

# Industrial and Sanitary Outfalls 2019 NPDES Permit Re-Application Outfall 03A113 Fact Sheet

Los Alamos Neutron Science Center (LANSCE) Facility Operations (LFO)  
TA-53-952 Cooling Tower



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## INDUSTRIAL AND SANITARY OUTFALLS 2019 NPDES PERMIT RE-APPLICATION OUTFALL 03A113 FACT SHEET

### 1.0 OUTFALL LOCATION [Section I]

<b>Outfall ID No.:</b>	03A113	<b>Outfall Location:</b>	Technical Area 53
<b>Category:</b>	03A, Treated Cooling Water Discharges	<b>Originating Structure for the Discharge:</b>	TA-53-952 Cooling Tower and Water Treatment System
<b>Flow Type:</b>	Intermittent	<b>Receiving Stream:</b>	Ephemeral Reach of Sandia Canyon Water Quality Segment 20.6.4.128 NMAC
<b>Longitude:</b>	106°15'43"W	<b>Latitude:</b>	35°52'03"N

### 2.0 FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES [Section II]

Outfall 03A113 is located at TA-53 and discharges to a ephemeral reach of Sandia Canyon in Water Quality Segment 20.6.4.128 NMAC. The outfall discharges treated cooling water that originates at TA-3-950 and 952. Attachment A provides a location map. The cooling tower blow-down is comprised of potable water that is treated by the cooling tower water treatment system. Table 1 identifies the discharge source, the source location, and source composition.

TA	Buildings <sup>a</sup>	Transportation Mode (Piping, Truck etc.)	Discharge Source Description	Source Composition
3	950, 952	Piping	TA-53-952 Cooling Tower	Treated Cooling Tower Blowdown Potable Water Used as Makeup Storm water

a. The cooling tower is building TA-53-592 and the water treatment system for the cooling tower is located in the adjacent building TA-53-950.

#### 2.1 Process Schematic and Water Balance [II.A]

A process schematic line drawing that shows the route taken by water from intake to the discharge at Outfall 03A113 is provided in Attachment B. This drawing includes all operations that contribute cooling water and storm water to the discharge at the Outfall 03A113. A water balance is also provided on the process schematic with average flows for the cooling tower intake and blowdown. The water balance is based upon actual data collected from cooling tower operations personnel and the flow meter/totalizer associated with the outfall.

#### 2.2 Water Treatment Processes [II.B]

Outfall 03A113 receives cooling tower blowdown from the Low Energy Demonstration Accelerator (LEDA) Cooling Tower and associated water treatment system located at TA-53-952 and 950, respectively. The cooling tower provides cooling to the former LEDA beam line operations. The water treatment system includes an automatic chemical feed system that is controlled by a programmable logic controller (PLC). The PLC reacts to conductivity meters and a chlorine analyzer to add treatment chemicals, add makeup water, and/or blowdown the Tower. The treatment chemicals include bromicide, corrosion inhibitor, and a de-chlorination chemical. The bromicide and corrosion inhibitor are added to the cooling water along with makeup water prior to being circulated through the cooling Tower. The cooling loop includes a bag filter to reduce the amount of particulates that concentrates in the system as it is circulated through the loop and cooling tower. The de-chlorination chemical is added to the blowdown line. Table 2 identifies the waste water treatment codes associated with the water treatment system. Attachment C provides photographs of the outfall, cooling Tower, and the wastewater treatment equipment.

Treatment Code	Description	Justification
2-H	Disinfection (other)	Chemicals are added to Control Microorganisms
2-E	De-Chlorination	Chlorine Scavenger Chemicals are Added
2-L	Reduction	Chemicals that are Corrosion Inhibitors are Added

The water treatment processes identified in Table 2 utilize chemicals to control corrosion, limit biological growth, and de-chlorinate blowdown prior to discharge. Table 3 provides a list of the chemicals used to treat the water in the cooling tower.

Source	Chemical Name	Reason for Use	Composition Identify Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4	
TA-53 952 Cooling Tower	Bromicide Tablets	Biocide	bromo-chloro-5,5-dimethyl hydantoin (chlorine source)	2C-4
	WEST C-358	Corrosion Inhibitor	Sodium hydroxide	2C-4
	WEST R-630	De-Chlorination	Sodium bisulfite	2C-4
	Bright Dyes FLT Yellow/Green Liquid	Water Line & Drain Tracing Dye	NA	NA
	Bright Dyes FLT Yellow/Green Tablet	Water Line & Drain Tracing Dye	NA	NA

### 2.3 Discharge Rate and Frequency [II.C]

The discharge rates and frequencies for Outfall 03A113 are provided in Table 4.

Source <sup>a</sup>	Frequency		Flow Rates and Volumes				
	Days/Week	Months	Average (MGD)	Maximum (MGD)	Average Volume (GPD)	Maximum Volume (GPD)	Duration (days)
TA-53-952 Cooling Tower	7.0	12.0	0.001576	0.01459	1,576	14,590	365
Storm water	0.9	1.6	0.016763	0.13678	16,763	136,678	49 <sup>b</sup>

a. Calculated between October 2017 and September 2018.

b. Duration is the number of days that the outfall received a discharge between October 2017 and September 2018

MGD = million gallons per day, GPD = gallons per day

### 3.0 PRODUCTION [Section III]

Section III is not applicable to Outfall 03A113.

### 4.0 IMPROVEMENTS [Section IV]

The cooling towers identified as TA-53-293 are not currently in use but could return to service in the future. These towers use an existing water treatment system that is identical to the one used for the TA-53-952 cooling towers (see Section 2.2). Table 5 provides an estimate for the future flow rates and frequencies of the outfall if the TA-53-952 cooling towers come back online. A Notice of Change will be submitted for the TA-53-293 cooling towers prior to return to service and subsequent increased volume to the outfall. Attachment B provides a proposed schematic and water balance for the future configuration.

**Table 5**  
**Potential Future Flow Rates and Frequencies for Outfall 03A113**

Source	Frequency		Flow Rates and Volumes				
	Days/Week	Months	Average (MGD)	Maximum (MGD)	Average Volume (GPD)	Maximum Volume (GPD)	Duration (days)
TA-53-952 Cooling Tower <sup>a</sup>	7.0	12.0	0.001576	0.01459	1,576	14,590	365
Storm water	0.9	1.6	0.016763	0.1367	16,763	136,678	49 <sup>b</sup>
TA-53-293 Cooling Towers <sup>c</sup>	7.0	12.0	0.0006	0.0016	557	1640	365

- a. Calculated between October 2017 and September 2018.
- b. Duration is the number of days that the outfall received a discharge between October 2017 and September 2018.
- c. Frequency, flow rates, and volumes are estimated based upon historical data.

MGD = million gallons per day, GPD = gallons per day

## 5.0 INTAKE AND EFFLUENT CHARACTERISTICS [Section V]

### 5.1 Analytical Data [V.A, B, and C]

The analytical results provided for the Outfall 03A113 Permit Reapplication on the Form 2C were provided from the following sources:

- Samples collected on August 14, 2018 that were shipped to an independent laboratory for analysis.
- Field samples collected and analyzed on August 14, 2018 for temperature, residual chlorine, and pH.
- Field samples collected and analyzed on February 13, 2019 for sulfite.
- Discharge Monitoring Report Summary for Outfall 03A113 from October 2014 to September 2018 (Attachment D).
- Calculated Hardness = 96 mg/L (CaCO<sub>3</sub>)

### 5.2 Potential Pollutants [V.D]

The treatment chemicals associated with the cooling tower water treatment system and the potable water used for makeup water to the tower constitute the pollutant load of the discharge to Outfall 03A113. Table 6 identifies the Table 2C-3 and 2C-4 pollutants by discharge source. It also identifies those pollutants (if any) that were detected in the analytical results from the samples collected for the 2019 Permit Renewal Application.

**Table 6**  
**Potential Pollutants by Source for Outfall 03A113**

Source	POTENTIAL Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4		Analytical Data Results
TA-53- 952 Cooling Tower	Sodium Hydroxide	2C-4	pH = 6.7 - 8.7 S.U.
	Sodium Bisulfite	2C-4	Sulfite 74.7 mg/L <sup>a</sup>
	Chlorine	2C-4	Total Residual Chlorine = 0
Potable Water Used as Makeup	Chlorine	2C-4	Total Residual Chlorine = 0

a. Sulfite result may be artificially high because it was collected at a time of year when the cooling load on the towers was low.

The safety data sheets associated with the chemicals used in the cooling tower are provided in Attachment E.

## 6.0 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS [Section VI]

Section VI is not applicable to Outfall 03A113.

## 7.0 BIOLOGICAL TOXICITY TESTING DATA [Section VII]

Section VII is not applicable to Outfall 03A113.

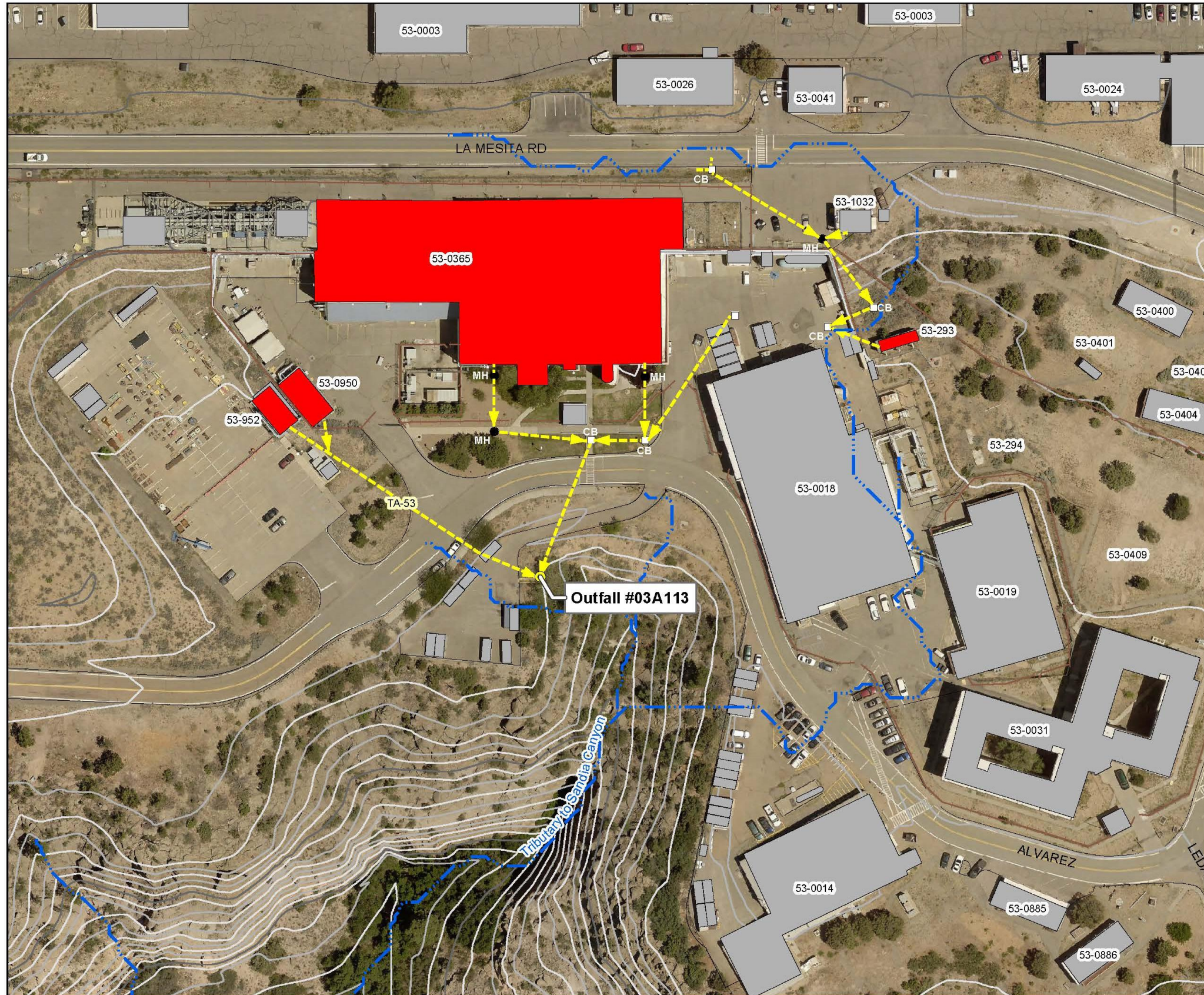
## 8.0 CONTRACT ANALYSIS INFORMATION [Section VIII]

Samples were collected from the cooling tower blowdown on August 14, 2018 for the Form 2C constituents required by the permit application forms. These samples were submitted to independent laboratories as summarized in Table 7.

<b>Laboratory Name</b>	<b>Address and Contact Info</b>	<b>Analytes</b>
GEL Laboratories LLC	2040 Savage Road Charleston SC 29407 (843) 556-8171	Biological Oxygen Demand, General Chemistry, Pesticides, Polychlorinated Biphenyls, Radiochemistry, Semi-volatile Organic Compounds, Total Metals, Total Suspended Solids, Volatile Organic Compounds
New Mexico Water Testing Laboratory, Inc.	401 North Coronado Ave Española, NM 87532 (505) 929-4545	E.coli
Cape Fear Analytical LLC	3306 Kitty Hawk Road Suite 120 Wilmington, NC 28405 (910) 795-0421	TCDD (Dioxin)




**ATTACHMENT A: Location Map for Outfall 03A113**



**NPDES Permit Re-Application Project  
TA-53 Building 293, 365, 950,  
952, Outfall #03A113**

Legend			
	NPDES Outfall		Source Structures
	Outfall Flow		Building Served by Source
	Springs		Structures
	Drainages		LANL Boundary
	100ft Contours		Technical Areas
	20ft Contours		Catch Basin
	10ft Contours		Manhole
	Fences		
	Dirt Roads		
	Paved Roads		

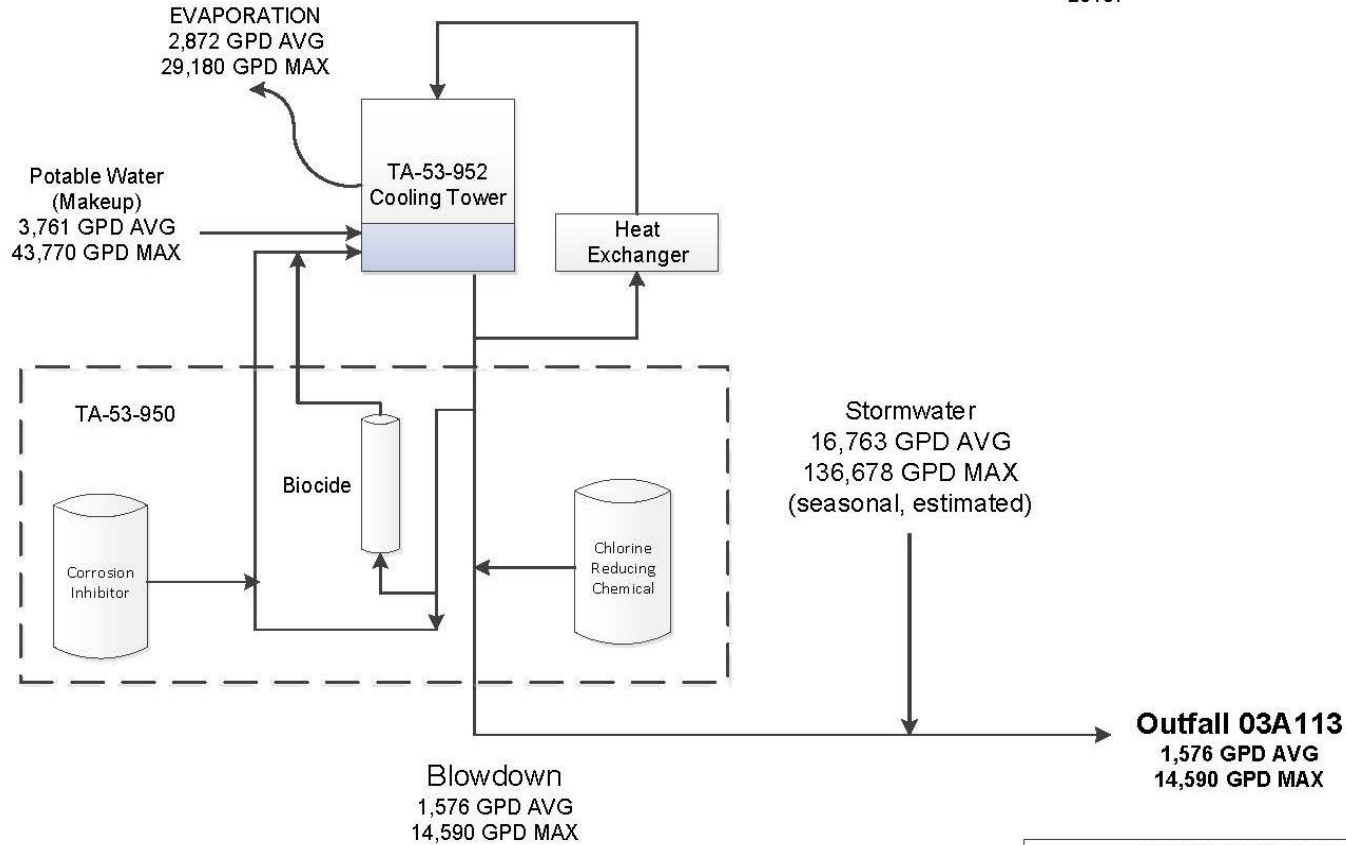
  
 0 30 60 120 180 240 Feet  
 0 10 20 40 60 80 Meters  
 1:1,000  
 State Plane Coordinate System  
 New Mexico, Central Zone, US Feet  
 NAD 1983 Datum, NGVD 1929  
 Map Updated By: Bethann McVicker, IF-PROG  
 Map #18-129-03 21 February 2019

Disclaimer: This map was created for work processes associated with the Water Quality & RCRA. All other uses for this map should be confirmed with LANL EPC-RCRA staff.

**ATTACHMENT B: Process Schematics and Water Balances**

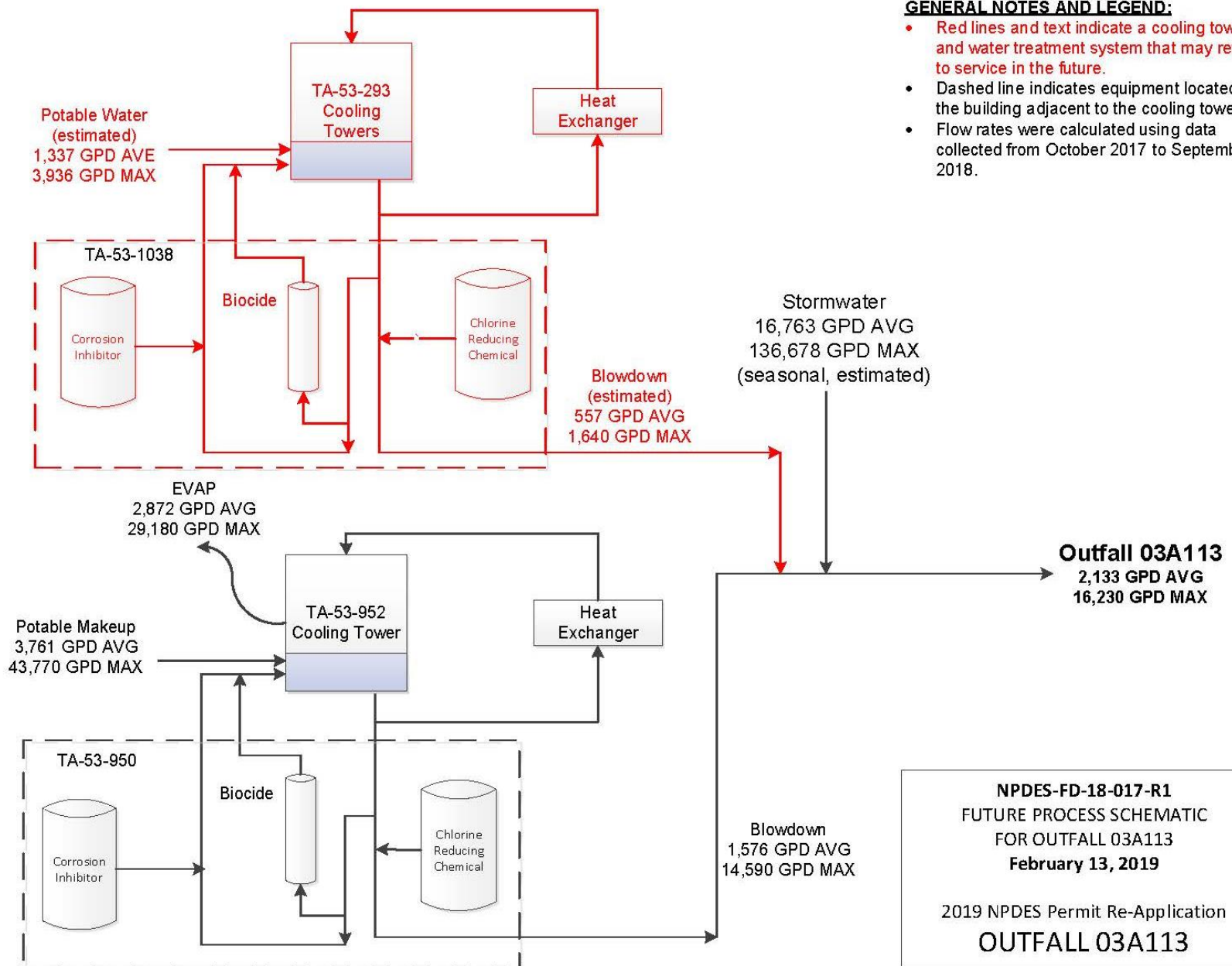
**GENERAL NOTES AND LEGEND:**

- Dashed line indicates equipment located the building adjacent to the cooling towers.
- Flow rates were calculated using data collected from October 2017 to September 2018.



**NPDES-FD-18-009-R1**  
**PROCESS SCHEMATIC & WATER BALANCE**  
**FOR OUTFALL 03A113**  
**February 13, 2019**

2019 NPDES Permit Re-Application  
**OUTFALL 03A113**



**GENERAL NOTES AND LEGEND:**

- Red lines and text indicate a cooling tower and water treatment system that may return to service in the future.
- Dashed line indicates equipment located the building adjacent to the cooling towers.
- Flow rates were calculated using data collected from October 2017 to September 2018.

NPDES-FD-18-017-R1  
FUTURE PROCESS SCHEMATIC  
FOR OUTFALL 03A113  
February 13, 2019

2019 NPDES Permit Re-Application  
OUTFALL 03A113

### ATTACHMENT C: Photographs

Photograph ID No.	Photograph Title
NPDES-03A113-18-001	Outfall 03A113 Location
NPDES-03A113-18-002	Outfall 03A113 Condition at Discharge Location
NPDES-03A113-18-003	Outfall 03A113 Accessibility
NPDES-03A113-18-004	Outfall 03A113 Receiving Stream Ephemeral Tributary to Sandia Canyon, Water Quality Segment Number 20.6.4.126 NMAC
NPDES-03A113-18-005	TA-53-952 Cooling Tower
NPDES-03A113-18-006	TA-53-952 Brominator
NPDES-03A113-18-007	TA-53-952 Chemical Treatment Feed Tanks
NPDES-03A113-18-008	TA-53-293 Cooling Towers [Inactive but Available for Use]
NPDES-03A113-18-009	TA-53-293 Brominator [Inactive but Available for Use]
NPDES-03A113-18-010	TA-53-293 Chemical Treatment Feed Tanks [Inactive but Available for Use]



Photograph - NPDES-03A113-18-001  
 Outfall 03A113 Location



**Photograph - NPDES-03A113-18-002**  
**Outfall 03A113 Condition at Discharge Location**



**Photograph - NPDES-03A113-18-003**  
**Outfall 03A113 Accessibility**



**Photograph - NPDES-03A113-18-004  
Outfall 03A113 Receiving Stream Ephemeral Tributary to  
Sandia Canyon, Water Quality Segment Number 20.6.4.126 NMAC**



Photograph - NPDES-03A113-18-005  
TA-53-952 Cooling Tower



Photograph - NPDES-03A113-18-006  
TA-53-952 Cooling Tower Brominator Located in TA-53-950



**Photograph - NPDES-03A113-18-007**

**TA-53-952 Cooling Tower Chemical Treatment Feed Tanks Located in TA-53-950**



**Photograph - NPDES-03A113-18-008**

**TA-53-293 Cooling Towers [Inactive but Available for Use]**





**Photograph - NPDES-03A113-18-009**  
**TA-53-293 Brominator Located in TA-53-1038 [Inactive but Available for Use]**



**Photograph - NPDES-03A113-18-010**  
**TA-53-293 Chemical Treatment Feed Tanks Located in TA-53-1038 [Inactive but Available for Use]**

**ATTACHMENT D: Summary Discharge Monitoring Report October 2014 – September 2018**

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration								
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency	Notes
03A113	TA-53-950, 952, 293	2014	Oct	Flow (Totalized Est.)	0.000533	0.002000	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2014	Nov	Flow (Totalized Est.)	0.000663	0.002080	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2014	Dec	Flow (Totalized Est.)	0.000541	0.003500	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Jan	Flow (Totalized Est.)	0.000940	0.010190	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Feb	Flow (Totalized Est.)	0.001001	0.003770	MGD							28	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Mar	Flow (Totalized Est.)	0.000519	0.001640	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Apr	Flow (Totalized Est.)	0.000829	0.002410	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	May	Flow (Totalized Est.)	0.002479	0.006400	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Jun	Flow (Totalized Est.)	0.001508	0.006490	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Jul	Flow (Totalized Est.)	0.001134	0.004680	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Aug	Flow (Totalized Est.)	0.001375	0.004800	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Sept	Flow (Totalized Est.)	0.002362	0.021210	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Oct	Flow (Totalized Est.)	0.000615	0.002450	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Nov	Flow (Totalized Est.)	0.000429	0.001350	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2015	Dec	Flow (Totalized Est.)	0.000204	0.000650	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Jan	Flow (Totalized Est.)	0.000964	0.005090	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Feb	Flow (Totalized Est.)	0.001027	0.002010	MGD							29	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Mar	Flow (Totalized Est.)	0.000432	0.001110	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Apr	Flow (Totalized Est.)	0.001253	0.010570	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	May	Flow (Totalized Est.)	0.000386	0.000780	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Jun	Flow (Totalized Est.)	0.000825	0.001620	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Jul	Flow (Totalized Est.)	****	****	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Aug	Flow (Totalized Est.)	****	****	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Sept	Flow (Totalized Est.)	0.002688	0.020790	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Oct	Flow (Totalized Est.)	0.000445	0.001420	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Nov	Flow (Totalized Est.)	0.000729	0.008260	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2016	Dec	Flow (Totalized Est.)	0.001016	0.002630	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Jan	Flow (Totalized Est.)	0.000493	0.001280	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Feb	Flow (Totalized Est.)	0.001171	0.005600	MGD							28	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Mar	Flow (Totalized Est.)	0.003053	0.013310	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Apr	Flow (Totalized Est.)	0.006244	0.032850	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	May	Flow (Totalized Est.)	0.001183	0.003170	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Jun	Flow (Totalized Est.)	0.001802	0.003800	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Jul	Flow (Totalized Est.)	0.001234	0.002180	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Aug	Flow (Totalized Est.)	0.000957	0.002750	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Sept	Flow (Totalized Est.)	0.001983	0.003850	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Oct	Flow (Totalized Est.)	0.000453	0.001380	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Nov	Flow (Totalized Est.)	0.000729	0.008260	MGD							30	Daily	Permit Required
03A113	TA-53-950, 952, 293	2017	Dec	Flow (Totalized Est.)	0.000664	0.006530	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2018	Jan	Flow (Totalized Est.)	0.000254	0.001750	MGD							31	Daily	Permit Required
03A113	TA-53-950, 952, 293	2018	Feb	Flow (Totalized Est.)	0.000445	0.001060	MGD							28	Daily	Permit Required
03A113	TA-53-950, 952, 293	2018	Mar	Flow (Totalized Est.)	0.000769	0.002290	MGD							31	Daily	Permit Required

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration									
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency	Notes	
03A113	TA-53-950, 952, 293	2018	Apr	Flow (Totalized Est.)	0.001786	0.006280	MGD							30	Daily	Permit Required	
03A113	TA-53-950, 952, 293	2018	May	Flow (Totalized Est.)	0.003529	0.014590	MGD							31	Daily	Permit Required	
03A113	TA-53-950, 952, 293	2018	Jun	Flow (Totalized Est.)	0.002411	0.011370	MGD							30	Daily	Permit Required	
03A113	TA-53-950, 952, 293	2018	Jul	Flow (Totalized Est.)	0.003297	0.013190	MGD							31	Daily	Permit Required	
03A113	TA-53-950, 952, 293	2018	Aug	Flow (Totalized Est.)	0.003496	0.011120	MGD							31	Daily	Permit Required	
03A113	TA-53-950, 952, 293	2018	Sept	Flow (Totalized Est.)	0.000205	0.000760	MGD							30	Daily	Permit Required	
<b>Flow (Totalized Est.)</b>					<b>Maximum 30 Day Average</b>				<b>0.0062</b>					<b>mg/L</b>	<b>1,461</b>		
<b>Flow (Totalized Est.)</b>					<b>Maximum</b>					<b>0.0329</b>				<b>mg/L</b>	<b>1,461</b>		
03A113	TA-53-950, 952, 293	2014	Oct	pH				7.9	****	8.6	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2014	Nov	pH				7.6	****	8.7	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2014	Dec	pH				7.5	****	8.4	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Jan	pH				7.7	****	8.1	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Feb	pH				7.6	****	8.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Mar	pH				7.8	****	8.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Apr	pH				8.3	****	8.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	May	pH				8.1	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Jun	pH				7.3	****	7.9	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Jul	pH				7.5	****	8.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Aug	pH				7.6	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Sept	pH				7.3	****	8.3	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Oct	pH				7.3	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Nov	pH				6.9	****	7.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2015	Dec	pH				7.1	****	7.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Jan	pH				7.2	****	7.9	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Feb	pH				6.8	****	8.7	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Mar	pH				7.2	****	7.3	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Apr	pH				7.1	****	7.2	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	May	pH				7.0	****	7.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Jun	pH				7.1	****	7.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Jul	pH				****	****	****	S.U.	6.0 - 9.0	S.U.	0.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Aug	pH				****	****	****	S.U.	6.0 - 9.0	S.U.	0.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Sept	pH				6.9	****	7.2	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Oct	pH				6.9	****	7.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Nov	pH				7.4	****	8.0	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2016	Dec	pH				7.4	****	7.7	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Jan	pH				7.2	****	7.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Feb	pH				7.2	****	8.2	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Mar	pH				7.1	****	8.0	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Apr	pH				7.2	****	7.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	May	pH				7.3	****	7.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Jun	pH				7.3	****	7.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Jul	pH				7.3	****	8.2	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Aug	pH				7.4	****	8.3	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required	
03A113	TA-53-950, 952, 293	2017	Sept	pH				7.4	****	8.2	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required	

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration								
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency	Notes
03A113	TA-53-950, 952, 293	2017	Oct	pH				7.2	****	7.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Nov	pH				7.0	****	8.0	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Dec	pH				6.8	****	7.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jan	pH				7.1	****	7.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Feb	pH				7.2	****	7.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Mar	pH				7.1	****	7.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Apr	pH				7.0	****	7.2	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	May	pH				7.0	****	7.2	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jun	pH				6.7	****	7.0	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jul	pH				7.0	****	8.0	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Aug	pH				6.8	****	7.1	S.U.	6.0 - 9.0	S.U.	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Sept	pH				6.8	****	7.2	S.U.	6.0 - 9.0	S.U.	5.0	Weekly	Permit Required
				pH				Minimum						201		
				pH				Maximum 30 Day Average		8.54				201		
				pH				Maximum		8.7				201		
03A113	TA-53-950, 952, 293	2014	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2014	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2014	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Jul	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Aug	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2015	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Jul	Total Residual Chlorine				****	****	****	mg/L	0.011	mg/L	0.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Aug	Total Residual Chlorine				****	****	****	mg/L	0.011	mg/L	0.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2016	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration								
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency	Notes
03A113	TA-53-950, 952, 293	2017	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Jul	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Aug	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2017	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jul	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Aug	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4.0	Weekly	Permit Required
03A113	TA-53-950, 952, 293	2018	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5.0	Weekly	Permit Required
				<b>Total Residual Chlorine</b>	<b>Daily Average</b>										<b>201</b>	
				<b>Total Residual Chlorine</b>	<b>Maximum 30 Day Average</b>				<b>0</b>						<b>201</b>	
				<b>Total Residual Chlorine</b>	<b>Maximum</b>					<b>0</b>					<b>201</b>	
03A113	TA-53-950, 952, 293	2014	Dec	Phosphorus, <u>Total</u>				****	0.142	0.142	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Mar	Phosphorus, <u>Total</u>				****	0.0949	0.0949	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Jun	Phosphorus, <u>Total</u>				****	0.155	0.155	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Sept	Phosphorus, <u>Total</u>				****	0.0729	0.0729	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Dec	Phosphorus, <u>Total</u>				****	<0.056	<0.056	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Mar	Phosphorus, <u>Total</u>				****	0.0939	0.0939	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Jun	Phosphorus, <u>Total</u>				****	0.0722	0.0722	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Sept	Phosphorus, <u>Total</u>				****	0.302	0.302	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Dec	Phosphorus, <u>Total</u>				****	0.147	0.147	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Mar	Phosphorus, <u>Total</u>				****	0.074	0.074	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Jun	Phosphorus, <u>Total</u>				****	0.0952	0.0952	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Sept	Phosphorus, <u>Total</u>				****	0.0948	0.0948	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Dec	Phosphorus, <u>Total</u>				****	0.144	0.144	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2018	Mar	Phosphorus, <u>Total</u>				****	0.103	0.103	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jun	Phosphorus, <u>Total</u>				****	0.144	0.144	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2018	Sept	Phosphorus, <u>Total</u>				****	0.0982	0.0982	mg/L	20 - 40	mg/L	1	Quarterly	Permit Required
				<b>Phosphorus, <u>Total</u></b>	<b>Daily Average</b>				<b>0.1</b>						<b>16</b>	
				<b>Phosphorus, <u>Total</u></b>	<b>Maximum 30 Day Average</b>				<b>0.302</b>						<b>16</b>	
				<b>Phosphorus, <u>Total</u></b>	<b>Maximum</b>					<b>0.302</b>					<b>16</b>	
03A113	TA-53-950, 952, 293	2014	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Mar	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Jun	Total Suspended Solids				****	1	1	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration								
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency	Notes
03A113	TA-53-950, 952, 293	2015	Sept	Total Suspended Solids				****	1	1	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2015	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Mar	Total Suspended Solids				****	0.7	0.7	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Jun	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Sept	Total Suspended Solids				****	<0.582	<0.582	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2016	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Mar	Total Suspended Solids				****	5.68	5.68	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Jun	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Sept	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2017	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2018	Mar	Total Suspended Solids				****	0.6	0.6	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2018	Jun	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
03A113	TA-53-950, 952, 293	2018	Sept	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly	Permit Required
<b>Total Suspended Solids</b>					<b>Daily Average</b>				<b>1.8</b>					<b>16</b>		
<b>Total Suspended Solids</b>					<b>Maximum 30 Day Average</b>				<b>5.68</b>					<b>16</b>		
<b>Total Suspended Solids</b>					<b>Maximum</b>					<b>5.68</b>				<b>16</b>		
03A113	TA-53-950, 952, 293	2015	Sept	Copper, Dissolved				****	****	0.00315	mg/L		mg/L	1	Yearly	Permit Required
03A113	TA-53-950, 952, 293	2016	Sept	Copper, Dissolved				****	****	0.00728	mg/L	NA	mg/L	1	Yearly	Permit Required
03A113	TA-53-950, 952, 293	2017	Sept	Copper, Dissolved				****	****	0.00395	mg/L		mg/L	1	Yearly	Permit Required
03A113	TA-53-950, 952, 293	2018	Sept	Copper, Dissolved				****	****	0.00489	mg/L		mg/L	1	Yearly	Permit Required
<b>Copper, Dissolved</b>					<b>Daily Average</b>				<b>0.0048</b>					<b>4</b>		
<b>Copper, Dissolved</b>					<b>Maximum 30 Day Average</b>				<b>0.00728</b>					<b>4</b>		
<b>Copper, Dissolved</b>					<b>Maximum</b>					<b>0.00728</b>				<b>4</b>		
03A113	TA-53-950, 952, 293	2015	Sept	Aluminum, Total				****	****	<0.015	mg/L		mg/L	1	Yearly	Permit Required
03A113	TA-53-950, 952, 293	2016	Sept	Aluminum, Total				****	****	<0.015	mg/L	NA	mg/L	1	Yearly	Permit Required
03A113	TA-53-950, 952, 293	2017	Sept	Aluminum, Total				****	****	<0.0193	mg/L		mg/L	1	Yearly	Permit Required
03A113	TA-53-950, 952, 293	2018	Sept	Aluminum, Total				****	****	<0.0193	mg/L		mg/L	1	Yearly	Permit Required
<b>Aluminum, Total</b>					<b>Daily Average</b>									<b>4</b>		
<b>Aluminum, Total</b>					<b>Maximum 30 Day Average</b>				<b>0</b>					<b>4</b>		
<b>Aluminum, Total</b>					<b>Maximum</b>					<b>0</b>				<b>4</b>		
03A113	TA-53-950, 952, 293	2016	Sept	Adjusted Gross Alpha				****	0	0	pCi/L	NA	mg/L	1	Term	Permit Required
<b>Mercury, Total Adjusted Gross Alpha</b>					<b>Daily Average</b>									<b>1</b>		
<b>Mercury, Total Adjusted Gross Alpha</b>					<b>Maximum 30 Day Average</b>									<b>1</b>		
<b>Mercury, Total Adjusted Gross Alpha</b>					<b>Maximum</b>					<b>0</b>				<b>1</b>		

## ATTACHMENT E: Safety Data Sheets

LIST OF SAFETY DATA SHEETS
Bromocide Tablets
WEST C-358
WEST R-630
Bright Dyes FLT Yellow/Green Liquid
Bright Dyes FLT Yellow/Green Tablet

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# BROMICIDE TABLETS

Revision date: 3/28/2016

Revision: 9



**SAFETY DATA SHEET  
BROMICIDE TABLETS**

**1. Identification**

**Product identifier**

**Product name** BROMICIDE TABLETS  
**Chemical name** Bromo-chloro-5,5-dimethylhydantoin  
**Product number** 100405, 100406, 100407, 100412, 100414, 100794, 101187  
**CAS number** 32718-18-6

**Recommended use of the chemical and restrictions on use**

**Application** Biocides for water treatment.

**Details of the supplier of the safety data sheet**

**Supplier** BWA Water Additives US LLC  
 1979 Lakeside Parkway  
 Suite 925, Tucker, GA30084  
 USA

T: +1 800 600 4523  
 T: +1 678 802 3050

E: msds@wateradditives.com

**Emergency telephone number**

**Emergency telephone** CHEMTREC Phone: 1-800-424-9300

**2. Hazard(s) identification**

**Classification of the substance or mixture**

**Physical hazards** Ox. Sol. 3 - H272  
**Health hazards** Acute Tox. 4 - H302 Skin Corr. 1C - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317  
**Environmental hazards** Aquatic Acute 1 - H400

**Label elements**

**Pictogram**



**Signal word**

Danger

**Hazard statements**

H272 May intensify fire; oxidizer.  
 H302 Harmful if swallowed.  
 H314 Causes severe skin burns and eye damage.  
 H317 May cause an allergic skin reaction.  
 H400 Very toxic to aquatic life.

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## BROMICIDE TABLETS

**Precautionary statements**

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.  
 P220 Keep away from combustible materials.  
 P221 Take any precaution to avoid mixing with combustibles.  
 P260 Do not breathe vapor/ spray.  
 P261 Avoid breathing vapor/ spray.  
 P264 Wash contaminated skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P272 Contaminated work clothing must not be allowed out of the workplace.  
 P273 Avoid release to the environment.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
 P301+P310 If swallowed: Immediately call a poison center/ doctor.  
 P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.  
 P302+P352 If on skin: Wash with plenty of water.  
 P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
 P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.  
 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P321 Specific treatment (see medical advice on this label).  
 P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P362+P364 Take off contaminated clothing and wash it before reuse.  
 P363 Wash contaminated clothing before reuse.  
 P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.  
 P391 Collect spillage.  
 P405 Store locked up.  
 P501 Dispose of contents/ container in accordance with national regulations.

**Contains** Bromo-chloro-5,5-dimethylhydantoin

### 3. Composition/Information on ingredients

#### Mixtures

<b>Bromo-chloro-5,5-dimethylhydantoin</b> CAS number: 32718-18-6 M factor (Acute) = 1	<b>96.0%</b>
<b>Classification</b> Ox. Sol. 3 - H272 Acute Tox. 4 - H302 Skin Corr. 1C - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Aquatic Acute 1 - H400	
<b>Inert ingredients</b> CAS number: —	<b>4.0%</b>
<b>Classification</b> Not Classified	

The Full Text for all Hazard Statements are Displayed in Section 16.

**Composition comments** 1-bromo-3-chloro-5,5-dimethylhydantoin

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## BROMICIDE TABLETS

### 4. First-aid measures

#### Description of first aid measures

<b>Inhalation</b>	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention. Show this Safety Data Sheet to the medical personnel.
<b>Ingestion</b>	Do not induce vomiting. Give plenty of water to drink. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Get medical attention. Show this Safety Data Sheet to the medical personnel.
<b>Skin Contact</b>	Remove contaminated clothing. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention. Show this Safety Data Sheet to the medical personnel.
<b>Eye contact</b>	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention. Show this Safety Data Sheet to the medical personnel.

#### Most important symptoms and effects, both acute and delayed

<b>Inhalation</b>	Dust may irritate the respiratory system.
<b>Ingestion</b>	May cause stomach pain or vomiting. May cause chemical burns in mouth and throat. Due to the physical nature of this material it is unlikely that swallowing will occur.
<b>Skin contact</b>	Chemical burns. Burning pain and severe corrosive skin damage.
<b>Eye contact</b>	Severe irritation, burning and tearing.

#### Indication of immediate medical attention and special treatment needed

<b>Notes for the doctor</b>	If lavage is performed suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Chemical eye burns may require extended irrigation. Obtain prompt consultation preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
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### 5. Fire-fighting measures

#### Extinguishing media

<b>Suitable extinguishing media</b>	Extinguish with the following media: Water spray, fog or mist. Alcohol-resistant foam.
<b>Unsuitable extinguishing media</b>	Carbon dioxide (CO <sub>2</sub> ). Dry chemicals.

#### Special hazards arising from the substance or mixture

<b>Specific hazards</b>	Toxic gases/vapors/fumes of: Bromine. Chlorine. Oxides of the following substances: Carbon. Nitrogen. Thermal decomposition or combustion products may include the following substances: Toxic gases or vapors.
-------------------------	---

#### Advice for firefighters

<b>Protective actions during firefighting</b>	Move containers from fire area if it can be done without risk. Control run-off water by containing and keeping it out of sewers and watercourses.
<b>Special protective equipment for firefighters</b>	Leave danger zone immediately. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

### 6. Accidental release measures

#### Personal precautions, protective equipment and emergency procedures

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## BROMICIDE TABLETS

**Personal precautions** Follow precautions for safe handling described in this safety data sheet. For personal protection, see Section 8.

**Environmental precautions**

**Environmental precautions** Avoid release to the environment. To prevent release, place container with damaged side up.

**Methods and material for containment and cleaning up**

**Methods for cleaning up** Provide adequate ventilation. Contain spillage with sand, earth or other suitable non-combustible material. Avoid the spillage or runoff entering drains, sewers or watercourses. Collect spillage for reclamation or disposal in sealed containers via a licensed waste contractor. Containers with collected spillage must be properly labeled with correct contents and hazard symbol. Wash thoroughly after dealing with a spillage. Avoid generation and spreading of dust. Avoid contact with water.

**Reference to other sections** For personal protection, see Section 8. For waste disposal, see section 13.

**7. Handling and storage**

**Precautions for safe handling**

**Usage precautions** Provide adequate ventilation. Avoid inhalation of vapors. Use approved respirator if air contamination is above an acceptable level. Do not use in confined spaces without adequate ventilation and/or respirator. Avoid spilling. Avoid contact with skin and eyes. Avoid contact with the following materials: Acids. Moisture. Avoid handling which leads to dust formation.

**Conditions for safe storage, including any incompatibilities**

**Storage precautions** Store in tightly-closed, original container in a dry, cool and well-ventilated place. Keep container tightly closed. Protect from light. Keep away from heat, sparks and open flame. Store away from the following materials: Reducing agents.

**Storage class** Oxidizer storage.

**Specific end uses(s)**

**Specific end use(s)** The identified uses for this product are detailed in Section 1.2.

**8. Exposure Controls/personal protection**

**Ingredient comments** No exposure limits known for ingredient(s).

**Exposure controls**

**Protective equipment**



**Appropriate engineering controls** All handling should only take place in well-ventilated areas.

**Eye/face protection** The following protection should be worn: Chemical splash goggles or face shield.

**Hand protection** Selection of a suitable glove depends on work conditions and whether the product is present on its own or in combination with other substances. Wear protective gloves made of the following material: Butyl rubber. Neoprene. Nitrile rubber. Polyethylene. Polyvinyl chloride (PVC). Gloves should be replaced immediately if signs of degradation are observed.

**Other skin and body protection** Wear appropriate clothing to prevent any possibility of skin contact. Wear a suitable dust mask. Wear apron or protective clothing in case of contact.

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## BROMICIDE TABLETS

**Hygiene measures** Use engineering controls to reduce air contamination to permissible exposure level. Provide eyewash station. No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products. Contaminated clothing should be placed in a closed container for disposal or decontamination.

**Respiratory protection** Wear a suitable dust mask.

### 9. Physical and Chemical Properties

#### Information on basic physical and chemical properties

<b>Appearance</b>	Tablet.
<b>Color</b>	White/off-white.
<b>Odor</b>	Slight. Halogen
<b>Odor threshold</b>	Not available. Not available.
<b>pH</b>	pH (diluted solution): 3.5 @ 0.15 %
<b>Melting point</b>	156 - 162°C
<b>Initial boiling point and range</b>	Not known.
<b>Freezing Point</b>	
<b>Flash point</b>	Not applicable.
<b>Evaporation rate</b>	Not known.
<b>Evaporation factor</b>	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	Not available.
<b>Vapor pressure</b>	0.0038 Pa @ °C
<b>Vapor density</b>	Not available.
<b>Relative density</b>	Not applicable.
<b>Bulk density</b>	0.9 kg/l
<b>Solubility(ies)</b>	0.15 @ °C Slightly soluble in water.
<b>Partition coefficient</b>	log Pow: 0.35
<b>Auto-ignition temperature</b>	Not available.
<b>Viscosity</b>	Not known.
<b>Explosive properties</b>	There are no chemical groups present in the product that are associated with explosive properties.
<b>Oxidizing properties</b>	The product contains a substance classified as oxidizing. Keep away from flammable and combustible materials.
<b>Molecular weight</b>	241.47
<b>Molecular Formula</b>	C5 H6 Br Cl N2 O2

### 10. Stability and reactivity

**Reactivity** This material has oxidising properties.

**Stability** Stable at normal ambient temperatures. Avoid the following conditions: Moisture.

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### BROMICIDE TABLETS

<b>Possibility of hazardous reactions</b>	Will not polymerize.
<b>Conditions to avoid</b>	Generates toxic gas in contact with acid. Avoid excessive heat for prolonged periods of time. Avoid heat, flames and other sources of ignition.
<b>Materials to avoid</b>	Strong acids. Strong reducing agents. Strong alkalis.
<b>Hazardous decomposition products</b>	Toxic gases/vapors/fumes of: Hydrogen bromide (HBr). Bromine. Hydrogen chloride (HCl). Chlorine. Oxides of the following substances: Carbon. Nitrogen.

#### 11. Toxicological information

##### Information on toxicological effects

<b>Toxicological effects</b>	Ames Test negative
<b>Other health effects</b>	There is no evidence that the product can cause cancer.

##### Supplemental Toxicological Information

##### Acute toxicity - oral

<b>Acute toxicity oral (LD<sub>50</sub> mg/kg)</b>	578.0
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<b>Species</b>	Rat
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<b>ATE oral (mg/kg)</b>	520.83
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##### Acute toxicity - dermal

<b>Acute toxicity dermal (LD<sub>50</sub> mg/kg)</b>	2,000.0
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<b>Species</b>	Rabbit
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##### Germ cell mutagenicity

<b>Genotoxicity - in vitro</b>	Ames test: Negative.
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<b>Inhalation</b>	May cause respiratory system irritation.
-------------------	--

<b>Ingestion</b>	Harmful if swallowed.
------------------	-----------------------

<b>Skin Contact</b>	Causes burns. May cause sensitisation by skin contact.
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<b>Eye contact</b>	Causes burns.
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<b>Acute and chronic health hazards</b>	Causes severe burns. May cause sensitisation by skin contact.
---	---

<b>Route of entry</b>	Skin and/or eye contact Ingestion.
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#### 12. Ecological Information

<b>Ecotoxicity</b>	The product contains a substance which is very toxic to aquatic organisms.
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##### Toxicity

<b>Acute toxicity - fish</b>	LC50, 96 hours: 0.87 mg/l, Onchorhynchus mykiss (Rainbow trout) LC <sub>50</sub> , 96 hours: 0.87 mg/l, Fish
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## BROMICIDE TABLETS

**Acute toxicity - aquatic invertebrates** EC<sub>50</sub>, 48 hours: 0.46 mg/l, Daphnia magna  
 EC<sub>50</sub>, 48 hours: 0.46 mg/l, Daphnia magna

### Persistence and degradability

**Persistence and degradability** Halogens will dissociate in water leaving DMH. DMH is readily biodegradable in a CO<sub>2</sub> Evolution study and passes the 10-day window criteria. DMH has also been shown to be rapidly degraded in a water/sediment system.

**Chemical oxygen demand** 1.005 g O<sub>2</sub>/g substance

### Bioaccumulative potential

**Bio-Accumulative Potential** Low bioaccumulation potential

**Partition coefficient** log Pow: 0.35

### Mobility in soil

**Mobility** No information available.

### Results of PBT and vPvB assessment

**Results of PBT and vPvB assessment** This substance is not classified as PBT or vPvB according to current EU criteria.

### Other adverse effects

**Acute Toxicity. Lc50 96 Hours, >640 American Oyster Mg/L**

## 13. Disposal considerations

### Waste treatment methods

**General information** When handling waste, the safety precautions applying to handling of the product should be considered.

**Disposal methods** Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. Absorb in vermiculite, dry sand or earth and place into containers. Dispose of waste via a licensed waste disposal contractor. Liquid material should be incinerated. Material absorbed onto sand or earth should be disposed of as solid waste in accordance with local regulations. Empty packaging may contain product residues and due consideration should be given prior to disposal.

**Waste class** 07 01 99

## 14. Transport information

### UN Number

**UN No. (TDG)** 3085

**UN No. (IMDG)** 3085

**UN No. (ICAO)** 3085

**UN No. (DOT)** 3085

### UN proper shipping name

**Proper shipping name (TDG)** OXIDISING SOLID, CORROSIVE, N.O.S., (contains bromo-chloro-dimethylhydantoin) 5.1(8), PGIII, MARINE POLLUTANT

**Proper shipping name (IMDG)** OXIDISING SOLID, CORROSIVE, N.O.S., (contains bromo-chloro-dimethylhydantoin) 5.1(8), PGIII, MARINE POLLUTANT



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### BROMICIDE TABLETS

**Proper shipping name (ICAO)** OXIDISING SOLID, CORROSIVE, N.O.S., (contains bromo-chloro-dimethylhydantoin) 5.1(8), PGIII, MARINE POLLUTANT

**Proper shipping name (DOT)** OXIDISING SOLID, CORROSIVE, N.O.S., (contains bromo-chloro-dimethylhydantoin) 5.1(8), PGIII, MARINE POLLUTANT

Transport hazard class(es)

**TDG class** 5.1+8

**TDG label(s)** 5.1+8

**IMDG Class** 5.1+8

**ICAO class/division** 5.1

**ICAO subsidiary risk** 8

Transport labels



Packing group

**TDG Packing Group** III

**IMDG packing group** III

**ICAO packing group** III

**DOT packing group** III

Environmental hazards

**Environmentally Hazardous Substance**



Special precautions for user

**EmS** F-A, S-Q

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

**Classification Code (Adr)** OC2

**15. Regulatory information**

**Regulatory Status** This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label. DANGER Avoid contact with eyes, skin and clothing. EPA Reg. No. 83451-4

**Regulatory References** 29 CFR 1910.1010 Federal Regulations (OSHA Standard)

**Canadian Regulatory Status** PMRA PCP No. 31855

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## BROMICIDE TABLETS

### 16. Other information

<b>General information</b>	For advice on chemical emergencies, spillages, fires or first aid in relation to this product please contact the relevant emergency number below : EU/English Speakers - +44 (0) 1235 239 670 (NCEC) Arabic Speakers - +44 (0) 1235 239 671 Asia/Pacific countries - +65 3158 1074 Within Mainland China: +86 532 8388 9090 (NRCC). To/From China: +86 10 5100 3039 (NCEC)
<b>Revision comments</b>	Section 15 revision, added US regulatory status and EPA Reg. No.
<b>Issued by</b>	BWA Water Additives Regulatory Group, +44(0)1618646699
<b>Revision date</b>	3/28/2016
<b>Revision</b>	9
<b>SDS No.</b>	11306
<b>Hazard statements in full</b>	H272 May intensify fire; oxidizer. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H400 Very toxic to aquatic life.
<b>KIWA Certification</b>	
<b>NSF Non Food Program</b>	
<b>NSF/ANSI Standard 60</b>	

For safety reasons it is IMPERATIVE that customers:-

1. Ensure that all those within their control who use the products are supplied with all relevant information contained within the Safety Data Sheet and Technical Bulletin concerning the applications for which the product is designed and any instructions and warnings contained therein.

2. Consult BWA Water Additives before using or supplying the product for any other applications. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.

## WEST -358



**HMS RATING:**  
 HEALTH 2  
 FLAMMABILITY 0  
 REACTIVITY 0  
 OTHER C

## Safety Data Sheet WEST C-358

### SECTION 1: Identification

#### 1.1 Product identifier

Product name WEST C-358 Cooling Tower Inhibitor  
 Product number C-358

#### 1.2 Recommended use

An aqueous corrosion and scale inhibitor. This product is designed specifically for the control of corrosion and mineral scales in open circulating cooling water systems.

#### 1.3 Supplier's details

Name Water & Energy Systems Technology, Inc.  
 Address 13109 Arctic Cr.  
 Santa Fe Springs, CA 90670  
 Telephone (562) 921-5191

#### 1.4 Emergency phone number(s)

Chem-Tel (U.S.): (800) 255-3924

### SECTION 2: Hazard identification

#### 2.1 Classification of the substance or mixture

##### GHS classification in accordance with OSHA (29 CFR 1910.1200)

- Skin corrosion/irritation (chapter 3.2), Cat. 1A
- Eye damage/irritation (chapter 3.3), Cat. 1
- Corrosive to metals (chapter 2.16), Cat. 1

#### 2.2 GHS label elements, including precautionary statements

##### Pictogram



##### Signal word

**Danger**

##### Hazard statement(s)

H290 May be corrosive to metals  
 H302 Harmful if swallowed  
 H314 Causes severe skin burns and eye damage  
 H332 Harmful if inhaled

##### Precautionary statement(s)

P260 Do not breathe fume/gas/mist/vapors/spray.  
 P264 Wash hands thoroughly after handling.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection.  
 P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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**WEST C-358**

P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P406	Store in a corrosive resistant container with a resistant inner liner.

**SECTION 3: Composition/information on ingredients**

**3.1 Mixtures**

**Hazardous components**

**1. Sodium Hydroxide**

Concentration	10 - 15 % (Weight)
CAS no.	1310-73-2

**2. Azole Salts**

Concentration	1 - 5 % (Weight)
CAS no.	NA

**Trade secret statement (OSHA 1910.1200(i))**

Specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.

**SECTION 4: First-aid measures**

**4.1 Description of necessary first-aid measures**

General advice	Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
If inhaled	Remove to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.
In case of skin contact	Immediately remove clothing under safety shower. Flush skin with large amounts of soap and water. Wash clothing separately before reuse.
In case of eye contact	Flush eye with water for 15 minutes. Get medical attention.
If swallowed	Do NOT induce vomiting. Give victim large quantities of water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

**4.2 Most important symptoms/effects, acute and delayed**

**ACUTE:** Multiple small burns can result from exposure.

**CHRONIC:** Death may occur if penetration into vital areas occurs. Scarring may so constrict or destroy damaged tissue that extensive corrective surgery may be required.

**SECTION 5: Fire-fighting measures**

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## Safety Data Sheet WEST C-358

- 5.1 Suitable extinguishing media**  
No data available.
- 5.2 Specific hazards arising from the chemical**  
No data available.
- 5.3 Special protective actions for fire-fighters**  
No special fire fighting procedures.

---

### SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures**  
See section 8.
- 6.2 Environmental precautions**  
Do not flush to sewer, drains, or surface waters.
- 6.3 Methods and materials for containment and cleaning up**  
Clean up spills immediately, observing precautions in Exposure Protection section of this SDS. Flush with a water spray. Pick up wash liquid with absorbent or vacuum and place in a disposable container. Large spills should be handled according to a predetermined plan.

---

### SECTION 7: Handling and storage

- 7.1 Precautions for safe handling**  
Use with adequate ventilation. Follow all SDS/label precautions even after container is emptied because they may retain product residues.
- 7.2 Conditions for safe storage, including any incompatibilities**  
Contents may develop pressure upon prolonged storage. Loosen closure cautiously before opening.
- 7.3 Specific end use(s)**  
No data available.

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### SECTION 8: Exposure controls/personal protection

- 8.1 Control parameters**
- 1. Sodium hydroxide (CAS: 1310-73-2)**  
PEL (Inhalation): 2 mg/m<sup>3</sup> Ceiling (OSHA)  
TLV (Inhalation): 2 mg/m<sup>3</sup> Ceiling (ACGIH)
- 8.2 Appropriate engineering controls**  
Local exhaust ventilation may be necessary to control any air containments to within their PELs (TLVs) during the use of this product.
- 8.3 Individual protection measures, such as personal protective equipment (PPE)**
- Eye/face protection**  
Wear safety glasses with side shields (or goggles) and a face shield.
- Skin protection**  
Nitrile rubber, PVC, or Neoprene gloves are suitable protective materials.
- Body protection**

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Where splashing is possible, full chemically resistant protective clothing, rubber apron and boots are required.

### Respiratory protection

NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited.

### Thermal hazards

No data available.

### Environmental exposure controls

No data available.

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## SECTION 9: Physical and chemical properties

### Information on basic physical and chemical properties

Appearance/form	Amber or Yellow Liquid
Odor	Bland
pH	12.0
Melting point/freezing point	No data available.
Initial boiling point and boiling range	>212 F
Flash point	No data available.
Evaporation rate	<1 (butyl acetate = 1)
Flammability (solid, gas)	No data available.
Vapor pressure	No data available.
Vapor density	No data available.
Relative density	1.102
Solubility(ies)	Water Soluble

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available.

### 10.4 Conditions to avoid

Do not mix with other industrial chemicals.

### 10.5 Incompatible materials

Acids, oxidizing materials, halogen compounds, copper, zinc and galvanized metals.

### 10.6 Hazardous decomposition products

Carbon monoxide, carbon dioxide, ammonia, and oxides of nitrogen.

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## SECTION 11: Toxicological information

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## Safety Data Sheet WEST C-358

### Information on toxicological effects

**Acute toxicity**

No data available.

**Skin corrosion/irritation**

No data available.

**Serious eye damage/irritation**

No data available.

**Respiratory or skin sensitization**

No data available.

**Germ cell mutagenicity**

No data available.

**Carcinogenicity**

This product's ingredients are not found in the federal or Cal OSHA NTP, or IARC lists of suspected cancer causing agents.

**Reproductive toxicity**

No data available.

**STOT-single exposure**

No data available.

**STOT-repeated exposure**

No data available.

**Aspiration hazard**

No data available.

---

## SECTION 12: Ecological information

**Toxicity**

No data available.

**Persistence and degradability**

No data available.

**Bioaccumulative potential**

No data available.

**Mobility in soil**

No data available.

**Results of PBT and vPvB assessment**

No data available.

---

## SECTION 13: Disposal considerations

**Disposal of the product**

Dispose of all waste in accordance with federal, state, and local regulations.

Version: 1.0, Date of issue: 2015-05-19, Printed on: 2015-05-20, p. 5 of 6



**Safety Data Sheet**  
**WEST C-358**

**Disposal of contaminated packaging**  
Dispose of as unused product.

**Waste treatment**  
No data available.

**Sewage disposal**  
No data available.

---

**SECTION 14: Transport information**

**DOT (US)**  
UN Number: UN 1719  
Class: 8  
Packing Group: II  
Proper Shipping Name: CAUSTIC ALKALI LIQUID, N.O.S.  
Marine pollutant: No  
Shipping Label: Corrosive - 8  
Other Shipping Information: CONTAINS SODIUM HYDROXIDE, LIQUID



---

**SECTION 15: Regulatory information**

**Safety, health and environmental regulations specific for the product in question**

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**  
**FIRE: NO PRESSURE GENERATING: NO REACTIVITY: NO ACUTE: YES CHRONIC: NO**

---

**SECTION 16: Other information**

**Further information/disclaimer**

The information contained herein is provided in good faith and believed to be correct as of the date hereof. WEST, Inc. makes no representation as to the comprehensiveness or accuracy of the information. It is expected that the individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular purpose. Accordingly, WEST, Inc. will not be responsible for damages of any kind resulting in the use of or reliance upon such information. No representations, or warranties, either expressed or implied, of merchantability fitness for a particular purpose or of any other nature are made hereunder with respect to the information set forth herein or to the product to which the information refers.

## WEST R-630



**HMS RATING:**  
 HEALTH 1  
 FLAMMABILITY 0  
 REACTIVITY 0  
 OTHER C

**Safety Data Sheet**  
**WEST R-630**

**SECTION 1: Identification**

**1.1 Product identifier**

Product name WEST R-630 Sulfite  
 Product number R-630

**1.2 Recommended use**

An aqueous solution of sodium and potassium sulfites, bisulfites and metabisulfites designed specifically for halogen removal in process water systems.

**1.3 Supplier's details**

Name Water & Energy Systems Technology, Inc.  
 Address 13109 Arctic Cr.  
 Santa Fe Springs, CA 90670  
 Telephone (562) 921-5191

**1.4 Emergency phone number(s)**

Chem-Tel (U.S.): (800) 255-3924

**SECTION 2: Hazard identification**

**2.1 Classification of the substance or mixture**

**GHS classification in accordance with OSHA (29 CFR 1910.1200)**

- Skin corrosion/irritation (chapter 3.2), Cat. 3
- Eye damage/irritation (chapter 3.3), Cat. 2B

**2.2 GHS label elements, including precautionary statements**

**Signal word**

**Warning**

**Hazard statement(s)**

H316  
H320

Causes mild skin irritation  
Causes eye irritation

**Precautionary statement(s)**

P332+P313  
P264  
P305+P351+P338  
P337+P313

If skin irritation occurs: Get medical advice/attention.  
 Wash hands thoroughly after handling.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.  
 If eye irritation persists: Get medical advice/attention.

**SECTION 3: Composition/information on ingredients**

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## Safety Data Sheet WEST R-630

### 3.1 Mixtures

This product does not contain any hazardous materials under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

#### Trade secret statement (OSHA 1910.1200(i))

Specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.

---

## SECTION 4: First-aid measures

### 4.1 Description of necessary first-aid measures

General advice	Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
If inhaled	Remove to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.
In case of skin contact	Immediately remove clothing under safety shower. Flush skin with large amounts of soap and water. Wash clothing separately before reuse.
In case of eye contact	Flush eye with water for 15 minutes. Get medical attention.
If swallowed	Do NOT induce vomiting. Give victim large quantities of water. Call a physician or poison control center immediately.
Personal protective equipment for first-aid responders	No data available.

### 4.2 Most important symptoms/effects, acute and delayed

No data available.

### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

No data available.

---

## SECTION 5: Fire-fighting measures

### 5.1 Suitable extinguishing media

No data available.

### 5.2 Specific hazards arising from the chemical

No data available.

### 5.3 Special protective actions for fire-fighters

No special fire fighting procedures.

---

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Wear appropriate personal protective equipment as specified in Section 8.

### 6.2 Environmental precautions

Do not flush to sewer.

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## Safety Data Sheet WEST R-630

### 6.3 Methods and materials for containment and cleaning up

No data available.

---

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Use with adequate ventilation. Follow all SDS/label precautions even after container is emptied because they may retain product residues.

### 7.2 Conditions for safe storage, including any incompatibilities

Contents may develop pressure upon prolonged storage. Loosen closure cautiously before opening.

---

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

No exposure limits noted for ingredient(s).

### 8.2 Appropriate engineering controls

Local exhaust ventilation may be necessary to control any air containments to within their PELs (TLVs) during the use of this product.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear safety glasses with side shields (or goggles) and a face shield.

#### Skin protection

Nitrile rubber, PVC, or Neoprene gloves are suitable protective materials.

#### Body protection

Where splashing is possible, full chemically resistant protective clothing, rubber apron and boots are required.

#### Respiratory protection

NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited.

#### Thermal hazards

No data available.

#### Environmental exposure controls

No data available.

---

## SECTION 9: Physical and chemical properties

### Information on basic physical and chemical properties

Appearance/form	Clear pink liquid
Odor	No appreciable odor.
Odor threshold	No data available.
pH	~6.5
Melting point/freezing point	No data available.
Initial boiling point and boiling range	212 F

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## Safety Data Sheet WEST R-630

Flash point	No data available.
Evaporation rate	<1 (butyl acetate = 1)
Flammability (solid, gas)	No data available.
Vapor pressure	No data available.
Vapor density	No data available.
Relative density	1.251
Solubility(ies)	Water Soluble
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Viscosity	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.

---

### SECTION 10: Stability and reactivity

#### 10.1 Reactivity

No data available.

#### 10.2 Chemical stability

Stable under recommended storage conditions.

#### 10.3 Possibility of hazardous reactions

No data available.

#### 10.4 Conditions to avoid

Generation of heat by reaction with water or acids.

#### 10.5 Incompatible materials

Acids, oxidizing materials, halogen compounds, copper, zinc and galvanized metals.

#### 10.6 Hazardous decomposition products

Carbon monoxide, carbon dioxide, ammonia, and oxides of nitrogen.

---

### SECTION 11: Toxicological information

#### Information on toxicological effects

##### Acute toxicity

No data available.

##### Skin corrosion/irritation

No data available.

##### Serious eye damage/irritation

No data available.

##### Respiratory or skin sensitization

No data available.

##### Germ cell mutagenicity

No data available.

##### Carcinogenicity

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## Safety Data Sheet WEST R-630

This product's ingredients are not found in the federal or Cal OSHA NTP, or IARC lists of suspected cancer causing agents.

**Reproductive toxicity**

No data available.

**STOT-single exposure**

No data available.

**STOT-repeated exposure**

No data available.

**Aspiration hazard**

No data available.

---

### SECTION 12: Ecological information

**Toxicity**

No data available.

**Persistence and degradability**

No data available.

**Bioaccumulative potential**

No data available.

**Mobility in soil**

No data available.

**Results of PBT and vPvB assessment**

No data available.

---

### SECTION 13: Disposal considerations

**Disposal of the product**

Dispose of all waste in accordance with federal, state, and local regulations.

**Disposal of contaminated packaging**

Dispose of as unused product.

**Waste treatment**

No data available.

**Sewage disposal**

No data available.

---

### SECTION 14: Transport information

**DOT (US)**

Proper Shipping Name: D.O.T. NONREGULATED WATER TREATMENT LIQUID COMPOUND

---

**Safety Data Sheet  
WEST R-630**

---

**SECTION 15: Regulatory information**

**Safety, health and environmental regulations specific for the product in question**

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**

**FIRE: NO PRESSURE GENERATING: NO REACTIVITY: NO ACUTE: YES CHRONIC: NO**

---

**SECTION 16: Other information**

**Further information/disclaimer**

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# **BRIGHT DYES FLT YELLOW/GREEN LIQUID**

# Kingscote CHEMICALS

## Safety Data Sheet

Issue Date: 04-Oct-2013

Revision Date: 06-Feb-2017

Version Number: 1.1

### 1. Identification

#### Product Identifiers

**Product Name:** Bright Dyes® FLT Yellow/Green Liquid

**Product Number:** 106001

#### Recommended Use & Restrictions on Use

Water tracing & leak detection dye

#### Manufacturer/Supplier

Kingscote Chemicals, Inc.  
3334 South Tech Blvd.  
Miamisburg, OH 45342  
U.S.A.

#### Emergency Telephone Number

**Company Telephone Number:** (937) 886-9100  
**Emergency Telephone (24 hr):** INFOTRAC (800) 535-5053 (North America)  
+1-352-323-3500 (International)

### 2. Hazards Identification

#### Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

### 3. Composition/Information on Ingredients

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

### 4. First-Aid Measures

#### First-Aid Measures

<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
<b>Skin Contact</b>	Wash thoroughly with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
<b>Inhalation</b>	Remove to fresh air. If breathing is difficult, administer oxygen; seek medical attention immediately.

**Bright Dyes® FLT Yellow/Green Liquid**

**Revision Date:** 06-Feb-2017

**Ingestion** Rinse mouth. DO NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention if large quantities were ingested or if nausea occurs.

**Most Important Symptoms and Effects**

**Symptoms** Will cause staining of the skin on contact. May cause eye irritation. Inhalation of dust may cause respiratory irritation. Ingestion may cause urine to be a yellow/green color until the dye has been washed through the system.

**Indication of Any Immediate Medical Attention and Special Treatment Needed**

**Notes to Physician** Treat symptomatically.

**5. Fire-Fighting Measures**

**Suitable Extinguishing Media**

Water spray (fog). Carbon dioxide (CO<sub>2</sub>). Dry chemical. Regular foam.

**Unsuitable Extinguishing Media**

Not determined

**Specific Hazards Arising from the Chemical**

Product is not flammable. Burning/combustion may produce oxides of carbon and nitrogen (NO<sub>x</sub>).

**Protective Equipment and Precautions for Firefighters**

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**6. Accidental Release Measures**

**Personal Precautions, Protective Equipment and Emergency Procedures**

**Personal Precautions** Use personal protective equipment as recommended in Section 8.

**Environmental Precautions** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12 and Section 13.

**Methods and Material for Containment and Cleaning Up**

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for Cleaning Up** Sweep up and collect into suitable containers for disposal. Flush area with water.

**7. Handling and Storage**

**Precautions for Safe Handling**

**Advice on Safe Handling** Handle in accordance with good industrial hygiene and safety practices. Use personal protection recommended in Section 8. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts. Contaminated clothing should be thoroughly washed before reuse.

**Bright Dyes® FLT Yellow/Green Liquid**

**Revision Date:** 06-Feb-2017

**Conditions for Safe Storage, Including Incompatibilities**

<b>Storage Conditions</b>	Keep container tightly closed and store in a cool, dry, and well-ventilated area. Keep from freezing.
<b>Incompatible Materials</b>	Acids.

**8. Exposure Controls / Personal Protection**

**Exposure Guidelines**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Engineering Controls**

Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

**Individual Protection Measures, Such as Personal Protective Equipment:**

<b>Eye/Face Protection</b>	Goggles.
<b>Skin &amp; Body Protection</b>	Rubber gloves. Suitable protective clothing.
<b>Respiratory Protection</b>	No protection is ordinarily required under normal conditions of use.
<b>Hygiene Measures</b>	Handle in accordance with good industrial hygiene and safety practices.

**9. Physical and Chemical Properties**

**Information on Basic Physical and Chemical Properties**

<b>Physical State</b>	Liquid	<b>Odor</b>	None apparent
<b>Appearance</b>	Yellow/green liquid	<b>Odor Threshold</b>	Not determined
<b>Color</b>	Yellow/green		

<b><u>Property</u></b>	<b><u>Values</u></b>
<b>pH</b>	>8.0
<b>Melting/Freezing Point</b>	~32° F
<b>Boiling Point/Range</b>	~212° F
<b>Flash Point</b>	Not applicable
<b>Evaporation Rate</b>	1.8
<b>Flammability (solid, gas)</b>	Liquid – not applicable
<b>Upper Flammability Limits</b>	Not applicable
<b>Lower Flammability Limits</b>	Not applicable
<b>Vapor Pressure</b>	Not applicable
<b>Vapor Density</b>	0.6
<b>Relative Density</b>	Not applicable
<b>Specific Gravity</b>	Not determined
<b>Solubility</b>	Highly soluble in water
<b>Partition Coefficient</b>	Not determined
<b>Auto-ignition Temperature</b>	Not determined
<b>Decomposition Temperature</b>	Not determined
<b>Viscosity</b>	Not determined

**Bright Dyes® FLT Yellow/Green Liquid**

Revision Date: 06-Feb-2017

## 10. Stability and Reactivity

### **Reactivity**

Not reactive under normal conditions.

### **Chemical Stability**

Stable under recommended storage conditions.

### **Possibility of Hazardous Reactions**

None under normal processing.

### **Conditions to Avoid**

Keep separated from incompatible substances. Keep out of reach of children.

### **Incompatible Materials**

Acids. Strong oxidizing agents.

### **Hazardous Decomposition Products**

Oxides of carbon and nitrogen (NO<sub>x</sub>).

## 11: Toxicological Information

### **Information on Likely Routes of Exposure**

<b>Inhalation</b>	Avoid breathing vapors or mists.
<b>Ingestion</b>	Do not ingest.
<b>Skin Contact</b>	May cause an allergic skin reaction.
<b>Eye Contact</b>	Avoid contact with eyes.

### **Delayed, Immediate, and Chronic Effects from Short- and Long-Term Exposure**

May cause an allergic skin reaction.

### **Numerical Measures of Toxicity**

Not determined

### **Symptoms Associated with Exposure**

See Section 4 of this SDS for symptoms.

### **Carcinogenicity**

<b>NTP</b>	None
<b>IARC</b>	None
<b>OSHA</b>	None

**Bright Dyes® FLT Yellow/Green Liquid**

**Revision Date:** 06-Feb-2017

## 12. Ecological Information

### Ecotoxicity

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

### Component Information

Not available

### Persistence/Degradability

Not determined

### Bioaccumulation

Not determined

### Mobility

Not determined

### Other Adverse Effects

Not determined

## 13. Disposal Considerations

### Waste Disposal Methods

Dispose of in accordance with federal, state, and local regulations.

### Contaminated Packaging

Do not re-use empty containers. Dispose of containers in accordance with federal, state, and local regulations.

## 14. Transport Information

### Note

See current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

<b>DOT</b>	Not regulated
<b>IATA</b>	Not regulated
<b>OMDG</b>	Not regulated

## 15: Regulatory Information

### International Inventories

<b>TASCA</b>	This product is not subject to TSCA 12(b) reporting requirements.
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### U.S. Federal Regulations

<b>CERCLA</b>	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund
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**Bright Dyes® FLT Yellow/Green Liquid**

**Revision Date:** 06-Feb-2017

Amendments and Reauthorization Act (SARA) (40 CFR 355).

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

**U.S. State Regulations**

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know**

This product does not contain any substances regulated under applicable state right-to-know regulations.

**16: Other Information**

**HMIS**

Health Hazards	Flammability	Instability	Special Hazards
1	0	0	Not determined

**NFPA**

Health Hazards	Flammability	Physical Hazards	Personal Protection
1	0	0	B

<b>Issue Date</b>	04-Oct-2013
<b>Revision Date</b>	06-Feb-2017
<b>Revision Note</b>	Content Review

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**

# **BRIGHT DYES FLT YELLOW/GREEN TABLET**



# Kingscote CHEMICALS

## Safety Data Sheet

Issue Date: 09-Nov-2013

Revision Date: 06-Feb-2017

Version Number: 2.1

### 1. Identification

#### Product Identifiers

**Product Name:** Bright Dyes® FLT Yellow/Green Tablet

**Product Number:** 101101

#### Recommended Use & Restrictions on Use

Water tracing & leak detection dye

#### Manufacturer/Supplier

Kingscote Chemicals, Inc.  
3334 South Tech Blvd.  
Miamisburg, OH 45342  
U.S.A.

#### Emergency Telephone Number

**Company Telephone Number:** (937) 886-9100

**Emergency Telephone (24 hr):** INFOTRAC (800) 535-5053 (North America)

+1-352-323-3500 (International)

### 2. Hazards Identification

#### Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

### 3. Composition/Information on Ingredients

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

### 4. First-Aid Measures

#### First-Aid Measures

<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
<b>Skin Contact</b>	Wash thoroughly with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
<b>Inhalation</b>	Remove to fresh air. If breathing is difficult, administer oxygen; seek medical attention immediately.

**Bright Dyes® FLT Yellow/Green Tablet**

**Revision Date:** 06-Feb-2017

**Ingestion** Rinse mouth. DO NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention if large quantities were ingested or if nausea occurs.

**Most Important Symptoms and Effects**

**Symptoms** Will cause staining of the skin on contact. May cause eye irritation. Inhalation of dust may cause respiratory irritation. Ingestion may cause urine to be a yellow/green color until the dye has been washed through the system.

**Indication of Any Immediate Medical Attention and Special Treatment Needed**

**Notes to Physician** Treat symptomatically.

**5. Fire-Fighting Measures**

**Suitable Extinguishing Media**

Water spray (fog). Carbon dioxide (CO<sub>2</sub>). Dry chemical.

**Unsuitable Extinguishing Media**

Not determined

**Specific Hazards Arising from the Chemical**

Remote possibility of dust explosion. Burning may produce oxides of carbon and nitrogen (NO<sub>x</sub>).

**Protective Equipment and Precautions for Firefighters**

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**6. Accidental Release Measures**

**Personal Precautions, Protective Equipment and Emergency Procedures**

**Personal Precautions** Use personal protective equipment as recommended in Section 8.

**Environmental Precautions** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12 and Section 13.

**Methods and Material for Containment and Cleaning Up**

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for Cleaning Up** Sweep up and collect into suitable containers for disposal. Flush area with water.

**7. Handling and Storage**

**Precautions for Safe Handling**

**Advice on Safe Handling** Handle in accordance with good industrial hygiene and safety practices. Use personal protection recommended in Section 8. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts. Contaminated clothing should not be allowed out of the workplace.

**Bright Dyes® FLT Yellow/Green Tablet**

**Revision Date:** 06-Feb-2017

**Conditions for Safe Storage, Including Incompatibilities**

**Storage Conditions** Keep container tightly closed and store in a cool, dry, and well-ventilated area. Store away from heat, sparks, open flame or any other ignition source.

**Incompatible Materials** Bromine trifluoride. Lithium. Strong acids, bases, and oxidizing agents.

**8. Exposure Controls / Personal Protection**

**Exposure Guidelines**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Engineering Controls**

Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

**Individual Protection Measures, Such as Personal Protective Equipment:**

**Eye/Face Protection** Avoid contact with eyes.

**Skin & Body Protection** Rubber gloves. Suitable protective clothing.

**Respiratory Protection** Use NIOSH-approved dust mask if dusty conditions exist.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practices.

**9. Physical and Chemical Properties**

**Information on Basic Physical and Chemical Properties**

<b>Physical State</b>	Solid	<b>Odor</b>	None apparent
<b>Appearance</b>	Orange tablet	<b>Odor Threshold</b>	Not determined
<b>Color</b>	Orange		

<b><u>Property</u></b>	<b><u>Values</u></b>
<b>pH</b>	Not applicable
<b>Melting/Freezing Point</b>	Not applicable
<b>Boiling Point/Range</b>	Not applicable
<b>Flash Point</b>	Not applicable
<b>Evaporation Rate</b>	Not applicable
<b>Flammability (solid, gas)</b>	Not flammable
<b>Upper Flammability Limits</b>	Not applicable
<b>Lower Flammability Limits</b>	Not applicable
<b>Vapor Pressure</b>	Not applicable
<b>Vapor Density</b>	Not applicable
<b>Relative Density</b>	Not applicable
<b>Specific Gravity</b>	Not applicable
<b>Solubility</b>	Highly soluble in water with small amounts of insoluble residue
<b>Partition Coefficient</b>	Not determined
<b>Auto-ignition Temperature</b>	Not determined
<b>Decomposition Temperature</b>	Not determined
<b>Viscosity</b>	Not determined

**Bright Dyes® FLT Yellow/Green Tablet**

**Revision Date:** 06-Feb-2017

## 10. Stability and Reactivity

### **Reactivity**

Not reactive under normal conditions.

### **Chemical Stability**

Stable under recommended storage conditions.

### **Possibility of Hazardous Reactions**

None under normal processing.

### **Conditions to Avoid**

Keep separated from incompatible substances. Keep out of reach of children.

### **Incompatible Materials**

Bromine trifluoride. Lithium. Strong acids, bases, and oxidizing agents.

### **Hazardous Decomposition Products**

Oxides of carbon and nitrogen (NOx).

## 11: Toxicological Information

### **Information on Likely Routes of Exposure**

<b>Inhalation</b>	Avoid inhalation of dust.
<b>Ingestion</b>	Do not ingest.
<b>Skin Contact</b>	May cause an allergic skin reaction.
<b>Eye Contact</b>	Avoid contact with eyes.

### **Delayed, Immediate, and Chronic Effects from Short- and Long-Term Exposure**

May cause an allergic skin reaction.

### **Numerical Measures of Toxicity**

Not determined

### **Symptoms Associated with Exposure**

See Section 4 of this SDS for symptoms.

### **Carcinogenicity**

<b>NTP</b>	None
<b>IARC</b>	None
<b>OSHA</b>	None

**Bright Dyes® FLT Yellow/Green Tablet**

**Revision Date:** 06-Feb-2017

## 12. Ecological Information

### Ecotoxicity

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

### Component Information

Not available

### Persistence/Degradability

This product is biodegradable.

### Bioaccumulation

Not determined

### Mobility

Not determined

### Other Adverse Effects

Not determined

## 13. Disposal Considerations

### Waste Disposal Methods

Dispose of in accordance with federal, state, and local regulations.

### Contaminated Packaging

Do not re-use empty containers. Dispose of containers in accordance with federal, state, and local regulations.

## 14. Transport Information

### Note

See current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

<b>DOT</b>	Not regulated
<b>IATA</b>	Not regulated
<b>OMDG</b>	Not regulated

## 15: Regulatory Information

### International Inventories

Not determined

### U.S. Federal Regulations

<b>CERCLA</b>	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund
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**Bright Dyes® FLT Yellow/Green Tablet**

**Revision Date:** 06-Feb-2017

Amendments and Reauthorization Act (SARA) (40 CFR 355).

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

**U.S. State Regulations**

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know**

This product does not contain any substances regulated under applicable state right-to-know regulations.

**16: Other Information**

**HMIS**

<b>Health Hazards</b>	<b>Flammability</b>	<b>Instability</b>	<b>Special Hazards</b>
1	0	0	Not determined

**NFPA**

<b>Health Hazards</b>	<b>Flammability</b>	<b>Physical Hazards</b>	<b>Personal Protection</b>
1	0	0	B

<b>Issue Date</b>	09-Nov-2013
<b>Revision Date</b>	06-Feb-2017
<b>Revision Note</b>	Content Review

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**