



**TXU Business Services**  
1601 Bryan Street  
Dallas, TX 75201-3411  
Tel: 214 812 8476  
Fax: 214 812 4395

**Gerald (Jerry) R. Johnson**  
Generation Environmental Manager

*(Via Overnight Mail)*

August 26, 2003

**TXX-03121**  
**File No. 223**

**Executive Director**  
**Texas Commission on Environmental Quality**  
**Building F, Room 2101**  
**12100 Park 35 Circle**  
**Austin, Texas 78753**

**Attention: Permits Administrative Review Section (MC 161)**  
**Water Quality Applications Team**

**Comanche Peak Steam Electric Station**  
**TPDES Permit No. 01854**  
**Permit Renewal Application**

**Dear Sir/Madam:**

In accordance with the rules and regulations of the Texas Commission on Environmental Quality (TCEQ), TXU Generation Company LP (TXU Generation) hereby submits one original and four complete copies of an Industrial Wastewater Permit Application for renewal of the referenced TPDES Permit. This application consists of the "Industrial Administrative Report" (Revised 03/02) and the "Industrial Technical Report" (Revised 12/01). A check for the required renewal fee of \$2,015.00 was mailed on August 12, 2003 to the TCEQ Revenues Section (Attachment A). This submittal represents the formal application for renewal of the referenced permit.

The Company appreciates the opportunity to submit this permit renewal application and is confident of your careful consideration. If there are any questions, please contact Scott Wilde at 214/812-5221.

Sincerely yours,

  
James J. Kelley, Jr.

  
by : Gerald R. Johnson  
Generation Environmental Manager

SKW  
Enclosures

D029

bcc: Randy Morrison(w/o Attachments)  
Bruce Turner  
Mr. D. H. Jaffe, NRR (w/o Attachments)  
U. S. Nuclear Regulatory Commission, Attn: Document Control Desk  
Gail Jespersen (w/o Attachments)  
T. A. O'Shea (Attachments B, C and D)  
David Rutledge (Attachments B, C and D)  
File: T. A. O'Shea

C:\My Documents\Word Perfect Documents\TCEQ\Steam Electric\COVERL.CPSES.wpd

### CORRESPONDENCE SIGN-OFF SHEET

Document Number: TXX 03121		File Number: 223	
Issued Date: August 14, 2003	CPSES	Unit Affected: <span style="float: right;">(1, 2, Generic)</span>	
Title/Subject: Permit Renewal Application TPDES Permit No. 01854			
Commitment(s) Identified: No:      Yes:      (if yes, list and attach)			
Attachments: Commitments: Attachment: Enclosure: Distribution Sheet: Special Instructions:			
Hand carry to next person for signature		Return to originator by:      /      /	
FUNCTION	INITIALS	SIGNATURE*	COMMENTS
SW/EHS Originator	SKW	<i>[Signature]</i>	
Cognizant Manager	RM	<i>[Signature]</i>	No Additional Comments
	BGT	<i>[Signature]</i>	See Attached Mark-up
Vice-President(s)	JJK	<i>[Signature]</i>	
Legal Review			
Proof Reader			
RA/EHS Mgr. (Last)	GRJ		

**\*Signature indicates approval of the correspondence content, commitment status (if identified) and attachments (if identified)**

Associated Incoming Correspondence Information				Outgoing (this document) Correspondence Document Information			
Incoming Document No.	ACL No.	New ACL No.	Electronic Submittal	Follow-up Submittal	Licensing Fee Required	Notary Required	
			Yes    No	Yes    No	Yes    No	Yes    No	

Other References:
Comments:
Upon Issuance of attached correspondence, modify tracking database as required and initial this form:

# TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

## INDUSTRIAL WASTEWATER PERMIT APPLICATION

### SUBMISSION CHECKLIST - SUBMIT THIS WITH THE APPLICATION DO NOT SUBMIT THE INSTRUCTIONS WITH THE APPLICATION

INDICATE IF THE FOLLOWING ARE INCLUDED IN THE APPLICATION.

WORKSHEET	Y	N	WORKSHEET	Y	N
ADMINISTRATIVE REPORT 1.0	✓		WORKSHEET 6.0		✓
ADMINISTRATIVE REPORT 1.1		✓	WORKSHEET 7.0		✓
SPIF	✓		WORKSHEET 9.0		✓
TECHNICAL REPORT 1.0	✓		USGS MAP	✓	
WORKSHEET 1.0	✓		AFFECTED LANDOWNER MAP		✓
WORKSHEET 2.0	✓		FLOW DIAGRAM	✓	
WORKSHEET 3.0		✓	SITE DRAWING	✓	
WORKSHEET 4.0	✓		ORIGINAL PHOTOGRAPHS		✓
WORKSHEET 4.1		✓	SOLIDS MANAGEMENT PLAN		✓
WORKSHEET 5.0	✓		WATER BALANCE	✓	

Please indicate by a check mark the amount submitted for the application fee:

EPA Classification	New	Major Amend.	Renewal	Minor Amend./Mod.
Minor facility not subject to categorical standards promulgated by the EPA (40 CFR Part 400-471)	_____ \$350	_____ \$350	_____ \$315	_____ \$150
Minor facility subject to categorical standards promulgated by the EPA (40 CFR Part 400-471)	_____ \$1,250	_____ \$1,250	_____ \$1,215	_____ \$150
Major facility	N/A *	_____ \$2,050	✓ _____ \$2,015	_____ \$450

\* All facilities are designated as minors until formerly classified as a major by EPA.

**A COPY OF THE CHECK MUST BE SUBMITTED AS PART OF THE APPLICATION**  
See Attachment A: Payment of Application Fee

**For Commission Use Only:**

Segment Number \_\_\_\_\_ County \_\_\_\_\_  
Expiration Date \_\_\_\_\_ Region \_\_\_\_\_  
Proposed/Current Permit Number \_\_\_\_\_

**ADMINISTRATIVE REPORT 1.0 - INDUSTRIAL**

**THE FOLLOWING IS REQUIRED FOR ALL APPLICATIONS, RENEWAL, NEW AND AMENDMENT.**

**The instructions MUST BE FOLLOWED while completing the application. Failure to do so will result in significant delays in the processing of the application.**

Type of application: (check all that apply)

<input type="checkbox"/> New TPDES	<input type="checkbox"/> New TLAP
<input type="checkbox"/> Major amendment to existing permit	<input type="checkbox"/> Minor modification to permit
<input checked="" type="checkbox"/> Renewal of existing permit	<input type="checkbox"/> Minor amendment to permit
<input type="checkbox"/> Storm water only discharges	

If applying for an amendment/modification to a permit, briefly describe the reason for the proposed amendment.

N/A

**1. APPLICANT INFORMATION (Instructions, Page 13)**

**a. Facility owner\*:** TXU Generation Company LP

Charter Number (issued by the Texas Secretary of State): 800025435

Mailing address for use on the permit and permit correspondence:

Street No. 1601 Street name: Bryan Street type Street

P.O. Box \_\_\_\_\_ City: Dallas State: Texas Zip code: 75201-3411

Telephone number: (214)812-4600

Tax Identification Number issued by the State Comptroller: Not Applicable

Charter Number (issued by the Texas Secretary of State): 800025435

\* Owner of the facility must apply for the permit

Check one: ☐ The TNRCC has issued this Customer Reference Number to the owner. CN: \_\_\_\_\_

☒ The owner has not yet received a Customer Reference Number. A completed Core Data Form (TNRCC-10400) listing the owner as a customer and this facility as the regulated entity is attached to this application.  
**Note: A Core Data Form has been submitted, but no CN or RN has been issued**

**b. Co-Permittee information (complete only if the operator must be a co-permittee)**

Facility operator: Not Applicable

Mailing address for use on the permit and permit correspondence:

Street No. \_\_\_\_\_ Street name: \_\_\_\_\_ Street type \_\_\_\_\_

P.O. Box \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Tax Identification Number issued by the State Comptroller: \_\_\_\_\_

Charter Number (issued by the Texas Secretary of State): \_\_\_\_\_

Check one: ☐ The TNRCC has issued this Customer Reference Number to the co-permittee. CN: \_\_\_\_\_

☐ The co-permittee has not yet received a Customer Reference Number. A completed Core Data Form (TNRCC-10400) listing the co-permittee as a customer and this facility as the regulated entity is attached to this application.

Provide a brief description as to the need for a co-permittee.

**c. Individual information** (complete only if the facility owner or co-permittee is an individual)

Name: Not Applicable Check one: ☐ Male ☐ Female

State Identification Number: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Assumed business or professional name: \_\_\_\_\_

Home address:

Street No. \_\_\_\_\_ Street name: \_\_\_\_\_ Street type: \_\_\_\_\_

P.O. Box \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Business name: \_\_\_\_\_

Check one: ☐ The TNRCC has issued this Customer Reference Number to this person. CN: \_\_\_\_\_

☐ This person has not yet received a Customer Reference Number. A completed Core Data Form (TNRCC-10400) listing this person as a customer and this facility as the regulated entity is attached to this application.

**2. CONTACT INFORMATION** (Instructions, Pages 14)

Name: Timothy A. O'Shea, Ph.D. Company: TXU Energy Company LLC

Telephone number: (214)812-8413 Fax number: (214)812-5695 E-Mail: \_\_\_\_\_

Street No. 1601 Street name: Bryan Street type: Street

P.O. Box \_\_\_\_\_ City: Dallas State: Texas Zip code: 75201-3411

Check one or more: ☒ Administrative contact ☒ Technical contact

Name: \_\_\_\_\_ Company: \_\_\_\_\_

Telephone number: \_\_\_\_\_ Fax number: \_\_\_\_\_ E-Mail: \_\_\_\_\_

Street No. \_\_\_\_\_ Street name: \_\_\_\_\_ Street type: \_\_\_\_\_

P.O. Box \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Check one or more: ☐ Administrative contact ☐ Technical contact

**3. NOTICE INFORMATION** (Instructions, Page 14)

**a. Individual publishing the notices**

Name: Timothy A. O'Shea, Ph.D. Telephone number: (214)812-8413

Company: TXU Energy Company LLC Fax number: (214)812-5695

Street No. 1601 Street name: Bryan Street type: Street

P.O. Box \_\_\_\_\_ City: Dallas State: Texas Zip code: 75201-3411

**b. Method of receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package and Instructions**  
(Check one)

\_\_\_\_\_ E-mail: E-mail address: \_\_\_\_\_

☒ Fax: Fax number: (214)812-5695

\_\_\_\_\_ Overnight/Priority mail: (self addressed, prepaid envelope required)

\_\_\_\_\_ Regular Mail: Street No. \_\_\_\_\_ Street name: \_\_\_\_\_

Street type: \_\_\_\_\_ P.O. Box \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**c. Contact in the notice**

Name: Timothy A. O'Shea, Ph.D. Telephone number: (214)812-8413

Company: TXU Energy Company LLC Fax number (214)812-5695

Street No. 1601 Street name: Bryan Street type: Street

P.O. Box \_\_\_\_\_ City: Dallas State: Texas Zip code: 75201-3411

**d. Public place information**

Location of public building: Glen Rose, Texas

Public building name: Court Annex Building

Name: Candice Garrett, County Clerk's Office Telephone number: (254)897-4427

Street No. 107 Street name: NE Vernon Street type: Street

City: Glen Rose County: Somervell State: TX Zip code: 76043

**4. FACILITY INFORMATION (Instructions, Pages 14-15)**

a. State/TPDES Permit No. 01854 Expiration date: 03/01/04

NPDES Permit No. N/A Expiration date: N/A

Check one: \_\_\_\_\_ The TNRCC has issued this Regulated Entity Reference Number for this facility. RN: \_\_\_\_\_

See Item 1.a. ☒ No Regulatory Entity Reference Number has been received for this facility. One or more completed Core Data Forms (TNRCC-10400) listing this facility as the regulated entity is attached to this application.

b. Plant Name: Comanche Peak Steam Electric Station

County in which the facility is located: Somervell

County in which the outfall is located: Somervell

c. Owner of the facility: TXU Generation Company LP

d. Owner of land where the facility is/will be: TXU Generation Company LP

If not the same as the facility owner, there must be a long term lease agreement in effect for at least six years. In some cases, a lease may not suffice - see instructions

Street No. 1601 Street name: Bryan Street type: Street

City: Dallas State: Texas Zip code: 75201-3411

e. Ownership of effluent disposal site: N/A

If not the same as the facility owner, there must be a long term lease agreement in effect for at least six years

Street No. \_\_\_\_\_ Street name: \_\_\_\_\_ Street type: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

f. Owner of sewage sludge disposal site: N/A

only required if authorization is being sought in the permit for sludge disposal on property owned/controlled by the applicant

Street No. \_\_\_\_\_ Street name: \_\_\_\_\_ Street type: \_\_\_\_\_

City \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

5. **LOCATION INFORMATION** (Instructions, Pages 16-17)

a. Is the location of the facility used in the existing permit correct: ☒ Yes ☐ No

If no, or a new permit application, please give an accurate description:

b. Is the point of discharge and discharge route in the existing permit correct: ☐ Yes ☒ No

If no, or a new or amendment permit application, please give an accurate description:

**To Squaw Creek Reservoir, thence to Squaw Creek, thence to the Paluxy River in Segment 1229 of the Brazos River Basin; or to Squaw Creek Reservoir, thence to Lake Granbury in Segment 1205 of the Brazos River Basin.**

c. If a TLAP, is the location of the effluent disposal in the existing permit accurate: ☐ Yes ☐ No

If no, or a new or amendment permit application, please give an accurate description:

N/A

d. If a TLAP, provide the flow of effluent from the treatment facility to the effluent disposal site.

N/A

e. For TLAP applications, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: N/A



f. Is the location of the sewage sludge disposal site in the existing permit accurate: ☐ Yes ☐ No ☒ N/A

If no, or a new permit application, please give an accurate description:

g. Provide a USGS Map with all required information. Indicate by a check mark that the information is provided.

<input checked="" type="checkbox"/> Applicant's property boundary	<input checked="" type="checkbox"/> Treatment plant boundaries
<input checked="" type="checkbox"/> Point of discharge and highlighted discharge route	<input type="checkbox"/> Effluent disposal site boundaries
<input checked="" type="checkbox"/> All ponds	<input type="checkbox"/> Sewage sludge disposal site
<input checked="" type="checkbox"/> 1 mile radius and 1 mile downstream information	<input type="checkbox"/> New and future construction

See Attachment B: USGS Site Map and Facility Map

h. Is the facility located in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County?

☐ Yes ☒ No

If yes, additional information concerning protection of the Edwards Aquifer may be required.

i. Identify the name and distance to the nearest city from the facility: Glen Rose (4.5 miles)

j. Is/will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch? ☐ Yes ☒ No

If yes, indicate by a check mark if: ☐ Authorization granted ☐ Authorization pending

For new and amendment permit applications, provide copies of letters that show proof of contact and upon receipt, the approval letter.

k. Is the facility located on or does the treated effluent cross Indian Land? ☐ Yes ☒ No

## 6. MISCELLANEOUS INFORMATION (Instructions, Page 17-18)

a. Provide two names of individuals that can be contacted during the permit term.

Name: Timothy A. O'Shea, Ph.D. Telephone number: (214)812-8413  
Company: TXU Energy Company LLC Fax number: (214)812-5695  
Street No. 1601 Street name: Bryan Street type: Street  
City: Dallas State: TX Zip code: 75201-3411

Name: David Rutledge Telephone number: (214)812-8477  
Company: TXU Energy Company LLC Fax number: (214)812-5695  
Street No. 1601 Street name: Bryan Street type: Street  
City: Dallas State: TX Zip code: 75201-3411

b. List each person formerly employed by the TNRCC who represented your company and was paid for service regarding the application. N/A

c. For all applications involving an average daily discharge of 5 million gallons per day or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge.

**Somervell, Johnson, Bosque, McLennan, Falls and Hill Counties**

d. Please provide the address for receiving self-reporting/DMR forms:

Company: **TXU Energy Company LLC** Department: **Environmental Services**

Name: **c/o Zeke Martinez**

Street No. **1601** Street Name: **Bryan** Street Type: **Street**

P.O. Box \_\_\_\_\_ City: **Dallas** State: **TX** Zip code: **75201-3411**

Please provide the address for receiving Annual Billing Invoices:

Company: **TXU Energy Company LLC** Department: **Environmental Services**

Name: **c/o David Rutledge**

Street No. **1601** Street Name: **Bryan** Street Type: **Street**

P.O. Box \_\_\_\_\_ City: **Dallas** State: **TX** Zip code: **75201-3411**

7. SIGNATURE PAGE (Instructions, Page 18)

I, James J. Kelley

Vice President

*Typed or printed name*

*Title*

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

Signature: *James J. Kelley, Jr.*

Date: 8/26/03

Subscribed and Sworn to before me by the said *James J. Kelley, Jr.* on this

26th

day of

August

, 20 03

My commission expires on the

2nd

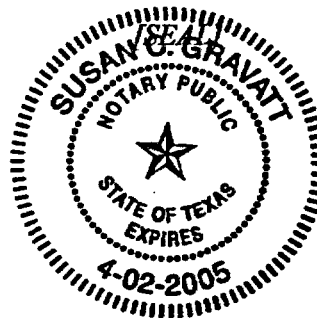
day of

April

, 20 05

*Susan C. Gravatt*  
Notary Public

*Somervell*  
County, Texas



**NOTE: If co-permittees are necessary, both entities must submit separate Signature Pages.**

**TNRCC USE ONLY:**

Application type: ☐ Renewal ☐ Major Amendment ☐ Minor Amendment ☐ New  
County: \_\_\_\_\_ Admin Complete Date: \_\_\_\_\_  
Agency Receiving SPIF: ☐ Texas Historical Commission ☐ U.S. Fish and Wildlife  
☐ Texas Parks and Wildlife ☐ Army Corps of Engineers

**8. SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF) (Instructions, Page 18)**

**This form applies to TPDES permit applications only.** The SPIF must be completed as a separate document. The TNRCC will mail a copy of the SPIF to each agency as required by the TNRCC agreement with EPA. If any of the items are not completely addressed and/or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed. **DO NOT REFER TO A RESPONSE OF ANY ITEM IN THE PERMIT APPLICATION FORM.** Each attachment must be provided with this form, separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments

**The following applies to all applications:**

1. Permittee: TXU Generation Company LP
2. Permit No. 01854 (NPDES Permit No./EPA ID No.) TX006584
3. Address of the project (location description that includes street/highway, city/vicinity, county):  
4.5 miles northwest of Glen Rose on SH 56
4. Provide the name, address, telephone and fax number of an individual who can be contacted to answer specific questions about the property:  
Name: Timothy A. O'Shea, Ph.D. Telephone number: (214)812-8413  
Company: TXU Energy Company LLC Fax number: (214)812-5695  
Street No. 1601 Street name: Bryan Street type: Street  
City: Dallas State: Texas Zip code: 75201-3411
5. List the county in which the facility is located: Somervell
6. If the property is publicly owned and the owner is different than the permittee/applicant, please identify the owner of the property: N/A

7. Identify the name of the water body (receiving waters) or TNRCC segment number that will receive the discharge: To Squaw Creek Reservoir, thence to Squaw Creek, thence to the Paluxy River in Segment 1229 of the Brazos River Basin: or to Squaw Creek Reservoir. thence to Lake Granbury in Segment 1205 of the

Brazos River Basin.

8. Please provide a separate 7.5 minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. (This map is required in addition to the map in the administrative report)

See attached map

9. Please provide original photographs of any structures 50 years or older on the property.

N/A

10. Does your project involve any of the following? If yes, circle the appropriate letter.

None

- a. Proposed access roads, utility lines, construction easements
- b. Visual effects that could damage or detract from a historic property's integrity
- c. Vibration effects during construction, or as a result of project design
- d. Additional phases of development that are planned for the future
- e. Sealing caves, fractures, sinkholes, other karst features
- f. Disturbance of vegetation or wetlands

11. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves or other karst features): None, this is an established facility that has been in operation since 1990.

12. Describe existing disturbances, vegetation & land use: Power plant, with associated structures, facilities and roads.

**The following applies only to applications for New TPDES permits and Major Amendments to TPDES Permits**

13. List construction dates of any buildings or structures on the property: \_\_\_\_\_

14. Provide a brief history of the property, and name of the architect/builder, if known: \_\_\_\_\_

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,**

**THAT CAN BE VIEWED AT  
THE RECORD TITLED:  
"GEOLOGICAL SURVEY OF  
HILL CITY QUADRANGLE,  
TEXAS"**

**N3215-W9745/7.5** 

**WITHIN THIS PACKAGE**

**D-1**

## TECHNICAL REPORT 1.0 - INDUSTRIAL

THE FOLLOWING IS REQUIRED FOR ALL APPLICATIONS, RENEWAL, NEW, AND AMENDMENT

### 1. FACILITY/SITE INFORMATION (Instructions, page 22)

a. Describe the type of activity and general nature of your business.

Generation of Electricity

b. SIC Code(s) 4911 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

c. Describe the wastewater generating processes.

See Attachment C: General Description

d. Provide a list of raw materials, major intermediates, and products handled at your facility.

Raw Materials	Intermediate Products	Final Products
water	steam	electricity
enriched uranium		

e. Indicate by a check mark that an attached facility map with the following information was provided with the application:

☒

Production areas, maintenance areas, materials handling areas, and waste disposal areas.

☒

The location of each unit of the wastewater treatment plant including the location of wastewater collection sumps and impoundments.

**Attachment: B: USGS Site Map and Facility Map**

f. Is this a new permit application for an existing facility? ☐ Yes ☒ No

If yes, provide background discussion below.

g. Is the treatment facility/disposal site located above the 100-year frequency flood level?

☒

Yes ☐ No

List source(s) used to determine 100-year frequency flood plain: Design plans for Squaw Creek Reservoir prepared by Freese & Nichols, Inc., 1974

If no, provide the elevation of the 100-year frequency flood plain and describe what protective measures are in use or planned to be used to prevent flooding of the treatment facility/disposal area.

h. For new or amendment permit applications, will there be discharge of fill material into a water in the state for construction of the proposed outfall structure? ☐ Yes ☐ No

N/A

If no, proceed to Item No. 2. If yes, has the applicant applied for a U.S. Corps of Engineers 404 Dredge and Fill permit? ☐ Yes ☐ No

If yes, provide the permit number: \_\_\_\_\_

If no, provide the approximate date you anticipate submitting your application to the Corps.

\_\_\_\_\_



## 2. TREATMENT SYSTEM (Instructions, page 23)

- a. List any physical, chemical, and/or biological treatment process that you use for the treatment of wastewater at your facility. Include a description of each treatment process starting with initial treatment and finishing with the discharge point.

TREATMENT PROCESS	TREATMENT UNIT	CAPACITY or DIMENSIONS	OUTFALL
1. solids separation	Condensate Polisher Decant Basin	34' x 15'3" x 8'	004
2. solids separation	Clarifier Decant Basin	96'4" x 21' x 11'	004
3. oil/water separation	API Separator	4'6" x 4' x 5'6"	004
4. neutralization	See Pond #6 (Item 3)		
5. radiological filtration	Waste Water Hold Up Tank 01	15' x 20' x 15'	004
6. radiological filtration	Waste Water Hold Up Tank 02	15' x 20' x 15'	004

For additional information, see Attachment C: General Description.

- b. ☒ Indicate by a check mark that an attached flow schematic with a water balance was provided with the application showing each treatment unit and all sources of wastewater flow into the treatment plant and to each outfall/point of disposal. Attachment: D: Water Balance Diagram

## 3. IMPOUNDMENTS (Instructions, page 23)

Do you use or plan to use any wastewater lagoons, ponds, or impoundments? ☒ Yes ☐ No  
If yes, complete item 3(a) for existing impoundments and items 3(a)-3(f) for new or proposed impoundments.  
If no, proceed to Item No. 4.

- a. Provide the following information in the table provided:

**Designation:** Indicate the appropriate use designation for each pond [Treatment (T), Disposal (D), Containment (C), or Evaporation (E)]

**Discharge Point:** If a discharge occurs from the impoundments, designate the outfall associated with the impoundment.

**Liner Information:** If the impoundments are lined to comply with specifications outlined for 1) a compacted clay liner (C), 2) an in-situ clay liner (I), or 3) a synthetic/plastic/rubber liner (S), indicate the liner type with the appropriate letter designation (see instructions for further detail on liner specifications). If not, provide a reference to the attachment that provides a description of the alternate liner and any additional technical information necessary for an evaluation.

**Dimensions:** Provide the dimensions(s), freeboard, surface area, and storage volume capacity of the impoundments. For impoundments with irregular shapes, submit surface area (instead of length and width), the average depth, and the maximum depth below natural ground level.

# Impoundment Information Table

	Pond # <u>1</u>	Pond # <u>2</u>	Pond # <u>3</u>	Pond # <u>4</u>	Pond # <u>5</u>
Designation	Surge Basin	LVW Pond A	LVW Pond B	LVW Pond C	MCW Pond
(T) (D) (C) or (E)	flow equalization	C,D,E,T	C,D,E,T	C,D,E,T	C,T,E
Discharge Point					
Outfall Number	004	004	004	004	104
Liner Information					
Liner Type (C) (I) or (S)	S	S	S	S	S
Alt. Liner Attachment Reference					
Dimensions					
Length (feet)	<u>76</u> ft	<u>410</u> ft	<u>410</u> ft	<u>410</u> ft	<u>410</u> ft
Width (feet)	<u>76</u> ft	<u>114</u> ft	<u>114</u> ft	<u>366</u> ft	<u>100</u> ft
Depth from Water Surface	<u>3</u> ft	<u>14</u> ft	<u>14</u> ft	<u>10</u> ft	<u>10</u> ft
Depth from Nat. Ground Level	5 avg NA max	16 avg NA max	16 avg NA max	12 avg NA max	12 avg NA max
Freeboard (feet)	<u>2</u> ft	<u>2</u> ft	<u>2</u> ft	<u>2</u> ft	<u>2</u> ft
Surface Area (acres)	NA acres	NA acres	NA acres	NA acres	NA acres
Storage Capacity (gallons)	130,400 gal.	1,600,000 gal.	1,600,000 gal.	6,400,000 gal.	1,500,000 gal.

	Pond # <u>6</u>	Pond # _____	Pond # _____	Pond # _____	Pond # _____
Designation	Equal. Pond				
(T) (D) (C) or (E)	C				
Discharge Point					
Outfall Number	004				
Liner Information					
Liner Type (C) (I) or (S)	S over concrete				
Alt. Liner Attachment Reference					
Dimensions					
Length (feet)	<u>210</u> ft	_____ ft	_____ ft	_____ ft	_____ ft
Width (feet)	<u>46</u> ft	_____ ft	_____ ft	_____ ft	_____ ft
Depth from Water Surface	<u>9</u> ft	_____ ft	_____ ft	_____ ft	_____ ft
Depth from Nat. Ground Level	11 avg NA max	____ avg ____ max	____ avg ____ max	____ avg ____ max	____ avg ____ max
Freeboard (feet)	<u>2</u> ft	_____ ft	_____ ft	_____ ft	_____ ft
Surface Area (acres)	NA acres	_____ acres	_____ acres	_____ acres	_____ acres
Storage Capacity (gallons)	1,200,000 gal.	_____ gal.	_____ gal.	_____ gal.	_____ gal.

**THE FOLLOWING ITEMS ARE REQUIRED ONLY FOR NEW OR PROPOSED IMPOUNDMENTS.**

b. Indicate by a check mark if any of the following data was provided with the application:

- (1) ☐ Synthetic/plastic/rubber liner data  
(2) ☐ In-situ clay liner data

Attachment: \_\_\_\_\_

c. Are there any leak detection systems or ground water monitoring wells in place or planned? Yes No

☐ If yes, indicate by a check mark that a separate attachment was provided with the leak detection system information for each pond and/or ground water monitoring well data.

Attachment: \_\_\_\_\_

d. Is the bottom of the pond above the seasonal high water table in the most shallow water bearing zone?  
☐ Yes ☐ No

☐ If no, indicate by a check mark that additional information was provided describing the depth of the seasonal high water table in the most shallow water bearing zone in relation to the depth of the bottom of the new or proposed impoundment and how this may or may not impact groundwater.

e. Indicate by a check mark that the following information was provided:

☐ A USGS quadrangle map or a color copy of original quality and scale which accurately locates and identifies water supply wells and/or monitor wells within 1/2 mile radius of the impoundments.

☐ Copies of State Water Well Reports (driller's logs, completion data), and data on depths to ground water for water supply wells including a description of how the depths to ground water were obtained.

**For TLAP permit applications:** ☐ Indicate by a check mark that the new or proposed impoundment(s) and the land application disposal area are located in the same general area and the information for this item is provided in Worksheet 3.0 (item 8).

f. ☐ Indicate by a check mark if any data was provided with the application pertaining to the ground water, soils, geology, etc. used to assess the potential for migration of wastes from the impoundments and/or the potential for contamination of ground water or surface water.

**4. OUTFALL/DISPOSAL METHOD INFORMATION (Instructions, page 25)**

Complete the following tables to describe the location and wastewater discharge or disposal operations for each outfall for discharge operations and for each point of disposal for TLAP operations.

**For TLAP permit applications:** Indicate the disposal method and each individual irrigation area (I), evaporation pond (E), or subsurface drainage system (S) by providing the appropriate letter designation for the disposal method followed by a numerical designation for each disposal area (e.g. evaporation pond, application area) in the space provided for "Outfall" designation (e.g. "E1" for evaporation pond 1, "I2" for irrigation area No. 2, etc.).

OUTFALL: 001

Latitude			Longitude			Location Description	
32	17	46	97	46	56	From the Once-through Cooling Discharge Canal to Sauaw Creek Reservoir	
Permitted Flow (MGD)			Proposed Flow (MGD)				
Dly Avg	Dly Max	Dly Avg	Dly Max	Discharge Duration			
3168	3168	3168	3168	24 (hrs./day) 30 (days/mo.) 12 (mo./year)			
<input checked="" type="checkbox"/> Pumped <input type="checkbox"/> Gravity		Measurement Device: <u>record</u>			<input type="checkbox"/> Intermittent <input type="checkbox"/> Seasonal <input checked="" type="checkbox"/> Continuous		
Contributing Wastestreams:				Volume (MGD)		% of Total Flow	
Once-through cooling				3168		variable	
Previously monitored effluents from Outfall 004				1.128		variable	

OUTFALL: 002

Latitude			Longitude			Location Description	
32	17	29	97	47	10	From the Safe Shutdown Impoundment to Sauaw Creek Reservoir	
Permitted Flow (MGD)			Proposed Flow (MGD)				
Dly Avg	Dly Max	Dly Avg	Dly Max	Discharge Duration			
report	report	report	report	0 (hrs./day) 0 (days/mo.) 0 (mo./year)			
<input type="checkbox"/> Pumped <input checked="" type="checkbox"/> Gravity		Measurement Device: <u>estimate</u>			<input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Seasonal <input type="checkbox"/> Continuous		
Contributing Wastestreams:				Volume (MGD)		% of Total Flow	
condenser cooling water				No anticipated		discharge	
storm water runoff				No anticipated		discharge*	
* See General Description (Attachment C)							

OUTFALL: 003

Latitude			Longitude			Location Description		
32	17	46	97	46	56	From the Sewer Treatment Plant to Squaw Creek Reservoir		
Permitted Flow (MGD)			Proposed Flow (MGD)					
Dly Avg	Dly Max		Dly Avg	Dly Max		Discharge Duration		
report	report		report	report		24 (hrs./day) 30 (days/mo.) 12 (mo./year)		
<input checked="" type="checkbox"/> Pumped <input type="checkbox"/> Gravity			Measurement Device: <u>estimate</u>			<input type="checkbox"/> Intermittent <input type="checkbox"/> Seasonal <input checked="" type="checkbox"/> Continuous		
Contributing Wastestreams:						Volume (MGD)		% of Total Flow
sanitary sewage effluent						0.048		100

OUTFALL: 004

Latitude			Longitude			Location Description		
32	18	08	97	47	21	From the Waste Management System to Outfall 001 and/or Squaw Creek Reservoir		
Permitted Flow (MGD)			Proposed Flow (MGD)					
Dly Avg	Dly Max		Dly Avg	Dly Max		Discharge Duration		
report	report		report	report		24 (hrs./day) 15 (days/mo.) 12 (mo./year)		
<input checked="" type="checkbox"/> Pumped <input type="checkbox"/> Gravity			Measurement Device: <u>estimate</u>			<input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Seasonal <input type="checkbox"/> Continuous		
Contributing Wastestreams:						Volume (MGD)		% of Total Flow
low volume waste (washdown water, floor/equipment drains,								
miscellaneous uses, water treatment wastes)						1.128		variable
storm water runoff from bermed areas						variable		variable
previously monitored effluents						variable		variable

OUTFALL: 005

Latitude			Longitude			Location Description		
32	17	29	97	45	03	From Squaw Creek Reservoir to Lake Granbury		
Permitted Flow (MGD)			Proposed Flow (MGD)					
Dly Avg	Dly Max		Dly Avg	Dly Max		Discharge Duration		
report	report		report	report		0 (hrs./day) 0 (days/mo.) 0 (mo./year)		
<input checked="" type="checkbox"/> Pumped <input type="checkbox"/> Gravity			Measurement Device: <u>estimate</u>			<input type="checkbox"/> Intermittent <input type="checkbox"/> Seasonal <input checked="" type="checkbox"/> Continuous		
Contributing Wastestreams:						Volume (MGD)		% of Total Flow
Squaw Creek Reservoir water						No anticipated		discharge

OUTFALL: 104

Latitude			Longitude			Location Description		
32	18	05	97	47	03	From the Metal Cleaning Waste (MCW) Pond to Outfall 004		
Permitted Flow (MGD)			Proposed Flow (MGD)					
Dly Avg	Dly Max		Dly Avg	Dly Max		Discharge Duration		
report	report		report	report		24 (hrs./day) NA (days/mo.) NA (mo./year)		
<input checked="" type="checkbox"/> Pumped <input type="checkbox"/> Gravity			Measurement Device: <u>estimate</u>			<input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Seasonal <input type="checkbox"/> Continuous		
Contributing Wastestreams:						Volume (MGD)		% of Total Flow
metal cleaning waste						0.346		100

**5. BLOWDOWN AND ONCE-THROUGH COOLING WATER DISCHARGES** (Instructions, page 26)

a. Does your facility use any cooling towers or boilers that discharge blowdown or other wastestreams to the outfall(s)? ☒ Yes ☐ No

b. Does your facility discharge once-through cooling water to the outfall(s)? ☒ Yes ☐ No

c. If yes to either item a or b, indicate with a check mark that the appropriate MSDS with the following information for each chemical additive was submitted with the application.

Information, if available, is provided for each chemical additive (See Attachments E and F).

- ☐ Manufacturers Product Identification Number.
- ☐ Product use. (e.g., biocide, fungicide, corrosion inhibitor, etc.)
- ☐ Chemical Composition including Chemical Abstracts System (CAS) number for each ingredient.
- ☐ Classify product as non-persistent, persistent, or bioaccumulative.
- ☐ Product or active ingredient half-life.
- ☐ Frequency of product use (e.g., 2 hr/day once every two weeks).
- ☐ Product toxicity data specific to fish and aquatic invertebrate organisms.
- ☐ Concentration of whole product in wastestream (if above item is for whole product)
- ☐ Concentration of active ingredient in wastestream (if above item is for active ingredient)

Please provide a summary of this information in addition to the submittal of the MSDS for each specific wastestream and the associated chemical additives and specify which outfalls are affected.

Attachment: E and F

**d. Cooling Towers and Boilers**

	Number of Units	Daily Avg. Blowdown	Daily Max Blowdown
Cooling Towers	<u>0</u> cooling towers	Daily Avg: <u>0</u> gallons/day	Daily Max: <u>0</u> gallons/day
Boilers	<u>1</u> boilers	Daily Avg: <u>*</u> gallons/day	Daily Max: <u>*</u> gallons/day

\*Note: The Auxiliary Boiler is an emergency back-up system that is only activated in the event of a loss of steam generator use; it is also operated periodically for maintenance purposes.

**6. STORM WATER MANAGEMENT** (Instructions, page 26)

Are there any existing or proposed outfalls which discharge storm water runoff commingled with other wastestreams? ☒ Yes ☐ No. If yes, provide the following information. If no, proceed to Item No. 7.

a. Provide a brief narrative description of the industrial processes and activities that occur outdoors or in some manner that may result in exposure of the materials to precipitation or runoff in areas where runoff is generated.

Storm water runoff from the Turbine-Generator Area for Unit 1 and small construction sites in this drainage area is routed to the Safe Shutdown Impoundment and eventually to Outfall 002. The Unit 2 side is routed through storm water outfalls permitted under the TCEQ's Multi-sector General Permit (Permit No. TXR05K098). Storm water runoff from the diked chemical storage areas and transformers, and, if feasible, small construction sites, is suctioned into tanker trucks and discharged through Outfall 004.

Other areas in which storm water runoff may be exposed to industrial processes are permitted under the TCEQ's Multi-Sector General Permit (Permit No. TXR05K098).

**7. DOMESTIC SEWAGE, SEWAGE SLUDGE, AND/OR SEPTAGE MANAGEMENT AND DISPOSAL**  
(Instructions, page 27)

- a. Please check the appropriate method(s) of domestic sewage and domestic sewage sludge treatment/disposal and complete Attachment F if directed.

☐ Domestic sewage is not generated on-site. **PROCEED TO ITEM NO. 8.**

☐ Both domestic and industrial treatment sludge ARE commingled prior to use or disposal. **PROCEED TO ITEM NO. 8.**

☒ Industrial wastewater and domestic sewage are treated separately and the respective sludge IS NOT commingled prior to sludge use or disposal. **COMPLETE WORKSHEET 5.0 OF THIS APPLICATION.**

☐ If your facility is a POTW, **COMPLETE WORKSHEET 5.0 OF THIS APPLICATION.**

☐ Facility is connected to a wastewater treatment plant permitted to receive domestic sewage, or the domestic sewage is transported off-site to a permitted facility for treatment and/or disposal. **COMPLETE ITEM NO. 7.B.**

☐ Domestic sewage is disposed of by an on-site septic tank. **COMPLETE ITEM 7.B.**

☐ Other. Please provide a detailed description below.

--

- b. Provide the name and TNRCC, NPDES, and/or TPDES Permit No. of the waste disposal facility which receives the domestic sewage/septage. If hauled by motorized vehicle, provide the name and TNRCC Registration No. of the hauler.

Plant/Hauler Name	Permit/Registration No.

**8. IMPROVEMENTS OR COMPLIANCE/ENFORCEMENT REQUIREMENTS** (Instructions, page 27)

Is the permittee currently required to meet any implementation schedule for compliance or enforcement?

☐ Yes ☒ No

If yes, provide a brief summary of the requirements and a status update.

--



## 9. TOXICITY TESTING (Instructions, page 27)

Have any biological tests for acute or chronic toxicity been made on any of your discharges or on a receiving water in relation to your discharge within the last three (3) years?

☒ Yes ☐ No

If yes, identify the tests and describe their purposes below. Please attach a copy of all tests performed that have not been previously sent to the TNRCC and/or EPA.

**Chronic and 24-hour Acute Biomonitoring of Outfall 001 is done once per six months. All test results have been previously submitted to the TCEQ.**

## 10. OFF-SITE/THIRD PARTY WASTES (Instructions, page 28)

Do you receive wastes from off-site sources for treatment in your facility, disposal on-site via land application, and/or discharge via a permitted outfall? ☐ Yes ☒ No

If no, proceed to Item No. 11. If yes, proceed as directed.

a. Indicate with a check mark that a detailed attachment with the following information was provided with the application: Attachment: \_\_\_\_\_

<input type="checkbox"/> List of wastes received	<input type="checkbox"/> Identified sources of wastes received
<input checked="" type="checkbox"/> Characterization of wastes received	<input type="checkbox"/> Name and addresses of generators
<input type="checkbox"/> Volumes of each waste received	<input type="checkbox"/> Description of the relationship of waste
<input type="checkbox"/> Info. on compatibility with on-site wastes	<input type="checkbox"/> source(s) with your facility's activities.

b. Is wastewater from a TNRCC, NPDES, and/or TPDES permitted facility commingled with your wastewater after your final treatment and prior to discharge via your final outfall/point of disposal? ☐ Yes ☐ No

If yes, provide the name, address, and TNRCC, NPDES, and/or TPDES permit number of the contributing facility and a copy of any agreements and/or contracts relating to this activity.

c. Is your facility a Publicly Owned Treatment Works (POTW) that accepts process wastewater from any Significant Industrial User (SIU) and has or is required to have an approved pretreatment program under the NPDES/TPDES program? ☐ Yes ☐ No If yes, complete Worksheet 6.0 of this application.

## 11. RADIOACTIVE MATERIALS (Instructions, page 28)

Are radioactive materials mined, used, stored, or processed at this facility? ☒ Yes ☐ No

If yes, Provide a list of the materials and the results of one analysis of your effluent in picocuries per liter (pCi/L) for all radioactive parameters which may be present.

Radioactive Materials	Conc. (pCi/L)
All radioactive materials used at this site falls under the jurisdiction of the	
Nuclear Regulatory Commission (NRC).	

**THE FOLLOWING ITEMS ARE ONLY REQUIRED FOR EXISTING PERMITTED FACILITIES.**

**12. MAJOR AMENDMENT REQUESTS (Instructions, page 28)**

Are you requesting a major amendment of an existing permit? \_\_\_\_ Yes ☒ No

If yes, list each specific request and provide discussion on the scope of any requested permit changes.

If necessary, provide supplemental information or additional data that will support the request.

**13. MINOR MODIFICATION REQUESTS (Instructions, page 29)**

Are you requesting any minor modifications to the permit? \_\_\_\_ Yes ☒ No Note: see the instructions for an exclusive list of changes considered as minor modifications.

If yes, list and discuss the requested changes.

**14. MINOR AMENDMENT REQUESTS (Instructions, page 29)**

Are you requesting any minor amendments to the permit? \_\_\_\_ Yes ☒ No

If yes, list and discuss the requested changes.

**WORKSHEETS**  
**TO THE INDUSTRIAL WASTEWATER PERMIT APPLICATION TECHNICAL REPORT**

Please review the worksheet requirements in the instructions and indicate by checking either yes or no which worksheets are required, completed, and submitted with the technical report. Worksheets that are not applicable do not need to be submitted with the technical report.

WORKSHEET	COMPLETED AND SUBMITTED WITH THE TECHNICAL REPORT:	
	YES	NO
<b>1.0: EPA EFFLUENT CATEGORICAL GUIDELINES</b>	✓	
<b>2.0: POLLUTANT ANALYSES REQUIREMENTS</b>	✓	
<b>3.0: LAND DISPOSAL OF EFFLUENT</b>		✓
<b>4.0: RECEIVING WATERS</b>	✓	
<b>4.1: STREAM PHYSICAL CHARACTERISTICS WORKSHEET</b>		✓
<b>5.0: SEWAGE SLUDGE MANAGEMENT AND DISPOSAL</b>	✓	
<b>6.0: INDUSTRIAL WASTE CONTRIBUTION</b>		✓
<b>7.0: STORM WATER RUNOFF</b>		✓
<b>8.0: AQUACULTURE (Reserved)</b>	N/A	N/A
<b>9.0: CLASS V INJECTION WELL</b>		✓

## WORKSHEET 1.0 - EPA EFFLUENT CATEGORICAL GUIDELINES

REQUIRED FOR ALL APPLICATIONS FOR TPDES PERMITS FOR DISCHARGES OF WASTEWATERS  
SUBJECT TO EPA EFFLUENT LIMITATION GUIDELINES.

### 1. CATEGORICAL INDUSTRIES (Instructions, page 31)

Is your facility subject to any of the 40 CFR effluent guidelines outlined in Table 1? ☒ Yes ☐ No

If yes, provide the appropriate information in the table below. If no, this worksheet is not required.

Industry	CFR
Steam Electric Power Generating	423

### 2. PRODUCTION/PROCESS DATA (Instructions, page 32)

a. Production data: Provide the appropriate data for effluent guidelines with production based effluent limitations.

Subcategory	Actual Quantity/Day	Design Quantity/Day	Units
N/A			

b. Organic Chemicals, Plastics, and Synthetic Fibers Manufacturing Data (40 CFR Part 414): Provide each appropriate subpart and the percent of total production. Also provide the appropriate data for metal bearing wastestreams as required in 40 CFR Part 414, Appendices A and B.

Subcategory	% of total production	Appendix A and B	
		Metal	Process
N/A			

c. **Refineries (40 CFR Part 419):** Provide the applicable subcategory and a brief justification for each.

N/A
-----

3. **PROCESS/NON-PROCESS WASTEWATER FLOWS:** Provide a breakdown of process wastewater flow(s) and non-process wastewater flow(s) as directed. (Instructions, page 32)

PROCESS WASTEWATER	NON-PROCESS WASTEWATER
bottom ash transport water	coal pile runoff
chemical metal cleaning wastes	once-through cooling water
cooling tower blowdown	
fly ash transport water	
low volume waste sources	
non-chemical metal cleaning wastes	

4. **NEW SOURCE DETERMINATION:** Provide a list of wastewater generating processes subject to effluent guidelines and the appropriate information. (Instructions, page 32)

Process	EPA Guideline		Date Process/Construction Commenced
	Part	Subpart	
low volume waste sources	423	N/A	1990
chemical metal cleaning wastes	423	N/A	1990
once-through cooling water	423	N/A	1990
non-chemical metal cleaning wastes	423	N/A	1990

**TXU Generation Company LP**  
**Comanche Peak Steam Electric Station**  
**TPDES Permit No. 01854**  
**Worksheet 2.0**  
**General Effluent Sampling and Analysis Information**

Outfall 001 is an external, continuous discharge of nonprocess wastewater. Complete analytical results for Tables 1 and 5 are provided. Since intermittent treatment of the wastewater with chlorine and/or bromine agents could produce undesirable byproducts, partial analytical results for Tables 2 and 7 are also provided. Grab samples representative of chlorination and/or bromination were used for the analyses.

Outfall 002 is an external discharge of nonprocess wastewater. Complete analytical results for Tables 1 and 5 are provided. Since the discharge to the Safe Shutdown Impoundment is from the Once-through Cooling Intake, partial analytical results for Tables 2 and 7 are also provided. This outfall was not discharging; therefore, the samples are not representative of a discharge.

Outfall 003 is an external discharge of process wastewater; therefore, complete analytical results are provided for Tables 1,2,5 and 7.

Outfall 004 is normally an internal outfall although it has an option to be discharged directly to the lake. This option has not been used for several years and presently has a flange installed to avoid use. Outfall 104 is an internal outfall. Since both outfalls are internal, no samples were taken.

Outfall 005 is an external outfall for Squaw Creek Reservoir back to Lake Granbury. The outfall has not been used since the plant initiated operation; therefore, no samples were taken. The quality of any discharge from this outfall would be very similar to Outfall 001.

Pollutant analyses were performed by the following entities:

- a. The following analyses are performed by Company personnel:  
Outfall 001: Total Residual Chlorine (TRC), temperature, flow and pH.  
Outfall 003: Flow, temperature, fecal coliform and pH.
- b. BOD and TSS analyses for Outfall 003 were retrieved from Discharge Monitoring Reports (DMR). The analyses were performed by Advanced Analytical Labs, 3507 Westway Street, Tyler, TX 75703.
- c. All other analyses were performed by ERM Environmental Laboratories, Bethany Tech Center, 400 W. Bethany, Suite 190, Allen, TX 75013.

# WORKSHEET 2.0 - POLLUTANT ANALYSES REQUIREMENTS

REQUIRED FOR APPLICATIONS SUBMITTED FOR A TPDES PERMIT. NOT REQUIRED FOR APPLICATIONS FOR A PERMIT TO DISPOSE OF ALL WASTEWATER BY LAND DISPOSAL OR FOR DISCHARGES SOLELY OF STORM WATER RUNOFF. (General Requirements: Instructions, Page 33)

1. TABLE 1: Complete table required for all external outfalls. (Instructions, Page 34)

Outfall No.: 001	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration (mg/l)					
Pollutants	Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average		
BOD (5-day)	1.0	2.7	6.0	8.8	4.6		
CBOD (5-day)	NA	NA	NA	NA	NA		
Chemical Oxygen Demand	10	390	78	48	132		
Total Organic Carbon	1.9	1.2	1.8	8.1	3.25		
Ammonia Nitrogen	0.493	0.269	0.271	0.248	0.320		
Total Suspended Solids	4.0	4.4	7.2	4.4	5.0		
Nitrate Nitrogen	0.05	0.05	2.86	0.29	0.81		
Total Organic Nitrogen	0.317	0.990	0.769	0.772	0.712		
Total Phosphorus	0.47	0.48	0.50	0.48	0.48		
Oil and Grease	<5	<5	<5	<5	<5		
Total Residual Chlorine	0	0	0	0	0		
Total Dissolved Solids	2500	2400	2500	2500	2475		
Sulfate	418	532	415	417	445		
Chloride	972	1000	990	991	988		
Fluoride	0.25	0.6	0.63	0.54	0.36		
Fecal Coliform	0.5	0.5	1.0	0.5	0.6		
Temperature(°F)	91.0	87.8	94.1	98.0	92.7		
pH (Standard Units; min/max)	8.7	7.4	7.7	8.3	7.4/8.7		
	Effluent Concentration (µg/l)					MAL (µg/l)	
Total Aluminum	15	47	37	15	29	30	
Total Antimony	<30	<30	<30	<30	<30	30	
Total Arsenic	<10	<10	<10	<10	<10	10	
Total Barium	180	200	180	210	193	10	
Total Beryllium	<5	<5	<5	<5	<5	5	
Total Cadmium	<1	<1	<1	<1	<1	1	
Total Chromium	<5	<5	<5	<5	<5	10	
Trivalent Chromium	N/A	N/A	N/A	N/A	N/A	N/A	
Hexavalent Chromium	N/A	N/A	N/A	N/A	N/A	10	
Total Copper	<10	<10	<10	<10	<10	10	
Cyanide	<0.02	<0.02	<0.02	<0.02	<0.02	20	
Total Lead	<5	<5	<5	<5	<5	5	
Total Mercury	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	
Total Nickel	<10	<10	<10	<10	<10	10	
Total Selenium	<5	<5	<5	<5	<5	10	
Total Silver	<2	<2	<2	<2	<2	2.0	
Total Thallium	<10	<10	<10	<10	<10	10	
Total Zinc	2.5	9.95	10.2	2.5	6.29	5	

**WORKSHEET 2.0 - POLLUTANT ANALYSES REQUIREMENTS**

**REQUIRED FOR APPLICATIONS SUBMITTED FOR A TPDES PERMIT. NOT REQUIRED FOR APPLICATIONS FOR A PERMIT TO DISPOSE OF ALL WASTEWATER BY LAND DISPOSAL OR FOR DISCHARGES SOLELY OF STORM WATER RUNOFF. (General Requirements: Instructions, Page 33)**

**1. TABLE 1: Complete table required for all external outfalls. (Instructions, Page 34)**

<b>Outfall No.: 002</b>	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	<b>Effluent Concentration (mg/l)</b>					
<b>Pollutants</b>		<b>Samp. 1</b>	<b>Samp. 2</b>	<b>Samp. 3</b>	<b>Samp. 4</b>	<b>Average</b>	
BOD (5-day)		5.1	6.5	3.2	2.6	4.4	
CBOD (5-day)		NA	NA	NA	NA	NA	
Chemical Oxygen Demand		26	74	55	61	54	
Total Organic Carbon		1.9	1.7	1.8	7.5	3.2	
Ammonia Nitrogen		0.246	0.245	0.242	0.312	0.261	
Total Suspended Solids		4.2	5.3	4.4	6.1	5.0	
Nitrate Nitrogen		<0.1	<0.1	<0.1	<0.1	<0.1	
Total Organic Nitrogen		1.02	0.845	0.849	0.928	0.911	
Total Phosphorus		0.53	0.61	0.53	0.54	0.55	
Oil and Grease		<5	<5	<5	<5	<5	
Total Residual Chlorine		0	0	0	0	0	
Total Dissolved Solids		2500	2300	2500	2400	2425	
Sulfate		457	498	409	408	443	
Chloride		1030	1260	950	986	1056	
Fluoride		0.5	0.6	0.59	0.51	0.55	
Fecal Coliform		0.5	0.5	0.5	2.0	0.85	
Temperature(°F)		80.6	82.4	87.8	94.1	86.2	
pH (Standard Units; min/max)		8.2	8.4	7.9	8.0	7.9/8.4	
		<b>Effluent Concentration (µg/l)</b>					<b>MAL (µg/l)</b>
Total Aluminum		58	15	15	36	31	30
Total Antimony		<30	<30	<30	<30	<30	30
Total Arsenic		<10	<10	<10	<10	<10	10
Total Barium		190	190	200	230	203	10
Total Beryllium		<5	<5	<5	<5	<5	5
Total Cadmium		<1	<1	<1	<1	<1	1
Total Chromium		<5	<5	<5	<5	<5	10
Trivalent Chromium		N/A	N/A	N/A	N/A	N/A	N/A
Hexavalent Chromium		N/A	N/A	N/A	N/A	N/A	10
Total Copper		<10	<10	<10	<10	<10	10
Cyanide		<0.02	<0.02	<0.02	<0.02	<0.02	20
Total Lead		<5	<5	<5	<5	<5	5
Total Mercury		<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Total Nickel		<10	<10	<10	<10	<10	10
Total Selenium		<5	<5	<5	<5	<5	10
Total Silver		<2	<2	<2	<2	<2	2.0
Total Thallium		<10	<10	<10	<10	<10	10
Total Zinc		<5	<5	<5	<5	<5	5



# WORKSHEET 2.0 - POLLUTANT ANALYSES REQUIREMENTS

**REQUIRED FOR APPLICATIONS SUBMITTED FOR A TPDES PERMIT. NOT REQUIRED FOR APPLICATIONS FOR A PERMIT TO DISPOSE OF ALL WASTEWATER BY LAND DISPOSAL OR FOR DISCHARGES SOLELY OF STORM WATER RUNOFF. (General Requirements: Instructions, Page 33)**

**1. TABLE 1:** Complete table required for all external outfalls. (Instructions, Page 34)

Outfall No.: 003	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration (mg/l)					
Pollutants		Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	
BOD (5-day)		5.3	9.7	8.7	4.4	7.0	
CBOD (5-day)		NA	NA	NA	NA	NA	
Chemical Oxygen Demand		10	44	10	10	19	
Total Organic Carbon		3.7	4.6	4.7	6.2	4.8	
Ammonia Nitrogen		0.445	0.204	0.280	0.367	0.324	
Total Suspended Solids		2	10	33	1	12	
Nitrate Nitrogen		42.4	47.5	48.6	46.9	46.4	
Total Organic Nitrogen		0.275	0.050	0.321	0.050	0.174	
Total Phosphorus		6.6	7.7	5.8	8.2	7.1	
Oil and Grease		<5	<5	<5	<5	<5	
Total Residual Chlorine		0	0	0	0	0	
Total Dissolved Solids		640	670	610	420	585	
Sulfate		57.7	58.0	57.1	41.2	53.5	
Chloride		60.6	64.3	68.8	71.3	66.3	
Fluoride		<0.5	<0.5	<0.5	<0.5	<0.5	
Fecal Coliform		10	30	1	1	11	
Temperature(°F)		69.8	68.0	75.2	73.4	71.6	
pH (Standard Units; min/max)		7.3	7.2	7.1	7.0	7.0/7.3	
		Effluent Concentration (µg/l)					MAL (µg/l)
Total Aluminum		15	120	90	15	60	30
Total Antimony		<30	<30	<30	<30	<30	30
Total Arsenic		<10	<10	<10	<10	<10	10
Total Barium		53	72	42	46	53	10
Total Beryllium		<5	<5	<5	<5	<5	5
Total Cadmium		<1	<1	<1	<1	<1	1
Total Chromium		<5	<5	<5	<5	<5	10
Trivalent Chromium		N/A	N/A	N/A	N/A	N/A	N/A
Hexavalent Chromium		N/A	N/A	N/A	N/A	N/A	10
Total Copper		16	36	15	19	22	10
Cyanide		<0.02	<0.02	<0.02	<0.02	<0.02	20
Total Lead		<5	<5	<5	<5	<5	5
Total Mercury		<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Total Nickel		<10	<10	<10	<10	<10	10
Total Selenium		<5	<5	<5	<5	<5	10
Total Silver		<2	<2	<2	<2	<2	2.0
Total Thallium		<10	<10	<10	<10	<10	10
Total Zinc		81.0	119	32.6	123	88.9	5

2. **TABLE 2:** Complete table required for all external outfalls which discharge process wastewater. Partial table required for all external outfalls with nonprocess wastewater discharges. Storm water runoff discharges commingled with other wastestreams shall complete the table as instructed (Instructions, Page 34).

Outfall No.: 001	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration (µg/l) (*1)					
Pollutants		Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	MAL (µg/l)
Benzene							10
Benzidine							50
Benzo(a)anthracene							10
Benzo(a)pyrene							10
Carbon Tetrachloride							10
Chlorobenzene							10
Chloroform		<1	<1	<1	<1	<1	10
Chrysene							10
Cresols							(*2)
Dibromochloromethane		<1	<1	<1	<1	<1	10
1,2-Dibromoethane		<1	<1	<1	<1	<1	2
1,4-Dichlorobenzene							10
1,2-Dichloroethane		<1	<1	<1	<1	<1	10
1,1-Dichloroethylene							10
Fluoride		250	600	630	540	360	500
Hexachlorobenzene							10
Hexachlorobutadiene							10
Hexachloroethane		<10	<10	<10	<10	<10	20
Methyl Ethyl Ketone							50
Nitrobenzene							10
n-Nitrosodiethylamine							20
n-Nitroso-di-n-Butylamine							20
PCB's, Total (*3)							1
Pentachlorobenzene							20
Pentachlorophenol							50
Phenanthrene							10
Pyridine							20
1,2,4,5-Tetrachlorobenzene							20
Tetrachloroethylene							10
Trichloroethylene							10
1,1,1-Trichloroethane		<1	<1	<1	<1	<1	10
2,4,5-Trichlorophenol							50
TTHM (Total Trihalomethanes)		<1	<1	<1	<1	<1	10
Vinyl Chloride							10

(\*1) Indicate units if different from µg/l.

(\*2) MAL's for Cresols: p-Chloro-m-Cresol 10 µg/l; 4,6-Dinitro-o-Cresol 50 µg/l; p-Cresol 10 µg/l

(\*3) Total of PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016.

2. **TABLE 2:** Complete table required for all external outfalls which discharge process wastewater. Partial table required for all external outfalls with nonprocess wastewater discharges. Storm water runoff discharges commingled with other wastestreams shall complete the table as instructed (Instructions, Page 34).

Outfall No.: 002	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ ) (*1)					
Pollutants		Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	MAL ( $\mu\text{g/l}$ )
Benzene							10
Benzidine							50
Benzo(a)anthracene							10
Benzo(a)pyrene							10
Carbon Tetrachloride							10
Chlorobenzene							10
Chloroform		<10	<10	<10	<10	<10	10
Chrysene							10
Cresols							(*2)
Dibromochloromethane		<10	<10	<10	<10	<10	10
1,2-Dibromoethane		<2	<2	<2	<2	<2	2
1,4-Dichlorobenzene							10
1,2-Dichloroethane		<10	<10	<10	<10	<10	10
1,1-Dichloroethylene							10
Fluoride		500	600	590	510	550	500
Hexachlorobenzene							10
Hexachlorobutadiene							10
Hexachloroethane		<20	<20	<20	<20	<20	20
Methyl Ethyl Ketone							50
Nitrobenzene							10
n-Nitrosodiethylamine							20
n-Nitroso-di-n-Butylamine							20
PCB's, Total (*3)							1
Pentachlorobenzene							20
Pentachlorophenol							50
Phenanthrene							10
Pyridine							20
1,2,4,5-Tetrachlorobenzene							20
Tetrachloroethylene							10
Trichloroethylene							10
1,1,1-Trichloroethane		<10	<10	<10	<10	<10	10
2,4,5-Trichlorophenol							50
THM (Total Trihalomethanes)		<10	<10	<10	<10	<10	10
Vinyl Chloride							10

(\*1) Indicate units if different from  $\mu\text{g/l}$ .

(\*2) MAL's for Cresols: p-Chloro-m-Cresol 10  $\mu\text{g/l}$ ; 4,6-Dinitro-o-Cresol 50  $\mu\text{g/l}$ ; p-Cresol 10  $\mu\text{g/l}$

(\*3) Total of PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016.

2. **TABLE 2:** Complete table required for all external outfalls which discharge process wastewater. Partial table required for all external outfalls with nonprocess wastewater discharges. Storm water runoff discharges commingled with other wastestreams shall complete the table as instructed (Instructions, Page 34).

Outfall No.: 003	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ ) (*1)					
Pollutants	Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	MAL ( $\mu\text{g/l}$ )	
Benzene	<10	<10	<10	<10	<10	10	
Benzidine	<50	<50	<50	<50	<50	50	
Benzo(a)anthracene	<10	<10	<10	<10	<10	10	
Benzo(a)pyrene	<10	<10	<10	<10	<10	10	
Carbon Tetrachloride	<10	<10	<10	<10	<10	10	
Chlorobenzene	<10	<10	<10	<10	<10	10	
Chloroform	<10	<10	<10	<10	<10	10	
Chrysene	<10	<10	<10	<10	<10	10	
Cresols	<10	<10	<10	<10	<10	(*2)	
Dibromochloromethane	<10	<10	<10	<10	<10	10	
1,2-Dibromoethane	<2	<2	<2	<2	<2	2	
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	10	
1,2-Dichloroethane	<10	<10	<10	<10	<10	10	
1,1-Dichloroethylene	<10	<10	<10	<10	<10	10	
Fluoride	<500	<500	<500	<500	<500	500	
Hexachlorobenzene	<10	<10	<10	<10	<10	10	
Hexachlorobutadiene	<10	<10	<10	<10	<10	10	
Hexachloroethane	<20	<20	<20	<20	<20	20	
Methyl Ethyl Ketone	<50	<50	<50	<50	<50	50	
Nitrobenzene	<10	<10	<10	<10	<10	10	
n-Nitrosodiethylamine	<20	<20	<20	<20	<20	20	
n-Nitroso-di-n-Butylamine	<20	<20	<20	<20	<20	20	
PCB's, Total (*3)	<1	<1	<1	<1	<1	1	
Pentachlorobenzene	<20	<20	<20	<20	<20	20	
Pentachlorophenol	<50	<50	<50	<50	<50	50	
Phenanthrene	<10	<10	<10	<10	<10	10	
Pyridine	<20	<20	<20	<20	<20	20	
1,2,4,5-Tetrachlorobenzene	<20	<20	<20	<20	<20	20	
Tetrachloroethylene	<10	<10	<10	<10	<50	10	
Trichloroethylene	<10	<10	<10	<10	<10	10	
1,1,1-Trichloroethane	<10	<10	<10	<10	<10	10	
2,4,5-Trichlorophenol	<50	<50	<50	<50	<50	50	
TTHM (Total Trihalomethanes)	<10	<10	<10	<10	<10	10	
Vinyl Chloride	<10	<10	<10	<10	<10	10	

(\*1) Indicate units if different from  $\mu\text{g/l}$ .

(\*2) MAL's for Cresols: p-Chloro-m-Cresol 10  $\mu\text{g/l}$ ; 4,6-Dinitro-o-Cresol 50  $\mu\text{g/l}$ ; p-Cresol 10  $\mu\text{g/l}$

(\*3) Total of PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016.

3. **TABLE 3:** Partial table (only those pollutants which are required by the conditions specified) required for each external outfall. Not required for internal outfalls. (Instructions, Page 34)

a. **TRIBUTYLTIN:**

Is your facility or will your proposed facility be an industrial/commercial facilities which directly disposes of wastewater from the types of operations listed below or a domestic facilities which receive wastewater from the types of industrial/commercial operations listed below? ☐ Yes ☒ No

If yes, indicate with a check mark all of the following criteria which apply and provide the appropriate testing results in the table below.

- ☐ Manufacturers and formulators of tributyltin or related compounds.
- ☐ Painting of ships, boats and marine structures.
- ☐ Ship and boat building and repairing.
- ☐ Ship and boat cleaning, salvage, wrecking and scaling.
- ☐ Operation and maintenance of marine cargo handling facilities and marinas
- ☐ Facilities engaged in wood preserving
- ☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. **ENTEROCOCCI**

Does your facility or will your proposed facility discharge directly into saltwater receiving waters? ☐ Yes ☒ No

If yes, provide the appropriate testing results in the table below.

**TABLE 3**

Outfall No.:	<input type="checkbox"/> C <input type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ )					
Pollutants		Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	MAL ( $\mu\text{g/l}$ )
Tributyltin							0.010
Enterococci							N/A

4. **TABLE 4:** Complete table required for all external outfalls which discharge process wastewater and other wastewaters, which may contain pesticides or herbicides, from a facility which manufactures or formulates pesticides or herbicides. Not required for internal outfalls. (Instructions, Page 35)

Does your facility manufacture or formulate pesticides or herbicides? ☐ Yes ☒ No  
If yes, provide the appropriate testing results.

**TABLE 4**

Outfall No.:	<input type="checkbox"/> C <input type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ ) (*1)					MAL ( $\mu\text{g/l}$ )
Pollutants		Samp. 1	Samp. 2	Samp. 3	Samp. 4	Avg.	
Beta-hexachlorocyclohexane							0.05
Carbaryl							5
Chlordane							0.15
Chlorpyrifos							0.05
2,4-D							10
Danitol							—
4,4'-DDD							0.1
4,4'-DDE							0.1
4,4'-DDT							0.1
Demeton							0.2
Diazinon							0.5
Dicofol							20
Dieldrin							0.1
Diuron							—
Endosulfan I (alpha)							0.1
Endosulfan II (beta)							0.1
Endosulfan Sulfate							0.1
Endrin							0.1
Gamma - Hexachlorocyclohexane (Lindane)							0.05
Guthion							0.10
Heptachlor							0.05
Heptachlor Epoxide							1.0
Hexachlorophene							10
Malathion							0.10
Methoxychlor							2.0
Mirex							0.2
Parathion							0.1
Toxaphene							5
2,4,5-TP (Silvex)							2

\* Indicate units if different from mg/L.

5. **TABLE 5:** Complete table required for all external outfalls. Not required for internal outfalls.  
(Instructions, Page 35)

**TABLE 5**

Outfall No.: 001	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Believed Present	Believed Absent	Effluent Concentration (mg/l)		
Pollutants				Average	Maximum	No. of Samples
Bromide			X	<0.10		1
Color(PCU)			X	<5.0		1
Nitrate-Nitrite(as N)			X	<0.1	<0.1	4
Sulfide(as S)			X	<1.0		1
Sulfite(as SO <sub>3</sub> )			X	<5.0		1
Surfactants			X	<0.50		1
Total Antimony			X	<30	<30	4
Total Beryllium			X	<5	<5	4
Total Boron		X		0.62		1
Total Cobalt			X	<0.0008		1
Total Iron			X	<0.074		1
Total Magnesium		X		53.8		1
Total Molybdenum		X		0.002		1
Total Manganese		X		0.014		1
Total Thallium			X	<10	<10	4
Total Tin			X	<30		1
Total Titanium			X	<0.025		1

5. **TABLE 5:** Complete table required for all external outfalls. Not required for internal outfalls.  
(Instructions, Page 35)

**TABLE 5**

Outfall No.: 002	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Believed Present	Believed Absent	Effluent Concentration (mg/l)		
Pollutants				Average	Maximum	No. of Samples
Bromide		X		5.71		1
Color(PCU)			X	<5		1
Nitrate-Nitrite(as N)			X	<0.1		1
Sulfide(as S)			X	<1		1
Sulfite(as SO <sub>3</sub> )			X	<5		1
Surfactants		X		0.29		1
Total Antimony			X	<30	<30	4
Total Beryllium			X	<5	<5	4
Total Boron		X		0.61		1
Total Cobalt			X	<0.0008		1
Total Iron			X	<0.074		1
Total Magnesium		X		57.0		1
Total Molybdenum		X		0.0023		1
Total Manganese		X		0.0155		1
Total Thallium			X	<10	<10	4
Total Tin			X	<0.01		1
Total Titanium			X	<0.025		1



5. **TABLE 5:** Complete table required for all external outfalls. Not required for internal outfalls.  
(Instructions, Page 35)

**TABLE 5**

Outfall No.: 003 <input type="checkbox"/> C <input checked="" type="checkbox"/> G	Believed Present	Believed Absent	Effluent Concentration (mg/l)		No. of Samples
			Average	Maximum	
<b>Pollutants</b>					
Bromide		X	<0.1		1
Color(PCU)	X		20		1
Nitrate-Nitrite(as N)	X		42.4		1
Sulfide(as S)		X	<1		1
Sulfite(as SO <sub>3</sub> )		X	<5		1
Surfactants	X		0.96		1
Total Antimony		X	<30	<30	4
Total Beryllium		X	<5	<5	4
Total Boron	X		0.16		1
Total Cobalt		X	<0.0008		1
Total Iron		X	<0.074		1
Total Magnesium	X		12.4		1
Total Molybdenum	X		0.0055		1
Total Manganese	X		0.005		1
Total Thallium		X	<10	<10	4
Total Tin		X	<0.01		1
Total Titanium		X	<0.025		1

6. **TABLE 6:** Indicate with a check mark any of the industrial categories applicable to your facility. If testing is required, indicate with a check mark in the box provided that the testing results for the appropriate parameters in Table B-7 are provided with the application. (Instructions, Page 35)

N/A		GC/MS Testing Required			
		Volatile	Acid	Base/Neutral	Pesticides
<input type="checkbox"/> Adhesives and Sealants		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Aluminum Forming		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Auto and Other Laundries		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Battery Manufacturing		Yes <input type="checkbox"/>	No	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Coal Mining		No	No	No	No
<input type="checkbox"/> Coil Coating		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Copper Forming		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Electric and Electronic Components		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Electroplating		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Explosives Manufacturing		No <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Foundries		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Gum and Wood Chemicals					
<input type="checkbox"/> Subparts A,B,C,E		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No	No
<input type="checkbox"/> Subparts D,F		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Inorganic Chemicals		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Iron and Steel Manufacturing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Leather Tanning/Finishing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Mechanical Products Manufacturing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Nonferrous Metals Mfg.		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Ore Mining(Subpart B)		No	Yes <input type="checkbox"/>	No	No
<input type="checkbox"/> Organic Chemicals, Plastics, and Synthetic Fibers		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Paint and Ink Formulation		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Pesticides		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Petroleum Refining		Yes <input type="checkbox"/>	No	No	No
<input type="checkbox"/> Pharmaceutical Preparations		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Photographic Equipment and Supplies		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Plastic and Synthetic Materials Manufacturing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Plastic Processing		Yes <input type="checkbox"/>	No	No	No
<input type="checkbox"/> Porcelain Enameling		No	No	No	No
<input type="checkbox"/> Printing and Publishing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Pulp and Paperboard Mills					
<input type="checkbox"/> Subparts A		* <input type="checkbox"/>	Yes <input type="checkbox"/>	* <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Subparts B,C,D,R		* <input type="checkbox"/>	Yes <input type="checkbox"/>	* <input type="checkbox"/>	* <input type="checkbox"/>
<input type="checkbox"/> Subparts F,G,H,I,K,L,M,N,O,P		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	* <input type="checkbox"/>	* <input type="checkbox"/>
<input type="checkbox"/> Subparts E,Q,S,T		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	* <input type="checkbox"/>	Yes <input type="checkbox"/>
<input type="checkbox"/> Subparts J,U		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	* <input type="checkbox"/>
<input type="checkbox"/> Rubber Processing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Soap and Detergent Manufacturing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input checked="" type="checkbox"/> Steam Electric Power Plants		Yes <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/>	No	No
<input type="checkbox"/> Textile Mills (Not Subpart C)		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	No
<input type="checkbox"/> Timber Products Processing		Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>	Yes <input type="checkbox"/>

\* Test if "believed present"

7. **TABLE 7:** Please complete as directed and only for those parameters specified in Table 6. Required for all external outfalls which contain process wastewater. Not required for internal outfalls. Testing may be required for types of industry not specified in Table 6 for specific parameters if believed present (Instructions, Page 36).

**TABLE 7**

Outfall No.: 001	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ ) *		
Pollutants		Average	Maximum	No. of Samples
MAL ( $\mu\text{g/l}$ )				
VOLATILE COMPOUNDS				
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform		<1	<1	4
Carbon Tetrachloride				10
Chlorobenzene				10
Chlorodibromomethane		<5	<5	4
Chloroethane		<1	<1	4
2-Chloroethylvinyl Ether				10
Chloroform		<1	<1	4
Dichlorobromomethane		<1	<1	4
1,1-Dichloroethane		<1	<1	4
1,2,-Dichloroethane		<1	<1	4
1,1-Dichloroethylene				10
1,2-Dichloropropane		<1	<1	4
1,3-Dichloropropylene				10
Ethylbenzene				10
Methyl Bromide		<1	<1	4
Methyl Chloride		<1	<1	4
Methylene Chloride				20
1,1,2,2-Tetrachloroethane		<1	<1	4
Tetrachloroethylene				50
Toluene				10
1,2-Trans-Dichloroethylene				10
1,1,1-Trichloroethane		<1	<1	4
1,1,2-Trichloroethane		<1	<1	4
Trichloroethylene				10
Vinyl Chloride				10

	Effluent Concentration (µg/l) *			
Pollutants	Average	Maximum	No. of Samples	MAL (µg/l)
ACID COMPOUNDS				
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-Cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
P-Chloro-m-Cresol				10
Pentachlorophenol				50
Phenol				10
2,4,6-Trichlorophenol				10
BASE/NEUTRAL COMPOUNDS				
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)Anthracene				10
Benzo(a)Pyrene				10
3,4-Benzofluoranthene				10
Benzo(ghi)Perylene				20
Benzo(k)Fluoranthene				10
Bis(2-Chloroethoxy)Methane				10
Bis(2-Chloroethyl)Ether				10
Bis(2-Chloroisopropyl)Ether				10
Bis(2-Ethylhexyl)Phthalate				10
4-Bromophenyl Phenyl Ether				10
Chrysene				10
Dibenzo(a,h)Anthracene				20
1,2-Dichlorobenzene				10
1,3-Dichlorobenzene				10
1,4-Dichlorobenzene				10
3,3-Dichlorobenzidine				50
Diethyl Phthalate				10
Dimethyl Phthalate				10
Di-n-Butyl Phthalate				10
2,4-Dinitrotoluene				10

7. **TABLE 7:** Please complete as directed and only for those parameters specified in Table 6. Required for all external outfalls which contain process wastewater. Not required for internal outfalls. Testing may be required for types of industry not specified in Table 6 for specific parameters if believed present (Instructions, Page 36).

**TABLE 7**

Outfall No.: 002	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ ) *		
Pollutants		Average	Maximum	No. of Samples
MAL ( $\mu\text{g/l}$ )				
VOLATILE COMPOUNDS				
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform		<10	<10	4
Carbon Tetrachloride				10
Chlorobenzene				10
Chlorodibromomethane		<10	<10	4
Chloroethane		<50	<50	4
2-Chloroethylvinyl Ether				10
Chloroform		<10	<10	4
Dichlorobromomethane		<10	<10	4
1,1-Dichloroethane		<10	<10	4
1,2-Dichloroethane		<10	<10	4
1,1-Dichloroethylene				10
1,2-Dichloropropane		<10	<10	4
1,3-Dichloropropylene				10
Ethylbenzene				10
Methyl Bromide		<20	<20	4
Methyl Chloride		<50	<50	4
Methylene Chloride				20
1,1,2,2-Tetrachloroethane		<10	<10	4
Tetrachloroethylene				50
Toluene				10
1,2-Trans-Dichloroethylene				10
1,1,1-Trichloroethane		<10	<10	4
1,1,2-Trichloroethane		<10	<10	4
Trichloroethylene				10
Vinyl Chloride				10

Pollutants	Effluent Concentration (µg/l) *		No. of Samples	MAL (µg/l)
	Average	Maximum		
ACID COMPOUNDS				
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-Cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
P-Chloro-m-Cresol				10
Pentachlorophenol				50
Phenol				10
2,4,6-Trichlorophenol				10
BASE/NEUTRAL COMPOUNDS				
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)Anthracene				10
Benzo(a)Pyrene				10
3,4-Benzofluoranthene				10
Benzo(ghi)Perylene				20
Benzo(k)Fluoranthene				10
Bis(2-Chloroethoxy)Methane				10
Bis(2-Chloroethyl)Ether				10
Bis(2-Chloroisopropyl)Ether				10
Bis(2-Ethylhexyl)Phthalate				10
4-Bromophenyl Phenyl Ether				10
Chrysene				10
Dibenzo(a,h)Anthracene				20
1,2-Dichlorobenzene				10
1,3-Dichlorobenzene				10
1,4-Dichlorobenzene				10
3,3-Dichlorobenzidine				50
Diethyl Phthalate				10
Dimethyl Phthalate				10
Di-n-Butyl Phthalate				10
2,4-Dinitrotoluene				10

7. **TABLE 7:** Please complete as directed and only for those parameters specified in Table 6. Required for all external outfalls which contain process wastewater. Not required for internal outfalls. Testing may be required for types of industry not specified in Table 6 for specific parameters if believed present (Instructions, Page 36).

**TABLE 7**

Outfall No.: 003	<input type="checkbox"/> C <input checked="" type="checkbox"/> G	Effluent Concentration ( $\mu\text{g/l}$ ) *		
Pollutants		Average	Maximum	No. of Samples
<b>VOLATILE COMPOUNDS</b>				
Acrolein		<50	<50	4
Acrylonitrile		<50	<50	4
Benzene		<10	<10	4
Bromoform		<10	<10	4
Carbon Tetrachloride		<10	<10	4
Chlorobenzene		<10	<10	4
Chlorodibromomethane		<10	<10	4
Chloroethane		<50	<50	4
2-Chloroethylvinyl Ether		<10	<10	4
Chloroform		<10	<10	4
Dichlorobromomethane		<10	<10	4
1,1-Dichloroethane		<10	<10	4
1,2-Dichloroethane		<10	<10	4
1,1-Dichloroethylene		<10	<10	4
1,2-Dichloropropane		<10	<10	4
1,3-Dichloropropylene		<10	<10	4
Ethylbenzene		<10	<10	4
Methyl Bromide		<20	<20	4
Methyl Chloride		<50	<50	4
Methylene Chloride		<20	<20	4
1,1,2,2-Tetrachloroethane		<10	<10	4
Tetrachloroethylene		<50	<50	4
Toluene		<10	<10	4
1,2-Trans-Dichloroethylene		<10	<10	4
1,1,1-Trichloroethane		<10	<10	4
1,1,2-Trichloroethane		<10	<10	4
Trichloroethylene		<10	<10	4
Vinyl Chloride		<10	<10	4

	Effluent Concentration (µg/l) *			
Pollutants	Average	Maximum	No. of Samples	MAL (µg/l)
ACID COMPOUNDS				
2-Chlorophenol	<10	<10	4	10
2,4-Dichlorophenol	<10	<10	4	10
2,4-Dimethylphenol	<10	<10	4	10
4,6-Dinitro-o-Cresol	<50	<50	4	50
2,4-Dinitrophenol	<50	<50	4	50
2-Nitrophenol	<20	<20	4	20
4-Nitrophenol	<50	<50	4	50
P-Chloro-m-Cresol	<10	<10	4	10
Pentachlorophenol	<50	<50	4	50
Phenol	<10	<10	4	10
2,4,6-Trichlorophenol	<10	<10	4	10
BASE/NEUTRAL COMPOUNDS				
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)Anthracene				10
Benzo(a)Pyrene				10
3,4-Benzofluoranthene				10
Benzo(ghi)Perylene				20
Benzo(k)Fluoranthene				10
Bis(2-Chloroethoxy)Methane				10
Bis(2-Chloroethyl)Ether				10
Bis(2-Chloroisopropyl)Ether				10
Bis(2-Ethylhexyl)Phthalate				10
4-Bromophenyl Phenyl Ether				10
Chrysene				10
Dibenzo(a,h)Anthracene				20
1,2-Dichlorobenzene				10
1,3-Dichlorobenzene				10
1,4-Dichlorobenzene				10
3,3-Dichlorobenzidine				50
Diethyl Phthalate				10
Dimethyl Phthalate				10
Di-n-Butyl Phthalate				10
2,4-Dinitrotoluene				10



	Effluent Concentration (µg/l) *			
Pollutants	Average	Maximum	No. of Samples	MAL (µg/l)
BASE/NEUTRAL COMPOUNDS (cont.)				
2,6-Dinitrotoluene				10
Di-n-Octyl Phthalate				10
1,2-Diphenyl Hydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				10
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				20
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-Propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10
PESTICIDES				
Aldrin				0.05
alpha-BHC				0.05
beta-BHC				0.05
gamma-BHC				0.05
delta-BHC				0.05
Chlordane				0.15
4,4,-DDT				0.1
4,4,-DDE				0.1
4,4,-DDE				0.1
Dieldrin				0.1
alpha-Endosulfan				0.1
beta-Endosulfan				0.1
Endosulfan Sulfate				0.1
Endrin				0.1
Endrin Aldehyde				0.1
Heptachlor				0.05

	Effluent Concentration (µg/l)			
Pollutants	Average	Maximum	No. of Samples	MAL (µg/l)
PESTICIDES (cont.)				
PCB-1254				1.0
PCB-1221				1.0
PCB-1232				1.0
PCB-1248				1.0
PCB-1260				1.0
PCB-1016				1.0
Toxaphene				5.0

\* Indicate units if different from  $\mu\text{g/l}$

8. **TABLE 8 (DIOXINS/FURAN COMPOUNDS):** Please complete as directed. Not required for internal outfalls.  
(Instructions, Page 36)

a. Are any of the following compounds manufactured and/or used in a process at the facility? \_\_\_\_ Yes ☒ No

If yes, indicate with a check mark the compound(s) which apply and provide a brief description of the conditions of its/their presence at the facility.

- \_\_\_\_ 2,4,5-trichlorophenoxy acetic acid (2,4,5-T) CAS #93-76-5  
 \_\_\_\_ 2-(2,4,5-trichlorophenoxy) propanoic acid (Silvex, 2,4,5-TP) CAS #93-72-1  
 \_\_\_\_ 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon) CAS #136-25-4  
 \_\_\_\_ 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate (Ronnell) CAS #299-84-3  
 \_\_\_\_ 2,4,5-trichlorophenol (TCP) CAS #95-95-4  
 \_\_\_\_ Hexachlorophene (HCP) CAS #70-30-4

b. Do you know or have any reason to believe that 2,3,7,8 Tetrachlorodibenzo-P-Dioxin (TCDD) or any congeners of TCDD may be present in your effluent? \_\_\_\_ Yes ☒ No

If yes, provide a brief description of the conditions for its presence.

c. If you responded yes to either item a or b, complete Table 8 as instructed.

**TABLE 8**

Outfall ____	<input type="checkbox"/> C <input type="checkbox"/> G	Wastewater		Sludge		
Compound	Equivalent Factors	Concentration (ppq)	Equivalents (ppq)	Concentration (ppt)	Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10.0
1,2,3,7,8-PeCDD	0.5					50.0
2,3,7,8-HxCDDs	0.1					50.0
2,3,7,8-TCDF	0.1					10.0
1,2,3,7,8-PeCDF	0.05					50.0
2,3,4,7,8-PeCDF	0.5					50.0
2,3,7,8-HxCDFs	0.1					50.0
Total						

9. **TABLE 9 (HAZARDOUS SUBSTANCES):** Proceed complete as directed. Not required for internal outfalls.  
(Instructions, Page 37)

- a. Are there any pollutants listed in the instructions (page 37) believed present in the discharge?  
\_\_\_\_\_ Yes ☒ No
- b. Are there pollutants listed in Item No. 1.d. on Page No. 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application? \_\_\_\_\_ Yes ☒ No

If your responded yes to either item, complete Table 9 as instructed.

**TABLE 9**

Pollutant & CAS Number	Average ( $\mu\text{g/l}$ )	Maximum ( $\mu\text{g/l}$ )	No. of Samples	Analytical Method

## WORKSHEET 4.0 - RECEIVING WATERS

### THE FOLLOWING IS REQUIRED FOR ALL TPDES PERMIT APPLICATIONS

#### 1. DOMESTIC DRINKING WATER SUPPLY (Instructions, Page 46)

Is there a surface water intake for domestic drinking water supply located within 5 (five) miles downstream from the point/proposed point of discharge? \_\_\_\_ Yes ☒ No

If yes, identify owner of the drinking water supply, the distance and direction to the intake, and locate and identify the intake on the USGS map. Indicate by a check mark that the requested information is provided: \_\_\_\_

#### 2. DISCHARGE INTO TIDALLY INFLUENCED WATERS (Instructions, Page 46)

a. Width of the receiving water at the outfall? \_\_\_\_\_ feet

b. Are there oyster reefs in the vicinity of the discharge? \_\_\_\_ Yes \_\_\_\_ No

If yes, indicate approximate distance and direction from outfall(s): \_\_\_\_\_

c. Are there any sea grasses within the vicinity of the point of discharge? \_\_\_\_ Yes \_\_\_\_ No

If yes, provide the distance and direction to the grasses: \_\_\_\_\_

#### 3. CLASSIFIED SEGMENT (Instructions, Page 46) (Receiving Water for Outfall 005)

Is the discharge directly into (or within 300 feet of) a classified segment? ☒ Yes \_\_\_\_ No

If yes, stop here. It is not necessary to complete items 4 and 5 and it is not necessary to complete Worksheet 2.1.  
If no, complete items 4 and 5.

#### 4. DESCRIPTION OF IMMEDIATE RECEIVING WATERS (Instructions, Pages 46)

Name of the immediate receiving waters: \_\_\_\_\_

a. Check the appropriate description of the receiving waters

\_\_\_\_ Open Bay

\_\_\_\_ Tidal Stream, Bayou, or Marsh

\_\_\_\_ Lake or Pond

\_\_\_\_ Surface area \_\_\_\_\_ acres. Average depth of the entire water body \_\_\_\_\_ feet

\_\_\_\_ Average depth of water body within a 500-foot radius or the discharge point \_\_\_\_\_ feet

\_\_\_\_ Freshwater Swamp or Marsh

\_\_\_\_ Other: \_\_\_\_\_

\_\_\_\_ Man-made Channel or Ditch

\_\_\_\_ Stream

If a man-made channel, ditch or stream was checked above, provide the following:

b. Check one of the following that best characterizes the area upstream of the discharge. For new discharges, characterize the area downstream or discharge (check one).

\_\_\_\_ Intermittent (dry for at least one week during most years)

\_\_\_\_ Intermittent with Perennial Pools (enduring pools containing sufficient habitat to maintain significant aquatic life uses)

\_\_\_\_ Perennial (normally flowing)

## WORKSHEET 4.0 - RECEIVING WATERS

### THE FOLLOWING IS REQUIRED FOR ALL TPDES PERMIT APPLICATIONS

#### 1. DOMESTIC DRINKING WATER SUPPLY (Instructions, Page 46)

Is there a surface water intake for domestic drinking water supply located within 5 (five) miles downstream from the point/proposed point of discharge? \_\_\_\_ Yes ☒ No

If yes, identify owner of the drinking water supply, the distance and direction to the intake, and locate and identify the intake on the USGS map. Indicate by a check mark that the requested information is provided: \_\_\_\_

#### 2. DISCHARGE INTO TIDALLY INFLUENCED WATERS (Instructions, Page 46)

a. Width of the receiving water at the outfall? \_\_\_\_\_ feet

b. Are there oyster reefs in the vicinity of the discharge? \_\_\_\_ Yes \_\_\_\_ No

If yes, indicate approximate distance and direction from outfall(s): \_\_\_\_\_

c. Are there any sea grasses within the vicinity of the point of discharge? \_\_\_\_ Yes \_\_\_\_ No

If yes, provide the distance and direction to the grasses: \_\_\_\_\_

#### 3. CLASSIFIED SEGMENT (Instructions, Page 46)

Is the discharge directly into (or within 300 feet of) a classified segment? \_\_\_\_ Yes ☒ No

If yes, stop here. It is not necessary to complete items 4 and 5 and it is not necessary to complete Worksheet 2.1. If no, complete items 4 and 5.

#### 4. DESCRIPTION OF IMMEDIATE RECEIVING WATERS (Instructions, Pages 46)

Name of the immediate receiving waters: Squaw Creek Reservoir (For Outfalls 001, 002, 003, 004)

a. Check the appropriate description of the receiving waters

\_\_\_\_ Open Bay

\_\_\_\_ Tidal Stream, Bayou, or Marsh

☒ Lake or Pond

Surface area 3,300 acres. Average depth of the entire water body 46 feet

Average depth of water body within a 500-foot radius or the discharge point 25 feet

\_\_\_\_ Freshwater Swamp or Marsh

\_\_\_\_ Other: \_\_\_\_\_

\_\_\_\_ Man-made Channel or Ditch

\_\_\_\_ Stream

If a man-made channel, ditch or stream was checked above, provide the following:

b. Check one of the following that best characterizes the area upstream of the discharge. For new discharges, characterize the area downstream or discharge (check one).

\_\_\_\_ Intermittent (dry for at least one week during most years)

\_\_\_\_ Intermittent with Perennial Pools (enduring pools containing sufficient habitat to maintain significant aquatic life uses)

\_\_\_\_ Perennial (normally flowing)

Check the method used to characterize the area upstream (or downstream for new dischargers): ☐ USGS flow records, ☒ personal observation, ☐ historical observation by adjacent landowner(s), ☐ others, specify:

c. List the name(s) of all perennial streams that join the receiving water within three miles downstream of the discharge point:  
Squaw Creek

d. Do the receiving water characteristics change within three miles downstream of the discharge? (e.g., natural or man-made dams, ponds, reservoirs, etc.) ☒ Yes ☐ No  
If yes, discuss how:

Changes from a reservoir to a stream.

e. Provide general observations of the water body during normal dry weather conditions:

Normal lake conditions

Date and time of observation: 04/15/03 09:45 a.m.

Was water body influenced by storm water runoff during observations? ☐ Yes ☒ No

## 5. GENERAL CHARACTERISTICS OF WATER BODY (Instructions, Page 47)

a. Is the receiving water upstream of the discharges or proposed discharge site influenced by (check as appropriate):

<input type="checkbox"/> oil field activities	<input type="checkbox"/> urban runoff
<input checked="" type="checkbox"/> agricultural runoff	<input type="checkbox"/> septic tanks
<input type="checkbox"/> upstream discharges	<input type="checkbox"/> others, specify below

b. Uses of water body, observed or evidences of (check as appropriate):

<input checked="" type="checkbox"/> livestock watering	<input type="checkbox"/> contact recreation	<input type="checkbox"/> irrigation withdrawal
<input type="checkbox"/> non contact recreation	<input type="checkbox"/> fishing	<input type="checkbox"/> navigation
<input type="checkbox"/> domestic water supply	<input checked="" type="checkbox"/> industrial water supply	<input type="checkbox"/> picnic park activities
<input type="checkbox"/> others, specify below		

c. Check one of the following to best describe the aesthetics of the receiving water and the surrounding area:

☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area: water clarity exceptional  
☒ Natural Area: trees and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity discolored  
☐ Common Setting: not offensive, developed but uncluttered; water may be colored or turbid  
☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

## WORKSHEET 5.0 - SEWAGE SLUDGE MANAGEMENT AND DISPOSAL

THE FOLLOWING IS REQUIRED FOR ALL TPDES PERMIT APPLICATIONS THAT MEET THE CONDITIONS AS OUTLINED IN TECHNICAL REPORT 1.0, ITEM NO. 7.

### 1. SEWAGE SLUDGE SOLIDS MANAGEMENT PLAN (Instructions, Page 50)

- a. Is this a new permit application or an amendment permit application? \_\_\_\_ Yes ☒ No
- b. Does the facility discharge in the Lake Houston watershed? \_\_\_\_ Yes ☒ No

If yes to either item a or b, \_\_\_\_ indicate by a check mark that a solids management plan was provided with the application.

### 2. SEWAGE SLUDGE MANAGEMENT AND DISPOSAL (Instruction, Page 50)

- a. Please check the current sludge disposal method(s). More than one method can be checked.

☒ Permitted landfill  
\_\_\_\_ Registered land application site  
\_\_\_\_ Surface disposal site (sludge monofill)  
\_\_\_\_ Transported to another WWTP (written statement or contractual agreement required)  
\_\_\_\_ Beneficial land application as authorized in the existing permit

\_\_\_\_ Marketing and distribution by the permittee  
\_\_\_\_ Composted by the permittee

- b. Disposal site name, TNRCC Permit/Registration Number and County where disposal site is located:  
CSC in Avalon. Ellis Countv. TX Permit No. TXD000836585

- c. Method of Transportation (truck, train, pipe, other) and hauler Registration Number:  
Truck, Registration No. 34529

Transported in: \_\_\_\_ liquid \_\_\_\_ semi-liquid \_\_\_\_ semi-solid ☒ solid state  
Land application for : \_\_\_\_ Reclamation \_\_\_\_ Soil Conditioning

- d. If the existing permit contains authorization for sludge land application, composting, marketing and distribution of sludge, and/or sludge lagoons and authorization to renew the activity is being sought in the application, the appropriate sections of the Sludge Technical Report must be provided.

### 3. PERMIT AUTHORIZATION FOR SEWAGE SLUDGE DISPOSAL (Instructions, Page 51)

Are you requesting new authorization to beneficially land apply sewage sludge at this site or a site under your direct control? \_\_\_\_ Yes ☒ No

Are you requesting new authorization to market and distribute sewage sludge at this facility or a facility under your direct control? \_\_\_\_ Yes ☒ No

Are you requesting new authorization to compost sewage sludge? \_\_\_\_ Yes ☒ No

Are you requesting new authorization to surface dispose sewage sludge at this site or site under your direct control? \_\_\_\_ Yes ☒ No

Are you requesting new authorization to incinerate sewage sludge at this site or site under your direct control? \_\_\_\_ Yes ☒ No

If yes to any of the above items, provide the information required in the SLUDGE TECHNICAL REPORT.

New authorization for beneficial land application, incineration, and sludge lagoons in the TPDES or TLAP permits requires a major amendment to the permit. New authorization for composting may require a major amendment to the permit. See the instructions for an explanation whether a major amendment is required or if authorization for composting can be added through the renewal process.



**Attachment A**

**PAYMENT OF APPLICATION FEE**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
TPDES Permit No. 01854**

**Administrative Report, Page 1**



88-88 / 1113

CHASE BANK, TEXAS  
SAN ANGELO, TEXAS

1001803805

CHECK NO. 1001803805

EXACTLY TWO THOUSAND FIFTEEN AND NO/\*\*\*\*\*

TO THE ORDER OF

TEXAS COMMISSION ON  
ENVIRONMENTAL QUALITY  
REVENUES SECTION  
PO BOX 13088  
AUSTINDATE  
07/16/03CHECK AMOUNT  
\*\*\*\*\*2,015.00

VOID AFTER 90 DAYS

TX 78711-3088

TXU BUSINESS SERVICES

*Lirk Olim*

1001733616

THE ORIGINAL DOCUMENT HAS A WHITE REFLECTIVE WATERMARK ON THE BACK. HOLD AT AN ANGLE TO SEE THE MARK WHEN CHECKING THE ENDORSEMENTS.

\*1001803805\* :111300880: \*06300016766\*

■ VERIFY THE AUTHENTICITY OF THIS MULTI-TONE SECURITY DOCUMENT. ■ CHECK BACKGROUND AREA CHANGES COLOR GRADUALLY FROM TOP TO BOTTOM. ■

TUE1  
011519952DATE  
07/16/03CHECK NO.  
1001803805

DATE	INVOICE/CREDIT MEMO	DESCRIPTION	GROSS	DISCOUNT	NET
070703	WP070703A *****	CPSES TPDES Permit No. 01854	201500	000	201500
TOTAL ►			201500	000	201500

THE ATTACHED CHECK IS IN PAYMENT  
FOR ITEMS DESCRIBED ABOVE.

**Attachment B**

**USGS SITE MAP  
AND FACILITY MAP**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
TPDES Permit No. 01854**

**Administrative Report, Item 5.g.  
Technical Report, Item 1.e.**

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,**

**THAT CAN BE VIEWED AT  
THE RECORD TITLED:  
"GEOLOGICAL SURVEY OF  
NEMO QUADRANGLE,  
TEXAS"**

**N3215-W9737.5**

**WITHIN THIS PACKAGE**

**D-2**

**TXU Generation Company LP**  
**Comanche Peak Steam Electric Station**  
**Wastewater Discharge Permit No. 01854**  
**Permit Renewal**

**August 26, 2003**

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,**

**THAT CAN BE VIEWED AT  
THE RECORD TITLED:  
"GEOLOGICAL SURVEY OF  
NEMO QUADRANGLE,  
TEXAS"**

**N3215-W9737.5/7.5**

**WITHIN THIS PACKAGE**

**D-3**

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,  
THAT CAN BE VIEWED AT  
THE RECORD TITLED:**

**"GEOLOGICAL SURVEY OF  
HILL CITY QUADRANGLE,  
TEXAS"**

**N3215-W9745/7.5**

**WITHIN THIS PACKAGE**

**D-4**

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,**

**THAT CAN BE VIEWED AT  
THE RECORD TITLED:**

**PLATE 1 OF 1, 4-16-99  
"FACILITY MAP"**

**WITHIN THIS PACKAGE**

**D-5**



**Attachment C**

**GENERAL DESCRIPTION**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
TPDES Permit No. 01854**

**Technical Report, Item 1.c.**

## **TXU GENERATION COMPANY LP COMANCHE PEAK STEAM ELECTRIC STATION GENERAL DESCRIPTION**

The Comanche Peak Steam Electric Station (Comanche Peak S.E.S.) is a two-unit nuclear-powered steam electric generating facility owned and operated by TXU Generation Company LP (TXU Generation). The facility is located on the west side of Squaw Creek Reservoir along HWY 56 approximately four and a half (4.5) miles northwest of the city of Glen Rose, Somervell County, Texas. Wastewaters are discharged to Squaw Creek Reservoir, thence to Squaw Creek, thence to the Paluxy River in Segment No. 1229 of the Brazos River Basin; or to Squaw Creek Reservoir, thence to Lake Granbury in Segment No. 1205 of the Brazos River Basin. Squaw Creek Reservoir is the source of all water used for cooling and industrial use. When needed, make-up water is provided to the reservoir via a pipeline from nearby Lake Granbury. Potable water is obtained from groundwater and is delivered by Company-owned on-site wells.

The generating capacity and date of initial commercial operation for each generating unit are as follows:

<u>Unit</u>	<u>Capacity (Mw)</u>	<u>Date</u>
1	1150	1990
2	1150	1993

Wastewaters produced at the plant site are collected, treated and discharged via six (6) permitted outfalls. TXU Generation's operating procedures and wastewater handling practices are designed both to comply with all applicable environmental regulations and to provide operational flexibility wherever practical.

The Company is aware of an increased potential for macroinvertebrate invasion of any plant water system. In the event of such occurrence, the Company is prepared to treat its water on a static or flow through basis with the following non-oxidizing biocide: Buckman Bulab 6002 Poly[oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride].

The six (6) permitted outfalls are listed below and a description of the wastewater system pertinent to each outfall follows:

<u>Outfall</u>	<u>Type of Wastewater</u>
001	once-through and auxiliary cooling water/previously monitored effluents
002	Safe Shutdown Impoundment containing cooling water, low volume wastes (service water), and stormwater runoff
003	sanitary sewage effluent
004	low volume wastewater/previously monitored effluents
005	reservoir discharge
104	metal cleaning wastes

#### Outfall 003 (Sanitary Sewage Effluent)

Domestic waste is received from Plant potable water systems and is discharged from a normal 0.090 MGD capacity treatment facility that employs the extended aeration, activated sludge return process for treatment of domestic sanitary sewage. The facility is designed as a single, integral, above ground installation consisting of a surge basin, grinder pumps, aeration basin, circular clarifier, aerobic digester and a sludge holding basin. Treated effluent is routed through an ultraviolet disinfection unit to a 3500 gallon contact chamber, then through a V-notch weir to the final discharge. Sludge from the sludge holding basin is transferred to a sludge dewatering facility for volume reduction. Dewatering is achieved by gravity flow through porous bags that retain solids while allowing filtrate to be returned to the domestic waste treatment process. All dewatered sludge is collected on-site in containment bins, then hauled to an industrial landfill for final disposal.

#### Outfall 004 (Low Volume Wastes)

Certain low volume wastes may become contaminated with low level radioactive material. These wastes must comply with both TCEQ-TPDES effluent limitations and the limitations imposed by the NRC. As a result, two separate low volume waste treatment systems are employed; as described below, one system is dedicated to the treatment of these potentially radioactive wastes and the other treats wastes generated from non-radioactive low volume sources.

The potentially low level radioactive low volume wastes are principally composed of wastewater from **primary support systems** which include equipment, floor, laboratory and sample drains, as well as the periodic drainage of various system components. These wastes are collected in holding tanks and are then processed, as necessary, to meet limitations imposed by the NRC Off-Site Dose Calculation Manual (ODCM) and TPDES, respectively. Treated effluent is collected in a monitoring tank where it is sampled and analyzed for compliance with both TPDES effluent limitations and the NRC ODCM for radioactive parameters. The monitored wastes are then batch discharged via Outfall 004 into the condenser cooling water. The discharge of these potentially low-level radioactive low volume wastes into the condenser cooling water is a practice approved by the NRC.

The non-radioactive low volume wastes from **secondary support systems** include equipment, floor, laboratory, and sample drains; water treatment wastes from demineralizer regeneration, reverse osmosis (R.O.) systems operation, condensate polisher system and other miscellaneous water treatment blowdown and backwash operations; periodic drainage and flushing of various system components; and intermittent boiler blowdown from the plant's auxiliary boiler. These low volume wastes and the previously monitored wastes discharged from Outfall 104 are routed to a low volume Waste Management System (WMS) and discharged via Outfall 004. The WMS consists of the following components: surge basin, API oil/water separator, clarifier blowdown and condensate polisher decant basin, three separate but interconnected low volume waste retention ponds with double synthetic liners and leachate collection systems, and a synthetic lined concrete equalization basin. The complete WMS provides for oil and grease removal, suspended solids reduction through settling and the addition of polymer, and pH control through addition of acid or caustic.

The treated non-radioactive low volume wastes are normally commingled with the wastes which are potentially low level radioactive and are discharged via Outfall 004 to the condenser cooling water; the commingled waste stream is sampled prior to mixing with the cooling water for compliance with the appropriate effluent limitations. An alternative practice, which has been utilized only on rare occasions, is to discharge the treated non-radioactive wastes via Outfall 004 directly to Squaw Creek Reservoir; this approach produces two separately discharging waste streams. Appropriate physical or mathematical flow-weight compositing is then employed for determining and reporting compliance with Outfall 004 limitations.

In addition to the low volume wastes described above, some storm water runoff may be discharged via this outfall. This consists of runoff from diked chemical storage areas and transformers, as well as small construction sites, which is loaded into tanker trucks and transported to the Outfall 004 discharge location.

#### Outfall 005 (Reservoir Discharge)

This outfall is designed to discharge water from Squaw Creek Reservoir via a pipeline to Lake Granbury on an "as needed" basis. The return of reservoir water to Lake Granbury is currently anticipated. To date, there have been no discharges from this outfall.

#### Outfall 104 (Metal Cleaning Wastes)

A metal cleaning waste pond has been dedicated for the storage and treatment of metal cleaning wastes. Metal cleaning wastes are generated by the chemical cleaning of plant equipment and are evaluated for treatability prior to their collection and retention in the pond. Unsuitable wastes are treated and/or disposed by alternative methods; e.g., off-site contract disposal.

Wastewater in the pond, as well as treatable metal cleaning wastes which might be collected in temporary facilities (frac tanks), is treated for metals and pH adjustment prior to discharge via Outfall 104 to the Low Volume Waste Ponds associated with Outfall 004. The treated wastes so discharged will be commingled as a previously monitored effluent with the non-radioactive low volume wastes prior to discharge via Outfall 004.

**Attachment D**

**WATER BALANCE DIAGRAM**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
TPDES Permit No. 01854**

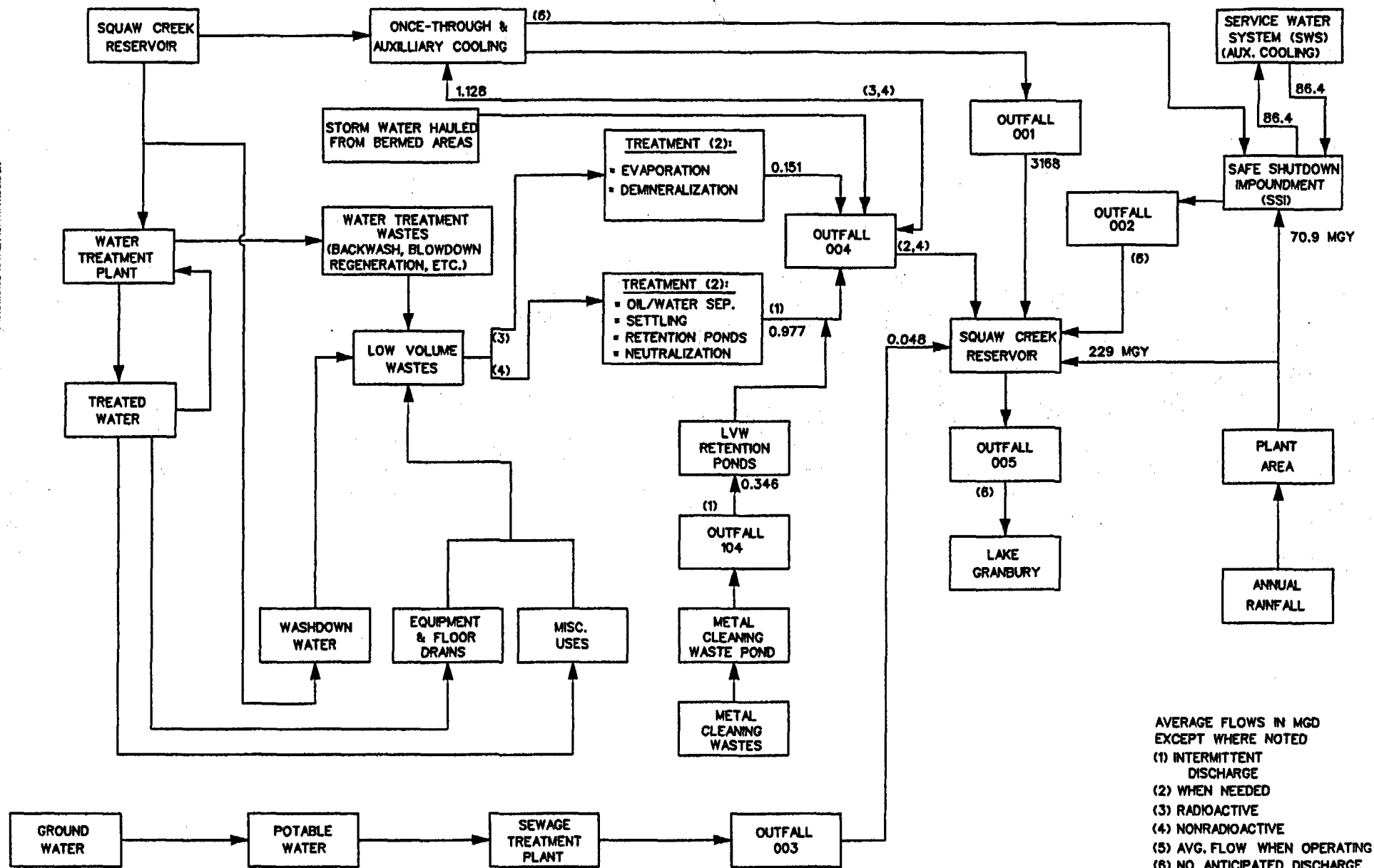
**Technical Report, Item 2.b.**

# TXU GENERATION COMPANY LP

## COMANCHE PEAK STEAM ELECTRIC STATION

### WATER BALANCE DIAGRAM

JULY 2003



**Attachment E**

**BOILER CHEMICAL ADDITIVES**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
TPDES Permit No. 01854**

**Technical Report, Item 5.c.**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
Auxiliary Boiler Chemical Additives**

- a. **Manufacturer's Product Identification Number: Hydrazine**
- b. **Product Use: Oxygen Scavenger**
- c. **Chemical Composition: See Attached Data Sheets**
- d. **Classification (non-persistent, persistent or bioaccumulative): non-persistent**
- e. **Product or active ingredient half-life: Not available**
- f. **Frequency of product use: Once or twice per year**
- g. **Product toxicity data: See attached data sheet**
- h. **Concentration in boiler blowdown: Not available**
- i. **Outfall: 004**



## \*\*\* GENERAL PRODUCT INFORMATION \*\*\*

Trade Product Name :HYDRAZINE 35%, RR-44  
 Synonyms :Not listed on MSDS  
 Manufacturer Name :CALGON CORPORATION  
 Manufacturer's Address :P. O. BOX 1346  
 City :PITTSBURGH  
 State :PA  
 ZIP :15230  
 Emergency Phone Number :412-777-8000  
 Telephone :Not listed on MSDS

## Additional Information:

Chemical Name :HYDRAZINE SOLUTION  
 Formula :NH<sub>2</sub> NH<sub>2</sub>

## \*\*\* INGREDIENTS INFORMATION \*\*\*

## \*\* EXPOSURE LIMITS \*\*

INGREDIENT NAME	ACGIH	TLV OSHA	OTHER
HYDRAZINE	.01*	1*	.04 (2)

## \*\* PERCENTAGES \*\*

	HIGH %	LOW %
HYDRAZINE	35	

## \*\* CAS NUMBERS \*\*

	CAS ON MSDS
HYDRAZINE	302-01-2

## Additional Information:

Chemical Name :HYDRAZINE Common Name :DIAMINE

## \* PPM LIMITS FOR SKIN

(2) NIOSH RECOMMENDED 2-HOUR CEILING.

## \*\*\* PHYSICAL/CHEMICAL CHARACTERISTICS \*\*\*

Boiling Point :228F  
 Specific Gravity :1.02  
 Vapor Pressure :0.8 AT 25C  
 Percent Volatiles :100  
 Vapor Density (air=1) :1  
 Water Solubility :MISCIBLE  
 Appearance and Odor :COLORLESS LIQUID WITH WEAK AMMONIA-LIKE ODOR

## Additional Information:

pH Undiluted :13.0  
 Other :Not listed on MSDS

## \*\*\* FIRE AND EXPLOSION HAZARD DATA \*\*\*

Flash Point :AQUEOUS SOLUTION, NOT APPLICABLE  
 Flash Point Method :NOT APPLICABLE  
 Extinguisher Media :WATER SPRAY, ALCOHOL FOAM OR CO<sub>2</sub> OR

# DRY CHEMICAL

## Special Fire Fighting Procedures

:EXERCISE CAUTION WHEN FIGHTING ANY CHEMICAL FIRE. A SELF-CONTAINED BREATHING APPARATUS IS ESSENTIAL.

## Unusual Fire and Explosive Hazards

:UNDER FIRE CONDITIONS, HAZARDOUS VAPORS AND GASES MAY BE EMITTED. DRUMS EXPOSED TO EXCESSIVE HEAT MAY RUPTURE VIOLENTLY. USE A WATER SPRAY TO KEEP DRUM COOL. VAPORS ARE EXPLOSIVE. MAY IGNITE SPONTANEOUSLY IN AIR WHEN IN CONTACT WITH COMBUSTIBLE AND STRONG OXIDIZERS.  
\*\*\* REACTIVITY DATA \*\*\*

Is this chemical stable under normal conditions of handling and storage?

:YES

Conditions to Avoid

:None listed on MSDS

Incompatibility(materials to avoid)

:OXIDERS, NITRIC ACID AND STRONG ACIDS, PEROXIDES AND COMBUSTIBLES.

Hazardous decomposition products

:AMMONIA

## \*\*\* HEALTH HAZARD DATA \*\*\*

### ACUTE EFFECTS OF OVEREXPOSURE:

Ingestion

:ORAL LD50 - RAT 60MG/KG (1)

EFFECTS AFTER INGESTION MAY INCLUDE ANOREXIA, WEIGHT LOSS, WEAKNESS, VOMITING, EXCITEMENT AND CONVULSIONS. MAY PRODUCE LIVER, KIDNEY DAMAGE AND HEMOLYSIS OF RED BLOOD CELLS.

Inhalation

:LC50 - RAT - 570PPM(4 HOUR) - NIOSH REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES, 1981 - 82.

IRRITATING TO THE RESPIRATORY TRACT. MAY PRODUCE BRONCHITIS AND PULMONARY EDEMA AND THE SAME EFFECTS AS DESCRIBED UNDER

INGESTION.

Dermal Exposure

A. Toxic

:DERMAL LD50 - RAT - 91MG/KG (1)

HYDRAZINE MAY BE ABSORBED THROUGH THE SKIN PRODUCING THE SAME EFFECTS AS DESCRIBED UNDER INGESTION.

B. Irritation

:HYDRAZINE IS SEVERELY IRRITATING TO THE SKIN. A 35% SOLUTION OF HYDRAZINE WHEN TESTED IN ACCORDANCE WITH THE DEPARTMENT OF

TRANSPORTATION REGULATIONS, WAS FOUND TO CAUSE DERMAL ERYTHEMA AND EDEMA TO RABBIT SKIN. THESE EFFECTS WERE PARTIALLY REVERSIBLE WITHIN 48 HOURS AND NO ULCERATION OR NECROSIS WAS OBSERVED.

C. Sensitization :SKIN SENSITIZATION CAN OCCUR. CONTACT DERMATITIS HAS BEEN DOCUMENTED IN WORKERS USING HYDRAZINE COMPOUNDS.

Eye Irritation :CONTACT OF LIQUID WITH EYES MAY RESULT IN SEVERE IRRITATION EVEN BURNS. SEVERE EXPOSURE OF THE EYES TO VAPORS MAY RESULT IN TEMPORARY BLINDNESS LASTING ABOUT 24 HOURS.

#### CHRONIC, SUBCHRONIC AND OTHER EFFECTS OF OVEREXPOSURE:

HYDRAZINE IS LISTED BY THE NATIONAL TOXICOLOGY PROGRAM AS A SUBSTANCE THAT MAY REASONABLY BE ANTICIPATED TO BE A CARCINOGEN. IT IS LISTED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER AS HAVING SUFFICIENT EVIDENCE FOR BEING CLASSIFIED AS A CARCINOGEN IN ANIMALS BUT INADEQUATE DATA IN HUMANS. PREVIOUS STUDIES HAVE SHOWN THAT HYDRAZINE SULFATE COMPOUNDS, GIVEN ORALLY, PRODUCED LIVER AND LUNG TUMORS IN ANIMALS. RECENTLY, AN INHALATION STUDY WAS CONDUCTED BY THE AIR FORCE AEROSPACE MEDICAL RESEARCH LABORATORY USING HYDRAZINE. THE RESULTS SHOW THAT ALL THE ANIMALS (MICE, RATS AND DOGS) EXPOSED TO HYDRAZINE AT 0.25 PPM OR LESS IN AIR HAD NO SIGNIFICANT INCREASE IN TUMORS EITHER BENIGN OR MALIGNANT. MICE, RATS HAMSTERS AND DOGS EXPOSED TO LEVELS OF 1 PPM OR MORE DID SHOW AN INCREASED INCIDENCE OF TUMORS. HOWEVER, THE MAJORITY OF THE TUMORS WERE BENIGN. ON THE BASIS OF THE STUDY, THE AUTHORS CONCLUDED THAT "HYDRAZINE IS A RELATIVELY WEAK TUMORIGEN CAPABLE OF INDUCING RESPIRATORY TUMORS, PRIMARILY BENIGN, IN A DOSE-RELATED INCIDENCE AT 1.0 AND 5.0 PPM. HYDRAZINE HAS BEEN SHOWN TO BE A MUTAGEN IN BACTERIA, PLANT, DROSPHILA AND MAMMALIAN TEST SYSTEMS. HYDRAZINE HAS BEEN SHOWN TO CAUSE MUSCULOSKELETAL DEFECTS AND FETAL TOXICITY IN LABORATORY ANIMALS.

Is chemical listed as a carcinogen or potential carcinogen ?

National Toxicology Program	IARC Monographs	OSHA
NOT STATED	YES IN ANIMALS	NOT STATED

#### \*\*\* FIRST AID PROCEDURES \*\*\*

Eyes and skin :IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES AND SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. WASH CLOTHING BEFORE REUSE.

Ingestion :IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF MILK. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTE TO PHYSICIAN :GASTRIC LAVAGE IS RECOMMENDED.

Inhalation :IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY BY MOUTH TO MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

Additional Information:

(1) PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, GEORGE D. CLAYTON AND  
 -----  
 FLORENCE E. CLAYTON, EDITOR, JOHN WILEY AND SONS, NEW YORK, 1981.  
 \*\*\* PRECAUTIONS FOR SAFE HANDLING AND USE \*\*\*

**\*\* SPECIAL PRECAUTIONS \*\***

Storage and Handling :DO NOT GET IN EYES, ON SKIN OR ON CLOTHING  
 DO NOT BREATHE VAPORS  
 DO NOT REUSE CONTAINER. LIQUID AND VAPOR  
 RESIDUES ARE HAZARDOUS  
 KEEP AWAY FROM COMBUSTIBLE OR STRONG OXIDERS  
 WASH THOROUGHLY AFTER HANDLING  
 KEEP CONTAINER CLOSED

**\*\* SPILL AND LEAK PROCEDURES \*\***

Steps to be Taken :CONTAIN THE SPILL BY DIKING OR DIGGING A  
 CONTAINMENT PIT SUFFICIENTLY LARGE TO HOLD AT LEAST 10 TIMES THE SPILL  
 VOLUME. DILUTE TO APPROXIMATELY 10 TIMES THE VOLUME WITH WATER. ADD  
 SUFFICIENT DRY COMMERCIAL CALCIUM HYPOCHLORITE (DRY CHLORINE, HTHR, DRY  
 BLEACH) TO COMPLETELY OXIDIZE THE HYDRAZINE. USE 7-10 LBS. PER POUND  
 OF HYDRAZINE.

Waste Disposal Method :OXIDZE AS ABOVE OR INCINERATE IN ACCORDANCE  
 WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

**Additional Information:**

REPORTABLE QUANTITIES IN LBS OF EPA HAZARDOUS SUBSTANCES IN PRODUCT:  
 NOT APPLICABLE

NOTIFY EPA OF PRODUCT SPILLS EQUAL TO OR EXCEEDING :NOT APPLICABLE

**\*\*\* CONTROL MEASURES \*\*\***

Ventilation :LOCAL EXHAUST IS RECOMMENDED  
 MECHANICAL (GENERAL) IS RECOMMENDED

Respiratory  
 Protection :A NIOSH APPROVED SELF-CONTAINED OR SUPPLIED AIR  
 RESPIRATOR IS RECOMMENDED IF THE AIR LEVELS  
 ESTABLISHED BY LOCAL, STATE OR FEDERAL REGULATIONS  
 ARE EXCEEDED.

Protective  
 Gloves :VINYL GLOVES

Eye Protection :CHEMICAL SPLASH GOGGLES ON FACE SHIELD

Other Protective  
 Clothing :PROTECTIVE CLOTHING

**Additional Information:**

Other Precautions :USE ONLY IN WELL VENTILATED AREAS THAT WILL MAINTAIN  
 AIR LEVELS BELOW LIMITS ESTABLISHED BY LOCAL, STATE AND FEDERAL  
 REGULATIONS.

**\*\*\* DOCUMENTARY \*\*\***

This MSDS prepared by :JANET MOSTOWY  
 Date of preparation for this MSDS :FEBRUARY 18, 1985

\*\*\* ADDITIONAL INFORMATION \*\*\*

WHILE THIS INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO BE ACCURATE AS OF THE DATE HEREOF, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
Auxiliary Boiler Chemical Additives**

- a. **Manufacturer's Product Identification Number: Morpholine**
- b. **Product Use: pH Adjuster**
- c. **Chemical Composition: See Attached Data Sheets**
- d. **Classification (non-persistent, persistent or bioaccumulative): non-persistent**
- e. **Product or active ingredient half-life: Not available**
- f. **Frequency of product use: Intermittent use not exceeding 2 hours/day/unit**
- g. **Product toxicity data: See attached data sheet**
- h. **Concentration in boiler blowdown: Not available**
- i. **Outfall: 004**

## \*\*\* GENERAL PRODUCT INFORMATION \*\*\*

Trade Product Name :MORPHOLINE  
 Synonyms :DIETHYLENE OXIMIDE  
 DIETHYLENIMIDE OXIDE:  
 TETRAHYDOR-1,4-OXZINE  
 Manufacturer Name :VAN WATERS & ROGERS INC.,  
 SUBSIDIARY OF UNIVAR  
 Manufacturer's Address :1600 NORTON BLDG  
 City :SEATTLE  
 State :WA  
 ZIP :98104-1564  
 Emergency Phone Number : (800) 424-9300  
 Telephone : (408) 435-8700

## \*\*\* ADDITIONAL INFORMATION \*\*\*

Common Names: DIETHYLENE OXIMIDE  
 DIETHYLENIMIDE OXIDE  
 TETRAHYDRO-1,4  
 -OXAZINE  
 Formula :C4 H9 N O  
 VW&R Code :T1241

## \*\*\* INGREDIENTS INFORMATION \*\*\*

## \*\* EXPOSURE LIMITS \*\*

INGREDIENT NAME	OSHA PEL	ACGIH TLV	OTHER LIMIT
MORPHOLINE	20 (SKIN)	20 (SKIN)	20 (SKIN, ACGIH STEL)

## \*\* PERCENTAGES \*\*

	HIGH %	LOW %
MORPHOLINE	>99%	N/A

## \*\* CAS NUMBERS \*\*

	CAS ON MSDS
MORPHOLINE	NOT STATED

## \*\*\* PHYSICAL/CHEMICAL CHARACTERISTICS \*\*\*

Boiling Point :263 DEGREES F.  
 Melting Point :23  
 Specific Gravity :1.0  
 Vapor Pressure :7-10  
 Percent Volatiles :NA  
 Vapor Density (air=1) :3.0  
 Evaporation Rate :NONE  
 Compared to :NOT STATED  
 Water Solubility :100  
 Appearance and Odor :CLEAR COLORLESS OILY LIQUID, AMMONIACAL  
 ODOR

## \*\*\* FIRE AND EXPLOSION HAZARD DATA \*\*\*

Flash Point :95 DEGREES F  
 Flash Point Method :TCC  
 Upper Explosive Limit :10.8

Lower Explosive Limit :1.8  
Extinguisher Media :USE WATER SPRAY, DRY CHEMICAL,  
ALCOHOL FOAM, OR CO2.  
Special Fire Fighting Procedures :FIRE FIGHTERS SHOULD WEAR  
SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE  
WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.  
Unusual Fire & Explosion Hazards :EXTINGUISH ALL NEARBY SOURCES OF  
IGNITION BECAUSE VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL TO IGNITION  
SOURCES AND FLASH BACK. ABOVE 95 DEG F. EXPLOSIVE MIXTURE MAY FORM.

\*\*\* REACTIVITY DATA \*\*\*

Is this chemical stable under normal  
conditions of handling and storage? :YES  
Conditions to Avoid :HEAT, SPARKS, AND OPEN FLAMES.  
Incompatibility(materials to avoid) :ACIDS, OXIDIZING MATERIALS,  
HALOGEN COMPOUNDS, COPPER, ZINC AND GALVANIZED METALS.  
Hazardous decomposition products :MAY LIBERATE CARBON MONOXIDE,  
CARBON DIOXIDE, AMMONIA, OXIDES OF NITROGEN, AND FORMALDEHYDE AND  
ACETALDEHYDE.  
Is hazardous polymerization possible :WILL NOT OCCUR  
Conditions to avoid regarding  
polymerization :NONE

\*\*\* HEALTH HAZARD DATA \*\*\*

Primary Routes of entry:  
SKIN OR EYE CONTACT, INHALATION, SWALLOWED.

Signs and Symptoms of exposure:  
INHALATION: VAPORS AND MISTS ARE EXTREMELY CORROSIVE TO THE NOSE,  
THROAT, AND MUCOUS MEMBRANES. BRONCHITIS, PULMONARY EDEMA, CHEMICAL  
PNEUMONITIS MAY OCCUR. IRRITATION, COUGHING, CHEST PAIN, AND DIFFICULTY  
IN BREATHING MAY OCCUR WITH BRIEF EXPOSURE WHILE PROLONGED EXPOSURE MAY  
RESULT IN VISUAL DISTURBANCES, MORE SEVERE IRRITATION AND TISSUE  
DAMAGE. BREATHING HIGH CONCENTRATIONS MAY RESULT IN DEATH.  
EYE CONTACT: VAPORS, LIQUID, AND MISTS ARE EXTREMELY CORROSIVE TO THE  
EYES. BRIEF CONTACT OF THE VAPORS WILL BE SEVERELY IRRITATING. BRIEF  
CONTACT OF THE LIQUID OR MISTS WILL SEVERELY DAMAGE THE EYES AND PRO-  
LONGED CONTACT MAY CAUSE PERMANENT EYE INJURY WHICH MAY BE FOLLOWED  
BY BLINDNESS. SKIN CONTACT: BRIEF CONTACT MAY CAUSE BURNS. PROLONGED  
CONTACT CAUSES SEVERE BURNS. MAY BE ABSORBED THROUGH THE SKIN AND CAUSE  
TOXIC EFFECTS. SWALLOWED: VAPORS, MISTS, AND LIQUID ARE EXTREMELY  
CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID BURNS THE  
TISSUES, CAUSES SEVERE ABDOMINAL PAIN, NAUSEA, VOMITING, AND COLLAPSE.  
SWALLOWING LARGE QUANTITIES CAN CAUSE DEATH.

Chronic Effects of exposure:  
NO SPECIFIC INFORMATION AVAILABLE, BUT PROLONGED EXPOSURE HAS CAUSED  
KIDNEY AND LIVER DAMAGE IN EXPERIMENTAL ANIMALS.

Medical conditions generally aggravated by exposure:



NONE REPORTED

Is chemical listed as a carcinogen or potential carcinogen? NO

National Toxicology Program

IARC Monographs

OSHA

NO

NO

NO

\*\*\* FIRST AID PROCEDURES \*\*\*

Emergency Phone number: (800) 435-9300

Inhalation :

IF INHALED, REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

Eye contact:

IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 30 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

Skin contact:

IN CASE OF SKIN CONTACT  
IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING  
WATER FOR 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES  
WASH  
CLOTHING BEFORE REUSE, DISCARD CONTAMINATED LEATHER ARTICLES. GET  
IMMEDIATE MEDICAL ATTENTION.

Ingestion:

IF SWALLOWED  
DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER  
OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY  
MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

\*\*\* ADDITIONAL INFORMATION \*\*\*

Toxicity Data

Oral:HUMAN LDLO = 50 MG/KG

Dermal:RABBIT LD50 = 504 MG/KG

Inhalation:RAT LC50 = 8000 PPM/8 HR

Carcinogenicity:THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY  
THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH  
ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

Other Data:ALKYL SUBSTITUTED N-NITROSAMINES, KNOWN TO BE POTENT  
CARCINOGENS, MAY BE FORMED WHEN THIS PRODUCT COMES IN CONTACT WITH  
NITROUS ACID, INORGANIC AND ORGANIC NITRITES OR ATMOSPHERES WITH HIGH  
NITROUS OXIDE CONCENTRATIONS. USE NITRITE/NITRATE FREE WATER WHEN  
PREPARING AQUEOUS SOLUTIONS.

\*\*\* PRECAUTIONS FOR SAFE HANDLING AND USE \*\*\*

Handling and Storage Precautions:

KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORES IN A COOL, DRY, WELL-  
VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER  
FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE.  
ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND  
USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN  
USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER

HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. THIS PRODUCT CORRODES COPPER, ZINC, AND GALVANIZED SURFACES. MATERIALS FOR CONTAINMENT SHOULD BE CONSTRUCTED OF IRON, STEEL, OR ALUMINUM.

**Other Precautions:**

CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

**Action to be taken for Spills or Leaks:**

WEAR PROTECTIVE EQUIPMENT INCLUDING BUTYL RUBBER BOOTS, GLOVES, APRON, AND SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECED AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS: OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. THIS MATERIAL IS RESISTANT TO BIODEGRADATION IN WASTEWATER TREATMENT PLANT AND IS EXPECTED TO BE HIGHLY TOXIC TO AQUATIC LIFE. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

**Disposal Methods:**

DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

\*\*\* ADDITIONAL INFORMATION \*\*\*

Note: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

\*\*\* CONTROL MEASURES \*\*\*

**Ventilation:**

LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

**Respiratory Protection:**

IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

**Eye Protection:**

CHEMICAL GOGGLES AND FULL FACESHIELD UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

**Protective clothing:**

LONG-SLEEVED SHIRT, TROUSERS, BUTYL RUBBER BOOTS, BUTYL RUBBER GLOVES, AND BUTYL RUBBER APRON.

**Other Protective Measures:**

AN EYE WASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

\*\*\* DOCUMENTARY \*\*\*

This MSDS prepared by	:Not on the original MSDS
Date of preparation for this MSDS	:08-27-89
Supercedes	:9/87
Date Issued	:8/89

\*\*\* ADDITIONAL INFORMATION \*\*\*

\*\*VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED THEREIN.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY, CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

Contact MSDS Coordinator, Van Waters & Rogers Inc.  
During Business Hours, Pacific time (403) 435-8700

\*\*\* ADDITIONAL INFORMATION \*\*\*

Revision:  
9/87: ADDED OTHER PERSONNEL EXPOSURE LIMIT.  
8/89: CHANGED HEADING AND CONTACT INFORMATION  
Prod:04161690 09:02:41 01 DEC 1989

**Attachment F**

**ONCE-THROUGH COOLING CHEMICAL ADDITIVES**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
TPDES Permit No. 01854**

**Technical Report, Item 5.c.**

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
Once-through Cooling Chemical Additives**

- a. **Manufacturer's Product Identification Number: Sodium Hypochlorite**
- b. **Product Use: Biocide (oxidizing)**
- c. **Chemical Composition: NaOCl**
- d. **Classification (non-persistent, persistent or bioaccumulative): non-persistent**
- e. **Product or active ingredient half-life: Not available**
- f. **Frequency of product use: Intermittent use not exceeding 2 hours/day/unit**
- g. **Product toxicity data: See attached data sheet**
- h. **Concentration in once-through cooling: Not available**
- i. **Outfall: 001**

R016609

# Material Safety Data Sheet

**Provided by:**

DPC Industries, Inc.      DX Distributors, Inc.  
DPC Enterprises        DX Systems Company  
DXI Industries, Inc.    DX Terminals

PO Box 24600  
Houston, Tx 77229-4600  
281-457-4888  
888-647-7717  
www.dixgroup.com

**SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**Product Name**      DIXICHLOR MAX  
**Synonyms**          BLEACH  
**Chemical Name**     SODIUM HYPOCHLORITE 12.5%

**Emergency phone:**    281-457-4888  
**Chemtrec:**            800-424-9300

**Date of Issue:**        01/08/01  
**Revised Date:**        10/4/2001

**SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS**

COMPONENTS	PERCENT	CAS NO.
SODIUM HYPOCHLORITE	12.5%	7681-52-9
SODIUM CHLORIDE	9% - 10%	7647-14-5
SODIUM HYDROXIDE	0.5% - 2%	1310-73-2
WATER	REMAINDER	7732-18-5

**SECTION 3 - HAZARDS IDENTIFICATION****Potential Health Effects**

**ACGIH - TLV:**        NOT ESTABLISHED.

**Eye Contact**        MAY CAUSE SEVERE PAIN, BLURRED VISION, TEARING AND SWELLING. CONCENTRATED SOLUTIONS MAY CAUSE BURNING.

**Skin Contact**        MAY CAUSE MODERATE SKIN IRRITATION. CONTACT WITH CONCENTRATED SOLUTIONS MAY BLEACH THE SKIN AND CAUSE REDNESS, PAIN, BLISTERING, ITCHY ECZEMA AND POSSIBLE CHEMICAL BURNS.

**Ingestion**            MAY CAUSE PAIN AND INFLAMMATION OF THE MOUTH, THROAT, ESOPHAGUS, AND STOMACH. CAN CAUSE EROSION OF MUCOUS MEMBRANES, ESPECIALLY IN THE STOMACH.

**Inhalation**           VAPORS MAY CAUSE SLIGHT TO SEVERE IRRITATION OF THE RESPIRATORY TRACT. HIGH CONCENTRATIONS MAY CAUSE SORE THROAT, BLISTERING, DELAYED PULMONARY EDEMA (SWELLING OF LUNG TISSUE) AND SHORTNESS OF BREATH.

**Carcinogenicity:**    NTP NO    IARC NO    OSHA NO

**SECTION 4 - FIRST AID PROCEDURES**

**Eye Contact:**        IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

**Skin Contact:**        IMMEDIATELY REMOVE CONTAMINATED CLOTHING OR SHOES. WIPE EXCESS FROM SKIN AND FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. USE SOAP IF AVAILABLE OR FOLLOW BY WASHING WITH SOAP AND WATER. DO NOT REUSE CLOTHING UNTIL THOROUGHLY CLEANED. GET MEDICAL ATTENTION.

**Inhalation:**           REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

**Ingestion:**           DO NOT INDUCE VOMITING. RINSE MOUTH WITH WATER. IF CONSCIOUS, GIVE LARGE QUANTITIES OF WATER OR MILK AND GET IMMEDIATE MEDICAL ATTENTION. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON!

### SECTION 5 - FIRE FIGHTING MEASURES

<b>Flash Point</b>	NONFLAMMABLE.
<b>Extinguishing Media</b>	USE MEDIA APPROPRIATE FOR SURROUNDING AREA.
<b>Special Firefighting Procedures/Precuations</b>	WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR. STAY UPWIND AND KEEP OUT OF LOW AREAS.

### SECTION 6 - ACCIDENTAL RELEASE MEASURES

<b>For Spill:</b>	CLEAN-UP PERSONNEL SHOULD USE PROTECTIVE EQUIPMENT TO PREVENT CONTACT. CONTAIN MATERIAL. PLACE COLLECTED MATERIAL IN A DISPOSAL CONTAINER. PREVENT LIQUID FROM ENTERING SEWERS OR WATERWAYS. DO NOT USE COMBUSTIBLE ABSORBENTS.
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### SECTION 7 - HANDLING AND STORAGE

Keep container tightly closed when not in use. Store in a cool, dry, well-ventilated area, away from heat and incompatible materials. Protect containers from physical damage.

AVOID CONTACT WITH EYES AND SKIN AND INHALATION OF VAPORS, MISTS, AND FUMES.

### SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Respiratory Protection</b>	USE NIOSH APPROVED RESPIRATOR PROTECTION. FOR CANISTER TYPE RESPIRATORS, USE CHLORINE FILTERS. IN CASE OF FIRE, WEAR SELF-CONTAINED BREATHING APPARATUS.
<b>Ventilation</b>	LOCAL AND MECHANICAL RECOMMENDED.
<b>Protective Gloves</b>	CHEMICAL IMPERVIOUS GLOVES.
<b>Eye/Face Protection</b>	CHEMICAL SAFETY GOGGLES AND/OR FULL-FACE SHIELD.
<b>Other Protection</b>	CHEMICAL RESISTANT CLOTHING SUCH AS COVERALLS/APRON, BOOTS, ETC.
<b>Work Practices</b>	USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES. PROMPTLY REMOVE SOILED CLOTHING AND WASH THOROUGHLY BEFORE REUSE. SHOWER AFTER WORK USING PLENTY OF SOAP AND WATER.

### SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

<b>Boiling Point (°F):</b>	DECOMPOSES	<b>Vapor Pressure (mmHg):</b>	17.5 (@ 20 C)
<b>Freezing Point (°F):</b>	7 - 10	<b>Vapor Density (Air=1):</b>	NOT ESTABLISHED.
<b>Solubility (H2O):</b>	COMPLETE	<b>Specific Gravity (H2O=1):</b>	1.20 - 1.40
<b>pH</b>	12 - 13	<b>Evaporation Rate:</b>	NOT ESTABLISHED.
<b>Appearance/Odor:</b>	CLEAR, PALE YELLOW OR GREENISH LIQUID WITH A CHLORINE ODOR.		

### SECTION 10 - STABILITY AND REACTIVITY

<b>Chemical Stability:</b>	YES
<b>Incompatible Materials</b>	ANY ACIDIC MATERIAL, AMMONIA, UREA, OXIDIZABLE MATERIALS AND METALS, SUCH AS NICKEL, COPPER, TIN, ALUMINUM AND IRON.
<b>Decomposition Products</b>	CHLORINE GAS RATE OF DECOMPOSITION INCREASES WITH THE CONCENTRATION WITH TEMPERATURES ABOVE 85 DEGREES F.
<b>Hazardous Polymerization:</b>	WILL NOT OCCUR.

**SECTION 11 - TOXICITY INFORMATION**

Oral = &gt; 8000 mg/kg (Rat) Dermal LD50 = N.E. Inhalation LC50 = &gt; 10.5 mg/l (Rat)

**SECTION 12 - ECOLOGICAL INFORMATION**

DAPHNIA MAGNA 24 HR. LC50 = &gt; 500 MG/L ZEBRA FISH STATIC 24 HR. LC50 = &gt; 500 MG/L

**SECTION 13 - DISPOSAL CONSIDERATIONS**

DISPOSE OF WASTE MATERIALS ACCORDING TO ALL FEDERAL, STATE AND LOCAL REGULATIONS.

**SECTION 14 - TRANSPORT INFORMATION****USA DOT Shipping Name:** HYPOCHLORITE SOLUTION**Hazard Class:** 8**UN/NA Number:** UN1791**Packing Group:** II**Subsidiary Hazard****Marine Pollutant:** NO**SECTION 15 - REGULATORY INFORMATION****CERCLA RQ (lbs):** 100**SARA Title III Section 312:**☒ **Acute**    ☐ **Chronic**    ☐ **Flammable**    ☐ **Sudden Release of Pressure**    ☐ **Reactive****SARA Title III Section 313:** No**SARA Extremely Hazardous Substance:** No**HMIS HAZARD RATING****Health:** 2**Fire:** 0**Reactivity:** 1

0 - Least

1 - Slight

2 - Moderate

3 - High

4 - Extren

**SECTION 16 - OTHER INFORMATION****EPA Pesticide Registration Number:**

813-15

**NSF Maximum Use Level for Potable Water (Standard 60):**

84 mg/l

**TSCA (Toxic Substance Control Act), 40 CFR 710:**

Sources of the raw materials used in this mixture assure that all chemical ingredients present are in compliance with Section 8(b) Chemical Substance Inventory, or are otherwise in compliance with TSCA.

**DISCLAIMER**

THE DATA PRESENTED IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF; HOWEVER, NEITHER SELLER NOR PREPARER MAKES ANY WARRANTIES, EXPRESSED OR IMPLIED, CONCERNING THE INFORMATION PRESENTED. THE USER IS CAUTIONED TO PERFORM HIS OWN HAZARD EVALUATION AND TO RELY UPON HIS OWN DETERMINATIONS.



**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
Once-through Cooling Chemical Additives**

- a. **Manufacturer's Product Identification Number: Sodium Bromide**
- b. **Product Use: Biocide enhancement**
- c. **Chemical Composition: See attached data sheets**
- d. **Classification (non-persistent, persistent or bioaccumulative): Non-persistent**
- e. **Product or active ingredient half-life: Not available**
- f. **Frequency of product use: Intermittent use not exceeding 2 hours/day/unit**
- g. **Product toxicity data: See attached data sheet**
- h. **Concentration in once-through cooling: Not available**
- i. **Outfall: 001**

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME :** ACTI-BROM® 1318

**APPLICATION :** BIOCIDES

**CHEMICAL DESCRIPTION :** Bromide salt(s), Water

**COMPANY IDENTIFICATION :** Nalco Chemical Company  
One Nalco Center  
Naperville, Illinois  
60563-1198

**EMERGENCY TELEPHONE NUMBER :** (800)462-5378 (24 Hours) (800) I-M-ALERT

**NFPA 704M/HMIS RATING**  
**HEALTH :** 1/1 **FLAMMABILITY :** 0/0 **REACTIVITY :** 0/0 **OTHER :**  
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

	Hazardous Substance(s)	CAS NO	% (w/w)
	Sodium Bromide	7647-15-6	42.8

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****WARNING**

Irritation may develop from eye and skin exposure.  
Avoid contact with eyes. Wear gloves and safety goggles. Wash contaminated clothing before reuse.  
May evolve hydrogen bromide and bromine under fire conditions.

**PRIMARY ROUTES OF EXPOSURE :**  
Eye, Skin

**HUMAN HEALTH HAZARDS - ACUTE :**

**EYE CONTACT :**  
Can cause mild to moderate irritation.

**SKIN CONTACT :**  
May cause irritation with prolonged contact.



## MATERIAL SAFETY DATA SHEET

### PRODUCT

**ACTI-BROM® 1318**

### EMERGENCY TELEPHONE NUMBER

**(800)462-5378 (24 Hours) (800) I-M-ALERT**

#### INGESTION :

Not a likely route of exposure. No adverse effects expected.

#### INHALATION :

Not a likely route of exposure. Aerosols or product mist may irritate the upper respiratory tract.

#### SYMPTOMS OF EXPOSURE :

##### Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

##### Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

#### AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

### 4. FIRST AID MEASURES

**IF SWALLOWED:** Drink promptly large quantities of water. DO NOT induce vomiting. Avoid alcohol. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

**IF IN EYES:** Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.

**IF ON SKIN:** Wash with plenty of soap and water. Get medical attention.

**IF INHALED:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably, mouth-to-mouth. Get medical attention.<sup>A</sup>

#### NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

### 5. FIRE FIGHTING MEASURES

**FLASH POINT :** None

#### EXTINGUISHING MEDIA :

Not expected to burn. Keep containers cool by spraying with water. Use extinguishing media appropriate for surrounding fire.

#### FIRE AND EXPLOSION HAZARD :

May evolve hydrogen bromide and bromine under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT****6. ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

**METHODS FOR CLEANING UP :**

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

**ENVIRONMENTAL PRECAUTIONS :**

This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters, unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**7. HANDLING AND STORAGE****HANDLING :**

Avoid eye and skin contact. Do not take internally. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labelled. Keep the containers closed when not in use. Use with adequate ventilation.

**STORAGE CONDITIONS :**

Store the containers tightly closed. Store in suitable labelled containers.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****OCCUPATIONAL EXPOSURE LIMITS :**

This product does not contain any substance that has an established exposure limit.

**ENGINEERING MEASURES :**

General ventilation is recommended.

**RESPIRATORY PROTECTION :**

Respiratory protection is not normally needed.

**HAND PROTECTION :**

Neoprene gloves, Nitrile gloves, Butyl gloves, PVC gloves

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT****SKIN PROTECTION :**

Wear standard protective clothing.

**EYE PROTECTION :**

Wear chemical splash goggles.

**HYGIENE RECOMMENDATIONS :**

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Keep an eye wash fountain available. Keep a safety shower available.

**HUMAN EXPOSURE CHARACTERIZATION :**

Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE            Liquid

APPEARANCE               Colorless

ODOR                        None

SPECIFIC GRAVITY            1.45 @ 77 °F / 25 °C

DENSITY                      12.1 lb/gal

SOLUBILITY IN WATER        Complete

pH (100 %)                   7.9

FREEZING POINT              7 °F / -14 °C

BOILING POINT               218 °F / 103.5 °C

VAPOR PRESSURE              5.6 mm Hg @ 68 °F / 20 °C

VOC CONTENT                 0.00 %

**10. STABILITY AND REACTIVITY****STABILITY :**

Stable under normal conditions.

**HAZARDOUS POLYMERIZATION :**

Hazardous polymerization will not occur.

**CONDITIONS TO AVOID :**

Freezing temperatures.

**MATERIALS TO AVOID :**

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT****HAZARDOUS DECOMPOSITION PRODUCTS :**

None known.

**11. TOXICOLOGICAL INFORMATION**

The following results are for the product and a similar product.

**ACUTE ORAL TOXICITY :**

Species	LD50	Tested Substance
Rat	> 5,000 mg/kg	Product
Rating :	Non-Hazardous	

**ACUTE DERMAL TOXICITY :**

Species	LD50	Tested Substance
Rabbit	> 2,000 mg/kg	Product
Rating :	Non-Hazardous	

**PRIMARY SKIN IRRITATION :**

Draize Score	Tested Substance
0.4 / 8.0	Similar Product
Rating :	Minimally irritating

**PRIMARY EYE IRRITATION :**

Draize Score	Tested Substance
10.8 / 110.0	Similar Product
Rating :	Slightly irritating

**CARCINOGENICITY :**

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

**HUMAN HAZARD CHARACTERIZATION :**

Based on our hazard characterization, the potential human hazard is: Low

**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product. The following results are for the hypobromous acid (as Br<sub>2</sub>) generated from sodium bromide.

**ACUTE FISH RESULTS :**

Species	Exposure	LC50	Tested Substance
Fathead Minnow	96 hrs	> 9,999 mg/l	Active Substance ( Sodium Bromide )
Guppy	96 hrs	225 mg/l	Active Substance ( Sodium Bromide )
Sheepshead Minnow	96 hrs	0.19 mg/l	HOBr (Generated from NaBr)
Rainbow Trout	96 hrs	0.23 mg/l	HOBr (Generated from NaBr)

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT**

Bluegill Sunfish	96 hrs	0.52 mg/l	HOBr (Generated from NaBr) ( Sodium Bromide )
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Rating : Essentially non-toxic

**ACUTE INVERTEBRATE RESULTS :**

Species	Exposure	LC50	EC50	Tested Substance
Daphnia magna	48 hrs	7,900 mg/l		Active Substance
Daphnia magna	48 hrs	0.71 mg/l		HOBr (Generated from NaBr) ( Sodium Bromide )
American Oyster	96 hrs	0.54 mg/l		HOBr (Generated from NaBr)
Mysid Shrimp (A. bahia)	96 hrs	0.17 mg/l		HOBr (Generated from NaBr)

Rating : Essentially non-toxic

**PERSISTENCY AND DEGRADATION :**

Biological Oxygen Demand (BOD) : This material is an oxidizing biocide and is not expected to persist in the environment.

**ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION**

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Moderate

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

DO NOT REUSE EMPTY CONTAINER. Triple rinse the container (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerate. Burn only if allowed by state and local authorities. If burned, stay out of smoke.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are:

**LAND TRANSPORT :**

Proper Shipping Name :

**PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION**

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT****AIR TRANSPORT (ICAO/IATA) :****Proper Shipping Name :****PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION****MARINE TRANSPORT (IMDG/IMO) :****Proper Shipping Name :****PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION****15. REGULATORY INFORMATION****NATIONAL REGULATIONS, USA :****OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium Bromide : Eye irritant

**CERCLA/SUPERFUND, 40 CFR 117, 302 :**

Notification of spills of this product is not required.

**SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :****SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :**

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

**SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :**

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

- |   |                                   |
|---|-----------------------------------|
| X | Immediate (Acute) Health Hazard   |
| - | Delayed (Chronic) Health Hazard   |
| - | Fire Hazard                       |
| - | Sudden Release of Pressure Hazard |
| - | Reactive Hazard                   |

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

**SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :**

This product does not contain substances on the List of Toxic Chemicals.

**TOXIC SUBSTANCES CONTROL ACT (TSCA) :**

This product is exempted under TSCA and regulated under FIFRA. The inerts are on the Inventory List.





# MATERIAL SAFETY DATA SHEET

## PRODUCT

**ACTI-BROM® 1318**

## EMERGENCY TELEPHONE NUMBER

**(800)462-5378 (24 Hours) (800) I-M-ALERT**

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR / formerly Sec. 311 :

None of the substances are specifically listed in the regulation.

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

None of the substances are specifically listed in the regulation.

CALIFORNIA PROPOSITION 65 :

This product does not contain substances which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS :

None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :

This product is a registered biocide and is exempt from State Right to Know Labelling Laws.

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

Pesticide controlled products are not regulated under WHMIS.

## 16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

\* The human risk is: Low

\* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should

**MATERIAL SAFETY DATA SHEET****PRODUCT****ACTI-BROM® 1318****EMERGENCY TELEPHONE NUMBER****(800)462-5378 (24 Hours) (800) I-M-ALERT**

be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

**REFERENCES**

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, Co.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO

Prepared By : Product Safety Department

Date issued : 01/19/2001

Replaces : 12/28/1998

**TXU Generation Company LP  
Comanche Peak Steam Electric Station  
Once-through Cooling Chemical Additives**

- a. **Manufacturer's Product Identification Number: Bulab 7016/Bulab 7034**
- b. **Product Use: Scale inhibitor and dispersant**
- c. **Chemical Composition: See attached data sheets**
- d. **Classification (non-persistent, persistent or bioaccumulative): Not available**
- e. **Product or active ingredient half-life: Not available**
- f. **Frequency of product use: Continuous low concentration feed**
- g. **Product toxicity data: See attached data sheet**
- h. **Concentration in once-through cooling: Not available**
- i. **Outfall: 001**

## \*\*\* GENERAL PRODUCT INFORMATION \*\*\*

## SECTION 1

Trade Product Name :BULAB 7016  
 Synonyms :Not stated on the original MSDS.  
 Manufacturer Name :BUCKMAN LABORATORIES, INC.  
 Manufacturer's Address :1256 NORTH MCLEAN BOULEVARD  
 City :MEMPHIS  
 State :TN  
 ZIP :38108  
 Emergency Telephone Number : (901) 767-2722  
 Telephone :1-800-BUCKMAN (1-800-282-5626)

## \*\*\* INGREDIENTS INFORMATION \*\*\*

## SECTION 2

## \*\* EXPOSURE LIMIT \*\*

INGREDIENT NAME	OSHA PEL	ACGIH TLV
(1-HYDROXYETHYLIDENE)DIPHOSPHONIC ACID	NOT LISTED	N/A

## \*\* PERCENTAGES \*\*

INGREDIENT NAME	HIGH %	LOW %
(1-HYDROXYETHYLIDENE)DIPHOSPHONIC ACID	60%	

## \*\* CAS NUMBERS \*\*

INGREDIENT NAME	CAS NUMBER
(1-HYDROXYETHYLIDENE)DIPHOSPHONIC ACID	2809-21-4

## Additional Information:

THE REMAINDER OF THE COMPONENTS COMPRISE PROPRIETARY INFORMATION.

## \*\*\* PHYSICAL/CHEMICAL CHARACTERISTICS \*\*\*

## SECTION 3

Boiling Point :>100C (>212F)  
 Melting Point :Not stated on the original MSDS.  
 Specific Gravity :Not stated on the original MSDS  
 Vapor Pressure :N/T  
 Percent Volatiles :Not stated on the original MSDS.  
 Vapor Density (air=1) :1.48 G/ML  
 Evaporation Rate :Not stated on the original MSDS.  
 Compared to :NOT-APPLICABLE  
 Water Solubility :COMPLETE MISCIBLE WITH WATER IN ALL  
 PROPORTIONS  
 Appearance and Odor :CLEAR, COLORLESS TO PALE YELLOW LIQUID

## Additional information:

FREEZING POINT :N/T  
 PH :1.0  
 PH (100 PPM IN WATER) :2 - 3  
 O/W PARTITION COEFFICIENT :N/T  
 OXIDIZING/REDUCING  
 PROPERTIES :N/T

## \*\*\* FIRE AND EXPLOSION HAZARD DATA \*\*\*

## SECTION 4

Flash Point :>100C (>212F)  
 Flash Point Method :NOT-APPLICABLE  
 Upper Explosive Limit :NOT-APPLICABLE  
 Lower Explosive Limit :NOT-APPLICABLE

Autoignition Temperature :Not stated on the original MSDS.  
 Extinguisher Media :WATER FOG, CARBON DIOXIDE, FOAM, DRY  
 CHEMICAL.

Special Fire Fighting Procedures :  
 SELF-CONTAINED BREATHING APPARATUS IS REQUIRED. WATER SPRAY MAY BE  
 USED TO COOL CONTAINERS.

Unusual Fire & Explosion Hazards :  
 Not stated on the original MSDS.

\*\*\* REACTIVITY DATA \*\*\*

SECTION 5

Is this chemical stable under normal  
 conditions of handling and storage? :YES

Conditions to Avoid :NOT LISTED

Incompatibility(materials to avoid) :STRONG ALKALI

Hazardous decomposition products :OXIDES OF PHOSPHOROUS AND CARBON

Is hazardous polymerization possible? :NOT LISTED

Conditions to avoid regarding  
 polymerization :NOT LISTED

\*\*\* HEALTH HAZARD DATA \*\*\*

SECTION 6

Acute effects of overexposure:

Eye contact :CORROSIVE. MILD TO SEVERE (CORROSION) IRRITATION  
 DEPENDING ON THE LENGTH OF EXPOSURE, SOLUTION CONCENTRATION AND FIRST  
 AID MEASURES.

Skin contact :IRRITANT. IRRITATION WILL DEPEND ON SOLUTION STRENGTH,  
 LENGTH OF EXPOSURE AND FIRST AID MEASURES.

Inhalation :MAY CAUSE IRRITATION OR CORROSION OF MUCOUS MEMBRANES AND  
 THE LUNGS. EXPOSED INDIVIDUALS SHOULD BE MONITORED FOR RESPIRATORY  
 DISTRESS, BRONCHITIS OR PNEUMONIA.

Ingestion :NO DATA IS AVAILABLE ON HUMAN INGESTION.

Chronic effects of overexposure:

THE EFFECTS FROM CHRONIC EXPOSURE TO THE PRODUCT HAVE NOT BEEN FULLY  
 EVALUATED.

Is chemical listed as a carcinogen or potential carcinogen? NO

National Toxicology Program	IARC Monographs	OSHA
-----	-----	----
NO	NO	NO

\*\*\* FIRST AID PROCEDURES \*\*\*

Emergency Phone Number: (901) 767-2722

Eye contact:

FLUSH IMMEDIATELY WITH COPIOUS AMOUNTS OF TAP WATER OR NORMAL SALINE  
 (MINIMUM OF 15 MINUTES). TAKE EXPOSED INDIVIDUAL TO A HEALTH CARE  
 PROFESSIONAL, PREFERABLY AN OPHTHALMOLOGIST, FOR FURTHER EVALUATION.

Skin contact:

WASH EXPOSED AREA WITH PLENTY OF SOAP AND WATER. REPEAT WASHING.  
 REMOVE CONTAMINATED CLOTHING AND WASH THOROUGHLY BEFORE REUSE. IF

IRRITATION PERSISTS CONSULT A HEALTH CARE PROFESSIONAL.

**Inhalation:**

IF EXPOSURE BY INHALATION IS SUSPECTED, IMMEDIATELY MOVE EXPOSED INDIVIDUAL TO FRESH AIR. IF INDIVIDUAL EXPERIENCES NAUSEA, HEADACHE, DIZZINESS, HAS DIFFICULTY OR IS CYANOTIC, SEEK A HEALTH CARE PROFESSIONAL IMMEDIATELY.

**Ingestion:**

DO NOT INDUCE VOMITING. RINSE WITH COPIOUS AMOUNTS OF WATER OR MILK, FIRST. IRRIGATE THE ESOPHAGUS AND DILUTE STOMACH CONTENTS BY SLOWLY GIVING ONE (1) OR TWO (2) GLASSES OF WATER OR MILK. AVOID GIVING ALCOHOL OR ALCOHOL RELATED PRODUCTS. IN CASES WHERE THE INDIVIDUAL IS SEMI-COMATOSE, COMATOSE OR CONVULSING. DO NOT GIVE FLUIDS BY MOUTH. IN CASE OF INTENTIONAL INGESTION OF THE PRODUCT SEEK MEDICAL ASSISTANCE IMMEDIATELY; TAKE INDIVIDUAL TO NEAREST MEDICAL FACILITY.

**Additional information:**

**NOTE TO PHYSICIAN:**

NO SPECIFIC ANTIDOTE IS KNOWN. PROBABLE MUCOSAL DAMAGE MAY CONTRAINDICATE THE USE OF GASTRIC LAVAGE. TREAT SYMPTOMS. MEDICAL CONSULTATION IS AVAILABLE 24 HOURS A DAY. ALL THE NPI-BUCKMAN CENTER FOR PRODUCT INFORMATION AT U.S.A. (1) (901)767-2722

**TOXICOLOGICAL INFORMATION:**

**ACUTE EFFECTS:**

ACUTE ORAL LD50 : 2,400.0 MG/KG

ACUTE DERMAL LD50: >7,940.0 MG/KG

IRRITANT EFFECTS : CORROSIVE TO EYES. IRRITATING TO SKIN.

SENSITIZATION EFFECTS : NOT TESTED BUT NON EXPECTED.

CARCINOGENIC POTENTIAL: NOT LISTED IN ANY OF OSHA STANDARD, SECTION 1910.1200 SOURCES AS CARCINOGENIC; NOT TESTED BY BUCKMAN LABORATORIES, INC.

OTHER HEALTH EFFECTS : NONE KNOWN

\*\*\* PRECAUTIONS FOR SAFE HANDLING AND USE \*\*\*

**SECTION 7**

**Precautions to be Taken in Handling and Storing:**  
NOT LISTED ON MSDS

**Steps to be taken in case material is released or spilled:**

INITIALLY MINIMIZE AREA AFFECTED BY THE SPILL OR LEAK. BLOCK ANY POTENTIAL ROUTES TO WATER SYSTEMS (E.G., SEWERS, STREAMS, LAKES, ETC.). BASED ON THE PRODUCT'S TOXICOLOGICAL AND CHEMICAL PROPERTIES, AND ON THE SIZE AND LOCATION OF THE SPILL OR LEAK, ASSESS THE IMPACT ON CONTAMINATED ENVIRONMENTS (E.G. WATER SYSTEMS, GROUND, AIR EQUIPMENT, ETC.). THERE ARE NO METHODS AVAILABLE TO COMPLETELY ELIMINATE ANY TOXICITY THIS PRODUCT MAY HAVE ON AQUATIC ENVIRONMENTS. MINIMIZE ADVERSE EFFECTS ON THESE ENVIRONMENTS. BUCKMAN LABORATORIES, INC. CAN BE CONTACTED FOR TECHNICAL ASSISTANCE. DETERMINE IF FEDERAL, STATE, AND/OR LOCAL RELEASE NOTIFICATION IS REQUIRED (SEE REGULATORY CLASSIFICATION SECTION OF THIS MSDS). RECOVER AS MUCH OF THE PURE PRODUCT AS POSSIBLE INTO APPROPRIATE CONTAINERS. LATER, DETERMINE IF THIS RECOVERED PRODUCT CAN BE USED FOR ITS INTENDED PURPOSE. ADDRESS CLEAN-UP OF CONTAMINATED ENVIRONMENTS. SPILL OR LEAK RESIDUALS MAY HAVE TO BE COLLECTED AND DISPOSED OF. CLAY, SOIL, OR COMMERCIALY AVAILABLE ABSORBENTS MAY BE USED TO RECOVER ANY MATERIAL THAT CAN NOT READILY BE RECOVERED AS PURE PRODUCT. FLUSHING RESIDUAL MATERIAL TO AN INDUSTRIAL SEWER, IF PRESENT AT THE SITE OF A SPILL OR LEAK INCIDENT, MAY BE ACCEPTABLE IF AUTHORIZED APPROVAL IS OBTAINED. IF PRODUCT AND/OR SPILL/LEAK RESIDUALS ARE FLUSHED TO AN INDUSTRIAL SEWER, INSURE THAT THEY DO NOT COME INTO CONTACT WITH INCOMPATIBLE MATERIALS.

CONTACT THE PERSON'S RESPONSIBLE FOR THE OPERATION OF YOUR FACILITY'S INDUSTRIAL SEWER SYSTEM PRIOR TO INTENTIONALLY FLUSHING OR PUMPING SPILLS OR LEAKS OF THIS PRODUCT TO THE INDUSTRIAL SEWER.

**Waste disposal method:**

NOTE: FOLLOW FEDERAL, STATE, AND LOCAL REGULATIONS GOVERNING THE DISPOSAL OF WASTE MATERIAL.

NEAT PRODUCT: CONTACT YOUR BUCKMAN REPRESENTATIVE OR BUCKMAN LABORATORIES, INC., AT (901) 278-0330.

CONTAMINATED MATERIALS :DETERMINE IF WASTE CONTAINING THIS PRODUCT CAN BE HANDLED BY AVAILABLE INDUSTRIAL EFFLUENT SYSTEM OR OTHER ON-SITE WASTE MANAGEMENT UNIT. IF OFF-SITE MANAGEMENT IS REQUIRED, CONTACT A COMPANY EXPERIENCED IN INDUSTRIAL WASTE MANAGEMENT. THIS PRODUCT IS NOT SPECIFICALLY LISTED IN 40 CFR 261 AS A RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) HAZARDOUS WASTE. HOWEVER, SPILL OR LEAK RESIDUALS MAY MEET THE CRITERIA AND/OR THE PHYSICAL AND REACTIVITY DATA GIVEN IN THIS MSDS FOR THE NEAT PRODUCT.

CONTAINER DISPOSAL :EMPTY CONTAINERS, AS DEFINED BY APPROPRIATE SECTIONS OF THE RCRA, ARE NOT HAZARDOUS WASTE. HOWEVER, INSURE PROPER MANAGEMENT OF ANY RESIDUALS REMAINING IN CONTAINER.

**Additional information:**

**TRANSPORTATION AND SHIPPING INFORMATION:**

DOT SHIPPING NAME : NONHAZARDOUS  
\*\*\* CONTROL MEASURES \*\*\*

**SECTION 8**

**Skin protection:**

RUBBER GLOVES ARE REQUIRED

**Eye protection:**

SAFETY GOGGLES ARE REQUIRED

**Other protective clothing or equipment:**

BODY-PROTECTIVE CLOTHING AND SHOES ARE REQUIRED

EYE-WASH FOUNTAINS IN THE WORK AREA ARE STRONGLY RECOMMENDED.

\*\*\* DOCUMENTARY \*\*\*

**SECTION 9**

This MSDS prepared by :Not stated on the original MSDS.

Date of preparation for this MSDS :12/24/1992

\*\*\* ADDITIONAL INFORMATION \*\*\*

**SECTION 10**

**NOTE:**

N/A - NOT APPLICABLE

N/T - NOT TESTED

**SATISFACTORY MATERIALS OF CONSTRUCTION:**

**TESTED SATISFACTORY MATERIALS:**

POLYPROPYLENE

TEFLON

PVC-RIGID

BUNA-N RUBBER

VITON

PVC - FLEXIBLE

SILICONE RUBBER

TYGON TUBING R3603

VAN LEER EPOXY LINER 136

POLYETHYLENE

NOTE: THE MATERIALS LISTED ABOVE HAVE BEEN TESTED WITH BULAB 7016.

WITH RESPECT TO ALL OTHER MATERIALS NOT LISTED ABOVE, USER SHOULD BE AWARE THAT USE OF SUCH MATERIALS WITH BULAB 7016 MAY BE HAZARDOUS AND RESULT IN DAMAGES TO SUCH MATERIALS AND OTHER PROPERTY AND PERSONAL INJURIES. NO DATA CONCERNING SUCH MATERIALS NOT LISTED ABOVE SHOULD BE IMPLIED BY THE USER.

**REGULATORY INFORMATION:**

THE FOLLOWING REGULATIONS ARE KNOWN TO APPLY TO THE USE AND DISPOSAL OF THIS PRODUCT. ADDITIONAL FEDERAL, STATE AND LOCAL REGULATIONS MAY ALSO BE APPLICABLE.

**SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):**

SARA 302 EXTREMELY HAZARDOUS SUBSTANCES LIST (40 CFR 300):

NO COMPONENTS OF THIS PRODUCT ARE LISTED.

SARA 312 HAZARD CATEGORY : IMMEDIATE (ACUTE) HEALTH HAZARD.

SARA 313 TOXIC CHEMICALS LIST: NO SECTION 313 LISTED SUBSTANCES ARE PRESENT ABOVE DE MINIMUS LEVELS.

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT):**

NO COMPONENTS OF THIS PRODUCT ARE LISTED.

RCRA (RESOURCE CONSERVATION AND RECOVERY ACT) LISTED HAZARDOUS WASTES:

NO COMPONENTS OF THIS PRODUCT ARE LISTED.

CWA (CLEAN WATER ACT, 40 CFR 401.15) LISTED SUBSTANCES : NO COMPONENTS OF THIS PRODUCT ARE LISTED.

FDA (FOOD AND DRUG ADMINISTRATION): THIS PRODUCT IS APPROVED UNDER THE FOLLOWING FDA (21 CFR) SECTIONS: 21 CFR 173.310

TSCA (TOXIC SUBSTANCES CONTROL ACT) APPLICABILITY: ALL COMPONENTS ARE LISTED ON TSCA INVENTORY.

FIFRA (FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT): THIS PRODUCT IS NOT A REGISTERED PESTICIDE.

HMIS/NPCA RATINGS: HEALTH 2; FLAMMABILITY 1; REACTIVITY 1

NFPA RATINGS : HEALTH 3; FLAMMABILITY 1; REACTIVITY 1

**STATE REGULATIONS:**

VARIOUS STATE RIGHT TO KNOW ACTS:

NON-PROPRIETARY HAZARDOUS CHEMICALS ARE LISTED IN SECTION 2 OF THIS MSDS. SHOULD YOU REQUIRE FURTHER INFORMATION ON SPECIFIC PROPRIETARY CHEMICALS OR INERTS PLEASE CONTACT BUCKMAN LABORATORIES' REGULATORY AFFAIRS DEPARTMENT.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REFLECTS THE LATEST INFORMATION AND DATA THAT WE HAVE ON HAZARDS, PROPERTIES, AND HANDLING OF THIS PRODUCT UNDER THE RECOMMENDED CONDITIONS OF USE. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT DESCRIBED IN THE PRODUCT DATA SHEET IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITHIN THE OSHA HAZARD COMMUNICATION REGULATIONS.

BUCKMAN LABORATORIES, INC. WARRANTS THAT THIS PRODUCT CONFORMS TO ITS CHEMICAL DESCRIPTION AND IS REASONABLY FIT FOR THE PURPOSE REFERRED TO IN THE DIRECTIONS FOR USE AND WHEN USED IN ACCORDANCE WITH THE DIRECTIONS UNDER NORMAL CONDITIONS. BUYER ASSUMES THE RISK OF ANY USE CONTRARY TO SUCH DIRECTIONS.

SELLER MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT, INCLUDING NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. NO SUCH WARRANTIES SHALL BE IMPLIED BY LAW AND NO AGENT OF SELLER IS AUTHORIZED TO ALTER THIS WARRANTY IN ANY WAY EXCEPT IN WRITING WITH A SPECIFIC REFERENCE TO THIS WARRANTY.



THE EXCLUSIVE REMEDY AGAINST SELLER SHALL BE A CLAIM FOR DAMAGES NOT TO EXCEED THE PURCHASE PRICE OF THE PRODUCT, WITHOUT REGARD TO WHETHER SUCH A CLAIM IS BASED UPON BREACH OF WARRANTY OR TORT.

ANY CONTROVERSY OR CLAIM ARISING OUT OF OR RELATING TO THIS CONTRACT, OR BREACH THEREOF, SHALL BE SETTLED BY ARBITRATION IN ACCORDANCE WITH THE COMMERCIAL ARBITRATION RULES OF THE AMERICAN ARBITRATION ASSOCIATION, AND JUDGEMENT UPON THE AWARD RENDERED BY THE ARBITRATOR(S) MAY BE ENTERED IN ANY COURT HAVING JURISDICTION THEREOF.

Case Name: Tri Cities Storage Feb. 2003 (TEG) Reb. 2

File Name: D:\SPREAD2\Tri-Cities\MACT Dehy log\_Tri-C\GLYCalc03\trcgly2.Feb03.ddf

Date: July 18, 2003

## CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0073	0.175	0.0013
Ethane	0.0021	0.050	0.0004
Propane	0.0016	0.038	0.0003
Isobutane	0.0008	0.020	0.0001
n-Butane	0.0016	0.039	0.0003
Isopentane	0.0011	0.025	0.0002
n-Pentane	0.0003	0.007	0.0001
n-Hexane	<0.0001	<0.001	<0.0001
Cyclohexane	0.0018	0.044	0.0003
Heptanes	0.0083	0.200	0.0015
2,2,4-Trimethylpentane	0.0019	0.046	0.0003
Benzene	0.0142	0.342	0.0025
Toluene	0.0281	0.674	0.0049
Ethylbenzene	0.0080	0.192	0.0014
Xylenes	0.0396	0.950	0.0069
C8+ Heavies	0.0106	0.253	0.0018
Total Emissions	0.1273	3.055	0.0222
Total Hydrocarbon Emissions	0.1273	3.055	0.0222
Total VOC Emissions	0.1179	2.831	0.0206
Total HAP Emissions	0.0918	2.204	0.0160
Total BTEX Emissions	0.0899	2.158	0.0157

## UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.3646	8.751	0.0636
Ethane	0.1036	2.485	0.0181
Propane	0.0796	1.911	0.0139
Isobutane	0.0421	1.011	0.0073
n-Butane	0.0808	1.940	0.0141
Isopentane	0.0527	1.265	0.0092
n-Pentane	0.0150	0.360	0.0026
n-Hexane	0.0005	0.012	0.0001
Cyclohexane	0.0912	2.189	0.0159
Heptanes	0.4160	9.985	0.0726
2,2,4-Trimethylpentane	0.0962	2.309	0.0168
Benzene	0.7121	17.091	0.1243
Toluene	1.4040	33.696	0.2450
Ethylbenzene	0.3997	9.594	0.0698
Xylenes	1.9797	47.512	0.3454
C8+ Heavies	0.5277	12.664	0.0921
Total Emissions	6.3656	152.774	1.1108
Total Hydrocarbon Emissions	6.3656	152.774	1.1108

Total VOC Emissions	5.8974	141.537	Page: 2 1.0291
Total HAP Emissions	4.5922	110.213	0.8013
Total BTEX Emissions	4.4955	107.893	0.7845

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	22.9740	551.375	4.0090
Ethane	1.6987	40.768	0.2964
Propane	0.5455	13.091	0.0952
Isobutane	0.1777	4.264	0.0310
n-Butane	0.2516	6.038	0.0439
Isopentane	0.1364	3.273	0.0238
n-Pentane	0.0487	1.169	0.0085
n-Hexane	0.0102	0.245	0.0018
Cyclohexane	0.0254	0.609	0.0044
Heptanes	0.1964	4.714	0.0343
2,2,4-Trimethylpentane	0.1002	2.405	0.0175
Benzene	0.0221	0.532	0.0039
Toluene	0.0270	0.648	0.0047
Ethylbenzene	0.0041	0.099	0.0007
Xylenes	0.0133	0.319	0.0023
C8+ Heavies	0.0281	0.674	0.0049
Total Emissions	26.2593	630.223	4.5822
Total Hydrocarbon Emissions	26.2593	630.223	4.5822
Total VOC Emissions	1.5866	38.080	0.2769
Total HAP Emissions	0.1770	4.248	0.0309
Total BTEX Emissions	0.0666	1.598	0.0116

## \*\*\* GENERAL PRODUCT INFORMATION \*\*\*

## SECTION 1

Trade Product Name :BULAB 7034  
 Synonyms :NA  
 Manufacturer Name :BUCKMAN LABORATORIES, INC.  
 Manufacturer's Address :1256 NORTH MCLEAN BOULEVARD  
 City :MEMPHIS  
 State :TN  
 ZIP :38108  
 Emergency Phone Number :901-767-2722  
 Telephone :1-800-BUCKMAN (1-800-282-5626)

## \*\*\* INGREDIENTS INFORMATION \*\*\*

## SECTION 2

## \*\* EXPOSURE LIMITS \*\*

INGREDIENT NAME PEL TLV  
 THE COMPONENTS OF THIS PRODUCT COMPRISE PROPRIETARY INFORMATION.

## \*\* PERCENTAGES \*\*

HIGH % LOW %  
 THE COMPONENTS OF THIS PRODUCT COMPRISE PROPRIETARY INFORMATION.

## \*\* CAS NUMBERS \*\*

CAS ON MSDS  
 THE COMPONENTS OF THIS PRODUCT COMPRISE PROPRIETARY INFORMATION.

## \*\*\* PHYSICAL/CHEMICAL CHARACTERISTICS \*\*\*

## SECTION 3

Boiling Point :>100C (>212F)  
 Melting Point :NA  
 Specific Gravity :NA  
 Vapor Pressure :N/T  
 Percent Volatiles :NA  
 Vapor Density (air=1) :1.2 G/ML  
 Evaporation Rate :NA  
 Compared to :NA  
 Water Solubility :COMPLETELY MISCIBLE WITH WATER IN ALL PROPORTIONS.  
 Appearance and Odor :CLEAR, YELLOW LIQUID, WITH SLIGHT ODOR  
 Additional Information:  
 Freezing Point :N/T  
 pH, Neat :4.2  
 pH, 100 PPM AQUEOUS :4.5 - 5.5

## \*\*\* FIRE AND EXPLOSION HAZARD DATA \*\*\*

## SECTION 4

Flash Point :>100C (>212F)  
 Flash Point Method :NOT STATED  
 Upper Explosive Limit :NA  
 Lower Explosive Limit :NA  
 Autoignition Temperature :NA  
 Extinguisher Media :WATER FOG, CARBON DIOXIDE, FOAM, DRY CHEMICAL.

Special Fire Fighting Procedures :  
 SELF-CONTAINED BREATHING APPARATUS IS REQUIRED. WATER SPRAY MAY BE USED TO COOL CONTAINERS.

Unusual Fire & Explosion Hazards :  
 NOT STATED

## \*\*\* REACTIVITY DATA \*\*\*

## SECTION 5

Is this chemical stable under normal conditions of handling and storage? :YES  
 Conditions to Avoid :NONE  
 Incompatibility(materials to avoid) :NONE KNOWN, NOT TESTED  
 Hazardous decomposition products :CARBON MONOXIDE, CARBON DIOXIDE  
 Is hazardous polymerization possible :NOT STATED  
 Conditions to avoid regarding polymerization :NA

## \*\*\* HEALTH HAZARD DATA \*\*\*

## SECTION 6

## Acute effects of overexposure:

Eye contact :EYE IRRITANT. EFFECTS MAY VARY DEPENDING ON THE LENGTH OF EXPOSURE, SOLUTION CONCENTRATION AND FIRST AID MEASURES.

Skin contact :NON-IRRITATING TO THE SKIN.

Inhalation :MAY CAUSE IRRITATION OF MUCOUS MEMBRANES AND THE LUNGS. EXPOSED INDIVIDUALS SHOULD BE MONITORED FOR RESPIRATORY DISTRESS, BRONCHITIS OR PNEUMONIA.

Ingestion :NO DATA IS AVAILABLE ON HUMAN INGESTION.

## Chronic effects of overexposure:

THE EFFECTS FROM CHRONIC EXPOSURE TO THIS PRODUCT HAVE NOT BEEN EVALUATED. CHRONIC INGESTION OF SOME BARIUM COMPOUNDS MAY HAVE AN ADVERSE EFFECT ON THE CARDIOVASCULAR SYSTEM.

Is chemical listed as a carcinogen or potential carcinogen?

National Toxicology Program	IARC Monographs	OSHA
NO	NO	NO

## \*\*\* FIRST AID PROCEDURES \*\*\*

Emergency phone number:901-767-2722

## Eye contact:

FLUSH IMMEDIATELY WITH COPIOUS AMOUNTS OF TAP WATER OR NORMAL SALINE (MINIMUM OF 15 MINUTES). TAKE EXPOSED INDIVIDUAL TO A HEALTH CARE PROFESSIONAL, PREFERABLY AN OPHTHALMOLOGIST, FOR FURTHER EVALUATION.

## Skin contact:

WASH EXPOSED AREA WITH PLENTY OF SOAP AND WATER. REPEAT WASHING. REMOVE CONTAMINATED CLOTHING AND WASH THOROUGHLY BEFORE REUSE. IF IRRITATION PERSISTS CONSULT A HEALTH CARE PROFESSIONAL.

## Inhalation:

IF EXPOSURE BY INHALATION IS SUSPECTED, IMMEDIATELY MOVE EXPOSED INDIVIDUAL TO FRESH AIR. IF INDIVIDUAL EXPERIENCES NAUSEA, HEADACHE, DIZZINESS, HAS DIFFICULTY IN BREATHING OR IS CYANOTIC, SEEK A HEALTH CARE PROFESSIONAL IMMEDIATELY.

## Ingestion:

DO NOT INDUCE VOMITING. RINSE WITH COPIOUS AMOUNTS OF WATER OR MILK, FIRST. IRRIGATE THE ESOPHAGUS AND DILUTE STOMACH CONTENTS BY SLOWLY GIVING ONE (1) TO TWO (2) GLASSES OF WATER OR MILK. AVOID GIVING ALCOHOL OR ALCOHOL RELATED PRODUCTS. IN CASES WHERE THE INDIVIDUAL IS SEMI-COMATOSE, COMATOSE OR CONVULSING. DO NOT GIVE FLUIDS BY MOUTH. IN CASE OF INTENTIONAL INGESTION OF THE PRODUCT SEEK MEDICAL ASSISTANCE IMMEDIATELY; TAKE INDIVIDUAL TO NEAREST MEDICAL FACILITY.

## Additional information:

## NOTE TO PHYSICIAN:

NO SPECIFIC ANTIDOTE IS KNOWN. PROBABLE MUCOSAL DAMAGE MAY CONTRAINDICATE THE USE OF GASTRIC LAVAGE. TREAT SYMPTOMS. MEDICAL CONSULTATION IS AVAILABLE 24 HOURS A DAY. CALL THE NPI-BUCKMAN CENTER FOR PRODUCT INFORMATION AT U.S.A. (1) (901) 767-2722.

## TOXICOLOGICAL INFORMATION:

## ACUTE EFFECTS:

ACUTE ORAL LD50: > 5,000.0 MG/KG  
ACUTE DERMAL LD50:> 5,000.0 MG/KG

IRRITANT EFFECTS : EXPECTED TO BE IRRITATING TO EYES.

SENSITIZATION EFFECTS : NONE EXPECTED BASED ON COMPONENTS.

CARCINOGENIC POTENTIAL: NOT LISTED IN ANY OF OSHA STANDARD, SECTION 1910.1200 SOURCES AS CARCINOGENIC; NOT TESTED BY BUCKMAN LABORATORIES, INC.

OTHER HEALTH EFFECTS : NONE KNOWN

\*\*\* PRECAUTIONS FOR SAFE HANDLING AND USE \*\*\*

## SECTION 7

Precautions to be taken in handling and storage:  
NOT LISTED ON MSDS

Steps to be taken in case material is released or spilled:

**IMPORTANT:** BEFORE RESPONDING TO A SPILL OR LEAK OF THIS PRODUCT, REVIEW EACH SECTION OF THIS MSDS. FOLLOW THE RECOMMENDATIONS GIVEN IN THE HANDLING PRECAUTIONS SECTIONS. CHECK THE FIRE AND EXPLOSION DATA SECTION TO DETERMINE IF THE USE OF NON-SPARKING TOOLS IS MERITED. INSURE THAT SPILLED OR LEAKED PRODUCT DOES NOT COME INTO CONTACT WITH MATERIALS LISTED AS INCOMPATIBLE. IF IRRITATING FUMES ARE PRESENT, CONSIDER EVACUATION OF ENCLOSED AREAS.

INITIALLY MINIMIZE AREA AFFECTED BY THE SPILL OR LEAK. BLOCK ANY POTENTIAL ROUTES TO WATER SYSTEMS (E.G., SEWERS, STREAMS, LAKES, ETC.). BASED ON THE PRODUCT'S TOXICOLOGICAL AND CHEMICAL PROPERTIES, AND ON THE SIZE AND LOCATION OF THE SPILL OR LEAK, ASSESS THE IMPACT ON CONTAMINATED ENVIRONMENTS (E.G. WATER SYSTEMS, GROUND, AIR EQUIPMENT, OF THE SPILL OR LEAK, ASSESS THE IMPACT ON CONTAMINATED ENVIRONMENTS (E.G. WATER SYSTEMS, GROUND, AIR EQUIPMENT, ETC.). THERE ARE NO METHODS AVAILABLE TO COMPLETELY ELIMINATE ANY TOXICITY THIS PRODUCT MAY HAVE ON AQUATIC ENVIRONMENTS. MINIMIZE ADVERSE EFFECTS ON THESE ENVIRONMENTS. BUCKMAN LABORATORIES, INC. CAN BE CONTACTED FOR TECHNICAL ASSISTANCE. DETERMINE IF FEDERAL, STATE, AND/OR LOCAL RELEASE NOTIFICATION IS REQUIRED (SEE REGULATORY CLASSIFICATIONS SECTION OF THIS MSDS). RECOVER AS MUCH OF THE PURE PRODUCT AS POSSIBLE INTO APPROPRIATE CONTAINERS. LATER, DETERMINE IF THIS RECOVERED PRODUCT CAN BE USED FOR ITS INTENDED PURPOSE. ADDRESS CLEAN-UP OF CONTAMINATED ENVIRONMENTS. SPILL OR LEAK RESIDUALS MAY HAVE TO BE COLLECTED AND DISPOSED OF. CLAY, SOIL, OR COMMERCIALY AVAILABLE ABSORBENTS MAY BE USED TO RECOVER ANY MATERIAL THAT CAN NOT READILY BE RECOVERED AS PURE PRODUCT. FLUSHING RESIDUAL MATERIAL TO AN INDUSTRIAL SEWER, IF PRESENT AT THE SITE OF A SPILL OR LEAK INCIDENT, MAY BE ACCEPTABLE IF AUTHORIZED APPROVAL IS OBTAINED. IF PRODUCT AND/OR SPILL/LEAK RESIDUALS ARE FLUSHED TO AN INDUSTRIAL SEWER, INSURE THAT THEY DO NOT COME INTO CONTACT WITH INCOMPATIBLE MATERIALS. CONTACT THE PERSON(S) RESPONSIBLE FOR THE OPERATION OF YOUR FACILITY'S INDUSTRIAL SEWER SYSTEM PRIOR TO INTENTIONALLY FLUSHING OR PUMPING SPILLS OR LEAKS OF THIS PRODUCT TO THE INDUSTRIAL SEWER.

Waste disposal method:

**NOTE:** FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS GOVERNING THE DISPOSAL OF WASTE MATERIALS.

**NEAT PRODUCT:** CONTACT YOUR BUCKMAN REPRESENTATIVE OR BUCKMAN LABORATORIES, INC., AT (901) 278-0330.

**CONTAMINATED MATERIALS :** DETERMINE IF WASTE CONTAINING THIS PRODUCT CAN BE HANDLED BY AVAILABLE INDUSTRIAL EFFLUENT SYSTEM OR OTHER ON-SITE WASTE MANAGEMENT UNIT. IF OFF-SITE MANAGEMENT IS REQUIRED, CONTACT A COMPANY EXPERIENCED IN INDUSTRIAL WASTE MANAGEMENT. THIS PRODUCT IS NOT SPECIFICALLY LISTED IN 40 CFR 261 AS A RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) HAZARDOUS WASTE. HOWEVER, SPILL OR LEAK RESIDUALS MAY MEET THE CRITERIA OF A CHARACTERISTIC HAZARDOUS WASTE UNDER THIS ACT. CHECK THE CHARACTERISTICS OF THE MATERIAL TO BE DISPOSED OF AND/OR THE PHYSICAL AND REACTIVITY DATA GIVEN IN THIS MSDS FOR THE NEAT PRODUCT.

**CONTAINER DISPOSAL:** EMPTY CONTAINERS, AS DEFINED BY APPROPRIATE SECTIONS OF THE RCRA, ARE NOT RCRA HAZARDOUS WASTES. HOWEVER, INSURE PROPER MANAGEMENT OF ANY RESIDUALS REMAINING IN CONTAINER.

Additional information:

TRANSPORTATION AND SHIPPING INFORMATION:  
DOT SHIPPING NAME : NONHAZARDOUS

Additional information:

**EMERGENCY RESPONSE ASSISTANCE:**

EMERGENCY TECHNICAL ASSISTANCE IS AVAILABLE AT ANY TIME FROM BUCKMAN LABORATORIES, INC., BY CALLING (901) 767-2722

\*\*\* CONTROL MEASURES \*\*\*

#### SECTION 8

Skin protection:  
RUBBER GLOVES

Eye protection:  
SAFETY GLASSES OR GOGGLES ARE RECOMMENDED

Other protective equipment or clothing:  
EYE-WASH FOUNTAINS IN THE WORKPLACE ARE STRONGLY RECOMMENDED.  
\*\*\* DOCUMENTARY \*\*\*

## SECTION 9

This MSDS prepared by :Not stated on original MSDS  
 Revision date for this MSDS :08/05/93  
 \*\*\* ADDITIONAL INFORMATION \*\*\*

## SECTION 10

## NOTE:

N/A = NOT APPLICABLE

N/T = NOT TESTED

## SATISFACTORY MATERIALS OF CONSTRUCTION:

## TESTED SATISFACTORY MATERIALS:

THIS PRODUCT HAS NOT BEEN TESTED FOR MATERIALS OF CONSTRUCTION DATA.  
 THIS MATERIAL SAFETY DATA SHEET WILL BE UPDATED AFTER THIS PRODUCT IS TESTED.

NOTE: WITH RESPECT TO ALL OTHER MATERIALS NOT LISTED ABOVE, USER SHOULD BE AWARE THE USE OF SUCH MATERIALS WITH BULAB 7034 MAY BE HAZARDOUS AND RESULT IN DAMAGES TO SUCH MATERIALS AND OTHER PROPERTY AND PERSONAL INJURIES. NO DATA CONCERNING SUCH MATERIALS NOT LISTED ABOVE SHOULD BE IMPLIED BY THE USER.

## REGULATORY INFORMATION:

THE FOLLOWING REGULATIONS ARE KNOWN TO APPLY TO THE USE AND DISPOSAL OF THIS PRODUCT. ADDITIONAL FEDERAL, STATE AND LOCAL REGULATIONS MAY ALSO BE APPLICABLE.

## SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

SARA 302 EXTREMELY HAZARDOUS SUBSTANCE LIST (40 CFR 300): NO COMPONENTS OF THIS PRODUCT ARE LISTED.

SARA 312 HAZARD CATEGORY: IMMEDIATE (ACUTE) HEALTH HAZARD

SARA 313 TOXIC CHEMICALS LIST: NO SECTION 313 LISTED SUBSTANCES ARE PRESENT ABOVE DE MINIMUS LEVELS.

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT): NO COMPONENTS OF THIS PRODUCT ARE LISTED.

RCRA (RESOURCE CONSERVATION AND RECOVERY ACT) LISTED HAZARDOUS WASTES: NO COMPONENTS OF THE PRODUCT ARE LISTED.

CWA (CLEAN WATER ACT, 40 CFR 401.15) LISTED SUBSTANCES: NO COMPONENTS OF THIS PRODUCT ARE LISTED.

FDA (FOOD AND DRUG ADMINISTRATION): THIS PRODUCT NOT APPROVED FOR FOOD CONTACT USES.

TSCA (TOXIC SUBSTANCES CONTROL ACT) APPLICABILITY : ALL COMPONENTS ARE LISTED ON TSCA INVENTORY.

FIFRA (FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT): THIS PRODUCT IS NOT A REGISTERED PESTICIDE.

HMIS/NPCA RATINGS : HEALTH 1; FLAMMABILITY 1; REACTIVITY 1  
 NFPA RATINGS : HEALTH 1; FLAMMABILITY 1; REACTIVITY 1

## STATE REGULATIONS:

## VARIOUS STATE RIGHT TO KNOW ACTS:

NON-PROPRIETARY HAZARDOUS CHEMICALS ARE LISTED IN SECTION 2 OF THIS MSDS. SHOULD YOU REQUIRE FURTHER INFORMATION ON SPECIFIC PROPRIETARY CHEMICALS OR INERTS PLEASE CONTACT BUCKMAN LABORATORIES' REGULATORY AFFAIRS DEPARTMENT.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REFLECTS THE LATEST INFORMATION AND DATA THAT WE HAVE ON HAZARDS, PROPERTIES, AND HANDLING OF THIS PRODUCT UNDER THE RECOMMENDED CONDITIONS OF USE. ANY USE OF THIS PRODUCT OR METHOD OF APPLICABLE WHICH IS NOT DESCRIBED IN THE PRODUCT DATA SHEET IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATIONS.

BUCKMAN LABORATORIES, INC. WARRANTS THAT THIS PRODUCT CONFORMS TO ITS CHEMICAL DESCRIPTION AND IS REASONABLY FIT FOR THE PURPOSE REFERRED TO IN THE DIRECTIONS FOR USE WHEN USED IN ACCORDANCE WITH THE DIRECTIONS UNDER NORMAL CONDITIONS. BUYER ASSUMES THE RISK OF ANY USE CONTRARY TO SUCH DIRECTIONS.

SELLER MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT, INCLUDING NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR

PURPOSE. NO SUCH WARRANTIES SHALL BE IMPLIED BY LAW AND NO AGENT OF SELLER IS AUTHORIZED TO ALTER THIS WARRANTY IN ANY WAY EXCEPT IN WRITING WITH A SPECIFIC REFERENCE TO THIS WARRANTY.

THE EXCLUSIVE REMEDY AGAINST SELLER SHALL BE A CLAIM FOR DAMAGES NOT TO EXCEED THE PURCHASE PRICE OF THE PRODUCT, WITHOUT REGARD TO WHETHER SUCH A CLAIM IS BASED UPON BREACH OF WARRANTY OR TORT.

ANY CONTROVERSY OR CLAIM ARISING OUT OF OR RELATING TO THIS CONTRACT, OR BREACH THEREOF, SHALL BE SETTLED BY ARBITRATION IN ACCORDANCE WITH THE COMMERCIAL ARBITRATION RULES OF THE AMERICAN ARBITRATION ASSOCIATION, AND JUDGEMENT UPON THE AWARD RENDERED BY THE ARBITRATOR(S) MAY BE ENTERED IN ANY COURT HAVING JURISDICTION THEREOF.