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity	
						 	
	 				 		
		 			 		
					 		
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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. Average Values Maximum Values (include units) (include units) Number Pollutant Grab Sample Grab Sample of and Taken During Storm Taken During CAS Number Flow-Weighted First 20 Flow-Weighted Events First 20 (if available) Sampled Sources of Pollutants Composite Minutes Composite Minutes 1.00 Nitrate/Nitrite 0.818 mg/L 1.09 mg/L Stormwater from industrial activity 1.00 Stormwater from industrial activity Copper, T <0.00100 mg/L 0.00420 mg/L Iron, T 0.818 mg/L 4.81 mg/L 1.00 Stormwater from industrial activity 1.00 Fecal Coliform 30.0 col/100mL Stormwater from industrial activity 1.00 Sulfate 4.43 mg/L 6.30 mg/L Stormwater from industrial activity Zinc, T <0.0100 mg/L 0.0248~mg/L1.00 Stormwater from industrial activity Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample. Part D -Maximum flow rate during Number of hours between Total rainfall Total flow from Date of Duration beginning of storm measured rain event Storm of Storm Event during storm event and end of previous (gallons/minute or rain event (in inches) (gallons or specify units) Event (in minutes) measurable rain event specify units) 4.665 33,868 10/16/2018 0.30 >72 hours

7. Provide a description of the method of flow measurement or estimate.

Rational Method Equation

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.

		um Values ide units)	Average Values (include units)		Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
Oil and Grease	<6.25 mg/L	N/A			1.00	Stormwater from industrial activity
Biological Oxygen Demand (BOD5)	3.00 mg/L	<2.00 mg/L			1.00	Stormwater from industrial activity
Chemical Oxygen Demand (COD)	<10.0 mg/L	<10.0 mg/L			1.00	Stormwater from industrial activity
Total Suspended Solids (TSS)	19.0 mg/L	13.0 mg/L			1.00	Stormwater from industrial activity
Total Nitrogen	<0.0600 mg/L	<0.0600 mg/L			1.00	Stormwater from industrial activity
Total Phosphorus	0.213 mg/L	0.213 mg/L			1.00	Stormwater from industrial activity
рH	Minimum 8.00	Maximum 8.00	Minimum	Maximum	1.00	Stormwater from industrial activity

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 Part B -

iequ	irements.	um Values	Ave	erage Values	Τ	
	(inclu	ude units)	(in	clude units)	Number	
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	of Storm Events Sampled	Sources of Pollutants
CE	<0.00100 mg/L	<0.00100 mg/L			1.00	Stormwater from industrial activity
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Part C - Lis	it each pollutant sho quirements. Complet	wn in Table 2F-2, 2F-3 e one table for each ou	, and 2F-4 that yo tfall.	ou know or have reason to	belie	eve is preser	nt. See the insti	uctions for additional details	s and
		um Values de units)		erage Values	Ι,	Number			
Pollutant and CAS Number (if available)	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		of Storm Events Sampled		Sources of Pollutants	
Nitrate/Nitrite	<0.0600 mg/L	<0.0600 mg/L			1.00	0	Stormwater	from industrial acti	vity
Copper, T	0.00145 mg/L	0.00149 mg/L			1.00	0	Stormwater	from industrial acti	vity
Iron, T	0.459 mg/L	0.468 mg/L			1.00)	Stormwater	from industrial acti	vity
Fecal Coliform	450 col/100mL				1.00		Stormwater	from industrial acti	vitv
Sulfate	5.20 mg/L	4.70 mg/L			1.00			from industrial acti	
Zinc, T	0.112 mg/L	0.102 mg/L			1.00			from industrial acti	
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Part D - Pre	ovide data for the sto	orm event(s) which resu	ilted in the maxim	um values for the flow wei	ghted	composite s	sample.		
	2.	•		4.			5.		
1. Date of	2. Duration	3. Total rain	nfall	Number of hours between beginning of storm meas			flow rate during in event	6. Total flow from	
Storm Event	of Storm Event (in minutes)	during storm (in inche	event	and end of previous measurable rain ever		(gallor	ns/minute or cify units)	rain event (gallons or specify un	its)
11/30/2018	130	0.42		>72		0.836		6,556	
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		ethod of flow measurem	ent or estimate.						
Rational Me	thod Equation								



NPDES Permit Renewal Application AL0000221

R#18-47222

Prepared for

National Aeronautics and Space Administration

Marshall Space Flight Center

Huntsville, Alabama

EPA ID# AL 1800013863

September 2018



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Contents

Section	n	Page
Acrony	ms and	Abbreviationsv
1	Introd	1.1
1	1.1	uction
	1.2	·
		NPDES Permit Background
	1.3	NPDES Permit Renewal Application Overview
2	Descri	ption of Outfalls and Sampling2-1
	2.1	Outfall Descriptions
	2.2	NPDES Permit Renewal Sampling
3	Deriva	tion of Permit Limits
3	3.1	Applicable Effluent Limitation Guidelines
	3.2	Water Quality Calculations
	3.2	3.2.1 DSN019
	3.3	Reasonable Potential Analysis
4	Reque	sted Permit Modifications4-1
	4.1	Chemical Oxygen Demand4-1
	4.2	Outfall DSN001
	4.3	Outfall DSN024
	4.4	Outfall DSN0264-1
	4.5	Outfalls D5N010, DSN013, and DSN015 4-1
	4.6	Outfall DSN0344-1
	4.7	Outfall DSN035
	4.8	Outfall DSN0084-2
	4.9	Outfall DSN0124-2
	4.10	Outfall DSN0164-2
	4.11	Outfall DSN0184-2
	4.12	Outfall DSN0224-2
	4.13	Outfall DSN0254-2
Append	dixes	
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В	EPA Fo	
С	EPA Fo	
D	EPA Fo	
E		Form 187
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2-1	Outfall	Descriptions
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Figure		
1-1	Area N	1ар

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Acronyms and Abbreviations

ADEM Alabama Department of Environmental Management

AST aboveground storage tank

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

DMR discharge monitoring report

U.S. Environmental Protection Agency **EPA**

ELG effluent limitation guideline million gallons per day mgd milligrams per liter

Marshall Space Flight Center MSFC

NASA National Aeronautics and Space Administration National Pollutant Discharge Elimination System **NPDES**

TCE trichloroethylene UT unnamed tributary

mg/L

accompanie and Appreviations

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V

SECTION 1

Introduction

The National Aeronautics and Space Administration (NASA) is submitting to the Alabama Department of Environmental Management (ADEM) its National Pollutant Discharge Elimination System (NPDES) permit application for the Marshall Space Flight Center (MSFC) near Huntsville, Alabama, for the renewal of NPDES Permit AL0000221.

1.1 Site Description

MSFC is located on 1,840 acres within Redstone Arsenal near Huntsville, Alabama (Figure 1-1). MSFC was established by a Presidential Executive Order in March 1960 to support a national program for the exploration of space. MSFC is used to design, fabricate, and test rocket vehicles, engines, and spacecraft components. Support operations in propellant handling, process development, and basic research are conducted. MSFC is NASA's primary propulsion development center. Its scientists, engineers, and support personnel play a major role in the development of the new Space Launch System; advanced technologies necessary for the human journey to Mars; and the next generation of missions to observe the outer edge of the universe, the surface of the sun, and our own planet, Earth.

1.2 NPDES Permit Background

NASA currently holds NPDES permit number AL0000221 for MSFC, which became effective on March 24, 2014, and expires on March 31, 2019. Under its existing NPDES permit, NASA is authorized to discharge treated process wastewater and stormwater to Indian Creek, an unnamed tributary (UT) to Indian Creek, an UT to Wheeler Lake, and an UT to Huntsville Spring Branch via 17 outfalls. Various operations have changed within the facility's drainage basins since the previous permit was issued and, as a result, MSFC is reconfiguring the outfalls such that 2 are combined process water and stormwater outfalls and 17 are stormwater-only outfalls. Most non-process wastewater has been diverted to wastewater treatment facilities and no longer reaches any NPDES outfalls (further discussed in Sections 2 and 3). These changes are being submitted to ADEM so that appropriate changes can be made to NASA's re-issued NPDES permit. This application includes completed U.S. Environmental Protection Agency (EPA) Forms 1, 2C, and 2F and ADEM Form 187.

Categorical process wastewater is discharged to the onsite industrial wastewater treatment facility for pretreatment before discharging to the sanitary sewer and then is treated at the Redstone Arsenal Central Wastewater Treatment Plant. The categorical process discharge is permitted under State Indirect Discharge permit number IU 08 45 00027, and therefore, is not applicable to this NPDES permit renewal.

1.3 NPDES Permit Renewal Application Overview

Because NASA's current NPDES permit expires on March 31, 2019, this application for permit renewal is being submitted to ADEM by October 2, 2018, which is 180 days prior to the expiration of the existing permit to ensure automatic administrative extension of the permit. This application includes a description of the facility and its discharges, the requested permit changes, and the required EPA Forms 1, 2C, and 2F and ADEM Form 187.

The permit application forms are presented as follows:

- Appendix A: Site Maps
- Appendix B: EPA Form 1
- Appendix C: EPA Form 2C

AX0814181050MGM 1-1

- Appendix D: EPA Form 2F
- Appendix E: ADEM Form 187

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Description of Outfalls and Sampling

2.1 Outfall Descriptions

NASA has 17 permitted outfalls in its existing NPDES permit for MSFC. However, as discussed with ADEM on April 2, 2018, various operations and site layouts have changed within the facility's drainage basins since the previous permit was issued and, as a result, MSFC re-evaluated stormwater drainage basins and reconfigured the outfalls based on the new understanding of stormwater flow throughout the facility. Additionally, most non-process wastewater has been rerouted to wastewater treatment facilities, and all floor drains and sumps have been plugged or routed to wastewater treatment facilities. These waters will no longer reach an NPDES permitted outfall. Based on these changes, MSFC is requesting 19 outfalls in this permit application, 2 that are combined process water and stormwater outfalls and 17 that are stormwater-only outfalls. Further details are provided in Table 2-1 and Section 4 of this document.

2.2 NPDES Permit Renewal Sampling

Based on ADEM's request to sample all outfalls rather than perform representative sampling, the combined process water and stormwater outfalls were sampled during dry weather, and will be sampled during a storm event; all other outfalls will be sampled during storm events. Table 2-1 describes the discharge sources and lists the EPA forms to be completed for the permit renewal application. Site maps in Appendix A show the locations and drainage areas of all outfalls.

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Description of Outfalls and Sampling

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SECTION 3

Derivation of Permit Limits

This section discusses effluent limitation guidelines (ELGs), water quality calculations, and reasonable potential analysis.

3.1 Applicable Effluent Limitation Guidelines

NASA MSFC discharges process wastewaters to the following receiving waters:

- UT to Indian Creek via DSN019
- UT to Huntsville Spring Branch via DSN012

Process water to DSN019 consists of deluge water from test stand operations and treated trichloroethylene (TCE)-contaminated groundwater from basement dewatering activities. Process water to DSN012 consists of deluge water from test stand operations.

There are no operations limited under an ELG that discharge process wastewater to any of these permitted outfalls. Therefore, there are no ELG calculations associated with this permit renewal.

3.2 Water Quality Calculations

3.2.1 DSN019

Waters known to contain TCE are treated with an air stripper and subsequently discharged through NASA MSFC's process wastewater outfall, DSN019, to a UT to Indian Creek that has a human health criteria for fish consumption only. TCE is classified as a carcinogen by EPA and therefore uses Equation 19 from ADEM Administrative Code 335-6-10.07 to determine the monthly average water quality standard of 17.5 micrograms per liter.

3.3 Reasonable Potential Analysis

The ADEM Reasonable Potential Spreadsheet was used to evaluate the reasonable potential of the discharge to exceed water quality criteria using the following inputs:

- 1Q10 and 7Q10 flow rates of zero
- Upstream flow rate of zero

The spreadsheet results indicate that NASA MSFC discharge does not exhibit a reasonable potential of exceeding water quality criteria at DSN019 or DSN012.

AX0814181050MGM 3-1

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3·1 Applicable 医循reat Limitation Culoelines :

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Requested Permit Modifications

This section provides a discussion of the requested modifications for the NASA MSFC NPDES permit renewal based on best professional judgment.

4.1 Chemical Oxygen Demand

Chemical oxygen demand monitoring was previously included in NASA's MSFC NPDES permit and only required at those outfalls with sinks and floor drains that discharge to the outfall. Because all sinks and floor drains have been plugged or rerouted to the wastewater treatment plant, NASA requests that this parameter be removed from the permit.

4.2 Outfall DSN001

Outfall DSN001 is located at an offsite closed Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site. The former discharge pipe that drained to this outfall has been plugged with concrete. All stormwater drainage received by this outfall is from off MSFC property. NASA is requesting that DSN001 be removed from the NPDES permit during this renewal.

4.3 Outfall DSN024

Outfall DSN024 consisted of a small drainage area around building 4696. During the stormwater basin boundary re-evaluation, it was determined that stormwater runoff associated with industrial activity around Building 4696 now drains to Outfall DSN019, and not DSN024. There has been no measurable flow at DSN024 for several years. Based on this new understanding, there is no longer a drainage area associated with Outfall DSN024, and NASA requests that this outfall be removed from the permit during this renewal.

4.4 Outfall DSN026

The drainage area for Outfall DSN026 was determined to not have any industrial activity within the basin. Previously this outfall was listed as receiving stormwater associated with industrial activities from aboveground storage tank (AST) operations. There are no longer any ASTs in this drainage area, nor any other industrial activities as defined in 40 *Code of Federal Regulations* 122.26(b)(14). NASA is requesting that this outfall be removed from the permit during this renewal.

4.5 Outfalls DSN010, DSN013, and DSN015

NASA requests that Outfalls DSN010, DSN013, and DSN015 (previously eliminated from the NPDES permit) be included in the NPDES permit during this renewal. In 2006 these outfalls were terminated based on best professional judgment because it was determined there were no potential point sources of pollution. Based on the basin boundary re-evaluation previously discussed with ADEM, NASA has determined that the drainage basins for these outfalls have the potential to include stormwater associated with industrial activity from various operations such as storage yards, scrap metal yards, and oil-filled equipment.

4.6 Outfall DSN034

Upon evaluation of basin boundaries, NASA determined that the widening of Martin Road has created a new drainage point next to DSN021. NASA requests this be added to the NPDES permit application as Outfall DSN034. The only potential pollutant source located in the associated drainage basin is stormwater associated with industrial activity, due to the roadway located within this basin boundary.

AX0814181050MGM 4-1

4.7 Outfall DSN035

During the basin boundary re-evaluation, NASA determined that an area previously thought to be a source of stormwater flowing onto the property has the potential for draining from the property. This includes an approximate 7-acre area that contains stormwater associated with industrial activity due to the presence of a storage yard and portable equipment. NASA requests this be added to the NPDES permit as Outfall DSN035.

4.8 Outfall DSN008

NASA previously had floor drains and cooling water at MSFC that drained to DSN008; however, these sources have been eliminated and the only source is stormwater associated with industrial activity. Therefore, this outfall does not receive any flow during dry weather and NASA requests that non-stormevent sampling be removed from the permit.

4.9 Outfall DSN012

NASA previously had floor drains, sumps, and cooling water at MSFC that drained to DSN012; however, these sources have been eliminated. DSN012 may receive deluge water from test stand overflow, hydraulic motor non-contact cooling water, and stormwater associated with industrial activity. NASA requests the source description be updated for this outfall in the NPDES permit application.

4.10 Outfall DSN016

NASA previously had test stands, sumps, and boiler blowdown at MSFC as sources to DSN016; however, these sources have been eliminated and the only source is stormwater associated with industrial activity. Therefore, this outfall does not receive any flow during dry weather and NASA requests that non-stormevent sampling be removed from the permit.

4.11 Outfall DSN018

NASA previously had cooling water, floor drains, and laboratory sinks at MSFC that discharged to DSN018; however, these sources have been eliminated and the only source is stormwater associated with industrial activity. Therefore, this outfall does not receive any flow during dry weather and NASA requests that non-storm-event sampling be removed from the permit.

4.12 Outfall DSN022

NASA previously had cooling water, floor drains sumps, and laboratory sinks at MSFC that discharged to DSN022; however, these sources have been eliminated and the only source is stormwater associated with industrial activity. Therefore, this outfall does not receive any flow during dry weather and NASA requests that non-storm-event sampling be removed from the permit.

4.13 Outfall DSN025

NASA previously had cooling water, floor drains, and laboratory sinks at MSFC that discharged to DSN025; however, these sources have been eliminated and the only source is stormwater associated with industrial activity. Therefore, this outfall does not receive any flow during dry weather and NASA requests that non-storm-event sampling be removed from the permit.

4-2 AX0814181050MGM

TABLE 2-1
Outfall Descriptions
NASA MSFC NPDES Permit Renewal Application

		Required	Form	Comments
one	N/A	N/A	N/A	Outfall DSN001 was plugged and requested to be removed from the NPDES permit during this renewal.
ST dike drainage, vehicle fueling area/loading and nloading and storage yard stormwater runoff	66	Yes (during a rain event)	2F	
azardous waste or material storage/drum storage, orage yards, and test stand area stormwater runoff	82	Yes (during a rain event)	2F	Based on redrawing the basin boundaries, DSN010 is requested to be added to the NPDES permit in the 2018 renewal.
rocess water: Test Stand Overflow on-Process Wastewater: hydraulic motor non-contact poling water azardous waste or material storage/drum storage, orage yards, and test stand area stormwater runoff	58	Yes (during dry weather and a rain event)	2C, 2F	
azardous waste or material storage/drum storage, orage yards, oil filled equipment and scrap metal ormwater runoff	25	Yes (during a rain event)	2F	Based on redrawing the basin boundaries, DSN013 is requested to be added to the NPDES permit in the 2018 renewal.
torage yard stormwater runoff	3.5	Yes (during a rain event)	2F	Based on redrawing the basin boundaries, DSN015 is requested to be added to the NPDES permit in the 2018 renewal.
ST dike drainage, hazardous waste or material corage/drum storage, storage yards, portable quipment, scrap metal and test cand area stormwater runoff	191	Yes (during a rain event)	2F	
ST dike drainage, hazardous waste or material corage/drum storage, storage yards and scrap metal cormwater runoff	17	Yes (during a rain event)	2F	
co qu ca so	rage/drum storage, storage yards, portable uipment, oil filled equipment, scrap metal and test nd area stormwater runoff T dike drainage, hazardous waste or material rage/drum storage, storage yards and scrap metal	rage/drum storage, storage yards, portable uipment, oil filled equipment, scrap metal and test nd area stormwater runoff T dike drainage, hazardous waste or material rage/drum storage, storage yards and scrap metal	T dike drainage, hazardous waste or material If dike drainage, hazardous waste or material If dike drainage, storage yards, portable If dike drainage, hazardous waste or material If dike drainage, hazardous waste or material If dike drainage, storage yards and scrap metal If dike drainage, storage yards and scrap metal If dike drainage, storage yards and scrap metal If diving a rain	T dike drainage, hazardous waste or material 191 Yes 2F trage/drum storage, storage yards, portable (during a rain upment, oil filled equipment, scrap metal and test nd area stormwater runoff T dike drainage, hazardous waste or material 17 Yes 2F trage/drum storage, storage yards and scrap metal (during a rain curing a rain rain)

TABLE 2-1
Outfall Descriptions
NASA MSFC NPDES Permit Renewal Application

Outfall	Description of Sources	Acreage	2018 Sampling Required	EPA Form	Comments
DSN018	AST dike drainage, UST loading/unloading, vehicle fueling area, hazardous waste or material storage/drum	697	Yes (during a rain	2F	
	storage, storage yards, oil filled equipment, and scrap metal stormwater runoff		event)		
DSN019	Process water: Test Stand Overflow and treated TCE- contaminated groundwater from basement dewatering activities AST dike drainage, vehicle fueling area, hazardous waste or material storage/drum storage, storage yards,	41	Yes (during dry weather and a rain event)	2C, 2F	
	portable tank pad, scrap metal and test stand area stormwater runoff				- C - (4) (1, -7 E - 15) - (400 - 1 E - 15 E
DSN020	AST dike drainage and storage yard stormwater runoff	57	Yes (during a rain event)	2F	
DSN021	AST dike drainage, scrap metal and industrial roadway stormwater runoff	12	Yes (during a rain event)	2F	
DSN022	AST dike drainage, hazardous waste or material	312	Yes	2F	SUPPLIES AND THE STATE OF THE S
DSINOZZ	storage/drum storage, storage yard, and scrap metal, skeet range, and sandblasting stormwater runoff	312	(during a rain event)		
DSN023	Hazardous waste or material storage/drum storage and storage yard stormwater runoff	11	Yes (during a rain event)	2F	What is a substitute of the second se
DSN024	None	N/A	N/A	N/A	Based on the drainage basin redraw, there are no industrial activities occurring in drainage basin for DSN024; and it is requested to be
					removed from the NPDES permit during this permit renewal.
DSN025	Hazardous waste or material storage/drum storage and stormwater runoff	9	Yes (during a rain event)	2F	

TABLE 2-1 **Outfall Descriptions** NASA MSFC NPDES Permit Renewal Application

Outfall	Description of Sources	Acreage	2018 Sampling Required	EPA Form	Comments
DSN026	None .	N/A	N/A	N/A	Based on the drainage basin redraw, there are no industrial activities occurring in drainage basin for DSN026; and it is requested to be removed from the NPDES permit during this permit renewal.
DSN031	Hazardous waste or material storage/drum storage, storage yard, and portable equipment stormwater runoff	1.15	Yes (during a rain event)	2F	- :
DSN032	Hazardous waste or material storage/drum storage, storage yard, and portable equipment stormwater runoff	1.84	Yes (during a rain event)	2F	
DSN033	AST dike drainage, Hazardous waste or material storage/drum storage, storage yard, and scrap metal stormwater runoff	24	Yes (during a rain event)	2F	
DSN034	Industrial roadway stormwater runoff	55	Yes (during a rain event)	2F	DSN034 was newly identified in 2018 and is requested to be included in the NPDES permit during this renewal
DSN035	Portable equipment and test stand area stormwater runoff	7	Yes (during a rain event)	2F	DSN035 was newly identified in 2018 and is requested to be included in the NPDES permit during this renewal

AST = aboveground storage tank

EPA = U.S. Environmental Protection Agency
NPDES = National Pollutant Discharge Elimination System

TCE = trichloroethylene

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center Marshall Space Flight Center, AL 35812

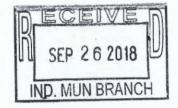


September 24, 2018

Reply to Attn of:

AS10

Ms. Rachel Stanaland Alabama Department of Environmental Management Industrial Branch/Water Division 1400 Coliseum Boulevard Montgomery, AL 36110-2400



RE: NPDES Permit Renewal Application for Permit Number AL0000221

Ms. Stanaland,

Enclosed is one hard copy and one CD of the NASA Marshall Space Flight Center's National Pollution Discharge Elimination System (NPDES) Permit Renewal Application. As stated in NASA's e-mail dated August 7, 2018, the permit application is being submitted without representative stormwater analytical data, due to recent dry weather conditions and ADEM's request to add additional stormwater sampling locations to the permit requirements. The representative stormwater analytical data will be provided as an addendum to the permit application, once the data is available.

If you have any questions or comments, please contact Malene McElroy at (256) 544-8824 or malene.a.mcelroy@nasa.gov.

Sincerely,

Manager

Environmental Engineering and Occupational Health Office

Enclosure

National Aeronautics and Space Administration

George C. Marshall Space Flight Center

Marshall Space Flight Center, AL 35812

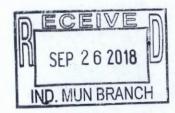


September 24, 2018

Reply to Attn of:

AS10

Ms. Rachel Stanaland Alabama Department of Environmental Management Industrial Branch/Water Division 1400 Coliseum Boulevard Montgomery, AL 36110-2400



RE: NPDES Permit Renewal Application for Permit Number AL0000221

Ms. Stanaland,

Enclosed is one hard copy and one CD of the NASA Marshall Space Flight Center's National Pollution Discharge Elimination System (NPDES) Permit Renewal Application. As stated in NASA's e-mail dated August 7, 2018, the permit application is being submitted without representative stormwater analytical data, due to recent dry weather conditions and ADEM's request to add additional stormwater sampling locations to the permit requirements. The representative stormwater analytical data will be provided as an addendum to the permit application, once the data is available.

If you have any questions or comments, please contact Malene McElroy at (256) 544-8824 or malene.a.mcelroy@nasa.gov.

Sincerely,

Elbert Farley Davis

Manager

Environmental Engineering and Occupational Health Office

Enclosure

RECEIVED SEP 16 2018

ADEM FRONT DESK

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM) NPDES INDIVIDUAL PERMIT APPLICATION SUPPLEMENTARY INFORMATION FOR INDUSTRIAL FACILITIES

Instructions: This form should be used to submit the required supplementary information for an application for an NPDES individual permit for industrial facilities. The completed application should be submitted to ADEM in duplicate. If insufficient space is available to address any item, please continue on an attached sheet of paper. Please mark "N/A" in the appropriate box when an item is not applicable to the applicant. Please type or print legibly in blue or black ink. Mail the completed application to:

		ADEM-Water Div Industrial Section P O Box 301463 Montgomery, AL		DECEIVE D N SEP 2 6 2018
		PURPOSE OF THIS A	APPLICATION	
	Initial Permit Application for New Facility* Modification of Existing Permit Revocation & Reissuance of Existing Permit	Reissuance of the second of the seco		onic Environmental (E2) Reporting must be
SE/	CTION A - GENERAL INFORMATION	submitted to allow	permittee to electronically submit r	eports as required.
1.	Facility Name: NASA Marshall Sp	ace Flight Cent	er	
1.	a. Operator Name: Marshall Space			
	Is the operator identified in A.1.a, the ow If no, provide name and address of the of facility.	ner of the facility? pperator and submit inf	■ Yes □ No ormation indicating the opera	ator's scope of responsibility for the
 3. 4. 	NPDES Permit Number: AL 0 0 0 0 0 SID Permit Number (if applicable): IU 0 8	3 - 4 5 - 0 0		ation)
5.	Facility Physical Location: (Attach a map with Street: Redstone Arsenal, Marsh			ecific identifier)
	City: MSFCCounty:_	Madison	State: Alabama	_{Zip:} 35812
	Facility Location (Front Gate): Latitude: 34.		Longitude:	
6.	Facility Mailing Address: Mail Code: AS	301, Marshall S	pace Flight Center	
•		Madison	state: AL	_{Zip:} 35812
7.	Responsible Official (as described on the last Name and Title: Roy Malone, Direct	ctor, Office of C	enter Operations	
	Address: Mail Code: AS01, Mars	hall Space Fligh	nt Center	
	City: MSFC	State: AL		_{Zip:} 35812
	Phone Number: 256-544-0506	Email Addres	_{s:} roy.w.malone@na	isa.gov
8.	Designated Facility Contact: Name and Title: Farley Davis, Env	ironmental Engi	neering and Occup	ational Health Office
	Phone Number: 256-544-6935		s: farley.davis@nasa	

	Phone Number: 256-544-8824	Email Address:_	malene.a.mc	elroy@nas	sa.gov
0.	Type of Business Entity:				
	☐ Corporation ☐ General Partnership ☐ Other (Please Specify) Federal Facility		Limited Liabil		
1.	Complete this section if the Applicant's busines	s entity is a Corporation	1		
	a) Location of Incorporation: Address: NA				
	City:County:				
	b) Parent Corporation of Applicant: Name: NA				
	Address:				
	City:	State:		Zip:	
	c) <u>Subsidiary Corporation(s) of Applicant</u> : Name: NA				,
	Address: NA				
	City:				
	d) <u>Corporate Officers</u> : Name: NA				
	Address:				
	City:	State:	,	Zip: _	
	Name:				
	Address:		1		
	City:	State:		Zip: _	
	e) Agent designated by the corporation for pur Name: NA				
	Address:				
	City:	State:		Zip:	
	If the Applicant's business entity is a Partnershi	p, please list the genera	l partners.		
	Address:				
					Zip:

Address:		
City:	State:	Zip:
Permit numbers for Applicant's previous Permits presently held by the Applica	ously issued NPDES Permits and identificent, its parent corporation, or subsidiary co	cation of any other State of Alabama Environmen reporations within the State of Alabama:
Permit Name	Permit Number	Held By
SID Permit	IU 08 45 00027	MSFC
Title V Air Permit	709-0014	MSFC
Identify all Administrative Complaints,	nt corporation or subsidiary corporations w	rative Orders, or Litigation concerning water pollution within the State of Alabama within the past five year
Facility Name	Permit Number Type o	of Action Date of Action
None.	Permit Number Type o	
None.		
None.		
None.		
None. CTION B – BUSINESS ACTIVITY Indicate applicable Standard Industrial		
None. CTION B – BUSINESS ACTIVITY Indicate applicable Standard Industrial portance: 3764 - Guided Missile Propulsion		
None. CTION B – BUSINESS ACTIVITY Indicate applicable Standard Industrial portance: a. 3764 - Guided Missile Propulsion 3769 - Guided Missile Parts		
None. CTION B – BUSINESS ACTIVITY Indicate applicable Standard Industrial portance: a. 3764 - Guided Missile Propulsion b. 3769 - Guided Missile Parts 9661 - Research and Technology		
None. CTION B – BUSINESS ACTIVITY Indicate applicable Standard Industrial cortance: a. 3764 - Guided Missile Propulsion b. 3769 - Guided Missile Parts c. 9661 - Research and Technology 3761 - Guided Missiles/Space Vehicles		

00000000000	Aluminum Forming Asbestos Manufacturing Battery Manufacturing Can Making Canned and Preserved Fruit and Vegetables Canned and Preserved Seafood	Motel Molding and Casting	
acility w	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 Materials 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)	
Give a		ling primary products or services (attach additional sheets if ocated on land granted to NASA by the Department of Army, for	necess
use a	and occupancy, for a term of 99 years renewable at N	ASA option. The facility is used to design, manufacture, and toperations in propellant handling, process development vities of communications, environment, and energy development.	test roc
vehice rese	and occupancy, for a term of 99 years renewable at Nocles, engines, and space craft components. Supposerch are conducted in the related aerospace action. C – WASTEWATER DISCHARGE INFORMATION that checked activities in B.2 and are considered Categorical Users Only: Provide wastewater flooring action. (Figure 1), enter the description that considered that considered is the matric (Figure 1), enter the description that considered in the related aerospace action.	ASA option. The facility is used to design, manufacture, and toperations in propellant handling, process development vities of communications, environment, and energy development gorical Industrial Users should skip to C.2 of this section. We see for each of the processes or proposed processes. Using the seponds to each process. (The flow schematic should should be seen as the section of the process.)	test roc , and ba velopme
vehice rese	and occupancy, for a term of 99 years renewable at Nocles, engines, and space craft components. Supposerch are conducted in the related aerospace action. C – WASTEWATER DISCHARGE INFORMATION that checked activities in B.2 and are considered Categorical Users Only: Provide wastewater flooring action. (Figure 1), enter the description that considered that considered is the matric (Figure 1), enter the description that considered in the related aerospace action.	ASA option. The facility is used to design, manufacture, and toperations in propellant handling, process development vities of communications, environment, and energy development of communications, environment, environment	the proinclude harge.]

ADEM Form 187 10/17 m5

tch discharge occurs or will		new facilities may	y estimate.]		
a. Number of batch disch			per day		
b. Average discharge per	r batch: NA		_ (GPD)		
c. Time of batch discharg			at NA		_
	(days o	f week)	(hours o	f day)	
d. Flow rate: NA		gallons/r	minute		
e. Percent of total discha	irge: NA				
Non-Process D non-contact c		(ga	12 Months als/day) onth Avg. Flow		Flow Year of Last 5 (gals/day) thly Avg. Flow
NA	•	NA		NA	
Complete this Section only tewater to a water of the S	State. If Categoric	al wastewater is	discharged exclusive	vely via an indi	rect discharge to a public of
ately-owned treatment work Yes	s, check "Yes" in t	he appropriate sp	pace below and pro	ceed directly to	part 2.c .
each of your processes or	r proposed proces	ses. Using the	process flow schem	natic (Figure 1	icable by the effluent guidel , pg 14), enter the descrip
corresponds to each proces	ss. [New facilities	snould provide e	estimates for each d	ischarge.]	
				Ту	/pe of Discharge Flow
Regulated Process NA	Applicable C		Applicable Subpart	Ту	rpe of Discharge Flow , continuous, intermittent)
Regulated Process	Applicable C	ategory	Applicable Subpart	Ty (batch	
Regulated Process	Applicable C	ategory	Applicable Subpart	Ty (batch	
Regulated Process	Applicable C NA Last 1 (gals/day),	ategory	Applicable Subpart	NA ear of Last 5 s/day), etc.	
Regulated Process NA	Applicable C NA Last 1 (gals/day),	ategory NA 2 Months (lbs/day), etc.	Applicable Subpart A Highest Flow Yo (gals/day), (lbs	NA ear of Last 5 s/day), etc.	Discharge Type (batch, continuous,
Regulated Process NA Process Description	Applicable C NA Last 1 (gals/day), Highest Mo	ategory NA 2 Months (lbs/day), etc.	Applicable Subpart A Highest Flow Yo (gals/day), (lb: Monthly Av	NA ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent)
Regulated Process NA Process Description	Applicable C NA Last 1 (gals/day), Highest Mo	ategory NA 2 Months (lbs/day), etc.	Applicable Subpart A Highest Flow Yo (gals/day), (lb: Monthly Av	NA ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent)
Regulated Process NA Process Description NA * Reported values sh	Applicable C NA Last 1 (gals/day), Highest Mo NA	2 Months (lbs/day), etc. onth Average*	Applicable Subpart A Highest Flow Ye (gals/day), (lbe Monthly Av NA	ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent) NA
Process Description NA * Reported values shexample, flow (MGD),	Applicable C NA Last 1 (gals/day), Highest Mo NA nould be express production (pour	2 Months (lbs/day), etc. onth Average*	Applicable Subpart A Highest Flow You (gals/day), (lbs Monthly Av NA the applicable Feed.	ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent)
Process Description NA * Reported values shexample, flow (MGD),	Applicable C NA Last 1 (gals/day), Highest Mo NA rould be express production (pour	2 Months (lbs/day), etc. onth Average*	Applicable Subpart A Highest Flow You (gals/day), (lbs Monthly Av NA the applicable Feed.	ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent) NA
Process Description NA * Reported values shexample, flow (MGD),	Applicable C NA Last 1 (gals/day), Highest Mo NA rould be express production (pour	2 Months (lbs/day), etc. onth Average*	Applicable Subpart A Highest Flow You (gals/day), (lbs Monthly Av NA the applicable Feed.	ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent) NA
Process Description NA * Reported values shexample, flow (MGD),	Applicable C NA Last 1 (gals/day), Highest Mo NA rould be express production (pour	2 Months (lbs/day), etc. onth Average*	Applicable Subpart A Highest Flow You (gals/day), (lbo Monthly Av NA the applicable Federal y estimate.]	ear of Last 5 s/day), etc.	Discharge Type (batch, continuous, intermittent) NA
Regulated Process NA Process Description NA * Reported values sh example, flow (MGD), atch discharge occurs or will a. Number of batch disch	Applicable C NA Last 1 (gals/day), Highest Mo NA nould be express production (pour loccur, indicate: [r harges: NA r batch: NA	2 Months (lbs/day), etc. onth Average*	Applicable Subpart A Highest Flow You (gals/day), (lb) Monthly Av NA the applicable Fee c. y estimate.] per day (GPD) at NA	ear of Last 5 s/day), etc. verage*	Discharge Type (batch, continuous, intermittent) NA
Regulated Process NA Process Description NA * Reported values sh example, flow (MGD), atch discharge occurs or will a. Number of batch disch b. Average discharge per	Applicable C NA Last 1 (gals/day), Highest Mo NA rould be express production (pour loccur, indicate: [r	2 Months (lbs/day), etc. onth Average*	Highest Flow You (gals/day), (lb. Monthly Av NA the applicable Feet. y estimate.] per day (GPD)	ear of Last 5 s/day), etc. verage*	Discharge Type (batch, continuous, intermittent) NA
Regulated Process NA Process Description NA * Reported values sh example, flow (MGD), atch discharge occurs or will a. Number of batch disch b. Average discharge per	Applicable C NA Last 1 (gals/day), Highest Mo NA nould be express production (pour loccur, indicate: [r harges: NA r batch: NA	2 Months (lbs/day), etc. onth Average*	Highest Flow You (gals/day), (lb. Monthly Av NA the applicable Feet c. y estimate.] per day (GPD) at NA (hours of	ear of Last 5 s/day), etc. verage*	Discharge Type (batch, continuous, intermittent) NA

_	Non categor Process Descr		(gals/day) est Month Avg. Flow	(gals/d Monthly Av		(batch, continuous, intermittent)
DS	SN012 Test Stand	Overflow 25,000(in	ncludes combined stormwater flow)	374,828 (includes combin	ned stormwater flow)	intermittent
DS	SN019 Test Stand	Overflow 0.0		0.0		intermittent
DS	SN019 Basement D	ewatering 7,024,000	(includes combined stormwater flow)	1,197,667(includes combin	ned stormwater flow)	continuous
a. b.	Number of bat	ch discharges:	NA NA (days of week)	ay estimate.] _per day (GPD) _at (hours of	day)	
	ΝΔ				uay)	
	Flow rate: NA	NI		/minute		
e.	Percent of tota	l discharge:				
	Non	-Process Discharg		12 Months		w Year of Last 5 ils/day)
		n-contact cooling		als/day) Month Avg. Flow		Avg. Flow
	None.					
		omplete C.3 – C.6		No. (If no nontinue to		
Do	you share an or reach shared of Applicant's	outfall with anothe outfall, provide the	er facility? Yes	No (If no, continue to NPDES Permit No.		re is sample collected . by Applicant?
Do	you share an or reach shared of Applicant's Outfall No.	outfall with anothe outfall, provide the	er facility? Yes following:	NPDES		re is sample collected . by Applicant?
Do For	you share and reach shared of Applicant's Outfall No.	outfall with anothe outfall, provide the 'Name of Oth	er facility? Yes e following: er Permittee/Facility	NPDES Permit No. NA	Whe NA	by Applicant?
Do For	you share and reach shared of Applicant's Outfall No.	outfall with anothe outfall, provide the 'Name of Oth	er facility? Yes e following: er Permittee/Facility	NPDES Permit No. NA	Whe NA	by Applicant?
Do For	you share and reach shared of Applicant's Outfall No.	outfall with anothe outfall, provide the 'Name of Oth	er facility? Yes e following: er Permittee/Facility	NPDES Permit No. NA t or continuous waste	Whe	
Do For	you share and reach shared of Applicant's Outfall No.	outfall with another outfall, provide the Name of Oth NA	er facility? Yes e following: er Permittee/Facility atic sampling equipment Flow Metering Sampling Equipme	NPDES Permit No. NA t or continuous waste Yes No Yes No	water flow meteri	by Applicant?
Do For	you share and reach shared of Applicant's Outfall No.	Name of Oth NA In to have, autom.	er facility? Yes e following: er Permittee/Facility atic sampling equipment Flow Metering Sampling Equipme	NPDES Permit No. NA t or continuous waste Yes No Yes No	water flow meteri	by Applicant?
Do y	you share and reach shared of Applicant's Outfall No. A	Name of Oth NA In to have, automore Current: Planned:	er facility? Yes following: er Permittee/Facility atic sampling equipment Flow Metering Sampling Equipme Flow Metering Sampling Equipme	NPDES Permit No. NA t or continuous waste Yes No. No. Yes No. No. NA	water flow meteri	by Applicant?
Do y If so the e	you share an or each shared of Applicant's Outfall No. A you have, or play you have attach equipment below	Name of Oth NA The control of the c	er facility? Yes e following: er Permittee/Facility atic sampling equipment Flow Metering Flow Meterin	NPDES Permit No. NA t or continuous waste Yes No Yes No Yes No Yes No indicating the preser	water flow meteri	by Applicant?

	Trade Name	Chemical Composition
	See Attachment	See Attachment
or ea	ach biocide and/or corrosion inhibitor used, please include the	e following information:
(2)	 96-hour median tolerance limit data for organisms represent ultimately reach, quantities to be used, frequencies of use, proposed discharge concentrations, and EPA registration number, if applicable 	entative of the biota of the waterway into which the discharge will
	ION D – WATER SUPPLY Sources (check as many as are applicable):	
	Private Well	☐ Surface Water
	Municipal Water Utility (Specify City):	Other (Specify): Redstone Arsenal
IF	MORE THAN ONE WELL OR SURFACE INTAKE, PROVI	DE DATA FOR EACH ON AN ATTACHMENT
C	ity:MGD* Well:MGD* Well De	epth:Ft. Latitude: Longitude:
S	urface Intake Volume:MGD* Intake Eleva	ation in Relation to Bottom:Ft.
	ntake Elevation:Ft. Latitude:	
ın	trake Elevation:Ft. Latitude	Longitude
N	ame of Surface Water Source:	
	MGD - Million Gallons per Day	
* Coolii Comp	MGD – Million Gallons per Day ng Water Intake Structure Information plete D.1 and D.2 if your water supply is provided by an order industry, municipality, etc) Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.)	outside source and not by an onsite water intake structure? (e.g
* Coolii Comp	MGD – Million Gallons per Day ng Water Intake Structure Information plete D.1 and D.2 if your water supply is provided by an order industry, municipality, etc) Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal	butside source and not by an onsite water intake structure? (e.government) water intake? Yes No b) Location of Provider: WTP #1 Redstone Arsenal, A
Cooling Companoth	MGD – Million Gallons per Day Ing Water Intake Structure Information Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal c) Latitude: 34.586770 Longitude: 86.6 Is the provider a public water system (defined as a system oprovides only treated water, not raw water)?	butside source and not by an onsite water intake structure? (e.g. water intake? Yes No b) Location of Provider: WTP #1 Redstone Arsenal, A 82095 which provides water to the public for human consumption or which No (If yes, go to Section E, if no, continue.)
Coolings anoth 1.	MGD – Million Gallons per Day Ing Water Intake Structure Information Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal c) Latitude: 34.586770 Longitude: 86.6 Is the provider a public water system (defined as a system oprovides only treated water, not raw water)?	butside source and not by an onsite water intake structure? (e.govater intake? Yes No Double No
Coolings anoth 1.	MGD – Million Gallons per Day Ing Water Intake Structure Information Deter D.1 and D.2 if your water supply is provided by an over industry, municipality, etc) Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal c) Latitude: 34.586770 Longitude: 86.6 Is the provider a public water system (defined as a system of provides only treated water, not raw water)?	butside source and not by an onsite water intake structure? (e.government) b) Location of Provider: WTP #1 Redstone Arsenal, A 82095 which provides water to the public for human consumption or which No (If yes, go to Section E, if no, continue.) ture or the provider of your water supply uses an intake structure.
* Cooling Compandth 1. 2. Only to	MGD – Million Gallons per Day Ing Water Intake Structure Information Deter D.1 and D.2 if your water supply is provided by an order industry, municipality, etc) Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal c) Latitude: 34.586770 Longitude: 86.6 Is the provider a public water system (defined as a system of provides only treated water, not raw water)? Yes to be completed if you have a cooling water intake structions not treat the raw water. Is any water withdrawn from the source water used for cooling treated in the source water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water withdrawn from the source water used for cooling water water.	butside source and not by an onsite water intake structure? (e.government) b) Location of Provider: WTP #1 Redstone Arsenal, A 82095 which provides water to the public for human consumption or which No (If yes, go to Section E, if no, continue.) ture or the provider of your water supply uses an intake structure.
Cooling Companoth 1. 2. Only 1 and d 3.	MGD – Million Gallons per Day Ing Water Intake Structure Information Deter D.1 and D.2 if your water supply is provided by an other industry, municipality, etc) Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal c) Latitude: 34.586770 Longitude: 86.6 Is the provider a public water system (defined as a system of provides only treated water, not raw water)? Types to be completed if you have a cooling water intake structions not treat the raw water. Is any water withdrawn from the source water used for cool. Using the average monthly measurements over any 12-measurements.	butside source and not by an onsite water intake structure? (e.g. water intake? Yes No Decation of Provider: WTP #1 Redstone Arsenal, A 82095 which provides water to the public for human consumption or which No (If yes, go to Section E, if no, continue.) ture or the provider of your water supply uses an intake structure or the provider of your water supply uses an intake structure or the provider of your water supply uses an intake structure.
Cooling anoth 1. 2. Only 1 and d 3.	MGD – Million Gallons per Day Ing Water Intake Structure Information Deter D.1 and D.2 if your water supply is provided by an object industry, municipality, etc) Does the provider of your source water operate a surface of (If yes, continue, if no, go to Section E.) a) Name of Provider: U.S. Army Redstone Arsenal c) Latitude: 34.586770 Longitude: 86.6 Is the provider a public water system (defined as a system of provides only treated water, not raw water)? Yes to be completed if you have a cooling water intake structions not treat the raw water. Is any water withdrawn from the source water used for cooling the average monthly measurements over any 12-measurements over any 12-m	butside source and not by an onsite water intake structure? (e.g., water intake? Yes No Department No Department No No No (If yes, go to Section E, if no, continue.) The provider of your water supply uses an intake structure or the provider of your water supply uses an intake structure or the period, approximately what percentage of water withdrawn is all otherwise be discharged? Pes No

ADEM Form 187 10/17 m5 Page 7 of 11

7. When was the intake installed? NA			
(Please provide dates for all major constr		mponents including screens)	
8. What is the maximum intake volume?	A and and		
(maximum pumping capacity in gallons p			
 What is the average intake volume? NA (average intake pump rate in gallons per 	day average in any 30-day pe	riod)	
10. What is the actual intake flow (AIF) as de	fined in 40 CFR §125.92(a)?	NA MGD	
11. How is the intake operated? (e.g., continu		NA	_
12. What is the mesh size of the screen on y	our intake? NA		
13. What is the intake screen flow-through ar	ea? NA		
14. What is the through-screen design intake	flow velocity? NA	t/sec	
15. What is the through-screen actual velocit		sec	
16. What is the mechanism for cleaning the s	screen? (e.g., does it rotate fo	r cleaning) NA	_
17. Do you have any additional fish detractio			
Have there been any studies to determine provide.)	e the impact of the intake on a	equatic organisms? Yes No (If yes, please	
19. Attach a site map showing the location of	f the water intake in relation to	the facility, shoreline, water depth, etc.	
at the facility for which the NPDES application is this application: Description of Waste	being made. Where possible	ge, municipal wastewater systems, etc., which are lo the location should be noted on a map and included Description of Storage Location	d with
See Attachment		See Attachment	
See Attachment		CCC Attachmicht	
Provide a description of the location of the ulti wastewater treatment system located at the facili		or liquid waste by-products (such as sludges) from	n any
Description of Waste	Quantity (lbs/day)	Disposal Method*	
Hazardous waste from metal finishing wastewater treatment	5	Stabilization/Landfill at Clean Harbors in Lone Mountain	n, OK
		toward facility and which are discovered of an elle	ıs
*Indicate which wastes identified above are d any wastes are sent to an off-site centralized	isposed of at an off-site trea waste treatment facility, ide	tment facility and which are disposed of on-site. ntify the waste and the facility.	ır
SECTION F - COASTAL ZONE INFORMATION			
Is the discharge(s) located within the 10-foot	t elevation contour and within	the limits of Mobile or Baldwin County? 🗌 Yes 🏻 🔳	No
If yes, complete items F.1 – F.12:			
	F0	Yes	No
Will the project be a source of new air	emissions?		

ADEM Form 187 10/17 m5 Page 8 of 11

	3.	Does the project involve dredging and/or filling of a wetland area or water way?	Yes	No
		If Yes, has the Corps of Engineers (COE) permit been received?		
	4.	Does the project involve wetlands and/or submersed grassbeds?		
	5.	Are oyster reefs located near the project site?		
		If Yes, include a map showing project and discharge location with respect to oyster reefs		
	6.	Does the project involve the site development, construction and operation of an energy facility as defined in ADEM Admin. Code r. 335-8-102(bb)?		
	7.	Does the project involve mitigation of shoreline or coastal area erosion?		
	8.	Does the project involve construction on beaches or dune areas?		
	9.	Will the project interfere with public access to coastal waters?		
	10	Does the project lie within the 100-year floodplain?		
	11	Does the project involve the registration, sale, use, or application of pesticides?		
	12	Does the project propose or require construction of a new well or to alter an existing groundwater well to pump more than 50 gallons per day (GPD)?		
		If yes, has the applicable permit for groundwater recovery or for groundwater well installation been	_	_
		obtained?		
SE	СТІО	N G – ANTI-DEGRADATION EVALUATION		
	Is this	information is required to make this demonstration, attach additional sheets to the application. Is a new or increased discharge that began after April 3, 1991? Yes No No Complete G.2 below. If no, go to Section H.		
2.		an Anti-Degradation Analysis been previously conducted and submitted to the Department for the new or increasenced in G.1? Yes No	sed disc	harge
	335-6	s, do not complete this section. If no, and the discharge is to a Tier II waterbody as defined in ADEM 5-1012(4), complete G.2.A – G.2.F below and ADEM Forms 311 and 313 (attached). ADEM Form 313 must alternative considered technically viable.	Admin. be prov	Code r. rided for
	Inforr	nation required for new or increased discharges to high quality waters:		
	A.	What environmental or public health problem will the discharger be correcting?		
		NA		
	B.	How much will the discharger be increasing employment (at its existing facility or as the result of locating a new	facility)	?
		NA .		
	C.	How much reduction in employment will the discharger be avoiding?		
		NA .		
	D.	How much additional state or local taxes will the discharger be paying?		
		NA .	5	
	E.	What public service to the community will the discharger be providing?		
		NA .		
	F.	What economic or social benefit will the discharger be providing to the community?		
		NA		

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. The EPA application forms are found on the Department's website at http://www.adem.alabama.gov/programs/water/waterforms.cnt. The EPA application forms must be submitted in duplicate as follows:

- 1. All applicants must submit Form 1.
- Applicants for existing industrial facilities (including manufacturing facilities, commercial facilities, mining activities, and silvicultural activities) which discharge process wastewater must submit Form 2C.
- 3. Applicants for new industrial facilities which propose to discharge process wastewater must submit Form 2D.
- Applicants for new and existing industrial facilities which 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- RECEIVING WATERS

Outfall No.	Receiving Water(s)	303(d) Segment?	Included in TMDL?*
	See Attachment	☐ Yes ☐ No	☐ Yes ☐No
		☐ Yes ☐No	☐ Yes ☐ No
		☐ Yes ☐No	☐ Yes ☐No
		☐ Yes ☐No	☐ Yes ☐ No
		Yes No	☐ Yes ☐No

^{*}If a TMDL Compliance Schedule is requested, the following should be attached as supporting documentation:

- (1) Justification for the requested Compliance Schedule (e.g. time for design and installation of control equipment, etc.);
- (2) Monitoring results for the pollutant(s) of concern which have not previously been submitted to the Department (sample collection dates, analytical results (mass and concentration), methods utilized, MDL/ML, etc. should be submitted as available);
- (3) Requested interim limitations, if applicable;
- (4) Date of final compliance with the TMDL limitations; and,
- (5) Any other additional information available to support requested compliance schedule.

ADEM Form 187 10/17 m5 Page 10 of 11

SECTION K – APPLICATION CERTIFICATION
The information contained in this form must be certified by a responsible official as defined in ADEM Administrative Code r. 335-6-60 "signatories to permit applications and reports" (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 responsible for gathering the information, the information submittee 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 Signed: Placetor of the Office of Center Operations If the Responsible Official signing this application is not identified in Section A.7, provide the following information: Mailing Address:
City:State:Zip:
Phone Number: Email Address:

335-6-6-.09 SIGNATORIES TO PERMIT APPLICATIONS AND REPORTS.

- (1) The application for an NPDES permit shall be signed by a responsible official, as indicated below.
 - (a) In the case of a corporation, by a principal executive 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;
 - (b) In the case of a partnership, by a general partner;
 - (c) In the case of a sole proprietorship, by the proprietor; or
 - (d) In the case of a municipal, state, federal, or other public entity, by either a principal executive officer, or ranking elected official.

ADEM Form 187 10/17 m5

Page 11 of 11

Supplement to ADEM Form 187 Section C, Part 6 Biocides and Corrosion Inhibitors NASA-MSFC

Additive Name	Trade Name	Frequency of Use	Purpose	Quantities to be Used	Proposed Discharge Concentrations	EPA Registration Number	96-hour Median Tolerance Limit
Liquid Caustic Potash (7732-18-5); Sodium Metabisulfate (7681-57-4); 2- Phosphonobutane-1,2,4-Tricarboxylic Acid (37971-36-1)	CHEM-E BWT-101	As Needed	Internal Steam Boiler Water Treatment	~ 10 gal/month	0*	N/A	N/A
Sodium Hypochlorite (7681-52-9)	Keystone 3015	As needed	Biocide for cooling towers located at 4473, 4561, 4570, 4583, 4607, 4614, 4628, 4666, 4670, 4674, and 4718.	~100 - 125 gallons/month	0 *	N/A .	0.6 mg/L Bluegil 1.0 mg/L Daphnia (48 hours, Aquatic LC ₅₀ Toxic)
Potassium Dimethyl Dithiocarbamate	Keystone 3020	As needed	Biocide for cooling towers located at 4473, 4561, 4570, 4583, 4607, 4614, 4628, 4666, 4670, 4674, and 4718.	~100 - 125 gallons/month	0*	1448-277	N/A
Polymaleic Acid (26099-09-2); Caustic Potash (1310-58-3); diphosphonic acid (2809-21-4); Alkyl Dimethyl (68424-85-1); Sodium Tolyltriazolen (29385-43-1); Sodium Polyacrylate (9003-04-7)	Keystone 3124	As needed	Biocide for cooling towers located at 4473, 4561, 4570, 4583, 4607, 4614, 4628, 4666, 4670, 4674, and 4718.	~100 - 125 gallons/month	0*	N/A	N/A
Sodium Molybdate (7631-95-0); Caustic Potash (1310-58-3); Sodium Nitrate (7632-00-0); Sodium Tolyltriazolen (29385-43-1); Sodium Lignosulfonate (68131-31-7)	Keystone 3723	Continual	Chiller plant for buildings located at 4203, 4207, 4353, 4471, 4476, 4481, 4487, 4561, 4570, 4583, 4605, 4610, 4612, 4618, 4619, 4650, 4653, 4663, 4674, 4702, 4705, 4707, 4708, 4712, 4714, 4718, 4735, 4755	~100 - 125 gallons/month	0*	N/A	N/A .

Notes: According to MSDSs, the above listed hazardous ingredients are included in the respective products. N/A = not available

^{*}Cooling towers are routed to sewer and do not flow to any NPDES outfalls

Supplement to ADEM Form 187 Section E (Part 1) Waste Storage and Disposal Information NASA-MSFC

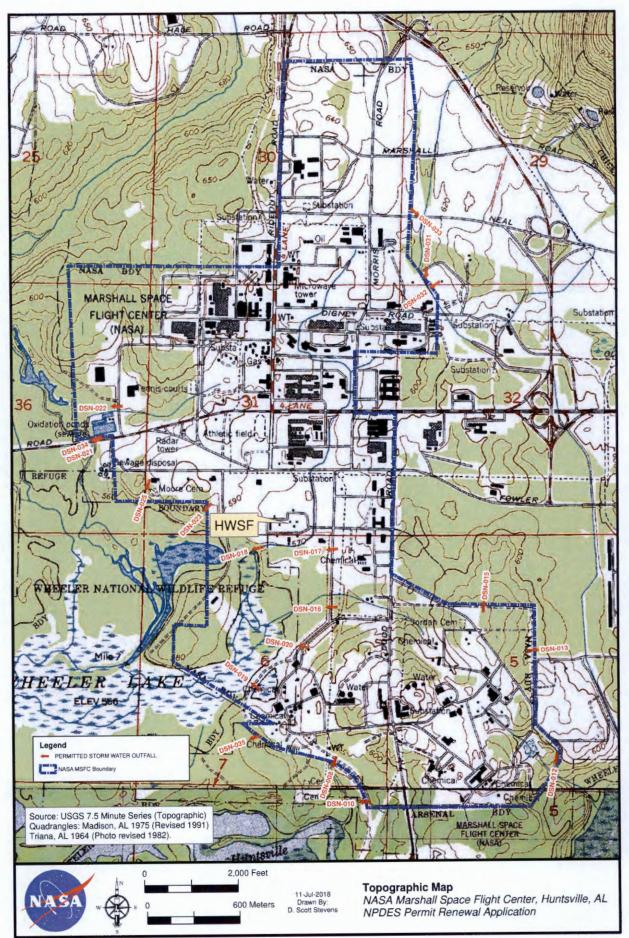
Description of Waste	Description of Storage Location (Area/Building Number)	Type of Containment
Used Oil	AST - 4400/4436	Concrete pad/dike
Used Acid	AST - 4400/4475	AST in concrete vault
Used Oil	AST - 4400/4476	Built in containment with rain shield
	AST - 4400/4483	Built in containment with rain shield
Used Oil		
Used Oil	AST - 4400/4487	Concrete pad/dike
Used Oil	AST - 4600/4640 (Bay 6)	Concrete pad/dike
Hazardous Waste	AST - 4600/4640 (Bay 1)	Concrete pad/dike
Hazardous Waste	AST - 4600/4640 (Bay 2)	Concrete pad/dike
Hazardous Waste	AST - 4600/4640 (Bay 4 & 5)	Concrete pad/dike
Used Oil	AST - 4600/4640 (P)	Concrete pad/dike
Used Oil	AST - 4600/4676	Built in containment with rain shield
Used Coolant	AST - 4700/4705	portable tank - moved indoors
Waste acids from r/d labs, and		
general cleaning ops	Hazardous Waste Storage Yard	Covered with secondary containment
Waste caustics from r/d labs, and		
general cleaning ops	Hazardous Waste Storage Yard	Covered with secondary containment
Used/waste photo/film processing		
solutions	Hazardous Waste Storage Yard	Covered with secondary containment
Used urethane foam components (
isocyanate & polyols)	Hazardous Waste Storage Yard	Covered with secondary containment
Waste halogenated solvents (1,1,1		
TCA, TCE, PCE, etc)	Hazardous Waste Storage Yard	Covered with secondary containment
Waste paint strippers (acid &		
caustic)	Hazardous Waste Storage Yard	Covered with secondary containment
Labpacks of D-,U-,P-,F- listed		0
wastes	Hazardous Waste Storage Yard	Covered with secondary containment
Waste/spent abrasives	Hazardous Waste Storage Yard	Covered with secondary containment
Coast aguagua/datargant alagnara	Hazardous Waste Storage Yard	Covered with secondary containment
Spent aqueous/detergent cleaners Spent/out-of-shelf life adhesives	Hazardous Waste Storage Yard	Covered with secondary containment
Spent antifreeze	Hazardous Waste Storage Yard	Covered with secondary containment
Spent batteries (dry cell, Pb-acid,	Trazardous Wusto Otorago Tara	Covered with boothdary containment
Ni-Cd, etc)	Hazardous Waste Storage Yard	Covered with secondary containment
PCB wastes (light ballasts)	Hazardous Waste Storage Yard	Covered with secondary containment
Waste/spent metal working		
coolants	Hazardous Waste Storage Yard	Covered with secondary containment
Wastewaters with oil/grease from		
secondary containments for fuel		
tanks, etc	Hazardous Waste Storage Yard	Covered with secondary containmen
IDW soils/water, soils		
contaminated with petroleum	Hazardous Waste Storage Yard	Covered with secondary containmen

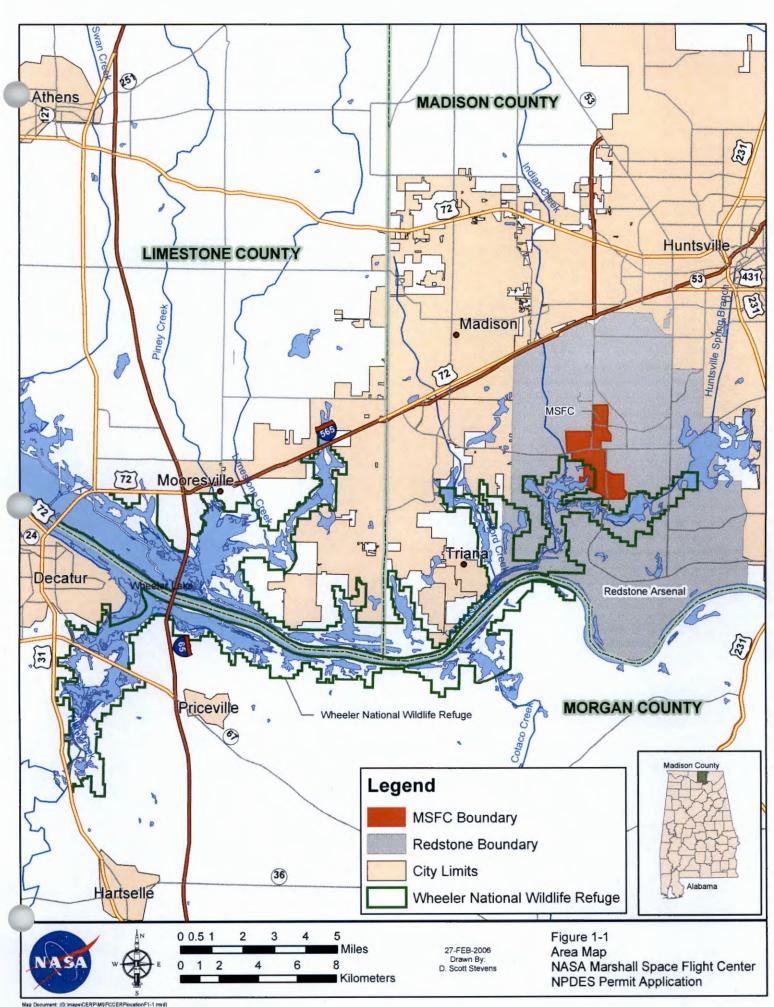
Supplement to ADEM Form 187 Section J Waste Storage and Disposal Information NASA-MSFC

Receiving Water	303d Segment? (Y/N)	Included in TMDL? (Y/N)
Indian Creek	Υ	N
UT to Wheeler Lake	N	N
UT to Huntsville Spring Branch	N	N
UT to Indian Creek	N	N

IND. MUN BRANCH

CONTINUED FROM THE FRONT	
VII. SIC CODES (4-digit, in order of priority) A. FIRST	B. SECOND
7 3764 (specify) Guided missile and space vehicle propulsion units and propulsion unit parts	7 3769 (specify) Guided missile and space vehicle pats and auxillary equipment
C. THIRD c (specify) Research and Technology	D. FOURTH C 1 (specify) Guided Missiles and space vehicles
15 16 - 19	15 16 - 19
VIII. OPERATOR INFORMATION A. NAME B. NASA/George C. Marshall Space Flight Cent	95 66
C. STATUS OF OPERATOR (Enter the appropriate letter into	
F = FEDERAL S = STATE P = PRIVATE M = PUBLIC (other than federal or state) O = OTHER (specify) F	(specify) N/A (256) 544-2121 15 6 - 18 19 - 21 22 - 26
E. STREET OR P.O. BOX Redstone Arsenal	
F. CITY OR TOWN	G. STATE H. ZIP CODE IX, INDIAN LAND
B Marshall Space Flight Center	AL 35812 Steep 1 Steep
X. EXISTING ENVIRONMENTAL PERMITS	
9 N AL0000221 9 P 709-0	Emissions from Proposed Sources)
15 16 17 18 30 15 16 17 18 B. UIC (Underground Injection of Fluids)	E. OTHER (specify)
8 U IVA	45 0027 (specify) SID Permit
15 16 17 18 30 15 16 17 18 C. RCRA (Hazardous Wastes)	E. OTHER (specify)
9 R 9	(specify)
15 16 17 18 30 15 16 17 18 XI. MAP	30
Attach to this application a topographic map of the area extending to at least or	ne mile beyond property boundaries. The map must show the outline of the facility, the h of its hazardous waste treatment, storage, or disposal facilities, and each well where it as in the map area. See instructions for precise requirements.
XII. NATURE OF BUSINESS (provide a brief description)	
the Army for irrevocable use and occupency for a term used to design, manufacture and test rocket vehicles, principal propulsion development center. Its scientist the development of the new Space Launch System; advance	ty located on land granted to NASA by the Department of of 99 years, renewable at NASA's option. The facility is engines, and space craft components. MSFC is NASA's s, engineers, and support personnel play a major role in ed technologies necessary for the human journey to Mars; er edge of the universe, the surface of the sun, and our
XIII. CERTIFICATION (see instructions)	
	n the information submitted in this application and all attachments and that, based on my ntained in the application, I believe that the information is true, accurate, and complete. I ding the possibility of fine and imprisonment
A. NAME & OFFICIAL TITLE (type or print) B. SIGNATU	C. DATE SIGNED
Roy Malone, Director, Office of Center Operations	9/24/18
COMMENTS FOR OFFICIAL USE ONLY	





EPA I.D. NUMBER (copy from Item 1 of Form 1)

AL 180003863

Form Approved. OMB No. 2040-0086. Approval expires 3-31-98.

FORM 2C

NPDES



Please print or type in the unshaded areas only.

U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS

Consolidated Permits Program

OUTFALL LOCATION

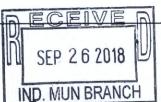
For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water. B. LATITUDE C. LONGITUDE A. OUTFALL NUMBER D. RECEIVING WATER (name) (list) 2. MIN. 3. SEC. 2 MIN 1. DEG. 3. SEC. 1. DEG. 37.00 39.00 25.00 tributary to Huntsville Spring Branch 34.00 30.00 89.00 DSN012 37.00 45.00 86.00 40.00 15.00 tributary to Indian Creek 34.00 DSN019

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

- A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.
- B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if

1. OUT-	2. OPERATION(S) CON	TRIBUTING FLOW	3. TREATMEI	TV
FALL NO. (list)	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1
012	-Test Stand Overflow Water	0.37 MGD	Sedimentation	10
	-Stormwater			
	-Hydraulic motor non-contact			
	cooling water			
019	-Treated groundwater from basement	1.14 MGD	Sedimentation	10
	dewatering system.		Air Stripper	
	-Stormwater			
	-Test stand overflow water			
	*			
	170			

OFFICIAL USE ONLY (effluent guidelines sub-categories)



PAGE 1 of 4

CONTINUE ON REVERSE

				3 FRE	QUENCY			4. FLOW		
				a. DAYS PER				B. TOTAL		
1. OUTFALL NUMBER (list)		PERATION(s) IBUTING FLOW (list)	I	WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RA 1. LONG TERM AVERAGE	TE (in mgd) 2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	C. DURATIO
12/019	Test Stand Overfloperated on an in needed. The flow of these sources on test schedules determined.	low: Test S ntermittent rate and f is highly	basis, as frequency dependent	variable	variable	variable	variable	variable	variable	variable
	DN uent guideline limitation YES (complete Item III-I ations in the applicable of YES (complete Item III-I	B) effluent guidel		terms of proc	NO (go to Sea	nion IV) measure of ope				•
	ered "yes" to Item III-B,	list the quant					production, exp	pressed in the t	erms and uni	s used in th
applicable e	ffluent guideline, and in		ected outfalls. ERAGE DAILY F	RODUCTION	1					
a. QUANTITY	PER DAY b. UNITS	OF MEASUR			ON, PRODUCT (specify)	MATERIAL, ET	C.		ECTED OUT st outfall numb	
N/A	N/A		N/A					N/A		
V. IMPROVEM		美克克克	19.54				\$ 2.544	+Bee	10 (4) (3) (4)	
	w required by any Fed quipment or practices or	r any other en	vironmental pro-	grams which n nent complian	implementation nay affect the discrete schedule lette NO (go to Ite.	scharges describ ers, stipulations,	ed in this app	lication? This in	cludes, but is	of wastewat not limited t
treatment ed					VINO 190 to He.					
treatment ed permit condi	YES (complete the follow TION OF CONDITION,	wing table)	ECTED OUTFA				OF PROJECT	4. F	INAL COMPL	IANCE DAT
treatment ed permit condi	YES (complete the follow	wing table)	ECTED OUTFA	LLS		DESCRIPTION	OF PROJECT			ANCE DAT

EPA I.D. NUMBER (copy from Item 1 of Form 1)

AL 180003863

CONTINUED FROM PAGE 2

	nd V-C are included on separate sheets numl		
Use the space below to list any of from any outfall. For every pollutan	the pollutants listed in Table 2c-3 of the instr t you list, briefly describe the reasons you bel	uctions, which you know or have reason to ieve it to be present and report any analytic	believe is discharged or may be dischar al data in your possession.
1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
ne.			
	•		
OTENTIAL DISCUADOES NOT	COVERED BY ANALYSIS		
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	The state of the s
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	The state of the s
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	The second secon
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sut YES (list all such pollute C does not manufacture	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sub YES (list all such polluta	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	The second secon
ny pollutant listed in Item V-C a sut YES (list all such pollute C does not manufacture	ostance or a component of a substance which cants below)	NO (go to Item VI-B)	
ny pollutant listed in Item V-C a sut YES (list all such pollute C does not manufacture	e any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	ostance or a component of a substance which cants below)	NO (go to liem VI-B) e are no intermediate or fin	
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	e any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	ostance or a component of a substance which ants below) any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	The second secon
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	ostance or a component of a substance which ants below) any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	ostance or a component of a substance which ants below) any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	The second secon
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	ostance or a component of a substance which ants below) any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	The second secon
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	ostance or a component of a substance which ants below) any products, therefore there.	NO (go to liem VI-B) e are no intermediate or fin	
ny pollutant listed in Item V-C a sut YES (list all such pollute FC does not manufacture	e any products, therefore there.	NO (go to ltem VI-B) e are no intermediate or fin	
ny pollutant listed in Item V-C a sut YES (list all such pollute C does not manufacture	e any products, therefore there.	NO (go to ltem VI-B) e are no intermediate or fin	

	L-P	toylogy has been made an enviolations	
lation to your discharge within the last	•		discharges or on a receiving water
YES (identify the test(s) an	d describe their purposes below)	NO (go to Section VIII)	
•			
			•
•			
	•		
ere any of the analyses reported in Itel	m V performed by a contract laboratory or consulting	firm?	
YES (list the name, addres each such laboratory	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below)	NO (go to Section IX) C. TELEPHONE	D. POLLUTANTS ANALY
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below)	C. TELEPHONE (area code & no.)	
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
ere any of the analyses reported in Item YES (list the name, address each such laboratory)	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)
YES (list the name, address each such laboratory of A. NAME	m V performed by a contract laboratory or consulting s, and telephone number of, and pollutants analyzed by, or firm below) B. ADDRESS	C. TELEPHONE (area code & no.)	(list)

Roy Malone, Office of Center Operations (256) 544-0506

C. SIGNATURE D. DATE SIGNED 9/24/18

EPA Form (8-90)

PAGE 4 of 4

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)
AL 180003863

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)

OUTFALL NO.

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.

				2. EFFLU	ENT			3. UN (specify if			I. INTAKE (optional)	
	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM AVR (if available		1 10 05	200050		a. LONG T AVERAGE		L NO 05
1. POLLUTANT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	<3.00	<49					1	mg/L	lb/d			
b. Chemical Oxygen Demand (COD)	<10.0	<163					1	mg/L	lb/d			
c. Total Organic Carbon (TOC)	<2.00	<33			*		1	mg/L	lb/d			
d. Total Suspended Solids (7SS)	5.33	87					1	mg/L	lb/d			
e. Ammonia (as N)	<0.100	<2					1	mg/L	lb/d			
f. Flow	VALUE 1.96 N	MGD	VALUE 0.025	MGD	VALUE 0.012 MG	GD	31	other COS		VALUE		
g. Temperature (winter)	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature (summer)	VALUE 23.3	3	VALUE		VALUE		1	°C		VALUE		
i. pH	MINIMUM 6.21	MAXIMUM 7.7	MINIMUM	MAXIMUM			17	STANDARI	UNITS			

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 limitations 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.

	2. MAI	RK "X"			3.	EFFLUENT				4. UNIT	S	5. INT/	AKE (option	al)
1. POLLUTANT AND	a.	b.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 I		c. LONG TERM AV (if availa)			20110511		a. LONG TERM A VALUE		
CAS NO. (if available)	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	TION (2) MASS CONCENTRATION (2) MASS CONCENTRATION (2) MASS ANALYSES TRATION b. MASS CONCENTRATION (2) MASS ANALYSES	b. NO. OF ANALYSES									
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual	X		<0.01	<0.16				-	1	mg/L	lb/d			,
c. Color		X							-					
d. Fecal Coliform	X		10	NA					1	col/100mL	NA			
e. Fluoride (16984-48-8)		X										•		
f. Nitrate-Nitrite (as N)		X												

	2. MA	RK "X"			3.	EFFLUENT		, , , , , , , , , , , , , , , , , , , ,	,	4. UNI	TS	5. INT	AKE (optiona	al)
1. POLLUTANT AND CAS NO.	a.	b.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM A' (if availa					a. LONG T AVERAGE V	ERM	MAF FRA
(if available)	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X			,									
h. Oil and Grease	X		<5.43	<88>	ND	ND	ND	ND	16	mg/L	lb/d			
i. Phosphorus (as P), Total (7723-14-0)	X		10.2	167					1	mg/L	lb/d			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total	AST I	X	E residents	TA BATTER						MENTE SE				
(3) Radium, Total		X			2,000 9.8	XXX		0 - 0 - E						
(4) Radium 226, Total		X	College of the self-	ents attended egyptickersk	Samuel California	is - me					erim — I	*		
k. Sulfate (as SO ₄) (14808-79-8)		X												
I. Sulfide (as S)		X		TATE OF							- 3			
m. Sulfite (as SO ₃) (14265-45-3)		X				# 0E 2 .								
n. Surfactants		X							-					
o. Aluminum, Total (7429-90-5)		×								,	1.5			
p. Barium, Total (7440-39-3)		X											-	
q. Boron, Total (7440-42-8)		X												
r. Cobalt, Total (7440-48-4)	Septiment of the septim	X												
s. Iron, Total (7439-89-6)	X		0.183	3					1	mg/L	lb/d			
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X								, W		11/56/19		77.7
v. Manganese, Total (7439-96-5)		X							-	1, 1, 1, 1, 1				
w. Tin, Total (7440-31-5)						ar a mark								
x. Titanium, Total (7440-32-6)	DETEN	X	ubicle Sounds	Tours !									-en Mg	

EPA I.D. NUMBER (copy from Item 1 of Form I) OUTFALL NUMBER
AL 180003863 DSN012

CONTINUED FROM PAGE 3 OF FORM 2-C

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 nonrequired 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 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.

	2	MARK "X	n			3. E	FFLUENT				4. UN	ITS	5. INTA	KE (optiona	ıl)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DAI	LY VALUE	b. MAXIMUM 30 E (if availab		c. LONG TERM VALUE (if ava	AVRG.		00110511		a. LONG T AVERAGE V		b. NO. OI
CAS NUMBER (if available)	TESTING REQUIRED	BELIEVED PRESENT	ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	ANALYSE
METALS, CYANIDI	E, AND TOT	AL PHENC	DLS												
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total (7440-41-7)			X						-				-		
4M. Cadmium, Total (7440-43-9)			X					-							
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)			X												
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X												
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X				1	7							
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)			X							-					
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X								-				
DIOXIN			1. /4												
2,3,7,8-Tetra- chlorodibenzo-P- Dioxin (1764-01-6)	111	-	X	DESCRIBE RESU	LTS			-	-						

4 POLLUTANT	- 2	2. MARK "X	"				FFLUENT				4. UN	ITS		AKE (optiona	:/)
1. POLLUTANT AND CAS NUMBER	a.	b.	C.	a. MAXIMUM DA		b. MAXIMUM 30 I (if availai	ble)	c. LONG TERM VALUE (if ava	ailable)		000050		a. LONG T AVERAGE V		
(if available)	TESTING REQUIRED	PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION	- VOLATIL	E COMPO	UNDS							-	*********				
1V. Accrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene (71-43-2)			X												
4V. Bis (Chloro- methyl) Ether (542-88-1)			X												- 3
5V. Bromoform (75-25-2)			X												
6V. Carbon Tetrachloride (56-23-5)			×	-											
7V. Chlorobenzene (108-90-7)			X						1						
8V. Chlorodi- bromomethane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloro- ethylvinyl Ether (110-75-8)		-	X												
11V. Chloroform (67-66-3)			X												
12V. Dichloro- bromomethane (75-27-4)			X			_									
13V. Dichloro- difluoromethane (75-71-8)			X												
14V. 1,1-Dichloro- ethane (75-34-3)			X		w										
15V. 1,2-Dichloro- ethane (107-06-2)	Excusal	it juiling	X												
16V. 1,1-Dichloro- ethylene (75-35-4)			X							4 2 2	1	T			KIT OE
17V. 1,2-Dichloro- propane (78-87-5)		-	X					= (4)			31		the contract of	0	
18V. 1,3-Dichloro- propylene (542-75-6)		5- 30 - EV	X			-				- 6.Um					THE RESERVE
19V. Ethylbenzene (100-41-4)			X							,1	- 11 N-Y-			100	prographer of
20V. Methyl Bromide (74-83-9)	n Intah		X								THE RESERVE TO SECOND		12.30	ENTER STATE	DE CONT
21V. Methyl Chloride (74-87-3)	J5::10	Scener	X	T _A E 1											

CONTINUED FROM PAGE V-4

		2. MARK "X	15			3. E	FFLUENT				4. UN	ITS	5. INTA	AKE (optiona	ul)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM VALUE (if av					a. LONG T AVERAGE V		
CAS NUMBER (if available)	TESTING REQUIRED	BELIEVED PRESENT	ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION	- VOLATIL	E COMPO	UNDS (con	timued)											
22V. Methylene Chloride (75-09-2)	1-		X												
23V. 1,1,2,2- Tetrachloroethane (79-34-5)			X												
24V. Tetrachloro- ethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans- Dichloroethylene (156-60-5)			X										•		
27V. 1,1,1-Trichloro- ethane (71-55-6)			X												
28V. 1,1,2-Trichloro- ethane (79-00-5)			X												
29V Trichloro- ethylene (79-01-6)			X			. –									
30V. Trichloro- fluoromethane (75-69-4)			X							1					
31V. Vinyl Chloride (75-01-4)			X												
GC/MS FRACTION	- ACID CO	OMPOUNDS	3		4										
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichloro- phenol (120-83-2)			X												
3A. 2,4-Dimethyl- phenol (105-67-9)			X												
4A. 4,6-Dinitro-O- Cresol (534-52-1)			X	*		TI TI							-		
5A. 2,4-Dinitro- phenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M- Cresol (59-50-7)			X					-							
9A. Pentachloro- phenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichloro- phenol (88-05-2)			X												

	- 2	2. MARK "X					FFLUENT				4. UN	ITS	5. INTA	AKE (optiona	ul)
1. POLLUTANT AND CAS NUMBER	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM VALUE (if ava		1 110 05			a. LONG T AVERAGE \	ERM	
(if available)	TESTING REQUIRED	BELIEVED PRESENT	ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSE
GC/MS FRACTION	- BASE/NE	EUTRAL CO	MPOUND	S											
1B. Acenaphthene (83-32-9)			X						-						
2B. Acenaphtylene (208-96-8)			X												
3B. Anthracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) Anthracene (56-55-3)			X									7			
6B. Benzo (a) Pyrene (50-32-8)			X												
7B. 3,4-Benzo- fluoranthene (205-99-2)			X												
8B. Benzo (<i>ghi</i>) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X	2											
10B. Bis (2-Chloro- ethoxy) Methane (111-91-1)	- CE . C.C.	Nac market	X												
11B. Bis (2-Chloro- ethyl) Ether (111-44-4)			X												
12B. Bis (2- Chloroisopropyl) Ether (102-80-1)	3		X												
13B. Bis (2-Ethyl- hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)		1 1 1	X												
16B. 2-Chloro- naphthalene (91-58-7)			X												
17B. 4-Chloro- phenyl Phenyl Ether (7005-72-3)			X				,								
18B. Chrysene (218-01-9)			X												1 1 1
19B. Dibenzo (a,h) Anthracene (53-70-3)			X					-							
20B. 1,2-Dichloro- benzene (95-50-1)	es ura		X					_w_m							
21B. 1,3-Di-chloro- benzene (541-73-1)	4		X				,								18112.5

CONT	MILLED	EDOR4	DAGE	1/6
CONT	MOED	FROM	FAGE	V-0

	2	2. MARK "X"	,				FFLUENT				4. UN	ITS		KE (optiona	ıl)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 E (if availab		c. LONG TERM VALUE (if ava				-	a. LONG T AVERAGE V		
CAS NUMBER (if available)	TESTING REQUIRED	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	· (2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. O ANALYSE
GC/MS FRACTION	- BASE/N	EUTRAL CO	OMPOUND												
22B. 1,4-Dichloro- penzene (106-46-7)			X												
23B. 3,3-Dichloro- penzidine (91-94-1)			X												
24B. Diethyl Phthalate (84-66-2)			X										-		
25B. Dimethyl Phthalate (131 -11-3)	*		X												
26B. Di-N-Butyl Phthalate (84-74-2)			X												
27B. 2,4-Dinitro- toluene (121-14-2)			X												
28B. 2,6-Dinitro- toluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenyl- hydrazine (as Azo- benzene) (122-66-7)			X								-				
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X				2.00					-			
33B. Hexachloro- benzene (118-74-1)			X												
34B. Hexachloro- butadiene (87-68-3)			X												
35B. Hexachloro- cyclopentadiene (77-47-4)			X												
36B Hexachloro- ethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X								-				
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitro- sodimethylamine (62-75-9)			X												
42B. N-Nitrosodi- N-Propylamine (621-64-7)			X												1

	- 2	2. MARK "X	"				FFLUENT				4. UN	ITS		KE (optiona	11)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA		b. MAXIMUM 30 (if availa		c. LONG TERM VALUE (if ava		1 110 05	- CONCEN		a. LONG T AVERAGE V		L NO 0
CAS NUMBER (if available)	TESTING REQUIRED	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	ANALYSES	a. CONCEN- TRATION	b. MASS	CONCENTRATION	(2) MASS	b. NO. OF ANALYSE
GC/MS FRACTION	- BASE/NI	EUTRAL CO	OMPOUND	S (continued)								-			
43B. N-Nitro- sodiphenylamine (86-30-6)			X										*		
44B. Phenanthrene (85-01-8)			X					-							
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Tri- chlorobenzene (120-82-1)			X		1										
GC/MS FRACTION	N - PESTIC	IDES													
1P. Aldrin (309-00-2)			X						*						
2P. α-BHC (319-84-6)			X			·									The state of
3P. β-BHC (319-85-7)		-1	X												
4P. γ-BHC (58-89-9)			X												
5P. δ-BHC (319-86-8)			X										- 2		
6P. Chlordane (57-74-9)			X			-									
7P. 4,4'-DDT (50-29-3)			X									-			
8P. 4,4'-DDE (72-55-9)			X												4
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X												
11P. α-Enosulfan (115-29-7)			X							J					
12P. β-Endosulfan (115-29-7)			X												
13P. Endosulfan Sulfate (1031-07-8)			X												
14P. Endrin (72-20-8)			X						1						
15P. Endrin Aldehyde (7421-93-4)			X			·									
16P. Heptachlor (76-44-8)	- missas	74	X				-								

EPA I.D. NUMBER (copy from Item 1 of Form 1)

OUTFALL NUMBER

AL 180003863

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CONTINUED FROM PAGE V-8

		2. MARK "X	17			3. E	FFLUENT	1. 2			4. UN	ITS	5. INTA	KE (optional	1)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA	LY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM VALUE (if ava			00110511		a. LONG T AVERAGE V		L NO 01
CAS NUMBER (if available)		BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES		b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSE
GC/MS FRACTIO	N - PESTICI	DES (contin	ued)												
17P. Heptachlor Epoxide (1024-57-3)			X				-								
18P. PCB-1242 (53469-21-9)			X												
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X			,			-						
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X					,							
23P. PCB-1260 (11096-82-5)			X												
24P. PCB-1016 (12674-11-2)			X												
25P. Toxaphene (8001-35-2)			X			pinaho			5						

EPA Form 3510-2C (8-90)

PAGE V-9

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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)
AL 180003863

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)

OUTFALL NO.

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.

				2. EFFLU	ENT			3. UNI (specify if			4. INTAKE (optional)	
	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM AVF (if available		1 110 05	- 00110511		a, LONG T AVERAGE		L NO 05
1. POLLUTANT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)	<3.00	<2.92	ND	ND	ND .	ND	31	mg/L	lb/d			
b. Chemical Oxygen Demand (<i>COD</i>)	<10.0	<9.7					1	mg/L	lb/d			
c. Total Organic Carbon (TOC)	3.82	3.72			,		1	mg/L	lb/d			
d. Total Suspended Solids (TSS)	5.67	5.52					1	mg/L	lb/d			
e. Ammonia (as N)	<0.100	<0.097					1	mg/L	lb/d			
f. Flow	VALUE 7.024	MGD	VALUE 7.024	MGD	VALUE 2.22 MC	D	31			VALUE		
g. Temperature (winter)	VALUE		VALUE		VALUE			°C		VALUE		
h. Temperature (summer)	VALUE 20.3	1	VALUE		VALUE		1	°C		VALUE		
i. pH	MINIMUM 6.8	MAXIMUM 8.1	MINIMUM	MAXIMUM			32	STANDARI	DUNITS			

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 limitations 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.

	2. MAF	RK "X"			3.	EFFLUENT				4. UNIT	S	5. INTA	AKE (optiona	zl)
1. POLLUTANT AND	a.	b.	a. MAXIMUM DA	ALLY VALUE	b. MAXIMUM 30 [(if availal		c. LONG TERM AV (if availab		1 NO 05	00110511	-	a. LONG TERM A VALUE		
CAS NO. (if available)	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)		X												
b. Chlorine, Total Residual		X	<0.01	<0.009			,		1	mg/L	lb/d			
c. Color		X												
d. Fecal Coliform	X		120	NA					1	col/100m			-	
e. Fluoride (16984-48-8)		X				-								
f. Nitrate-Nitrite (as N)		X	<0.260	<0.253					1	mg/L	lb/d	4		

	2. MA	RK "X"				EFFLUENT				4. UNI	TS		AKE (option	al)
1. POLLUTANT AND CAS NO.	a.	b.	a. MAXIMUM DA	AILY VALUE	b. MAXIMUM 30 (if availa		c. LONG TERM A (if availa		d. NO. OF	a. CONCEN-		a. LONG TI AVERAGE V		b. NO. OF
(if available)	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	ANALYSES	TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	ANALYSES
g. Nitrogen, Total Organic (as N)		X	3											
h. Oil and Grease	X		<5.56	<5.41	ND	ND	ND	ND	31	mg/L	lb/d			
i. Phosphorus (as P), Total (7723-14-0)	X		148	144					1	mg/L	lb/d			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X		r Alm			1.225		# #6 D=2			• •		
(3) Radium, Total	197	X			The state of the s								10 (- 0.0)	
(4) Radium 226, Total		X		14.00	2-1/-2/15	Tara Pari Uran			and the second					
k. Sulfate (as SO ₄) (14808-79-8)	X		8.02	7.81					1	mg/L	lb/d			
I. Sulfide (as S)		X												
m. Sulfite (as SO ₃) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)		X												
p. Barium, Total (7440-39-3)		X		-										
q. Boron, Total (7440-42-8)		X				-								
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)	X		0.197	0.192					1	mg/L	lb/d			
t. Magnesium, Total (7439-95-4)		X				-								
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)		X					-			1322				
w. Tin, Total (7440-31-5)	1 1 1 1 1 1	X												
x. Titanium, Total (7440-32-6)	1000	X											2 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	

EPA I.D. NUMBER (copy from Item 1 of Form I) OUTFALL NUMBER
AL 180003863 DSN019

CONTINUED FROM PAGE 3 OF FORM 2-C

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 nonrequired 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 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 additional details and requirements.

		2. MARK "X	п			3. E	FFLUENT		7		4. UN	ITS	5. INTA	KE (optiona	ul)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availate	DAY VALUE	c. LONG TERM VALUE (if avo			00110511		a. LONG T AVERAGE V		
CAS NUMBER (if available)	REQUIRED	BELIEVED PRESENT	ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
METALS, CYANIDI	E, AND TO	TAL PHENC	DLS					***************************************				-			
1M. Antimony, Total (7440-36-0)			X												
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total (7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)			X			14			,			-			
5M. Chromium, Total (7440-47-3)			X												
6M. Copper, Total (7440-50-8)		X		<0.0100	<0.009					1	mg/L	lb/d			
7M. Lead, Total (7439-92-1)			X												
8M. Mercury, Total (7439-97-6)			X				-								
9M. Nickel, Total (7440-02-0)			X												
10M. Selenium, Total (7782-49-2)			X											,	
11M. Silver, Total (7440-22-4)			X												
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)		X		<0.0500	<0.058					1	mg/L	lb/d			
14M. Cyanide, Total (57-12-5)			X								-				
15M. Phenols, Total			X												
DIOXIN							1								
2,3,7,8-Tetra- chlorodibenzo-P- Dioxin (1764-01-6)			X	DESCRIBE RESU	JLTS										

1. POLLUTANT		2. MARK "X					FFLUENT				4. UN	ITS		AKE (optiona	1)
AND CAS NUMBER	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 (if availa	DAY VALUE	c. LONG TERM VALUE (if av	M AVRG. ailable)				a. LONG T AVERAGE \		
(if available)	TESTING REQUIRED	PRESENT	BELIEVED ABSENT	· (1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSE
GC/MS FRACTION	- VOLATIL	E COMPO	UNDS							-					
1V. Accrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)	~		X										1		
3V. Benzene (71-43-2)		4	X												
4V. Bis (<i>Chloro-methyl</i>) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon Tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108-90-7)			X					-				-			
8V. Chlorodi- bromomethane (124-48-1)			X				-								
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloro- ethylvinyl Ether (110-75-8)			X	2 010/ 1											
11V. Chloroform (67-66-3)			X				-								
12V. Dichloro- bromomethane (75-27-4)			X												
13V. Dichloro- difluoromethane (75-71-8)			X					÷				L			
14V. 1,1-Dichloro- ethane (75-34-3)			X												
15V. 1,2-Dichloro- ethane (107-06-2)	MAD DES	r E FID	X												
16V. 1,1-Dichloro- ethylene (75-35-4)		they is	X							7, # 22,524 1 - 10 - 0 E	2 10/11=+1	275 286			1
17V. 1,2-Dichloro- propane (78-87-5)		1.1	X						1/24/2				Tayle's	- // /-	
18V. 1,3-Dichloro- propylene (542-75-6)	DEF DER TO		X					- ,						-18	
19V. Ethylbenzene (100-41-4)	7 / C	12 (10) (6) (4) = (6) (4)	X	deprior had to go t outros			THE STREET	R. C.	- 11 11 -	1 - 7 - 10 - 10	Secretary -		A Table	OV NEWS	
20V. Methyl Bromide (74-83-9)	The spell		X	Lyle L			ALTERNATION L				and the state of the			of Constants	A SOME
21V. Methyl Chloride (74-87-3)		EORY-SK	X												

CONTINUED	FROM	PAGE V-4

	2	MARK "X"	0			3. E	FFLUENT				4. UN	ITS	5. INTA	KE (optiona	ıl)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 E (if availab		c. LONG TERM VALUE (if ava	A AVRG.				a. LONG T AVERAGE V	ERM /ALUE	
CAS NUMBER (if available)	TESTING	BELIEVED PRESENT	BELIEVED	(1)		(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION			a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. O ANALYSE
GC/MS FRACTION	- VOLATIL	E COMPO	JNDS (cont	tinued)											
22V. Methylene Chloride (75-09-2)			X												
23V. 1,1,2,2- Tetrachloroethane (79-34-5)			X	1-			=								
24V. Tetrachloro- ethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans- Dichloroethylene (156-60-5)	,		X												
27V. 1,1,1-Trichloro- ethane (71-55-6)			X												
28V. 1,1,2-Trichloro- ethane (79-00-5)			X												
29V Trichloro- ethylene (79-01-6)		X		13	0.061	4.75	0.278	1.13	0.021	31	ug/L	lb/d			
30V. Trichloro- fluoromethane (75-69-4)			X												
31V. Vinyl Chloride (75-01-4)			X												
GC/MS FRACTION	- ACID CC	MPOUNDS	5												
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichloro- phenol (120-83-2)			X												
3A. 2,4-Dimethyl- phenol (105-67-9)			X												
4A. 4,6-Dinitro-O- Cresol (534-52-1)			X												
5A. 2,4-Dinitro- phenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X						-						
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M- Cresol (59-50-7)			X												
9A. Pentachloro- phenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichloro- phenol (88-05-2)		7 - 7	X				,								

1. POLLUTANT	- 2	2. MARK "X					FFLUENT				4. UN	ITS		AKE (optiona	ıl)
AND CAS NUMBER	a.	b.	C.	a. MAXIMUM DA		b. MAXIMUM 30 (if availa		c. LONG TERN VALUE (if ava	A AVRG ailable)	4 NO OF	a. CONCEN-		a. LONG T AVERAGE \	VALUE	
(if available)	TESTING REQUIRED	PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. O ANALYSE
GC/MS FRACTION	- BASE/N	EUTRAL CO	DMPOUND	S											
1B. Acenaphthene (83-32-9)			X											-	
2B. Acenaphtylene (208-96-8)			X									-			
3B. Anthracene (120-12-7)			X				- 1/								
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) Anthracene (56-55-3)			X												
6B. Benzo (a) Pyrene (50-32-8)			X												
7B. 3,4-Benzo- fluoranthene (205-99-2)			X								7				
8B. Benzo (ghi) Perylene (191-24-2)			X	*											
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro- ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro- ethyl) Ether (111-44-4)			X												
12B. Bis (2- Chloroisopropyl) Ether (102-80-1)			X								- ~				
13B. Bis (<i>2-Ethyl-hexyl</i>) Phthalate (117-81-7)			X												
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro- naphthalene (91-58-7)			X												
17B. 4-Chloro- phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X										,		
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro- benzene (95-50-1)		C. Nr. CA	X	Language Control											
21B. 1,3-Di-chloro- benzene (541-73-1)			X	W.W.S. at R. C.						7 -417	a resignation			11.18 11.18	P-247-04

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	2	2. MARK "X"					FFLUENT				4. UN	ITS		AKE (optiona	1)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DAIL	LY VALUE	b. MAXIMUM 30 I (if availal		c. LONG TERM VALUE (if av	M AVRG. ailable)			14	a. LONG T AVERAGE		
CAS NUMBER (if available)	TESTING	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) . CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. C ANALYSI
GC/MS FRACTION	- BASE/N	EUTRAL CO	DMPOUND												
22B. 1,4-Dichloro- benzene (106-46-7)			X												
23B. 3,3-Dichloro- benzidine (91-94-1)			X										•		
24B. Diethyl Phthalate (84-66-2)			X												
25B. Dimethyl Phthalate (131 -11-3)			X												
26B. Di-N-Butyl Phthalate (84-74-2)			X		5.										
27B. 2,4-Dinitro- toluene (121-14-2)			X												
28B. 2,6-Dinitro- toluene (606-20-2)			X												-
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenyl- hydrazine (as Azo- benzene) (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachloro- benzene (118-74-1)			X									-			
34B. Hexachloro- butadiene (87-68-3)			X												
35B. Hexachloro- cyclopentadiene (77-47-4)			X									- '			
36B Hexachloro- ethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X								-				
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitro- sodimethylamine (62-75-9)			X				*						•		
42B. N-Nitrosodi- N-Propylamine (621-64-7)			X												

	2	2. MARK "X	"				FFLUENT		•		4. UN	ITS	5. INTA	AKE (optiona	ıl)
1. POLLUTANT AND	a.	b.	C.	a. MAXIMUM DA		b. MAXIMUM 30 (if availa	ble)	c. LONG TERM VALUE (if ava	iilable)	1 110 05	CONCEN		a. LONG T AVERAGE \		
CAS NUMBER (if available)	TESTING REQUIRED	BELIEVED PRESENT	BELIEVED ABSENT	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	ANALYSES	a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSE
GC/MS FRACTION	- BASE/N	EUTRAL CO	DMPOUND	S (continued)					70						
43B. N-Nitro- sodiphenylamine (86-30-6)			X										·		
44B. Phenanthrene (85-01-8)			X												
45B. Pyrene (129-00-0)			X												
46B. 1,2,4-Tri- chlorobenzene (120-82-1)			X												
GC/MS FRACTION	- PESTIC	IDES				•									1 -
1P. Aldrin (309-00-2)			X				,								
2P. α-BHC (319-84-6)			X												
3P. β-BHC (319-85-7)			X												
4P. γ-BHC (58-89-9)			X					-				-			
5P. δ-BHC (319-86-8)			X												
6P. Chlordane (57-74-9)		0.00	X												
7P. 4,4 '-DDT (50-29-3)			X												1
8P. 4,4 '-DDE (72-55-9)			X												
9P. 4,4'-DDD (72-54-8)			X												
10P. Dieldrin (60-57-1)			X										\		
11P. α-Enosulfan (115-29-7)			X												
12P. β-Endosulfan (115-29-7)			X	13											
13P. Endosulfan Sulfate (1031-07-8)			X								-				
14P. Endrin (72-20-8)			X												
15P. Endrin Aldehyde (7421-93-4)			X				-								
16P. Heptachlor (76-44-8)	We state	1	X	The state of the s											

EPA I.D. NUMBER (copy from Item 1 of Form 1)

OUTFALL NUMBER

CONTINUED FROM PAGE V-8

AL 180003863

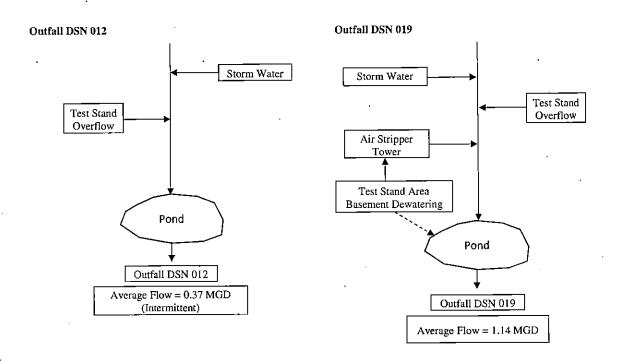
019

	1	2. MARK "X				3. E	FFLUENT		and a		4. UN	IITS	5. INTA	AKE (optiona	ul)
1. POLLUTANT	a.	b.	C.	a. MAXIMUM DA	ILY VALUE	b. MAXIMUM 30 [(if availab		c. LONG TERM VALUE (if ava		1 110 05			a. LONG T AVERAGE \	ERM	
CAS NUMBER (if available)	REQUIRED	BELIEVED PRESENT	ABSENT		(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		a. CONCEN- TRATION	b. MASS	(1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION	- PESTICI	DES (contin	ued)												
17P. Heptachlor Epoxide (1024-57-3)			X									*			
18P. PCB-1242 (53469-21-9)			X			-								-	
19P. PCB-1254 (11097-69-1)			X												
20P. PCB-1221 (11104-28-2)			X												
21P. PCB-1232 (11141-16-5)			X												
22P. PCB-1248 (12672-29-6)			X												
23P. PCB-1260 (11096-82-5)			X						-						
24P. PCB-1016 (12674-11-2)			X											_	
25P. Toxaphene (8001-35-2)			X												

EPA Form 3510-2C (8-90)

PAGE V-9

Supplement to EPA Form 2C Item II.A Flows, Sources of Pollution, and Treatment Technologies - Line Drawing NASA-MSFC



Please print or type in the unshaded areas only

AL 180003863

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water

B. Latitude

Form Approved. OMB No. 2040-0086 Approval expires 5-31-92

D. Receiving Water

(name)

FORM 2F NPDES

Outfall Location

A. Outfall Number

(list)

See attached

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.

C. Longitude

"Item 1 - Outfall					
Locations"					
I. Improvements			were the second of the second section of the second		
treatment equipment or practice	s or any other envitive or enforcemen	vironmental programs which may a	ementation schedule for the construction, upgrading feet the discharges described in this application? To schedule letters, stipulations, court orders, and grading feet and the schedule letters.	This includes, but is ant or loan condition 4. f	s not limited
Agreements, Etc.	number	source of discharge	3. Brief Description of Project	a. req.	b. proj.
None.					
.,					
			W WENNESDAMENTAL TO THE TOTAL OF THE TOTAL O		
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4	-		45.		-
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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.

> SEP 26 2018 IND. MUN BRANCH

EPA Form 3510-2F (1-92)

Continue on Page 2

	ative Description of Pollutant	Sources			
A. For ea			es (including pav	ved areas and building roofs) drained to the outfall, a	and an estimate of the total surface area
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 attached supplement sheet "Item IV.A- "Estimates of Outfall Sources"			· ·	
to sto	orm water; method of treatment, storage, n water runoff; materials loading and acce	, or disposal; past and pre	esent materials	hree years have been treated, stored or dispositions management practices employed to minimized frequency in which pesticides, herbicides, s	ize contact by these materials with
III. In addit include:	tion, the hazardous waste stora	age yard is outdoors	. Measures	to stormwater is listed in the sur to minimize the contact of these stainment and the hazardous waste and pesticides are applied as need	materials with stormwater storage ward has all of the
desc	each outfall, provide the location and a congition of the treatment the storm water may solid or fluid wastes other than by discharge.	receives, including the sch	uctural and non nedule and type	instructural control measures to reduce pollule of maintenance for control and treatment m	itants in storm water runoff; and a neasures and the ultimate disposal
Outfall Numbe	÷'		Treatment		List Codes from Table 2F-1
	See attached supplemental s.	heet Item IV.C - "Co	ontrol Meas	sures for Stormwater Runoff"	
A. I cert	stormwater Discharges tify under penalty of law hat the outfall(s) stormwater discharged from these outfall(s)) covered by this applications are identified in either a	on have been to an accompanyir	tested or evaluated for the presence of nonsing Form 2C or From 2E application for the out	stormwater discharges, and that all
	d Official Title (type or print) Sine, Office of Center Operations	Signature	nai	4	Date Signed 9/84/18
B. Prov	ride a description of the method used, the	e date of any testing, and the	he onsite drain:	age points that were directly observed during	a test.
See atta	ched supplemental sheet Item V.	.B Mon-stormwater	r Discharge		
VI. Signi	ificant Leaks or Spills				
	existing information regarding the histomate date and location of the spill or leak,			or hazardous pollutants at the facility in the leased.	ne last three years, including the
None.		,			
,					

Co	ntin	ned	from	Page	2
\sim	114111	ueu	HOIL	гачс	-

EPA ID Number (copy from Item 1 of Form 1) AL 180003863

VII. Discharge Information			
	ceeding. Complete one set of tables for each outfall. As eincluded on separate sheets numbers VII-1 and VII-		pace provided.
Potential discharges not covered by a currently use or manufacture as an inter-	analysis – is any toxic pollutant listed in table 2F-2, armediate or final product or byproduct?		component of a substance which you
Yes (list all such pollutants b		No (go to Section IX)	
See supplemental sheet Item VII.E	- "Potential Discharges Not Covered By	Analysis"	•
•			•
·			
VIII Biological Toyleity Testing	Cata		
VIII. Biological Toxicity Testing I	believe that any biological test for acute or chronic tox	cicity has been made on any of you	r dischames or on a receiving water in
relation to your discharge within the last 3	years?	_	
Yes (list all such pollutants b	elow)	✓ No (go to Section IX)	
	•		
		•	
	•		
		·	
IX. Contract Analysis Informatio			
	VII performed by a contract laboratory or consulting fi		
	and telephone number of, and pollutants laboratory or firm below)	No (go to Section X)	
A. Name	, B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Enersolv	PO Box 1646 Decatur, Alabama 35602	256-350-0846	All
and box v			
	•		
•			
X. Certification			
that qualified personnel properly gather ar directly responsible for gathering the info	ument and all attachments were prepared under my nd evaluate the information submitted. Based on my ir rmation, the information submitted is, to the best of r ng false information, including the possibility of fine and	equiry of the person or persons who my knowledge and belief, true, acc	o manage the system or those persons curate, and compléte. I am aware that
A. Name & Official Title (Type Or Print)		B. Area Code and Phone No.	
Roy Malone, Office of Cen		(256) 544-0506	
C. Signature	A	D. Date Signed 9/84/18	
		1/47/18	
EPA Form 35/10-2F (1/92)	Page 3 of 3		

Supplement to EPA Form 2F Item I Outfall Location NASA-MSFC

Outfall	Latitude	Longitude	Receiving Water
DSN 008	34° 37′ 35″	86° 40' 05"	Tributary to Huntsville Spring Branch
DSN010	34° 37' 27"	86° 39' 59"	Tributary to Huntsville Spring Branch
DSN 012	34° 37′ 30″	86° 39′ 25″	Tributary to Huntsville Spring Branch
DSN013	86° 39' 16"	34° 37' 59"	Tributary to Huntsville Spring Branch
DSN015	86° 39' 29"	34° 38' 9"	Tributary to Huntsville Spring Branch
DSN 016	34° 38′ 05″	86° 40' 05"	Tributary to Indian Creek
DSN 017	34 ⁰ 38 ['] 15 ["]	86° 40' 05"	Tributary to Indian Creek
DSN 018 -	34 ⁰ 38 ['] 15 ["]	86° 40' 30"	Tributary to Indian Creek
DSN 019	34 ⁰ 37 ['] 45 ["]	86° 40 ['] 15 ["]	Tributary to Indian Creek
DSN 020	34° 38 00"	86° 40' 15"	Tributary to Indian Creek
DSN 021	34° 38 ['] 45 ["]	86 ⁰ 41 00	Indian Creek
DSN 022	34° 38 ' 45"	86 ⁰ 41 ['] 10 ^{''}	Indian Creek
DSN 023	34° 38′ 30″	86° 40 ' 40"	Tributary to Indian Creek
DSN 025	34° 38′ 15″	86° 40 ' 50"	Tributary to Wheeler Lake
DSN 031	34 ⁰ 39' 18"	86° 39' 44"	Tributary to Huntsville Spring Branch
DSN 032	34° 39' 15"	86° 39' 42"	Tributary to Huntsville Spring Branch
DSN 033	34 ⁰ 39' 31"	86 ⁰ 39' 45"	Tributary to Huntsville Spring Branch
DSN034	86° 41' 8"	34° 38' 43"	Indian Creek
DSN035	86° 40' 27"	34° 37' 41"	Tributary to Indian Creek

Note:

Bold type indicates a process water discharge that includes stormwater (Form 2C and 2F)

Supplement to EPA Form 2F Item III (1) Hazardous Materials Storage NASA-MSFC

Drainage Area	Building Number	Material
DSN008	4667 ·	Diesel
DSN 012	4541	Insecticide
DSN 013	4583-A	Gases
DSN 016	4522	Gases
	4524	Alcohol, Lubricant, Sealant, Insecticide, Resin
	4530	Lubricant, Sealant, Gases
•	4539	Lubricant
	4540	Gases
•	4549	Lubricant, Gases
	4561	Insecticide
	4561A	Insecticide
	4583	Gases
	4657	Gases
	4659	Gases
	4660	Gases, Diesel
	4561A	Insecticide
DSN 017	4656	Lubricant, Alcohol, Oil, Gases
DSN 018	4200	Diesel
	4201	Diesel
	4203	Diesel
	4249	Diesel
	4250	Diesel
	4348	Diesel, Gasoline
	4464	Diesel
	4478	hydraulic fluid
•	4487	Lubricant, Gases
	4493	Diesel
	4605	Gases, Gasoline
	4607	Oil
•	4611	Diesel, Gasoline
	4612	Gases
	4618	Gases
	4619	Lubricant, Gases
	4620	Acetone, Alcohol, Enamel, Insecticide, Lubricant
,	4629	Diesel
	4638	Alcohol, Lubricant, Adhesive, Degreaser
	4649_	Diesel
`	4650	Diesel
	4663	Diesel
	4682	Paint, Resin, Sealant
	4635-1	Oil
	4635-2	Paint, Insecticide, Toluene, Lubricant
	4635-3	Lubricant, Paint
DSN 019	4670_	Gases
	4672	Gases
	4676	Gases

Supplement to EPA Form 2F Item III (1) Hazardous Materials Storage NASA-MSFC

Drainage Area	Building Number	Material
DSN 022	4704	Oil
	4705	Freon
	4707	Gases
	4708	Diesel
	4711	Gases
	4718	Gases, Diesel
	4723	Lubricant
	4730	Oil, Alcohol, Lubricant
	4755	Diesel
	4761	Lime
		Degreaser, Hexamethylenetetramine, Carbon, Resin,
	4767	Aluminum Powder, MDI, Ammonium Sulfate, Silica
	4718-1	Gases
	4718-3	Diesel
DSN 023	4623	Gases
		Oil, Lubricant, Alcohol, Sealant, Adhesive, Antifreeze,
DSN 025	4628	Insecticide, Boron Nitride, Gases
DSN 033	4205	Hydraulic Fluid
	4209	Diesel, Gasoline
DSN 035	4699B	Gases

Supplement to EPA Form 2F Item III (2) Hazardous Waste Storage NASA-MSFC

Drainage Area	Building Number	Hazardous Waste Type
DSN010	4563	Hazardous Waste
DSN016	4554	Used Oil
	4524	Used Oil
	4530	Used Oil
	4539	Used Oil
	4561	Hazardous Waste
	4660	Used oil and water mixture
	4596	Hazardous Waste
DSN017	4655	Hazardous Waste .
	4656	Hazardous Waste
DSN018	4479	Hazardous Waste
DSN022	4619	Waste Rags, Waste Aerosol Cans
	4678	Hazardous Waste
	4702	Waste Film Processing Solution
	4723	Used Oil
	4731	Hazardous Waste
DSN032	M2 Yard	Waste Rags with Solvents, Waste Aerosol Cans

Note: This table includes only hazardous waste that may come into contact with stormwater, such as items stored outside or in outside clamshells.

Supplement to EPA Form 2F Item III (3) CERCLA Sites NASA-MSFC

OUTFALL	Site I.D.	Site NAME
DSN012	MSFC-006	Disposal Pond 4586
	MSFC-007	Holding/Disposal Pond-Cold Calibration Test Stand Site
	MSFC-009	Liquid Waste Pond (SE)-East Test Area
	MSFC-012	Detention Pond for Building 4572
	MSFC-042	Waste Oil Trap for Fuel Oil Tanks
	MSFC-061	Surface Drainage System for Disposal Pond 4586
	MSFC-063	Uncontained Drainage Pathways-SE Section of East
	MSFC-064	Buried Pipeline at Building 4572
	MSFC-073	Construction/Rubble Fill in MSFC East Test Area
DSN016	MSFC-005	Holding Pond-Test Complex 300 Area
	MSFC-008	Old Holding Pond Area-Test Complex 500
	MSFC-010	Liquid Waste Pond (NC)-East Test Area
	MSFC-035	Inactive Sump/Tiled Drain Field-East Test Area
•	MSFC-059	Waste Anderol UST and Unloading Area for Building 4647
	MSFC-060	Inactive Deluge Water Drainage System
	MSFC-061	Surface Drainage System for Disposal Pond 4586
	MSFC-062	Uncontained Drainage Pathways-North Section of East Test Area
	MSFC-069	Drainage Accumulation Areas near Building 4530
DSN017	MSFC-038	Building 4656 Oil Trap and Drainage Area
DOMOTI	MSFC-059	Waste Anderol UST and Unloading Area for Building 4647
	MSFC-090	Building 4653 Components Support Building
DSN018	MSFC-001	Driller's Mud Disposal Site
DONOTO	MSFC-013	Old Soit/Rubble Dump Site
	MSFC-022	Satellite Waste Accumulation Area for Buildings 4241
	MSFC-029	Photograph Lab Satellite Waste Accumulation Area
,	MSFC-031	Hazardous Waste Container Storage Area
	MSFC-034	
	MSFC-034 MSFC-052	Former Chemical Production Area Industrial Wastewater Sewer Pipeline (excluding MSFC-052a, MSFC-052c)
	M9L0-035	MSFC-052d, and MSFC-052e)
	MSEC-0522	Portion of Industrial Sewer North of MSFC-034
	MSFC-052b	
	MSFC-055	Site of Former Stauffer Chemical Company Plant
	MSFC-055	Unleaded Gasoline Loading Area for Tanks 4632, 4633, and 4636
	MSFC-065	Building 4241 Surface Drainage
	MSFC-065 MSFC-066	Building 4347 Surface Drainage
	MSFC-066	
		Building 4618 Surface Drainage Vehicle Wash Rack and Oil/Water Separator
	MSFC-070	
	MSFC-075	
	MSFC-083	Groundskeeper/Future Area 4348
	MSFC-084	Auto Paint Shop 4480
	MSFC-085	Paint Shop 4682
	MSFC-090	<u> </u>
	MSFC-091	Building 4638 Maintenance Shop
	MSFC-092	
	MSFC-093	Building 4487 Sump Area

Supplement to EPA Form 2F Item III (3) CERCLA Sites NASA-MSFC

OUTFALL	Site I.D.	Site NAME
	RSA-141	4.2-inch Mortar Disposal Site, Building 4656
	MSFC-C	Containment Area for Tank 4636
	· MSFC-D	between NASA and DA)
	MSFC-E	Buildings 4241 and 4244 Product Storage Area
	MSFC-F	Storage Area West of Building 4650
DSN019	MSFC-004	Deluge Pond-West Test Area
	MSFC-056	Fuel Oil Loading Area for Tanks at Pump Station 4673
	MSFC-082	Inactive Chemical Munitions Demilitarization / Disposal Trenches
	MSFC-B	Containment Area for Old Storable Propellant Building 4688
DSN020	MSFC-003	Inactive Old Bone Yard Disposal Site
	MSFC-082	Inactive Chemical Munitions Demilitarization / Disposal Trenches
DSN021	MSFC-052	Industrial Wastewater Sewer Pipeline (excluding MSFC-052a, MSFC-052c
	11101 0 002	MSFC-052d, and MSFC-052e)
	MSFC-052b	
DSN022	MSFC-002	Inactive Abandoned Drum Disposal Site
	MSFC-014	Satellite Waste Accumulation Area for Buildings 4760
	MSFC-015	Satellite Waste Accumulation Area for Building 4707-A
	MSFC-016	
	MSFC-019	Former Satellite Waste Accumulation Area for Building 4757-B
	MSFC-020	Satellite Waste Accumulation Area for Building 4755
	MSFC-021	Satellite Waste Accumulation Area for Building 4733
	MSFC-031	Hazardous Waste Container Storage Area
	MSFC-031	
	MSFC-036	Sump in South Addition of Building 4708
	MSFC-037	Building 4767 Holding Tanks
		Waste Anderol Storage Tank for Building 4744
	MSFC-044	Industrial Waste Treatment Basin
	MSFC-045	Concentrate Receiving Tank
	MSFC-046	Transfer Tank
	MSFC-047	Hydrostatic Dump Lagoon
	MSFC-048	Mix Tank
	MSFC-049	East Ultimate Lagoon
	MSFC-050	West Ultimate Lagoon
	MSFC-052	Industrial Wastewater Sewer Pipeline (excluding MSFC-052a, MSFC-052c
		MSFC-052d, and MSFC-052e)
	52c	Portion of industrial sewer west of Building 4705
	MSFC-052d	
	MSFC-053	Former Propellant Storage Area and Test Stand Site
	MSFC-054	Site of Former Beryllium Metal Machining Facility
	MSFC-058	Waste Anderol UST and Unloading Area for Building 4747
	MSFC-076	Product Storage/Waste Accumulation Area at Building 4707
	MSFC-077	Inactive Open Burning/Disposal Pits
	MSFC-087	Cyanide Waste Site at 4768 (pending updated MOA between NASA/DA)
	MSFC-088	Building 4760 Ventilation Trench
	MSFC-089	Cyanide Waste Tank at Building 4760
	MSFC-092	Building 4435 Former Taxi and Bus Refueling Area
	MSFC-094/	Building 4705 West Clean Room and North Satellite Waste Accumulation
	MSFC-052c	Area (including the Industrial Sewer west of Building 4705 and north of MH
		105N)
	MSFC-A	Caustic Storage Tank
SN031/032	MSFC-027	Inactive Waste Accumulation Area
	MSFC-081	Paint Spray Booth at the M-1 Storage Area

Supplement to EPA Form 2F Item IV.A Estimates of Outfall Areas NASA-MSFC

Total Impervious Area Area Drained

Outfall ·	Impervious Area (acres)	Area Drained (acres)
DSN 008	14	66
DSN 010	. 7	82
DSN 012	2	58
DSN013	1	25
DSN015	0.5	4
DSN 016	5	191
DSN 017	5	17
DSN 018	172	697
DSN 019	8	41
DSN 020	3	57
DSN 021	3	12
DSN 022	67	312
DSN 023	2	11
DSN 025	1	9
DSN 031*	0.35	0.35*
DSN 032*	0.35	0.35*
DSN 033	7	24
DSN 034	9	55
DSN 035	2	7

^{*} Outfall is from NASA owned tanks on RSA property, MSFC leases the property from RSA

Supplement to EPA Form 2F Item IV.C Control Measure for Storm Water Runoff NASA-MSFC

Treatment of storm water is incidental but can include solids settling in natural swales, storm drainage ditches, and detention ponds. Maintenance of these facilities is performed as needed. Non-structural controls include the implementation of the MSFC Stormwater Pollution Prevention Plan. This plan provides inspection procedures for potential storm water pollutant sources, as well as, best management practices (BMPs) for the sources. Storm water pollution prevention training has been conducted for employees responsible for managing the identified sources. Listed below are outfalls that have treatment.

Outfall	Treatment Description	Code from Table 2F-1
DSN 008	None	
DSN 010	None	
DSN 012	Sedimentation	1U
DSN 013	None	
DSN 015	None	
DSN 016	None	
DSN 017	None	
DSN 018	None	
DSN 019	Sedimentation	1U
DSN 020	None	
. DSN 021	. None	-
DSN 022	None	·
DSN 023	None	
DSN 025	None	· .
DSN 031	None	
DSN 032	None	
DSN 033	None	
DSN 034	None	
DSN 035	None	

Note: Ponds are used for sedimentation at DSN012 and DSN019

Supplement to EPA Form 2F Item V.B Non-Storm Water Discharges NASA-MSFC

A visual examination was conducted in July 2018 to identify non-storm water discharges to the outfalls. All outfalls were identified as not receiving non-storm water discharge. Non-storm water sources are possible due to test stand operations in DSN 012 and 019, and applicable Form 2C is included for these discharges.

MSFC has completed implementation of their plan to eliminate the majority of nonstorm water discharges. This includes rerouting the non-storm discharges to the sanitary sewer or by eliminating the source completely, such as plugging floor drains.

Supplement to EPA Form 2F Item VII.E Potential Discharges Not Covered by Analysis NASA-MSFC

The following chemicals were identified as being used on MSFC:

Antimony
Arsenic
Berylium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc
Cyanide
Phenols

Acrolein
Acronitrile
Benzene
Carbon Tetrachloride
Chlorodibromomethane
Chlorobenzene
Chloroform

Dichlorobromomethane

1,1-Dichloroethane
1,2-Dichlorethane
1,2-Dichloropropane
Ethylbenzene
Methylene Chloride
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane

2,4-Dinitrophenol Pentachlorophenol Phenol

Trichloroethylene Vinyl Chloride

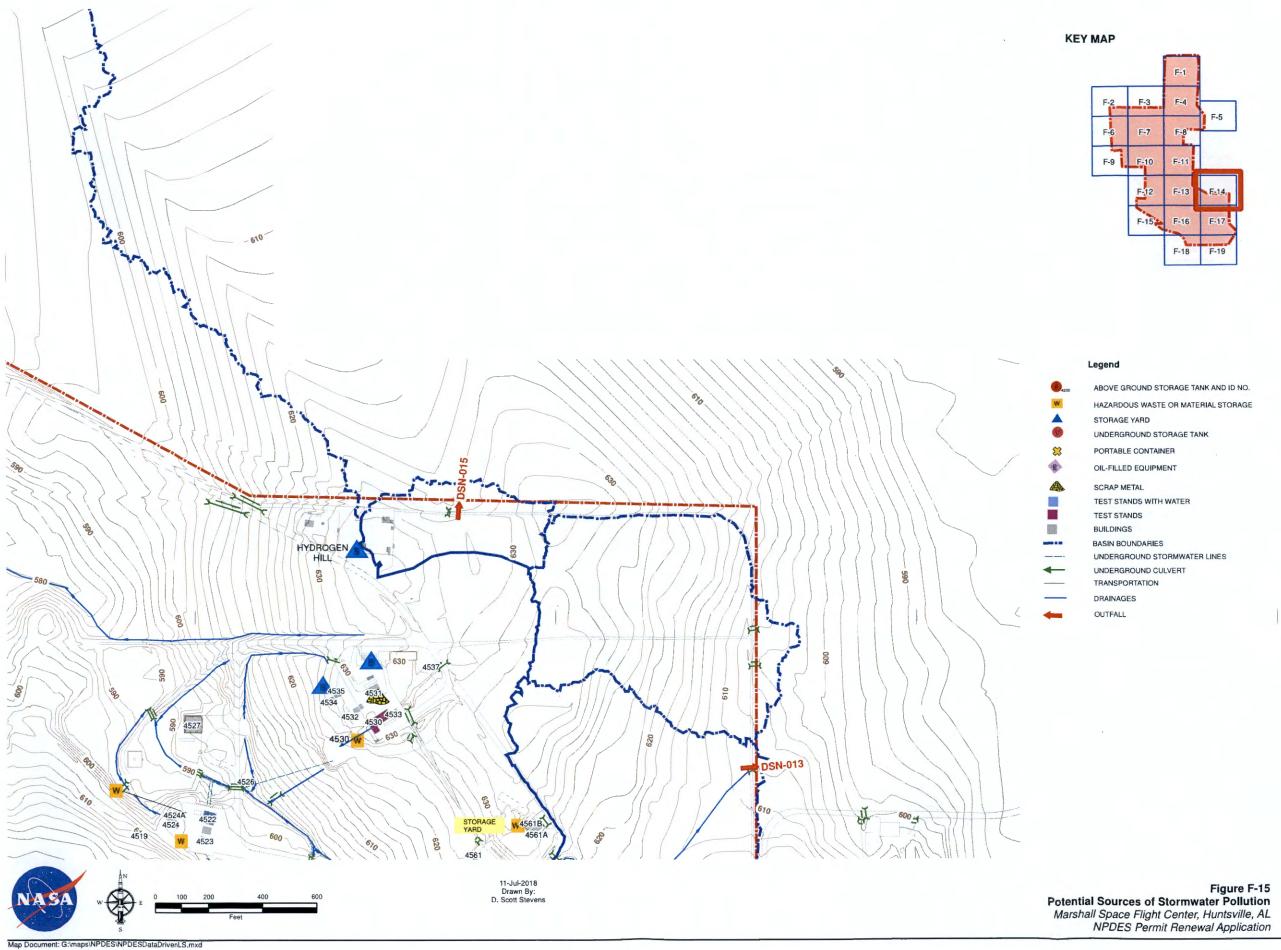
Benzidine
Benzo(a)anthracene
Bis(2-ethylhexyl)phthalate
Butylbenzyl Phthalate
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dibutyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate
Napthalene
Nitrobenzene
1,2-Trans-Dichloroethylene

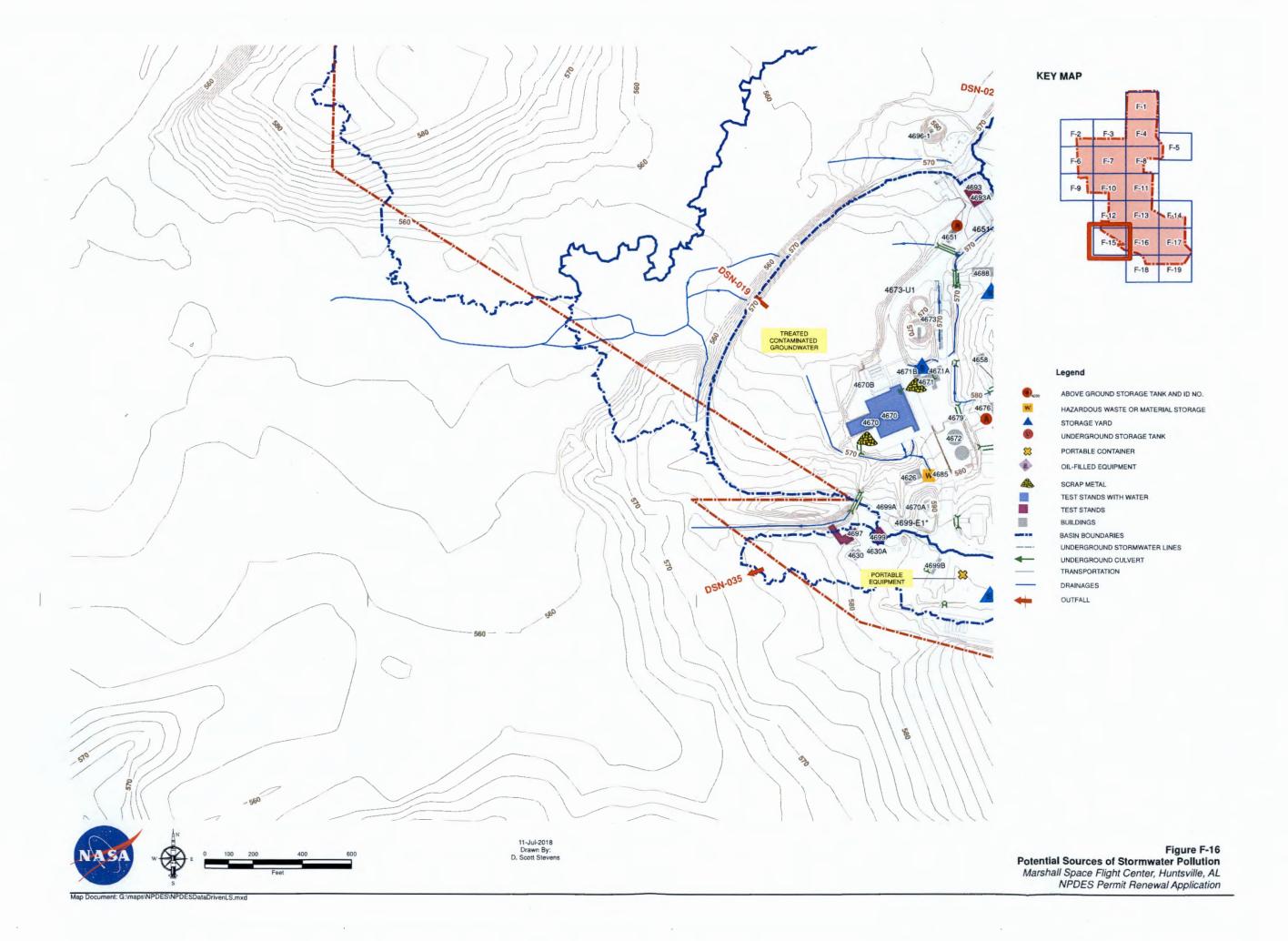
Aldrin 4,4'-DDT Dieldrin Endrin Heptachlor

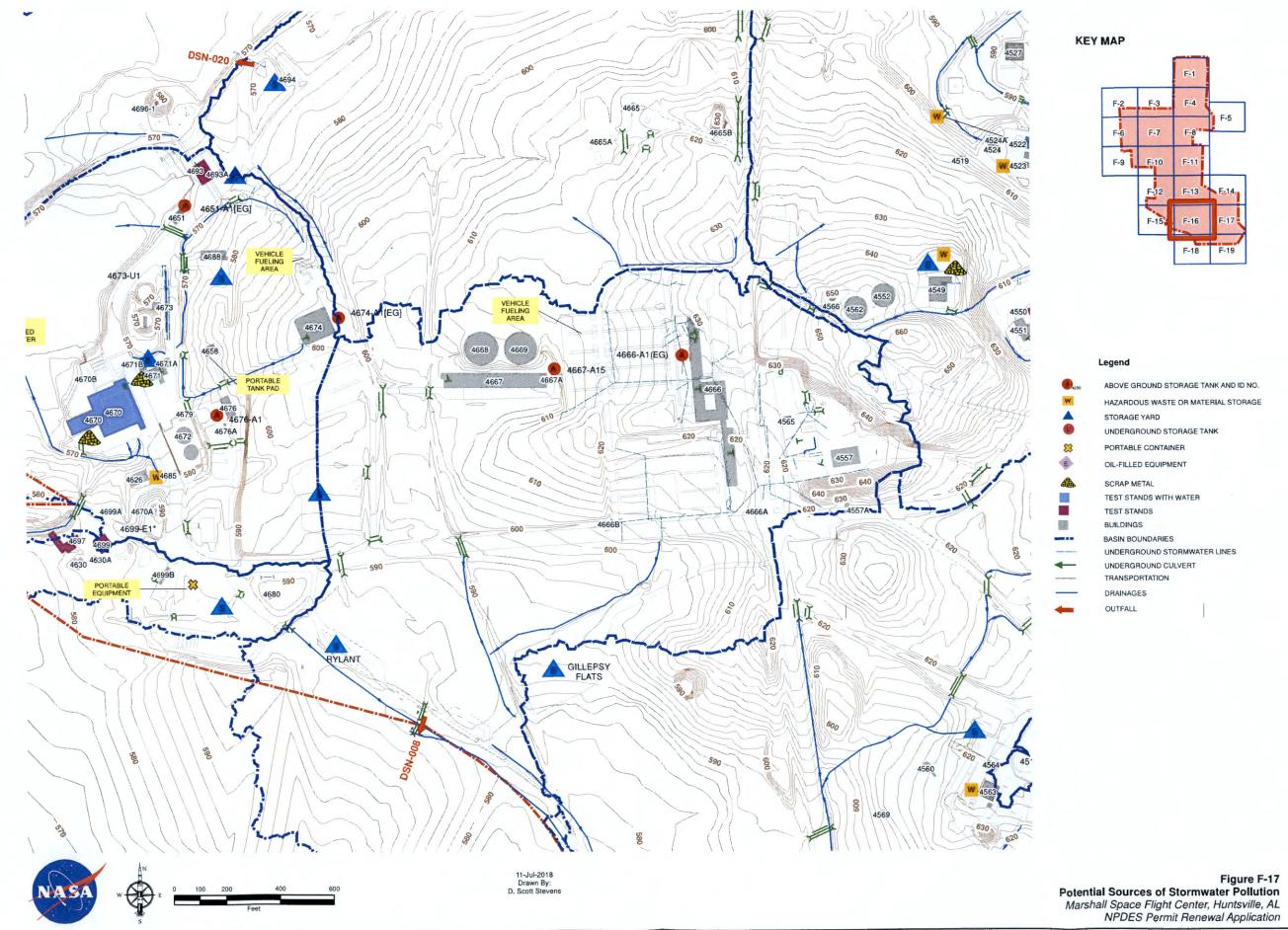
Acetaldehyde Allyl chloride Amyl acetate Aniline **Butyl Acetate** Carbaryl Carbon disulfide Cyclohexane Diethyl amine Epichlorohydrin Ethylene diamine Formaldehyde Isopropanolamine Malathion Methyl methacrylate Monoethylamine **Pyrethrins** Propylene oxide Resorcinol Styrene

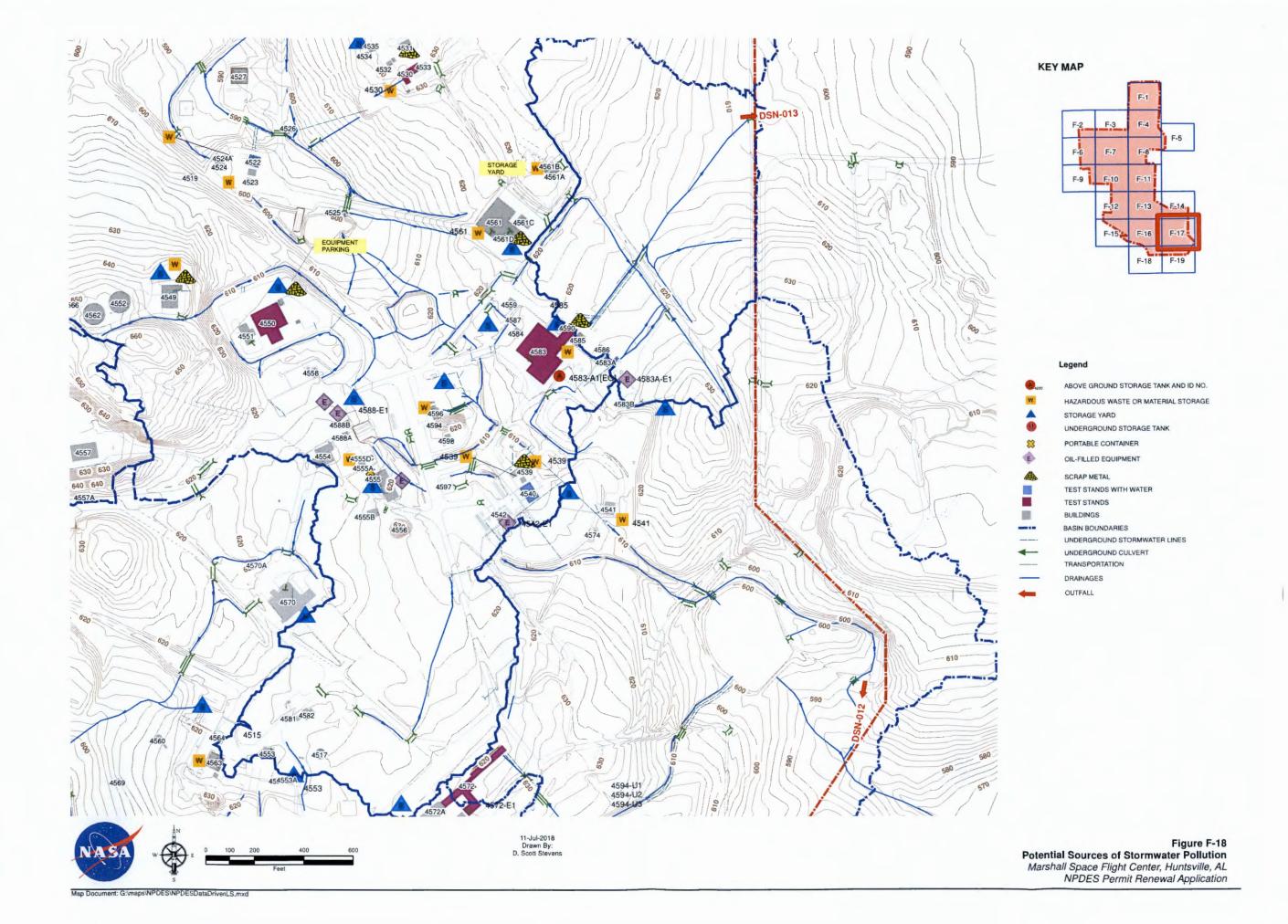
Triethylamine Trimethylamine

Vinyl Acetate Xylene

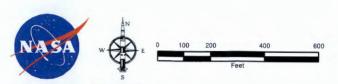






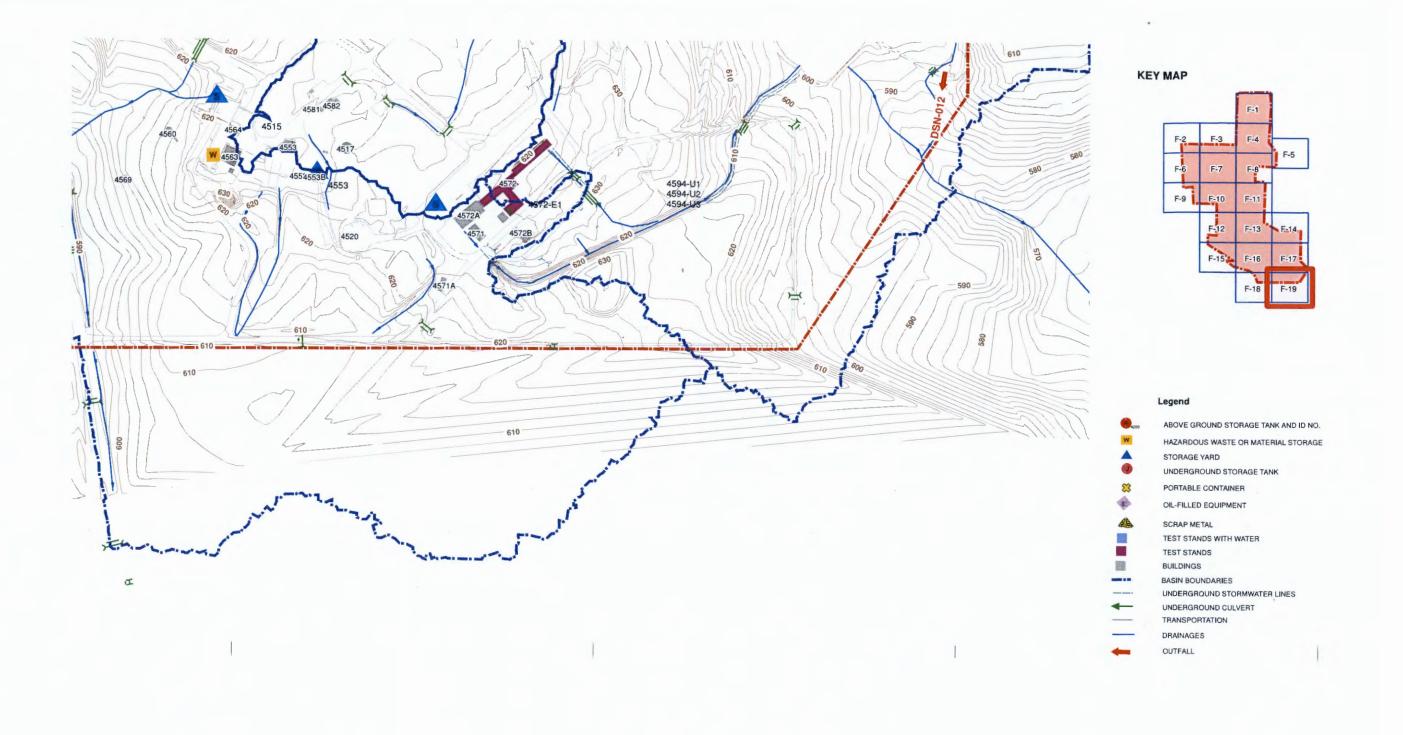






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Figure F-19
Potential Sources of Stormwater Pollution
Marshall Space Flight Center, Huntsville, AL
NPDES Permit Renewal Application



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Figure F-20
Potential Sources of Stormwater Pollution
Marshall Space Flight Center, Huntsville, AL
NPDES Permit Renewal Application

