Industrial and Sanitary Outfalls
2019 NPDES Permit Re-Application
Outfall 05A055 Fact Sheet

Weapons Facility Operations
High Explosive Wastewater Treatment Facility (HEWTF)

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INDUSTRIAL AND SANITARY OUTFALLS
2019 NPDES PERMIT RE-APPLICATION
OUTFALL O5A055 FACT SHEET

1.0 OUTFALL LOCATION [Section I]

Outfall ID No.:	05A055	**Outfall Location:**	Technical Area 16
Category:	05A, High Explosives Wastewater Discharge	**Originating Structure for the Discharge:**	TA-16-1508
Flow Type:	Intermittent	**Receiving Stream:**	Ephemeral Tributary to Canon de Valle in Water Quality Segment 20.6.4.128 NMAC
Longitude:	106° 19’ 52” W	**Latitude:**	30° 50’ 49” N

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

Outfall 05A055 is located at TA-16 and discharges to an ephemeral tributary of Canon De Valle in Water Quality Segment 20.6.4.128 NMAC. The outfall discharges treated wastewater that originates at TA-16-1508 at the High Explosives Wastewater Treatment Facility (HEWTF). Attachment A provides a location map. Table 1 identifies the discharge source, the source location, and source composition.

Table 1
Sources for Discharges to Outfall 05A055

TA	Building	Type	Transportation Mode (Piping, Truck etc.)	Discharge Source	Source Composition
16	1508	Process [a]	Truck	High Explosives Wastewater Treatment Facility (HEWTF)	Treated HEWTF Effluent

a. Some storm water as precipitation enters the tanks through the sand filters.

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 05A055 is provided in Attachment B. This drawing includes all operations that contribute treated process water and storm water to the discharge at the outfall. A water balance is also provided on the process schematic with average flows for the cooling tower intakes and blowdown. The water balance was estimated using influent data and the HEWTF treatment equipment capabilities.

2.2 Water Treatment Processes [II.B]

The HEWTF receives and treats high explosives (HE) contaminated process and/or storm water from various sumps, tanks, and facilities at TA-9 and TA-16. Table 2 identifies the wastewater treatment codes associated with the HEWTF. All water that is received at the HEWTF must comply with the Waste Acceptance Criteria, must have a completed and approved Waste Stream Profile Form, and is tracked in a water treatment logbook.

Table 2
Wastewater Treatment Codes Assigned to Outfall 05A055

Treatment Code	Description	Justification
1V	Slow Sand Filtration	Sand filters remove particulates of high explosive (HE) prior to treatment.
2A	Carbon Adsorption	Carbon adsorption to remove HE.
2J	Ion Exchange	Ion Exchange to remove anions and cations.
1F	Evaporation	Effluent is evaporated.

The HE contaminated wastewater and storm water is collected by pumper truck and discharged to one of two sand filters where it is filtered to remove solids. The filtered water from the sand filters is collected in a belowground storage tank and then pumped through cartridge filters to an equalization tank at the HEWTF. The wastewater from the equalization tank is circulated through Granular Activated Carbon (GAC) and/or Ion Exchange (IX) to remove residual HE, barium, perchlorate,

and other contaminants. The treatment process is designed to circulate the wastewater through the process multiple times prior to storage in the post treatment tanks and discharge to either electric evaporators or to Outfall 05A055. The HEWTF operations may include bypass of either the GAC tanks and/or IX columns when discharging to the electric evaporator(s). Attachment C provides photographs of the outfall location and treatment equipment.

The water treatment processes identified in Table 2 utilize chemicals to remove contaminates. Table 3 provides a list of the chemicals used at the HEWTF.

Table 3
List of Treatment Chemicals used in the Operations that Contribute to Outfall 05A055

Source	Chemical Name	Reason for Use	Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4	
High Explosives Wastewater Treatment Facility (HEWTF)	Granular Activated Carbon (GAC)	GAC used to remove residual HE	NA	NA
	CG10-BL Ion Exchange Resin	Ion Exchange Resin for Barium Removal	Polystyrene sulfonate (styrene)	2C-3, 2C-4
	SIR-110-HP Ion Exchange Resin	Ion Exchange Resin for Perchlorate Removal	Tributylamine (styrene & divinylbenzene)	2C-3, 2C-4

2.3 Discharge Rate and Frequency [II.C]

The discharge rates and frequencies for Outfall 05A055 are provided in Table 4.

Table 4
Flow Rates and Frequencies for Discharges to Outfall 05A055

Source [a, b]	Frequency		Flow Rates and Volumes				
	Days/Week	Months	Average (MGD)	Maximum (MGD)	Average Volume (GPD)	Maximum Volume (GPD)	Duration (days)
High Explosives Wastewater Treatment Facility (HEWTF)	0.1	0.1	0.0003	0.0021	270	2,120	4

a. Estimated based upon the influent receipt logbooks and the capacity of the post treatment tanks.
b. The HEWTF is a batch treatment facility.

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

3.0 PRODUCTION [Section III]

Section III is not applicable to Outfall 05A055.

4.0 IMPROVEMENTS [Section IV]

Section IV is not applicable to Outfall 05A055.

5.0 INTAKE AND EFFLUENT CHARACTERISTICS [Section V]

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

The analytical results provided for the Outfall 05A055 Permit Reapplication on the Form 2C were provided from the following sources:

- Operational samples collected on September 26, 2018 and January 24, 2019 that were shipped to an independent laboratory for analysis.
- Field samples collected and analyzed on September 26, 2018 for temperature, residual chlorine, and pH.
- Field samples collected and analyzed on January 24, 2018 for sulfite.
- Hardness = 2.9 mg/L ($CaCO_3$)

A discharge monitoring report summary is not provided for Outfall 05A055 because the effluent from the HEWTF was not discharge to Canon de Valle between October 2014 and September 2018. Effluent from the HEWTF was routed to the electric evaporator(s).

5.2 Potential Pollutants [V.D]

The treatment chemicals associated with the HEWTF and the composition of the influent it receives for treatment constitute the pollutant load of the discharge to Outfall 05A055. Table 5 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 5
Potential Pollutants by Source for Outfall 05A055

Source	POTENTIAL Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4		Analytical Data Results from Operational Samples Collected for Outfall 05A055
High Explosives Wastewater Treatment Facility (HEWTF)	styrene	2C-3, 2C-4	Not analyzed. [b]
High Explosives Wastewater Treatment Facility (HEWTF) - Chemicals identified on influent Waste Stream Profile forms.	acetone [a]	2C-4	Not analyzed. [b]
	ammonia	2C-4	2.27 mg/L
	benzoic acid	2C-4	pH = 6.5 – 8.7 S.U.
	chloroform	2C-4	Not detected.
	dinitrotoluene	2C-3	Not detected.
	sodium	2C-4	1040 mg/L
	toluene [a]	2C-4	Not detected.
	uranium	2C-3	Not analyzed. [b]

a. Results are from operational samples collected from the post treatment tanks. These samples are representative of the effluent after final treatment and the potential discharge to Outfall 05A055.
b. The potential pollutant was determined to not be associated with a "Listed" Resource Conservation and Recovery Act (RCRA) hazardous waste at the point of generation. This waste determination was documented with the associated waste stream profile form and in the waste characterization and tracking system database.
c. The potential pollutant was not analyzed because it is not specifically called out on the Form 2C.

The safety data sheets associated with the chemicals used to treat water at the HEWTF are provided in Attachment D.

6.0 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS [Section VI]

Section VI is not applicable to Outfall 05A055.

7.0 BIOLOGICAL TOXICITY TESTING DATA [Section VII]

Section VII is not applicable to Outfall 05A055.

8.0 CONTRACT ANALYSIS INFORMATION [Section VIII]

Operational Samples from the HEWTF for the Form 2C constituents required by the permit application forms were collected on September 26, 2018 and January 24, 2019. These samples were submitted to independent laboratories as summarized in Table 6.

Table 6
List of Independent Laboratories Used for NPDES Water Analysis

Laboratory Name	Address and Contact Info	Analytes
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 Espanola, 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 05A055

NPDES Permit Re-Application Project
TA-16 Building 1508, 363, 401, 406
Outfall #05A055

Legend

- NPDES Outfall
- Springs
- Drainages
- 100ft Contours
- 20ft Contours
- 10ft Contours
- Fences
- Dirt Roads
- Paved Roads
- Source Structures
- Building Served by Source
- Structures
- LANL Boundary
- Technical Areas

N

Feet
0 25 50 100 150 200

0 5 10 20 30 40
Meters

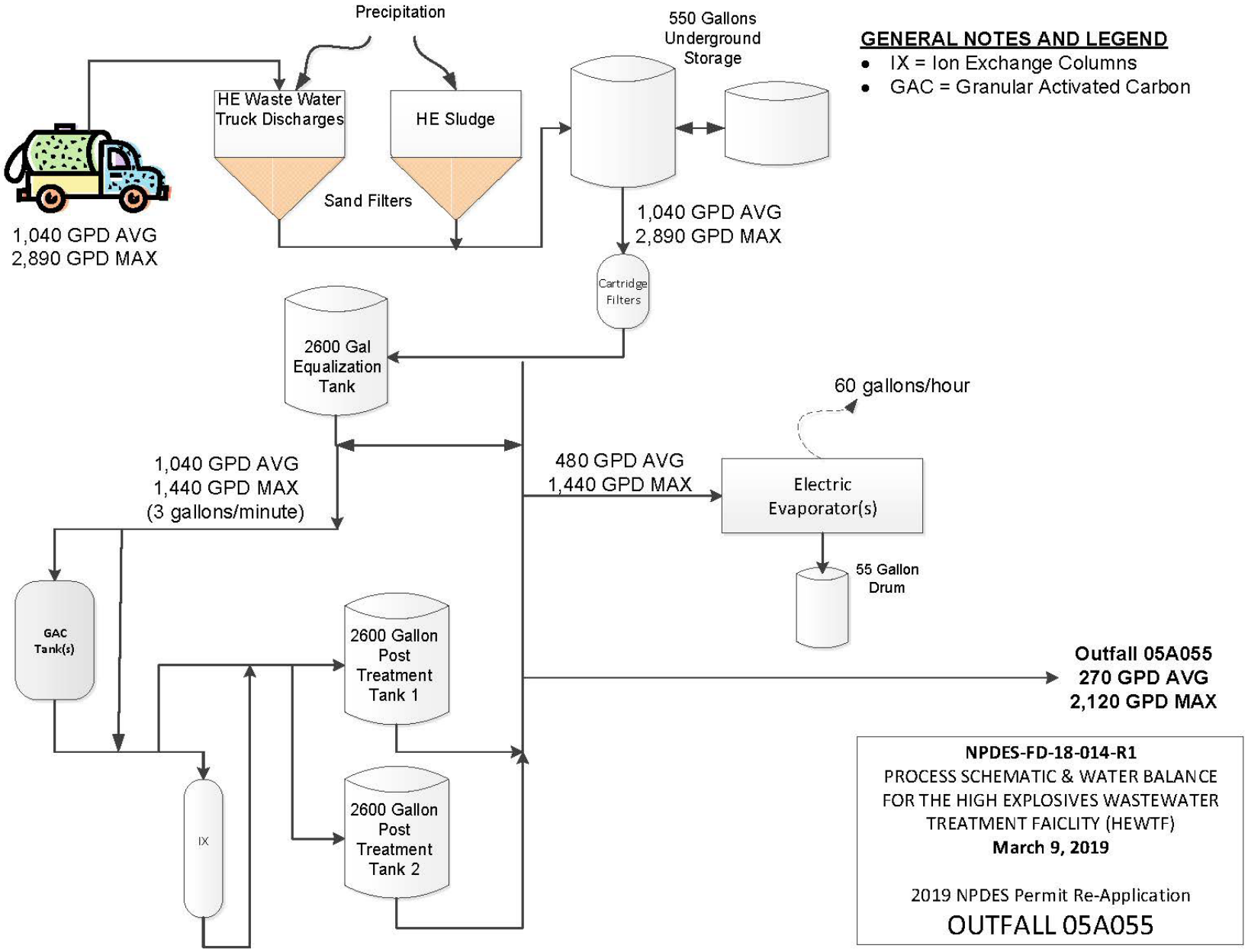
1:800

State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum, NGVD 1929

Map Updated By: Bethann McVicker, IF-PROG
Map #18-129-05 15 November 2018

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 Schematic and Water Balance for Outfall 05A055



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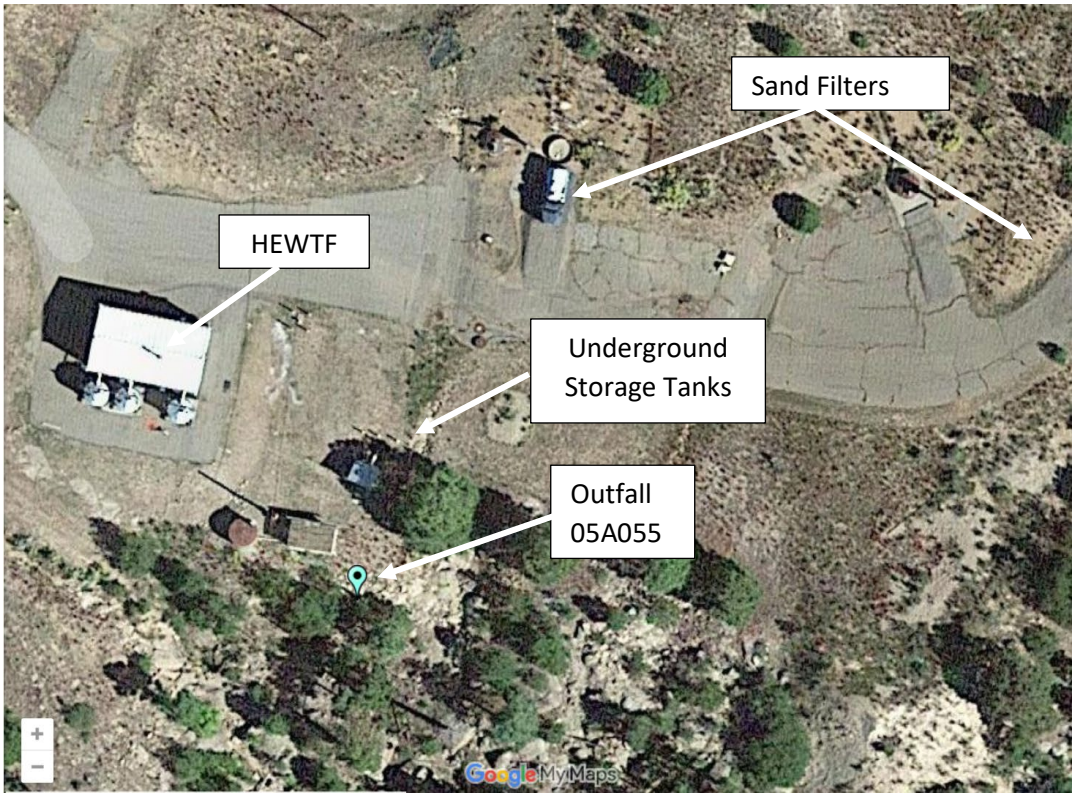
ATTACHMENT C: Photographs

NPDES-05A055-18-001	Outfall 05A055 - Location
NPDES-05A055-18-002	Outfall 05A055 - Receiving Stream Ephemeral Tributary to Canyon de Valle, Water Quality Segment Number 20.6.4.128 NMAC
NPDES-05A055-18-003	Outfall 05A055 - Condition at Hose Connection for Discharge to the Outfall
NPDES-05A055-18-004	High Explosives Wastewater Treatment Facility (HEWTF)
NPDES-05A055-18-005	HEWTF – Sand Filters and Tanker Truck
NPDES-05A055-18-006	HEWTF – Sand Filter
NPDES-05A055-18-007	HEWTF – Underground Storage Tanks
NPDES-05A055-18-008	HEWTF - Cartridge Filters
NPDES-05A055-18-009	HEWTF - Equalization Tank
NPDES-05A055-18-010	HEWTF - Granulated Activated Carbon Tanks
NPDES-05A055-18-011	HEWTF - Ion Exchange Tanks
NPDES-05A055-18-012	HEWTF - Post Treatment Tanks
NPDES-05A055-18-013	HEWTF - Evaporator



Photograph - NPDES-05A055-18-001
Outfall 05A055 - Location

Photograph - NPDES-05A055-18-002
Outfall 05A055 - Receiving Stream Ephemeral Tributary to Canyon de Valle, Water Quality Segment Number 20.6.4.128 NMAC

Photograph - NPDES-05A055-18-003
Outfall 05A055 - Condition at Hose Connection for Discharge to the Outfall

Photograph - NPDES-05A055-18-004
High Explosives Wastewater Treatment Facility (HEWTF)

Photograph - NPDES-05A055-18-005
HEWTF – Sand Filters and Tanker Truck

Photograph - NPDES-05A055-18-006
HEWTF – Sand Filter

Photograph - NPDES-05A055-18-007
HEWTF - Underground Stroage Tanks

Photograph - NPDES-05A055-18-008
HEWTF - Cartridge Filters

Photograph - NPDES-05A055-18-009
HEWTF - Equalization Tank

Photograph - NPDES-05A055-18-010
HEWTF - Activated Carbon Filter Tanks

Photograph - NPDES-05A055-18-011
HEWTF - Ion Exchange Tanks

Photograph - NPDES-05A055-18-012
HEWTF - Post Treatment Tanks

Photograph - NPDES-05A055-18-013
HEWTF - Evaporator

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ATTACHMENT D: Safety Data Sheets

LIST OF SAFETY DATA SHEETS
Granular Activated Carbon (GAC)
CG10-BL Ion Exchange Resin
SIR-110-HP Ion Exchange Resin

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GRANULAR ACTIVATED CARBON

BAKERCORP™

Safety Data Sheet

SECTION I	Identity

PRODUCT IDENTIFICATION: Activated Carbon, GAC, R, VCC, VCCAW, VCO, VCOAW, VP, PAC

PRODUCT USE: Use in accordance with manufacturer recommendations

MANUFACTURER:

BakerCorp
3020 Old Ranch Parkway
Suite 220
Seal Beach, CA 90740

TELEPHONE: **(562) 430-6262**
EMERGENCIES: **(562) 430-6262**

Date Prepared: 7/15/2015

SECTION II	Hazard(s) Identification

Hazard Classification: GHS-US

Eye Irritation	2B	H320
Respiratory Irritation	3	H335

Signal Word: Irritant

Hazard Statement: Contact may cause eye irritation: Dust may cause respiratory irritation.

Hazard Pictogram:

Precautionary statements:

P261	Avoid Breathing: dust/fume/gas/mist/vapor/spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protections/face protection
P304/P340	If inhaled/Remove to fresh air
P305/P351/P338	If in eyes/rinse cautiously with water/ remove contact lenses if easy/continue rinsing
P337/P313	If eye irritation persist: get medical attention
P403/P233	Store in well ventilated place. Keep container tightly closed
P405	Store locked up
P501	Dispose container to appropriate receptacle

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Other Hazards: No additional information

Acute Toxicity: No data available

SECTION III Composition/Information on Ingredients

Chemical Name	CAS#	%	Impurities
Carbon	7440-44-0	100	None

SECTION IV First-Aid Measures

Route(s) of Exposure	Symptoms	First Aid
Inhalation	Dust may cause mild respiratory irritation	Remove to fresh air. Seek medical attention if irritation persists
Skin	Dust may cause mild irritation/reddening	Wash with soap & water; seek medical attention if irritation persists.
Eye	Dust may cause eye irritation and redness.	Flush with lukewarm water for at least 15 minutes. If irritation persists seek medical attention.
Ingestion	May cause digestive track irritation.	Drink plenty of water and seek medical attention.

SECTION V Fire Fighting Measures

Suitable Extinguishing Media: Flood with plenty of water, use media suitable for surrounding the fire.
Unsuitable Media: None known.
Unusual fire & explosion hazards: Contact with strong oxidizers may cause rapid combustion.
Special Firefighting procedures: Exercise caution when responding to any chemical fire. Firefighters should wear full protective gear.

SECTION VI Accidental Release Measures

Personal Precautions: Wear protective equipment, keep unnecessary personnel away.
General precautions: Avoid contact with skin and eyes.
Environmental Precautions: None
Containment & Clean Up: Sweep up and discard in protected refuse container.
Other Information: Not applicable

SECTION VII Handling and Storage

Safe Handling: Avoid prolonged contact with eyes and skin. Use in well ventilated areas.

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Safe Storage: Store in a cool, dry and well ventilated area. Protect containers from physical damage. Keep away from oxidizers, heat and flame.

SECTION VIII	Exposure Controls/Personal Protection

Component	OSHA PEL	ACGIH-TLV	Other Limits
Activated Carbon	Not Available	Not Available	

Engineering Guidelines	Local exhaust and general ventilation to meet exposure standards. Wet activated carbon depletes oxygen from the air creating a severe hazard to workers in enclosed or confined spaces. Sampling and work procedures for low oxygen levels should be taken whenever workers entering carbon vessels, enclosed or confined spaces. If risk of overexposure exists, wear and approved respirator.
Personal Protective Equipment	Use NIOSH approved respirator if dust generated exceeds exposure limits. Gloves, safety glasses, work clothes as determined appropriate
General Hygiene	Keep away from food and beverages, remove contaminated clothing: wash hands before eating.

SECTION IX	Physical & Chemical Properties

Physical State	Solid	**Boiling point**	NA
Appearance	Granular/powder	**Flash Point**	NA
Color	Black	**Evaporation Rate**	NA
Odor	None	**Flammability (solid/gas) C**	No Data Available
Odor Threshold	None	**UEL**	NA
Vapor Pressure	0	**LEL**	NA
pH	NA	**Vapor Density**	Solid
Relative Density	28 – 33 lbs/cubic ft	**Partition Coefficient:**	NA
Melting Point	NA	**Auto ignition Temperature**	No data available
Freezing Point	NA	**Decomposition Temperature**	NA
Solubility	None	**Viscosity**	NA

SECTION X	Stability & Reactivity

Incompatibility:	Strong oxidizers such as ozone or liquid oxygen, and chlorine
Chemical Stability:	Stable
Conditions to Avoid:	None
Materials to Avoid:	Strong oxidizers such as ozone or liquid oxygen, and chlorine
Hazardous Decomposition Products:	Carbon Monoxide and carbon dioxide may be generated during combustion.

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SECTION XI	Toxicological Information

Acute Effects	
Oral LD50	Not Determined
Dermal LD 50	Not Determined
Inhalation	See Section IV
Ingestion	See Section IV
Eye Irritation	See Section IV
Skin Irritation	See Section IV
Sensitization	Not Determined
Signs and Symptoms of Exposure	Irritation and redness of eyes and skin. Dust may cause respiratory irritation

Chronic Effects:	
Carcinogenicity	Not Determined
Mutagenicity	Not Determined
Reproduction Effects	Not Determined
Developmental Factors	Not Determined

SECTION XII	Ecological Information

Ecotoxicity	Not Determined
Persistence/Degradability	Not Determined
Bioaccumulation Potential	Not Determined
Mobility in Soil	Not Determined
Other Adverse Effects	Not Determined

SECTION XIII	Disposal Concerns

Vacuum or shovel material in a closed container. Dispose of in accordance with all applicable local, state and federal and international regulations.

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SECTION XIV	Transport Information

UN Number: Not applicable
UN Name: Not applicable

Ship in accordance with
DOT/ADR/RID/ADNR/IMDP/ICAO/IATA

SECTION XV	Regulatory Information

SARA Title III 302	Product not listed
SARA Title III 313	Product not listed
TSCA	Product is listed
Canadian – WHMIS	Product is listed
DSL #	Product is Listed

SECTION XVI	Other Information

The information and recommendations listed are believed to be true and accurate to the best of our knowledge as of the prepared date below. BakerCorp makes no warranty with respect to same and disclaims all liability for reliance therein.

Date Prepared: May 25, 2015

5 AC

ION EXCHANGE RESIN

Safety Data Sheet

Product Names: CGS, CGS-BL, CG8, CG8-BL, CG8-C, CG8-F, CG8-UPS, CG8-HP, CG8-NS, CG10, CG10-BL, CG10-UPS, CG10-HP, SACMP, SACMP-UPS

(Cation Exchange Resin in the Sodium Form)

Effective date February 23, 2018

Section 1: Identification

1a	Product Names	ResinTech CGS, CGS-BL, CG8, CG8-BL, CG8-C, CG8-F, CG8-UPS, CG8-HP, CG8-NS, CG10, CG10-BL, CG10-UPS, CG10-HP, SACMP, SACMP-UPS
1b	Common Name	Cation exchange resin in the sodium form.
1c	Intended use	All general purpose cation exchange for general use including water softening and demineralization.
1d	Manufacturer Address	ResinTech, Inc. 160 Cooper Road, West Berlin, NJ 08091 USA
	Phone Email	856-768-9600 ixresin@resintech.com

Section 2: Hazard Identification

2a	OSHA Hazard classification	Not hazardous or dangerous

Product Hazard Rating	Scale
Health = 0	0 = Negligible
Fire = 1	1 = Slight
Reactivity = 0	2 = Moderate
Special – N/A	3 = High
	4 = Extreme

2b	Product description	Amber, tan or black colored solid beads with little or no odor.
2c	Precautions for use	Safety glasses and gloves recommended. Slipping hazard if spilled.
2c	Potential health effects	Will cause eye irritation. Ingestion is not likely to pose a health risk.
2d	Environmental effects	Little or none.

Section 2A: Hazard classification UN OSHA globally harmonized system

Warning (contains ion exchange resin)

H320: Causes eye irritation (Category 2B)

Precautionary Statements

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P333+313: If skin irritation or a rash occurs: Get medical advice/attention.

P337+313: If eye irritation persists get medical advice/attention.

P403+233: Store in a well-ventilated place. Keep container tightly closed.

P411: Store at temperatures not exceeding 50 °C/ 122 °F.

Please refer to the safety data sheet for additional information regarding this product

ResinTech, Inc.
160 Cooper Road
West Berlin, NJ 08091-9234
856 768-9600
lxresin@resintech.com

Section 3: Composition/ Information on Ingredients		
3a	Chemical name	Polystyrene sulfonate in the sodium form
3b	Ingredients Polystyrene sulfonate in the sodium form	CAS# 69011-22-9 (40 - 60%)
	Water	CAS# 7732-18-5 (40 – 60%)

Section 4: First Aid Measures		
4a	Inhalation	No adverse effects expected- normal use of product does not produce odors or vapors.
4b	Skin	Wash with soap and water- seek medical attention if a rash develops.
4c	Eye contact	Wash immediately with water-seek attention if discomfort continues.
4d	Ingestion	No adverse effects expected for small amounts, larger amounts can cause stomach irritation. Seek medical attention if discomfort occurs.

Section 5: Fire Fighting Measures		
5a	Flammability	NFPA Fire rating = 1
5b	Extinguishing media	Water, CO2, foam, dry powder
5c	Fire fighting Procedures	Follow general fire fighting procedures indicated in the work place.
5d	Protective Equipment	MSHA/NIOSH approved self-contained breathing gear, full protective clothing.
5e	Combustion Products	Carbon oxides and other toxic gasses and vapors.
5f	Unusual Hazards	Product is not combustible until moisture is removed. Resin begins to burn at approximately 230º C. Auto ignition can occur above 500º C.

Section 6: Accidental Release Measures		
6a	Personal Precautions	Keep people away, spilled resin can be a slipping hazard, wear gloves and safety glasses to minimize skin or eye contact.
6b	Incompatible Chemicals	Strong oxidants can create risk of combustion products similar to burning.
6c	Environmental Precautions	Keep out of public sewers and waterways.
6d	Containment Materials	Use plastic, paper, or metal containers.
6e	Methods of Clean-up	Sweep up material and transfer to containers.

Section 7: Handling and Storage		
7a	Handling	Avoid prolonged skin contact. Avoid contact with salts or with salty water to prevent premature exhaustion of the resin. Keep resin moist and avoid allowing resin to completely dry.
7b	Storage	Store in a cool dry place (0º to 45º C) in the original shipping container. This product is thermally sensitive and will have reduced shelf life if subjected to extended periods of time at temperatures exceeding 50º C. Although freezing does not usually damage ion exchange resins, avoid repeated freeze thaw cycles.

Section 8: Exposure Controls/Personal Protection		
8a	OSHA exposure limits	None noted.
8b	Engineering Controls	Provide adequate ventilation.
8c	Personal Protection Measures	
	Eye Protection	Safety glasses or goggles.
	Respiratory Protection	Not required for normal use.
	Protective Gloves	Recommended for extended contact.

Section 9: Physical and Chemical Properties

Appearance	Amber, tan, or black beads.
Flammability or explosive limits	Flammable above 500º C
Odor	None
Physical State	Solid
Vapor pressure	Not available
Odor threshold	Not available
Vapor density	Not available
pH	Near neutral (6 to 8 typical)
Relative density	Approx 800 grams/Liter
Melting point/freezing point	Does not melt, freezes at approx. 0 C
Solubility	Insoluble in water and most solvents
Boiling point	Does not boil
Flash point	Approx 500º C
Evaporation rate	Does not evaporate
Partition Coefficient (n-octonol/water)	Not applicable
Auto-ignition temperature	Approx 500º C
Decomposition temperature	Above 230º C
Viscosity	Not applicable

Section 10: Stability and Reactivity

10a Stability	Stable under normal conditions.
10b Conditions to Avoid	Heat, exposure to strong oxidants.
10c Hazardous by-products	Organic sulfonates, charred polystyrene, aromatic acids and hydrocarbons, organic amines, nitrogen oxides, carbon oxides, chlorinated hydrocarbons.
10d Incompatible materials	Strong oxidizing agents (such as HNO_3)
10e Hazardous Polymerization	Does not occur

Section 11: Toxicological Information

11a Likely Routes of Exposure	Oral, skin or eye contact.
11b Effects of exposure	
Delayed	None known.
Immediate (acute)	None known.
Chronic	None known.
11c Toxicity Measures	
Skin Adsorption	Unlikely.
Ingestion	Oral toxicity believed to be low but no LD50 has been established.
Inhalation	Unknown, vapors are very unlikely due to physical properties (insoluble solid).
11d Toxicity Symptoms	
Skin Adsorption	Mild rash.
Ingestion	Indigestion or general malaise.
Inhalation	Unknown.
11e Carcinogenicity	None known

Section 12: Ecological information

12a Eco toxicity	Not harmful to plant or animal life.
12b Mobility	Insoluble.
12c Biodegradability	Not biodegradable.
12d Bioaccumulation	Insignificant.
12e Other adverse effects	Not Harmful to the environment.

Section 13: Disposal Considerations	
13a General considerations	Material is non-hazardous.
13b Disposal Containers	Most plastic and paper containers are suitable.
13c Disposal methods	No specific method necessary
13d Sewage Disposal	Not recommended
13e Precautions for incineration	May release toxic vapors when burned
13f Precautions for landfills	Resins used to remove hazardous materials may then become hazardous mixtures.

Section 14: Transportation Information	
14a Transportation Class	Not classified as a dangerous good for transport by land, sea, or air.
14b TDG	Not regulated.
14c IATA	Not regulated.
14d DOT (49 CFR 172.101)	Not Regulated.

Section 15: Regulatory Information	
15a CERCLA	Not regulated
15b SARA Title III	Not regulated
15c Clean Air act	Not regulated
15d Clean Water Act	Not regulated
15e TSCA	Not regulated
15f Canadian Regulations	
WHMIS	Not a controlled product
TDG	Not regulated
15g Mexican Regulations	Not Dangerous

Section 16: Other Information

The information provided in this safety data sheet is presented in good faith and believed to be accurate as of the effective data shown above. However, no warranty or guarantee of accuracy, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that their activities comply with federal, state, and local laws.

16a Date of Revision 31 March 2015

ION EXCHANGE RESIN

Safety Data Sheet

Product Name: SIR-110-HP

(Perchlorate selective Strong Base Anion Exchange Resin Chloride Form)
Effective date February 23, 2018

Section 1: Identification

1a	Product Name	ResinTech SIR-110-HP
1b	Common Name	Perchlorate and nitrate Selective strong base anion resin in the chloride form.
1c	Intended use	Removal of perchlorate, iodide, and from water.
1d	Manufacturer Address	ResinTech, Inc. 160 Cooper Road, West Berlin, NJ 08091 USA
	Phone Email	856-768-9600 ixresin@resintech.com

Section 2: Hazard Identification

2a OSHA Hazard classification — Not hazardous or dangerous

Product Hazard Rating	Scale
Health = 0	0 = Negligible
Fire = 1	1 = Slight
Reactivity = 0	2 = Moderate
Special – N/A	3 = High
	4 = Extreme

2b	Product description	Light cream to light yellow colored solid beads with little or no odor.
2c	Precautions for use	Safety glasses and gloves recommended. Slipping hazard if spilled.
2c	Potential health effects	Will cause eye irritation. May casue mild skin irritation. Ingestion is not likely to pose a health risk.
2d	Environmental effects	Little or none.

Section 2A: Hazard classification UN OSHA globally harmonized system

Warning (contains ion exchange resin)

H320: Causes eye irritation (Category 2B)

Precautionary Statements

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P333+313: If skin irritation or a rash occurs: Get medical advice/attention.

P337+313: If eye irritation persists get medical advice/attention.

P403+233: Store in a well-ventilated place. Keep container tightly closed.

P411: Store at temperatures not exceeding 50 °C/ 122 °F.

Please refer to the safety data sheet for additional information regarding this product

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Section 3: Composition/ Information on Ingredients		
3a	Chemical name	Tributylamine functionalized chloromethylated copolymer of polystyrene in the chloride form.
3b	Ingredients Tributylamine functionalized chloromethlyated copolymer of styrene and divinylbenzene in the chloride form	CAS# 116565-72-1 (55 - 70%)
	Water	CAS# 7732-18-5 (30 – 45%)

Section 4: First Aid Measures		
4a	Inhalation	No adverse effects expected- normal use of product does not produce odors or vapors.
4b	Skin	Wash with soap and water- seek medical attention if a rash develops.
4c	Eye contact	Wash immediately with water-seek attention if discomfort continues.
4d	Ingestion	No adverse effects expected for small amounts, larger amounts can cause stomach irritation. Seek medical attention if discomfort occurs.

Section 5: Fire Fighting Measures		
5a	Flammability	NFPA Fire rating = 1
5b	Extinguishing media	Water, CO2, foam, dry powder
5c	Fire fighting Procedures	Follow general fire fighting procedures indicated in the work place.
5d	Protective Equipment	MSHA/NIOSH approved self-contained breathing gear, full protective clothing.
5e	Combustion Products	Carbon oxides and other toxic gasses and vapors.
5f	Unusual Hazards	Product is not combustible until moisture is removed. Resin begins to burn at approximately 230º C. Auto ignition can occur above 500º C.

Section 6: Accidental Release Measures		
6a	Personal Precautions	Keep people away, spilled resin can be a slipping hazard, wear gloves and safety glasses to minimize skin or eye contact.
6b	Incompatible Chemicals	Strong oxidants can create risk of combustion products similar to burning.
6c	Environmental Precautions	Keep out of public sewers and waterways.
6d	Containment Materials	Use plastic or paper containers.
6e	Methods of Clean-up	Sweep up material and transfer to containers.

Section 7: Handling and Storage		
7a	Handling	Avoid prolonged skin contact. Keep resin moist and avoid allowing resin to completely dry.
7b	Storage	Store in a cool dry place (0º to 45º C) in the original shipping container. This product is thermally sensitive and will have reduced shelf life if subjected to extended periods of time at temperatures exceeding 50º C. Although freezing does not usually damage ion exchange resins, avoid repeated freeze thaw cycles.

Section 8: Exposure Controls/Personal Protection		
8a	OSHA exposure limits	None noted.
8b	Engineering Controls	Provide adequate ventilation.
8c	Personal Protection Measures	
	Eye Protection	Safety glasses or goggles.
	Respiratory Protection	Not required for normal use.
	Protective Gloves	Recommended for extended contact.

Section 9: Physical and Chemical Properties

Appearance	Light cream to light yellow beads approx. 0.6 mm diameter.
Flammability or explosive limits	Flammable above 500º C
Odor	Little or no odor
Physical State	Solid
Vapor pressure	Not available
Odor threshold	Not available
Vapor density	Not available
pH	Near neutral
Relative density	Approx 680 grams/Liter
Melting point/freezing point	Does not melt, freezes at approx. 0 C
Solubility	Insoluble in water and most solvents
Boiling point	Does not boil
Flash point	Approx 500º C
Evaporation rate	Does not evaporate
Partition Coefficient (n-octonol/water)	Not applicable
Auto-ignition temperature	Approx 500º C
Decomposition temperature	Above 230º C
Viscosity	Not applicable

Section 10: Stability and Reactivity

10a Stability	Stable under normal conditions.
10b Conditions to Avoid	Heat, exposure to strong oxidants.
10c Hazardous by-products	Tributylamine, charred polystyrene, aromatic acids and hydrocarbons, organic amines, nitrogen oxides, carbon oxides, chlorinated hydrocarbons.
10d Incompatible materials	Strong oxidizing agents (such as HNO_3).
10e Hazardous Polymerization	Does not occur

Section 11: Toxicological Information

11a Likely Routes of Exposure	Oral, skin or eye contact.
11b Effects of exposure	
Delayed	None known.
Immediate (acute)	None known.
Chronic	None known.
11c Toxicity Measures	
Skin Adsorption	Unlikely.
Ingestion	Oral toxicity believed to be low but no LD50 has been established.
Inhalation	Unknown, vapors are very unlikely due to physical properties (insoluble solid).
11d Toxicity Symptoms	
Skin Adsorption	Mild rash.
Ingestion	Indigestion or general malaise.
Inhalation	Unknown.
11e Carcinogenicity	None known

Section 12: Ecological information

12a Eco toxicity	Not harmful to plant or animal life.
12b Mobility	Insoluble.
12c Biodegradability	Not biodegradable.
12d Bioaccumulation	Insignificant.
12e Other adverse effects	Not Harmful to the environment.

Section 13: Disposal Considerations	
13a General considerations	Material is non-hazardous.
13b Disposal Containers	Most plastic and paper containers are suitable.
13c Disposal methods	No specific method necessary.
13d Sewage Disposal	Not recommended.
13e Precautions for incineration	May release tributylamine and toxic vapors when burned.
13f Precautions for landfills	Resins used to remove hazardous materials may then become hazardous mixtures

Section 14: Transportation Information	
14a Transportation Class	Not classified as a dangerous good for transport by land, sea, or air.
14b TDG	Not regulated.
14c IATA	Not regulated.
14d DOT (49 CFR 172.101)	Not Regulated.

Section 15: Regulatory Information	
15a CERCLA	Not regulated
15b SARA Title III	Not regulated
15c Clean Air act	Not regulated
15d Clean Water Act	Not regulated
15e TSCA	Not regulated
15f Canadian Regulations	
WHMIS	Not a controlled product
TDG	Not regulated
15g Mexican Regulations	Not Dangerous

Section 16: Other Information

The information provided in this safety data sheet is presented in good faith and believed to be accurate as of the effective data shown above. However, no warranty or guarantee of accuracy, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that their activities comply with federal, state, and local laws.

16a Date of Revision 31 March 2015