The Power To Make It Happen
FOUR CORNERS POWER PLANT
P.O. Box 355 * FRUITLAND, NEW MEXICO 87416

October 5, 2005

VIA OVERNIGHT MAIL

Mr. Doug Eberhardt, Chief
Permits Issuance Section
U.S. EPA, Region IX, W-5-1
75 Hawthorne Street
San Francisco, California 94105-3901

RE: NPDES Permit Renewal Application #NM0000019

Dear Mr. Eberhardt:

Arizona Public Service Company (APS) as co-owner and operator of the Four Corners Steam Electric Station near Fruitland, New Mexico, (Four Corners Power Plant) submits this letter and the attached documents as part of the National Pollution Discharge Elimination System (NPDES) permit renewal application. This renewal application is made pursuant to 40 CFR Part 122.

The application does not include analyses for three volatile, organic compounds: acrolein, 2-chloroethylvinyl ether, and Bis (Chloromethyl) Ether. The laboratory contracted for analysis failed to run these parameters with the samples submitted and, as discussed previously with EPA, APS did not wish to delay reapplication to accommodate resampling and analysis. APS will collect additional samples and have them analyzed promptly so the analytical results may be forwarded to you during your review period.

Mr. Carl Woolfolk, Four Corners Power Plant Environmental Supervisor, contacted Mr. Eugene Bromley of your staff, to discuss the missing data for the permit re-application. Mr. Bromley advised APS to submit the available data and forward the missing results once they are received. APS has requested expedited service from the laboratory to minimize the delays in completing the renewal application.

The current NPDES permit for the Four Corners Power Plant became effective on April 7, 2001, and is expiring on April 6, 2006. APS is applying for authorization to continue discharging from the following Outfalls:

001 Cooling Pond Discharge to unnamed wash tributary to Chaco Wash

Internal Outfalls:

01A Condenser Cooling Water Discharge
01E Combined Waste Treatment Pond Discharge
01B Chemical Metal Cleaning Wastewater Discharge

APS has enclosed a copy of the present Four Corners Power Plant NPDES Permit, to assure your files are complete. No substantial changes are being requested and we are proposing re-issuance of this permit. APS is hopeful this will expedite the NPDES permit renewal.

ADDITIONAL INFORMATION

Analytical data for 01B is not included in Form 2C. Outfall 01B, Chemical Metal Cleaning Wastewater, is not being used. Four Corners currently co-disposes chemical metal cleaning wastewater with fly ash and scrubber sludge, as allowed by the RCRA Dietrich exemption. This Outfall must be retained, however, in case the ability to co-dispose with coal combustion byproducts is eliminated by future rule-

making. Because the boilers are chemically cleaned infrequently recent analytic data is not available for chemical metal cleaning wastewater.

Additionally, in order to discharge chemical metal cleaning wastewater, treatment would be necessary to meet effluent limitations. Therefore, analysis of chemical metal cleaning wastewater before treatment would not be meaningful.

APS requests EPA's consideration in using EPA method 330.5 for the determination of total residual chlorine instead of the amperometric methods. We are making this request because the distance between the sampling point and laboratory analyzer is large, which makes it difficult to collect and analyze the sample within 15 minutes per standard methods requirements. Additionally, this requirement does not allow for other parameters to be analyzed at the same time and location. As evidenced by all previous data submitted, effluent toxicity has not been observed at the Four Corners outfalls. APS is requesting that EPA allow the continued annual biomonitoring as presently allowed in the facility's NPDES permit.

As you are aware, APS continues to collect impingement data at all five cooling water intake structures in conformance with the Proposal for Information Collection (PIC) submitted in April 2005. As part of the PIC submittal APS requested a three and one half year extension for submittal of the Comprehensive Demonstration Study in compliance with the 316(b) rule. We are requesting that the allowance for the extension be documented in the renewed facility NPDES permit.

If you have any questions concerning this application, please contact Winston Benally or Carl Woolfolk, Environmental Services at (505) 598-8448 or (505) 598-8799, respectively. APS requests the opportunity to work with you on changes that may be made to the permit.

Sincerely,

David L. Saliba

David L. Saliba
Fossil Plant Manager

RG/CDW/WB/jmd

Enclosure

C5531/05-009-001.8

bcc:	Winston Benally	4915
	David. Saliba	4900
	Env File	4915

xc: Patrick Antonio NNEPA

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

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

FORM **1** GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting)

1. EPA I.D NUMBER: S F NM0000019 (1 2 - 13) T/A C D (14 15)

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms.**

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X		X	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
	40	41	42		43	44	45

III. NAME OF FACILITY

C 1 SKIP FOUR CORNERS POWER PLANT (15 16 - 29 30 - 69)

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2 SALIBA, DAVID L., PLANT MANAGER (15 16 - 45)	505 (46 - 48) 598 (49 - 51) 8209 (52 - 55)

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3 PO BOX 355, MS 4900 (15 16 - 45)

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 FRUITLAND (15 16 - 40)	NM (41 42)	87416 (47 - 51)

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5 20 MILES SW OF FARMINGTON, NM (15 16 - 45)

B. COUNTY NAME

SAN JUAN (46 - 70)

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6 FRUITLAND (15 16 - 40)	NM (41 42)	87416 (47 - 51)	(52 - 54)

CONTINUE ON REVERSE

STF EN/564F.1

CONTINUED FROM THE FRONT

VII. SIC CODES *(4 digit in order of priority)*

A. FIRST	B. SECOND
C 7 4911 (specify) ELECTRIC GENERATION	C 7 (specify)
C. THIRD	**D. FOURTH**
(specify)	C 7 (specify)

VIII. OPERATOR INFORMATION

A. NAME: C 8 ARIZONA PUBLIC SERVICE COMPANY

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box; if "Other," specify.)*
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*
P (specify) INVESTOR OWNED

D. PHONE *(area code & no.)*: C A 602 250 3220

E. STREET OR P.O. BOX: PO BOX 53999

F. CITY OR TOWN: C B PHOENIX

G. STATE: AZ

H. ZIP CODE: 85072

IX. INDIAN LAND
Is the facility located on Indian lands? [X] YES [ ] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
C T I 9 N NM0000019	C T I 9 P
B. UIC *(Underground Injection of Fluids)*	**E. OTHER** *(specify)*
C T I 9 U	C T I 9 (specify)
C. RCRA *(Hazardous Wastes)*	**E. OTHER** *(specify)*
C T I 9 R NND069409522	C T I 9 (specify)

MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

Arizona Public Service Company generates electricity at the Four Corners Power Plant for use in Arizona, New Mexico and California.

Arizona Public Service Company is the operating agent on its own behalf and on the behalf of the following participants:
Salt River Project Agricultural Improvement and Power District, Southern California Edison, El Paso Electric Company, Public Service Company of New Mexico, and Tucson Electric Power Company

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
David L. Saliba, Plant Manager Four Corners Power Plant	David L Saliba	100405

COMMENTS FOR OFFICIAL USE ONLY

C

EPA Form 3510-1 (8-90)

STF EN/564F.2

Please print or type in the unshaded areas only.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)* NM0000019

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

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS

Consolidated Permits Program

OUTFALL LOCATION

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

A. OUTFALL NUMBER *(list)*	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER *(name)*
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	36	42	16.5	108	29	12	Unnamed tributary to Chaco River
01A	36	41	30	108	28	9	Morgan Lake
01E	36	41	30	108	28	12	Condenser Cooling Water Discharge
01B							No established discharge point

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALLING *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
	Cooling Pond Discharge	4.2 MGD	None	NA	NA
001					
	Condenser Cooling Water	1713.6 MGD	None	NA	NA
	Discharge				
	a. Stormwater Runoff*				
01A	b. Once through Cooling Water				
	Chemical Metal Cleaning				
	Wastewater**				
01B					
	Combined Waste Treatment Pond		Sedimentation	1	U
	Discharge and Decant Cells		Neutralization	2	K
			Polymer	2	D
01E			Grit Removal	1	M
			Oil Skimming		
	A. Bottom Ash Sluice Water	8.0 MGD			
	B. Stormwater Runoff**				
01E	C. Once through Cooling Water	4.0 MGD			
	from small coolers				
	D. Low Vol. Wastewater	1.0 MGD			
	*Average flow negligible				
01E	**This discharge is presently co-disposed of w/Coal Combustion byproducts,as allowed under RCRA Dietrich Exempt				

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

[X] YES *(complete the following table)* [ ] NO *(go to Section III)*

1. OUTFALL NUMBER *(list)*	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY a. DAYS PER WEEK *(specify average)*	3. FREQUENCY b. MONTHS PER YEAR *(specify average)*	4. FLOW a. FLOW RATE *(in mgd)* 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE *(in mgd)* 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME *(specify with units)* 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME *(specify with units)* 2. MAXIMUM DAILY	4. FLOW c. DURATION *(in days)*
001	Cooling Pond Discharge Note:All data taken from 2001-2004	3.3	6	8.9	14.6	2,121.5 MG/yr	14.6 MGD	171
	Range:	2.5 - 4.1	4 - 7	7.9 -10.7				128 - 202

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

[X] YES *(complete Item III-B)* [ ] NO *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

[ ] YES *(complete Item III-C)* [X] NO *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	2. AFFECTED OUTFALLS *(list outfall numbers)*

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

[ ] YES *(complete the following table)* [X] NO *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. NO.	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. [ ] MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

 CONTINUE ON PAGE 3

CONTINUED FROM PAGE 2

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
NM0000019

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding — Complete one set of tables for each outfall — Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1.POLLUTANT	2. SOURCE
NA			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ **YES** *(list all such pollutants below)* ☐ **NO** *(go to Item VI-B)*

See Attachment A

NPDES PERMIT APPLICATION

VI. Potential Discharges not covered by Analysis:

Metals, Cyanide & total Phenols

Pollutant Listed in V-C:	CAS#	Component of:
1. Antimony, Total	7440-36-0	Coal Combustion byproducts (CCB), batteries, solder, lamps, shotgun shells
2. Arsenic, Total	7440-38-2	CCB's batteries, shotgun shells, threadlock
3. Beryllium, Total	7740-41-7	CCB's
4. Cadmium, Total	7440-43-9	CCB's, batteries
5. Chromium, Total	7740-47-3	CCB's, welding electrodes
6. Copper, Total	7440-50-8	CCB's, batteries, welding electrodes, shotgun shells
7. Lead, Total	7439-92-1	CCB's, batteries, solder, welding electrodes, lamps, shotgun shells
8. Mercury, Total	7439-97-6	CCB's lamps, batteries
9. Nickel, Total	7440-02-0	CCB/s, welding electrodes, flux
10. Selenium, Total	7782-49-2	CCB's
11. Silver, Total	7440-22-4	CCB's, solder, flux
12. Thallium, Total	7440-28-0	CCB's, welding electrodes
13. Zinc, Total	7440-66-6	CCB's, welding electrodes, flux, metal epoxies, batteries, shotgun shells, galvanizing compound

GC/MS FRACTION – VOLATILE COMPOUNDS

Pollutant listed in V-C:	CAS#	Component of:
1. Acrylonitrile	107-13-1	Caulk
2. Benzene	71-43-2	Petroleum fuels, thinner, coatings, transmission fluid
3. Chloroform	67-66-3	Lab reagent
4. Ethylbenzene	100-41-4	Silicone primer
5. Methylene chloride	75-09-2	Rubber cement, carburetor cleaner
6. 1,2-Trans-Dichloroethylene	156-60-5	Coatings
7. Trichloro-ethylene	79-01-6	Rubber cement, solvent, lubricant
8. Phenol cleaner	108-95-2	Coatings, adhesive, carburetor
9. Bis (2-Ethylhexyl) Phthalate	117-81-7	Rubber lining
10. Butyl Benzyl Phthalate	85-68-7	Coatings
11. 2-Chloronaphthalene	91-58-7	Oil
12. 1,2-Dichlorobenzene	95-50-1	Lubricant
13. 1,4-Dichlorobenzene	106-46-7	Lubricant, deodorizer
14. Dimethyl Phthalate	131-11-3	Coatings, epoxy, solvents
15. Di-N-Butyl Phthalate	84-74-2	Coatings
16. Naphthalene	91-20-3	Coatings, lubricants

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** *(identify the test(s) and describe their purposes below)* ☐ **NO** *(go to Section VIII)*

Chronic toxicity testing on 01A, Once through Cooling Water, was conducted in 2003 and 2004. Acute and Chronic toxicity testing on 01A, Once through Cooling Water, was conducted in 2005 as required by the NPDES Permit conditions with variance.

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ **YES** *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ **NO** *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
	See Tab 7 of this permit application.		

IX. CERTIFICATION

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

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
David L. Saliba, Plant Manager, Four Corners Power Plant	(505) 598-8209
C. SIGNATURE David L Saliba	D. DATE SIGNED 100405

PLEASE PRI TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: NM0000019

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

OUTFALL NO. 001

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	1.5	184.0					2	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	24.1	2,956.7					2	mg/l	lbs/day			
c. Total Organic Carbon *(TOC)*	7.0	858.8					2	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	2.0	245.4					2	mg/l	lbs/day			
e. Ammonia *(as N)*	<0.05	<6.13					2	mg/l	lbs/day			
f. Flow	VALUE 14.7		VALUE		VALUE		InSitu	MGD		VALUE		
g. Temperature *(winter)*	VALUE 23.6		VALUE		VALUE		Cont.	°C		VALUE		
h. Temperature *(summer)*	VALUE 33.2		VALUE		VALUE		Cont.	°C		VALUE		
i. pH	MINIMUM 7.90	MAXIMUM 8.44	MINIMUM	MAXIMUM			16	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		0.53	65.02					2	mg/l	lbs/day			
b. Chlorine, Total Residual	X		<0.1	<12.3					16	mg/l	lbs/day			
c. Color	X		12.5						2	Units				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		1.0	122.7					2	mg/l	lbs/day			
f. Nitrate—Nitrite *(as N)*	X		<0.03	<3.68					2	mg/l	lbs/day			

CONTINUE ON REVERSE

STF ENV441F.5

ITEM V-B CONT 'D FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	MARK 'X' a. BELIEVED PRESENT	MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (opt) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (opt) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (opt) b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		0.73	89.56					2	mg/l	lbs/day			
h. Oil and Grease	X		<1.0	<122.7					16	mg/l	lbs/day			
i. Phosphorus (as P), Total (7723-14-0)		X	<0.05	<6.13					2	mg/l	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		(±3.2) 5.3						2	pCi/L				
(2) Beta, Total	X		(±5.1) 7.4						2	pCi/L				
(3) Radium, Total	X		(±0.76) 1.44						2	pCi/L				
(4) Radium 226, Total	X		(±0.27) .27						2	pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		420	51,528					2	mg/l	lbs/day			
l. Sulfide (as S)		X	<0.05	<6.13					2	mg/l	lbs/day			
m. Sulfite (as SO_3) (14265-45-3)	X		<2.0	<245.4					2	mg/l	lbs/day			
n. Surfactants		X	<0.0250	<3.0671					2	mg/l	lbs/day			
o. Aluminum, Total (7429-90-5)	X		<0.10	<12.27					2	mg/l	lbs/day			
p. Barium, Total (7440-39-3)	X		0.19	23.31					2	mg/l	lbs/day			
q. Boron, Total (7440-42-8)	X		0.7	85.9					2	mg/l	lbs/day			
r. Cobalt, Total (7440-48-4)	X		<0.01	<1.23					2	mg/l	lbs/day			
s. Iron, Total (7439-89-6)	X		<0.05	<6.13					2	mg/l	lbs/day			
t. Magnesium, Total (7439-95-4)	X		37.4	4,588.4					2	mg/l	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		0.02	2.45					2	mg/l	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.016	1.963					2	mg/l	lbs/day			
w. Tin, Total (7440-31-5)	X		<0.01	<1.23					2	mg/l	lbs/day			
x. Titanium, Total (7440-32-6)	X		<0.0050	<0.6134					2	mg/l	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.020	<2.454					2	mg/l	lbs/day			
2M. Arsenic, Total (7440-38-2)	X			<0.0250	<3.067					2	mg/l	lbs/day			
3M. Beryllium, Total, 7440-41-7)	X			<0.001	<0.123					2	mg/l	lbs/day			
4M. Cadmium, Total (7440-43-9)	X			<0.0020	<0.2454					2	mg/l	lbs/day			
5M. Chromium, Total (7440-47-3)	X			<0.01	<1.23					2	mg/l	lbs/day			
6M. Copper, Total (7440-50-8)	X			<0.02	<2.45					2	mg/l	lbs/day			
7M. Lead, Total (7439-92-1)	X			<0.00750	<0.92014					2	mg/l	lbs/day			
8M. Mercury, Total (7439-97-6)	X			<0.0002	<0.0245					2	mg/l	lbs/day			
9M. Nickel, Total (7440-02-0)	X			<0.02	<2.45					2	mg/l	lbs/day			
10M. Selenium, Total (7782-49-2)	X			<0.040	<4.907					2	mg/l	lbs/day			
11M. Silver, Total (7440-22-4)	X			<0.01	<1.23					2	mg/l	lbs/day			
12M. Thallium, Total (7440-28-0)	X			<0.0150	<1.8403					2	mg/l	lbs/day			
13M. Zinc, Total (7440-66-6)	X			<0.08	<9.81					2	mg/l	lbs/day			
14M. Cyanide, Total (57-12-5)	X			<0.005	<0.613					16	mg/l	lbs/day			
15M. Phenols, Total	X			<0.015	<0.613					16	mg/l	lbs/day			
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X			DESCRIBE RESULTS Non-detectable in the parts per trillion range.											

CONTINUED FF THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAK. (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				*See Note											
2V. Acrylonitrile (107-13-1)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
3V. Benzene (71-43-2)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
4V. Bis (Chloromethyl) Ether (542-88-1)				*See Note											
5V. Bromoform (75-25-2)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
6V. Carbon Tetrachloride (56-23-5)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
7V. Chlorobenzene (108-90-7)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
8V. Chlorodibromomethane (124-48-1)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
9V. Chloroethane (75-00-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
10V. 2-Chloroethylvinyl Ether (110-75-8)				*See Note											
11V. Chloroform (67-66-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
12V. Dichlorobromomethane (75-27-4)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
13V. Dichlorodifluoromethane (75-71-8)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
14V. 1,1-Dichloroethane (75-34-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
15V. 1,2-Dichloroethane (107-06-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
16V. 1,1-Dichloroethylene (75-35-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
17V. 1,2-Dichloropropane (78-87-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
18V. 1,3-Dichloropropylene (542-75-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
19V. Ethylbenzene (100-41-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
20V. Methyl Bromide (74-83-9)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
21V. Methyl Chloride (74-87-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			

EPA Form 3510-2C (8-90) *Note: Pending lab analysis

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CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
24V. Tetrachloroethylene (127-18-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
25V. Toluene (108-88-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
29V. Trichloroethylene (79-01-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
30V. Trichlorofluoromethane (75-69-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
31V. Vinyl Chloride (75-01-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
GC/MS FRACTION — ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
6A. 2-Nitrophenol (88-75-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
7A. 4-Nitrophenol (100-02-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
9A. Pentachlorophenol (87-86-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
10A. Phenol (108-95-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			

CONTINUE ON REVERSE

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
2B. Acenaphtylene (208-96-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
3B. Anthracene (120-12-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
4B. Benzidine (92-87-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
5B. Benzo *(a)* Anthracene (56-55-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
6B. Benzo *(a)* Pyrene (50-32-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
8B. Benzo *(ghi)* Perylene (191-24-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
16B. 2-Chloro-naphthalene (91-58-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
18B. Chrysene (218-01-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
19B. Dibenzo *(a, h)* Anthracene (53-70-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			

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EPA I.D. NUMBER (copy from Item 1 of Fo	OUTFALL NUMBER
NM0000019	001

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
24B. Diethyl Phthalate (84-66-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
31B. Fluoranthene (206-44-0)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
32B. Fluorene (86-73-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
33B. Hexachlorobenzene (118-74-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
36B. Hexachloroethane (67-72-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
38B. Isophorone (78-59-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
39B. Naphthalene (91-20-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
40B. Nitrobenzene (98-95-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAK onal) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
44B. Phenanthrene (85-01-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
45B. Pyrene (129-00-0)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
GC/MS FRACTION — PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

PLEASE PRIN TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: NM0000019

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

OUTFALL NO. 01A

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	2. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	2. EFFLUENT d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS (specify if blank) b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	1.0	14,301					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	24.1	344,669					1	mg/l	lbs/day			
c. Total Organic Carbon *(TOC)*	10.9	155,888					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	<2.0	<28,603					1	mg/l	lbs/day			
e. Ammonia *(as N)*	<0.05	<715.1					1	mg/l	lbs/day			
f. Flow	VALUE 1,713.6		VALUE		VALUE		Est.	MGD		VALUE		
g. Temperature *(winter)*	VALUE 29.0		VALUE		VALUE		37	°C		VALUE		
h. Temperature *(summer)*	VALUE 38.5		VALUE		VALUE		37	°C		VALUE		
i. pH	MINIMUM 7.90	MAXIMUM 8.39	MINIMUM	MAXIMUM			8	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		0.22	3,146.4					1	mg/l	lbs/day			
b. Chlorine, Total Residual	X		<0.1	<1430..2					1	mg/l	lbs/day			
c. Color	X		5.0						1	Units				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		1.4	20,022.3					1	mg/l	lbs/day			
f. Nitrate—Nitrite *(as N)*	X		0.03	429.1					1	mg/l	lbs/day			

CONTINUE ON REVERSE

ITEM V-B CON ED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	MARK 'X' a. BELIEVED PRESENT	MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		0.78	11,155.3					1	mg/l	lbs/day			
h. Oil and Grease	X		<1.0	<14301.6					8	mg/l	lbs/day			
i. Phosphorus (as P), Total (7723-14-0)		X	<0.05	<715.1					1	mg/l	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		(±3.7) 6.1						1	pCi/L				
(2) Beta, Total	X		(±2.7) 10.6						1	pCi/L				
(3) Radium, Total	X		(±0.80) 1.24						1	pCi/L				
(4) Radium 226, Total	X		(±0.29) 0.32						1	pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		520	7,436,842.4					1	mg/l	lbs/day			
l. Sulfide (as S)		X	<0.05	<715.1					1	mg/l	lbs/day			
m. Sulfite (as SO_3) (14265-45-3)	X		<2.0	<28603.2					1	mg/l	lbs/day			
n. Surfactants		X	<0.0250	<357.5					1	mg/l	lbs/day			
o. Aluminum, Total (7429-90-5)	X		<0.10	<1430.2					1	mg/l	lbs/day			
p. Barium, Total (7440-39-3)	X		0.28	4,004.5					1	mg/l	lbs/day			
q. Boron, Total (7440-42-8)	X		1.1	15,731.8					1	mg/l	lbs/day			
r. Cobalt, Total (7440-48-4)	X		<0.01	<143.0					1	mg/l	lbs/day			
s. Iron, Total (7439-89-6)	X		<0.05	<715.1					1	mg/l	lbs/day			
t. Magnesium, Total (7439-95-4)	X		41.4	592,087.1					1	mg/l	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		0.02	286.0					1	mg/l	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.026	371.8					1	mg/l	lbs/day			
w. Tin, Total (7440-31-5)	X		<0.01	<143.0					1	mg/l	lbs/day			
x. Titanium, Total (7440-32-6)	X		<0.0050	<71.5					1	mg/l	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.020	<286.0					1	mg/l	lbs/day			
2M. Arsenic, Total (7440-38-2)	X			<0.0250	<357.5					1	mg/l	lbs/day			
3M. Beryllium, Total, 7440-41-7)	X			<0.001	<14.3					1	mg/l	lbs/day			
4M. Cadmium, Total (7440-43-9)	X			<0.0020	<28.6					1	mg/l	lbs/day			
5M. Chromium, Total (7440-47-3)	X			<0.01	<143.0					1	mg/l	lbs/day			
6M. Copper, Total (7440-50-8)	X			<0.02	<286.0					1	mg/l	lbs/day			
7M. Lead, Total (7439-92-1)	X			<0.00750	<107.3					1	mg/l	lbs/day			
8M. Mercury, Total (7439-97-6)	X			<0.0002	<2.9					1	mg/l	lbs/day			
9M. Nickel, Total (7440-02-0)	X			<0.02	<286.0					1	mg/l	lbs/day			
10M. Selenium, Total (7782-49-2)	X			<0.040	<572.1					1	mg/l	lbs/day			
11M. Silver, Total (7440-22-4)	X			<0.01	<143.0					1	mg/l	lbs/day			
12M. Thallium, Total (7440-28-0)	X			<0.0150	<214.5					1	mg/l	lbs/day			
13M. Zinc, Total (7440-66-6)	X			<0.05	<715.1					1	mg/l	lbs/day			
14M. Cyanide, Total (57-12-5)	X			<0.005	<71.5					8	mg/l	lbs/day			
15M. Phenols, Total	X			<0.005	<71.5					8	mg/l	lbs/day			
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X			DESCRIBE RESULTS Non-detectable in the parts per trillion range.											

CONTINUE ON REVERSE

CONTINUED F THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				*See Note											
2V. Acrylonitrile (107-13-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
3V. Benzene (71-43-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
4V. Bis *(Chloromethyl)* Ether (542-88-1)				*See Note											
5V. Bromoform (75-25-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
6V. Carbon Tetrachloride (56-23-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
7V. Chlorobenzene (108-90-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
8V. Chlorodibromomethane (124-48-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
9V. Chloroethane (75-00-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
10V. 2-Chloroethylvinyl Ether (110-75-8)				*See Note											
11V. Chloroform (67-66-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
12V. Dichlorobromomethane (75-27-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
13V. Dichlorodifluoromethane (75-71-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
14V. 1,1-Dichloroethane (75-34-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
15V. 1,2-Dichloroethane (107-06-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
16V. 1,1-Dichloroethylene (75-35-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
17V. 1,2-Dichloropropane (78-87-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
18V. 1,3-Dichloropropylene (542-75-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
19V. Ethylbenzene (100-41-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
20V. Methyl Bromide (74-83-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
21V. Methyl Chloride (74-87-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

*Note: Pending lab analysis

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
24V. Tetrachloroethylene (127-18-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
25V. Toluene (108-88-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
29V. Trichloroethylene (79-01-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
30V. Trichlorofluoromethane (75-69-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
31V. Vinyl Chloride (75-01-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
GC/MS FRACTION — ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
6A. 2-Nitrophenol (88-75-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
7A. 4-Nitrophenol (100-02-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
9A. Pentachlorophenol (87-86-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
10A. Phenol (108-95-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

CONTINUE ON REVERSE

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
2B. Acenaphtylene (208-96-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
3B. Anthracene (120-12-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
4B. Benzidine (92-87-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
5B. Benzo *(a)* Anthracene (56-55-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
6B. Benzo *(a)* Pyrene (50-32-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
8B. Benzo *(ghi)* Perylene (191-24-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
16B. 2-Chloro-naphthalene (91-58-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
18B. Chrysene (218-01-9)	X			<0.0005	<7.15088					1	mg/l	lbs/day			
19B. Dibenzo *(a, h)* Anthracene (53-70-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

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CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
24B. Diethyl Phthalate (84-66-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
31B. Fluoranthene (206-44-0)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
32B. Fluorene (86-73-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
33B. Hexachlorobenzene (118-74-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
36B. Hexachloroethane (67-72-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
38B. Isophorone (78-59-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
39B. Naphthalene (91-20-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
40B. Nitrobenzene (98-95-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
44B. Phenanthrene (85-01-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
45B. Pyrene (129-00-0)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
GC/MS FRACTION — PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

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CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

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

OUTFALL NO. 01E

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	<1.0	<158.5					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	15.4	2,442.02					1	mg/l	lbs/day			
c. Total Organic Carbon *(TOC)*	4.70	745.3					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	<2.0	<317.1					1	mg/l	lbs/day			
e. Ammonia *(as N)*	<0.05	<7.9					1	mg/l	lbs/day			
f. Flow	VALUE 19		VALUE		VALUE		Cont.	MGD		VALUE		
g. Temperature *(winter)*	VALUE 24.4		VALUE		VALUE		18	°C		VALUE		
h. Temperature *(summer)*	VALUE 42.2		VALUE		VALUE		18	°C		VALUE		
i. pH	MINIMUM 7.72	MAXIMUM 8.35	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		0.14	22.2					1	mg/l	lbs/day			
b. Chlorine, Total Residual	X		<0.1	<158.6					1	mg/l	lbs/day			
c. Color	X		5.0						1	Units				
d. Fecal Coliform		X							1	mg/l	lbs/day			
e. Fluoride (16984-48-8)	X		1.4	222.0					1	mg/l	lbs/day			
f. Nitrate—Nitrite *(as N)*	X		0.03	4.8					1	mg/l	lbs/day			

CONTINUE ON REVERSE

ITEM V-B CON ED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	MARK 'X' a. BELIEVED PRESENT	MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		0.60	95.1					1	mg/l	lbs/day			
h. Oil and Grease	X		<1.0	<158.6					1	mg/l	lbs/day			
i. Phosphorus (as P), Total (7723-14-0)		X	<0.05	<7.9					1	mg/l	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		(±3.4) 4.1						1	pCi/L				
(2) Beta, Total	X		(±4.1) 7.7						1	pCi/L				
(3) Radium, Total	X		(±0.73) 1.16						1	pCi/L				
(4) Radium 226, Total	X		(±0.22) 0.16						1	pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		520	82,458					1	mg/l	lbs/day			
l. Sulfide (as S)		X	<0.05	<7.9					1	mg/l	lbs/day			
m. Sulfite (as SO_3) (14265-45-3)	X		<2.0	<317.1					1	mg/l	lbs/day			
n. Surfactants		X	<0.0250	<3.9					1	mg/l	lbs/day			
o. Aluminum, Total (7429-90-5)	X		<0.10	<15.9					1	mg/l	lbs/day			
p. Barium, Total (7440-39-3)	X		0.19	30.1					1	mg/l	lbs/day			
q. Boron, Total (7440-42-8)	X		0.7	111.0					1	mg/l	lbs/day			
r. Cobalt, Total (7440-48-4)	X		<0.01	<1.6					1	mg/l	lbs/day			
s. Iron, Total (7439-89-6)	X		<0.05	<7.9					1	mg/l	lbs/day			
t. Magnesium, Total (7439-95-4)	X		36.8	5,835.5					1	mg/l	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		<0.01	<1.6					1	mg/l	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.038	6.0					1	mg/l	lbs/day			
w. Tin, Total (7440-31-5)	X		<0.01	<1.6					1	mg/l	lbs/day			
x. Titanium, Total (7440-32-6)	X		<0.0050	<0.8					1	mg/l	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.020	<3.2					1	mg/l	lbs/day			
2M. Arsenic, Total (7440-38-2)	X			<0.0250	<3.9					1	mg/l	lbs/day			
3M. Beryllium, Total, 7440-41-7)	X			<0.001	<0.16					1	mg/l	lbs/day			
4M. Cadmium, Total (7440-43-9)	X			<0.0020	<0.32					1	mg/l	lbs/day			
5M. Chromium, Total (7440-47-3)	X			<0.01	<1.6					1	mg/l	lbs/day			
6M. Copper, Total (7440-50-8)	X			<0.02	<3.2					1	mg/l	lbs/day			
7M. Lead, Total (7439-92-1)	X			<0.00750	<1.2					1	mg/l	lbs/day			
8M. Mercury, Total (7439-97-6)	X			<0.0002	<0.03					1	mg/l	lbs/day			
9M. Nickel, Total (7440-02-0)	X			<0.02	<3.2					1	mg/l	lbs/day			
10M. Selenium, Total (7782-49-2)	X			<0.040	<6.3					1	mg/l	lbs/day			
11M. Silver, Total (7440-22-4)	X			<0.01	<1.6					1	mg/l	lbs/day			
12M. Thallium, Total (7440-28-0)	X			<0.0150	<2.4					1	mg/l	lbs/day			
13M. Zinc, Total (7440-66-6)	X			<0.05	<7.9					1	mg/l	lbs/day			
14M. Cyanide, Total (57-12-5)	X			<0.005	<0.79					8	mg/l	lbs/day			
15M. Phenols, Total	X			<0.005	<0.79					8	mg/l	lbs/day			
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X			DESCRIBE RESULTS Non-detectable in the parts per trillion range.											

CONTINUE ON REVERSE

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CONTINUED FI THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAK. ptional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				*See Note											
2V. Acrylonitrile (107-13-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
3V. Benzene (71-43-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
4V. Bis (*Chloromethyl*) Ether (542-88-1)				*See Note											
5V. Bromoform (75-25-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
6V. Carbon Tetrachloride (56-23-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
7V. Chlorobenzene (108-90-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
8V. Chlorodibromomethane (124-48-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
9V. Chloroethane (75-00-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
10V. 2-Chloroethylvinyl Ether (110-75-8)				*See Note											
11V. Chloroform (67-66-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
12V. Dichlorobromomethane (75-27-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
13V. Dichlorodifluoromethane (75-71-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
14V. 1,1-Dichloroethane (75-34-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
15V. 1,2-Dichloroethane (107-06-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
16V. 1,1-Dichloroethylene (75-35-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
17V. 1,2-Dichloropropane (78-87-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
18V. 1,3-Dichloropropylene (542-75-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
19V. Ethylbenzene (100-41-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
20V. Methyl Bromide (74-83-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
21V. Methyl Chloride (74-87-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			

*Note: Pending lab analysis

CONTINUE ON PAGE V-5

EPA I.D. NUMBER (copy from Item 1 of For	OUTFALL NUMBER
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CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
24V. Tetrachloroethylene (127-18-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
25V. Toluene (108-88-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
29V. Trichloroethylene (79-01-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
30V. Trichlorofluoromethane (75-69-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
31V. Vinyl Chloride (75-01-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
GC/MS FRACTION — ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
6A. 2-Nitrophenol (88-75-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
7A. 4-Nitrophenol (100-02-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
9A. Pentachlorophenol (87-86-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
10A. Phenol (108-95-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED F' THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
2B. Acenaphtylene (208-96-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
3B. Anthracene (120-12-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
4B. Benzidine (92-87-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
5B. Benzo *(a)* Anthracene (56-55-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
6B. Benzo *(a)* Pyrene (50-32-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
8B. Benzo *(ghi)* Perylene (191-24-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
16B. 2-Chloro-naphthalene (91-58-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
18B. Chrysene (218-01-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
19B. Dibenzo *(a, h)* Anthracene (53-70-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			

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EPA I.D. NUMBER (copy from Item 1 of For	OUTFALL NUMBER
NM0000019	01E

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
24B. Diethyl Phthalate (84-66-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0005	<0.08					1	mg/l	lbs/day			
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
31B. Fluoranthene (206-44-0)	X			<0.0005	<0.08					1	mg/l	lbs/day			
32B. Fluorene (86-73-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
33B. Hexachlorobenzene (118-74-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
36B. Hexachloroethane (67-72-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
38B. Isophorone (78-59-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
39B. Naphthalene (91-20-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
40B. Nitrobenzene (98-95-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
44B. Phenanthrene (85-01-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
45B. Pyrene (129-00-0)	X			<0.0005	<0.08					1	mg/l	lbs/day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
GC/MS FRACTION — PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

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EPA I.D. NUMBER (copy from Item 1 of Fo	OUTFALL NUMBER
NM0000019	01E

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

7099 3220 0010 2531 0231

APS
The Power To Make It Happen
FOUR CORNERS POWER PLANT
P.O. Box 355 * FRUITLAND, NEW MEXICO 87416

November 8, 2005

CERTIFIED MAIL

Mr. Doug Eberhardt, Chief
Permits Issuance Section
US EPA, Region IX, W-5-1
75 Hawthorne Street
San Francisco, California 94105

RE: NPDES Permit Renewal Application #NM0000019 Amendment

Dear Mr. Eberhardt:

Arizona Public Service Company (APS), as co-owner and operator of the Four Corners Steam Electric Station near Fruitland, New Mexico, is submitting the three volatile organic compound lab results for Outfall Numbers 001, 01A and 01E that were not included on the initial renewal applications dated October 5, 2005. These results should now complete our renewal application made pursuant to 40 CFR Part 122.

The Form 3510-2C, Page V-4 copies with the lab results are enclosed. If you have any questions, please contact Winston Benally at (505) 598-8448.

Sincerely,

David L. Saliba
Fossil Plant Manager

CDW/WB/jmd

Enclosures (3)

received 11/10/05

C5540/05-009-001.8

cc: Patrick Antonio, NEPA

bcc: Winston Benally 4915
David Saliba 4900
Env File 4915

CONTINUED M THE FRONT EPA I.D. Number NM0000019 Outfall Number 001

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			<0.001	<0.1227					2	mg/l	lbs/day			
2V. Acrylonitrile (107-13-1)															
3V. Benzene (71-43-2)															
4V. Bis (*Chloromethyl*) Ether (542-88-1)	X			<0.001	<0.1227					2	mg/l	lbs/day			
5V. Bromoform (75-25-2)															
6V. Carbon Tetrachloride (56-23-5)															
7V. Chlorobenzene (108-90-7)															
8V. Chlorodibromomethane (124-48-1)															
9V. Chloroethane (75-00-3)															
10V. 2-Chloroethylvinyl Ether (110-75-8)	X			<0.001	<0.1227					2	mg/l	lbs/day			
11V. Chloroform (67-66-3)															
12V. Dichlorobromomethane (75-27-4)															
13V. Dichlorodifluoromethane (75-71-8)															
14V. 1,1-Dichloroethane (75-34-3)															
15V. 1,2-Dichloroethane (107-06-2)															
16V. 1,1-Dichloroethylene (75-35-4)															
17V. 1,2-Dichloropropane (78-87-5)															
18V. 1,3-Dichloropropylene (542-75-6)															
19V. Ethylbenzene (100-41-4)															
20V. Methyl Bromide (74-83-9)															
21V. Methyl Chloride (74-87-3)															

CONTINUE ON PAGE V-5

CONTINUED M THE FRONT EPA I.D. Number NM0000019 Outfall Number 01A

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			<0.001	<14.3016					1	mg/l	lbs/day			
2V. Acrylonitrile (107-13-1)															
3V. Benzene (71-43-2)															
4V. Bis (Chloromethyl) Ether (542-88-1)	X			<0.001	<14.3016					1	mg/l	lbs/day			
5V. Bromoform (75-25-2)															
6V. Carbon Tetrachloride (56-23-5)															
7V. Chlorobenzene (108-90-7)															
8V. Chlorodibromomethane (124-48-1)															
9V. Chloroethane (75-00-3)															
10V. 2-Chloroethylvinyl Ether (110-75-8)	X			<0.001	<14.3016					1	mg/l	lbs/day			
11V. Chloroform (67-66-3)															
12V. Dichlorobromomethane (75-27-4)															
13V. Dichlorodifluoromethane (75-71-8)															
14V. 1,1-Dichloroethane (75-34-3)															
15V. 1,2-Dichloroethane (107-06-2)															
16V. 1,1-Dichloroethylene (75-35-4)															
17V. 1,2-Dichloropropane (78-87-5)															
18V. 1,3-Dichloropropylene (542-75-6)															
19V. Ethylbenzene (100-41-4)															
20V. Methyl Bromide (74-83-9)															
21V. Methyl Chloride (74-87-3)															

CONTINUE ON PAGE V-5

CONTINUE ɔM THE FRONT EPA I.D. Number NM0000019 Outfall Number 01E

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)	X			<0.001	<0.15					1	mg/l	lbs/day			
2V. Acrylonitrile (107-13-1)															
3V. Benzene (71-43-2)															
4V. Bis (*Chloromethyl*) Ether (542-88-1)	X			<0.001	<0.15					1	mg/l	lbs/day			
5V. Bromoform (75-25-2)															
6V. Carbon Tetrachloride (56-23-5)															
7V. Chlorobenzene (108-90-7)															
8V. Chlorodibromomethane (124-48-1)															
9V. Chloroethane (75-00-3)															
10V. 2-Chloroethylvinyl Ether (110-75-8)	X			<0.001	<0.15					1	mg/l	lbs/day			
11V. Chloroform (67-66-3)															
12V. Dichlorobromomethane (75-27-4)															
13V. Dichlorodifluoromethane (75-71-8)															
14V. 1,1-Dichloroethane (75-34-3)															
15V. 1,2-Dichloroethane (107-06-2)															
16V. 1,1-Dichloroethylene (75-35-4)															
17V. 1,2-Dichloropropane (78-87-5)															
18V. 1,3-Dichloropropylene (542-75-6)															
19V. Ethylbenzene (100-41-4)															
20V. Methyl Bromide (74-83-9)															
21V. Methyl Chloride (74-87-3)															

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6 Map of Four Corners Power Plant Lease Boundary

7 Four Corners NPDES Analyses Performed by Contract Laboratories

8 Four Corners NPDES Schematic of Existing Permit Sample Points

9 Water Flow Line

10 Four Corners NPDES Once-Through Cooling Water Flow Diagram

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AVERY READY INDEX® INDEXING SYSTEM 600017

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11. Water Treatment Chemicals Discharged through 01A and 01E

12. Design Features Relevant to NPDES Application

13. Copy of Current NPDES Permit

The Power To Make It Happen
FOUR CORNERS POWER PLANT
P.O. Box 355 * FRUITLAND, NEW MEXICO 87416

Rec'd 10/11/05
L. Tran

October 5, 2005

VIA OVERNIGHT MAIL

Mr. Doug Eberhardt, Chief
Permits Issuance Section
U.S. EPA, Region IX, W-5-1
75 Hawthorne Street
San Francisco, California 94105-3901

RE: NPDES Permit Renewal Application #NM0000019

Dear Mr. Eberhardt:

Arizona Public Service Company (APS) as co-owner and operator of the Four Corners Steam Electric Station near Fruitland, New Mexico, (Four Corners Power Plant) submits this letter and the attached documents as part of the National Pollution Discharge Elimination System (NPDES) permit renewal application. This renewal application is made pursuant to 40 CFR Part 122.

The application does not include analyses for three volatile, organic compounds: acrolein, 2-chloroethylvinyl ether, and Bis (Chloromethyl) Ether. The laboratory contracted for analysis failed to run these parameters with the samples submitted and, as discussed previously with EPA, APS did not wish to delay reapplication to accommodate resampling and analysis. APS will collect additional samples and have them analyzed promptly so the analytical results may be forwarded to you during your review period.

Mr. Carl Woolfolk, Four Corners Power Plant Environmental Supervisor, contacted Mr. Eugene Bromley of your staff, to discuss the missing data for the permit re-application. Mr. Bromley advised APS to submit the available data and forward the missing results once they are received. APS has requested expedited service from the laboratory to minimize the delays in completing the renewal application.

The current NPDES permit for the Four Corners Power Plant became effective on April 7, 2001, and is expiring on April 6, 2006. APS is applying for authorization to continue discharging from the following Outfalls:

001 Cooling Pond Discharge to unnamed wash tributary to Chaco Wash

Internal Outfalls:

01A Condenser Cooling Water Discharge
01E Combined Waste Treatment Pond Discharge
01B Chemical Metal Cleaning Wastewater Discharge

APS has enclosed a copy of the present Four Corners Power Plant NPDES Permit, to assure your files are complete. No substantial changes are being requested and we are proposing re-issuance of this permit. APS is hopeful this will expedite the NPDES permit renewal.

ADDITIONAL INFORMATION

Analytical data for 01B is not included in Form 2C. Outfall 01B, Chemical Metal Cleaning Wastewater, is not being used. Four Corners currently co-disposes chemical metal cleaning wastewater with fly ash and scrubber sludge, as allowed by the RCRA Dietrich exemption. This Outfall must be retained, however, in case the ability to co-dispose with coal combustion byproducts is eliminated by future rule-

making. Because the boilers are chemically cleaned infrequently recent analytic data is not available for chemical metal cleaning wastewater.

Additionally, in order to discharge chemical metal cleaning wastewater, treatment would be necessary to meet effluent limitations. Therefore, analysis of chemical metal cleaning wastewater before treatment would not be meaningful.

APS requests EPA's consideration in using EPA method 330.5 for the determination of total residual chlorine instead of the amperometric methods. We are making this request because the distance between the sampling point and laboratory analyzer is large, which makes it difficult to collect and analyze the sample within 15 minutes per standard methods requirements. Additionally, this requirement does not allow for other parameters to be analyzed at the same time and location. As evidenced by all previous data submitted, effluent toxicity has not been observed at the Four Corners outfalls. APS is requesting that EPA allow the continued annual biomonitoring as presently allowed in the facility's NPDES permit.

As you are aware, APS continues to collect impingement data at all five cooling water intake structures in conformance with the Proposal for Information Collection (PIC) submitted in April 2005. As part of the PIC submittal APS requested a three and one half year extension for submittal of the Comprehensive Demonstration Study in compliance with the 316(b) rule. We are requesting that the allowance for the extension be documented in the renewed facility NPDES permit.

If you have any questions concerning this application, please contact Winston Benally or Carl Woolfolk, Environmental Services at (505) 598-8448 or (505) 598-8799, respectively. APS requests the opportunity to work with you on changes that may be made to the permit.

Sincerely,

David L. Saliba

David L. Saliba
Fossil Plant Manager

RG/CDW/WB/jmd

Enclosure

xc: Patrick Antonio NNEPA

SECTION 2

EPA Consolidated Permit Program General Information Form 1

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

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

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting)

1. EPA I.D NUMBER: S F NM0000019 (1 2 - 13) T/A (14) C D (15)

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms.**

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)	(16)	X (17)	(18)	B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)	(19)	X (20)	(21)
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X (22)	(23)	X (24)	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)	(25)	X (26)	(27)
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	(28)	X (29)	(30)	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	(31)	X (32)	(33)
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	(34)	X (35)	(36)	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	(37)	X (38)	(39)
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)	(40)	X (41)	(42)	J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)	(43)	X (44)	(45)

III. NAME OF FACILITY

C 1 SKIP FOUR CORNERS POWER PLANT (15 16 - 29 30 - 69)

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*		
C 2 SALIBA, DAVID L., PLANT MANAGER (15 16 - 45)	505 (46 - 48)	598 (49 - 51)	8209 (52 - 55)

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3 PO BOX 355, MS 4900 (15 16 - 45)

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 FRUITLAND (15 16 - 40)	NM (41 42)	87416 (47 - 51)

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5 20 MILES SW OF FARMINGTON, NM (15 16 - 45)

B. COUNTY NAME

AN JUAN (46 - 70)

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6 FRUITLAND (15 16 - 40)	NM (41 42)	87416 (47 - 51)	(52 - 54)

CONTINUE ON REVERSE

STF ENV564F.1

CONTINUED FROM THE FRONT

VII. SIC CODES *(4 digit in order of priority)*

A. FIRST	B. SECOND
C 7 4911 (specify) ELECTRIC GENERATION	C 7 (specify)
C. THIRD	**D. FOURTH**
C 7 (specify)	C 7 (specify)

VIII. OPERATOR INFORMATION

A. NAME: C 8 ARIZONA PUBLIC SERVICE COMPANY

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box; if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P (specify) INVESTOR OWNED

D. PHONE *(area code & no.)*: C A 602 250 3220

E. STREET OR P.O. BOX: PO BOX 53999

F. CITY OR TOWN: C B PHOENIX

G. STATE: AZ

H. ZIP CODE: 85072

IX. INDIAN LAND

Is the facility located on Indian lands? [X] YES [ ] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*: C 9 T N I NM0000019	**D. PSD** *(Air Emissions from Proposed Sources)*: C 9 T P I
B. UIC *(Underground Injection of Fluids)*: C 9 T U I	**E. OTHER** *(specify)*: C 9 T I (specify)
C. RCRA *(Hazardous Wastes)*: C 9 T R I NND069409522	**E. OTHER** *(specify)*: C 9 T I (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

Arizona Public Service Company generates electricity at the Four Corners Power Plant for use in Arizona, New Mexico and California.

Arizona Public Service Company is the operating agent on its own behalf and on the behalf of the following participants:

Salt River Project Agricultural Improvement and Power District, Southern California Edison, El Paso Electric Company, Public Service Company of New Mexico, and Tucson Electric Power Company

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
David L. Saliba, Plant Manager Four Corners Power Plant	David L Saliba	100405

COMMENTS FOR OFFICIAL USE ONLY

C

SECTION 3

EPA Consolidated Permit Program Wastewater Discharge Information Form 2C

Please print or type in the unshaded areas only.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)* NM0000019

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

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS

Consolidated Permits Program

I. OUTFALL LOCATION

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

A. OUTFALL NUMBER *(list)*	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER *(name)*
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	36	42	16.5	108	29	12	Unnamed tributary to Chaco River
01A	36	41	30	108	28	9	Morgan Lake
01E	36	41	30	108	28	12	Condenser Cooling Water Discharge
01B							No established discharge point

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALLING *(list)*	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION *(list)*	b. AVERAGE FLOW *(include units)*	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	Cooling Pond Discharge	4.2 MGD	None	NA	NA
01A	Condenser Cooling Water	1713.6 MGD	None	NA	NA
	Discharge				
	a. Stormwater Runoff*				
	b. Once through Cooling Water				
01B	Chemical Metal Cleaning				
	Wastewater**				
01E	Combined Waste Treatment Pond		Sedimentation	1	U
	Discharge and Decant Cells		Neutralization	2	K
			Polymer	2	D
			Grit Removal	1	M
			Oil Skimming		
01E	A. Bottom Ash Sluice Water	8.0 MGD			
	B. Stormwater Runoff**				
	C. Once through Cooling Water	4.0 MGD			
	from small coolers				
	D. Low Vol. Wastewater	1.0 MGD			
	*Average flow negligible				
	**This discharge is presently co-disposed of w/Coal Combustion byproducts,as allowed under RCRA Dietrich Exempt				

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

CONTINUE ON REVERSE

STF ENV441F.1

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **YES** *(complete the following table)* ☐ **NO** *(go to Section III)*

1. OUTFALL NUMBER *(list)*	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY a. DAYS PER WEEK *(specify average)*	3. FREQUENCY b. MONTHS PER YEAR *(specify average)*	4. FLOW a. FLOW RATE *(in mgd)* 1. LONG TERM AVERAGE	4. FLOW a. FLOW RATE *(in mgd)* 2. MAXIMUM DAILY	4. FLOW b. TOTAL VOLUME *(specify with units)* 1. LONG TERM AVERAGE	4. FLOW b. TOTAL VOLUME *(specify with units)* 2. MAXIMUM DAILY	4. FLOW c. DURATION *(in days)*
001	Cooling Pond Discharge	3.3	6	8.9	14.6	2,121.5 MG/yr	14.6 MGD	171
	Note:All data taken from 2001-2004							
	Range:	2.5 - 4.1	4 - 7	7.9 -10.7				128 - 202

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ **YES** *(complete Item III-B)* ☐ **NO** *(go to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☐ **YES** *(complete Item III-C)* ☒ **NO** *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	2. AFFECTED OUTFALLS *(list outfall numbers)*

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** *(complete the following table)* ☒ **NO** *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS a. NO.	2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE	3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE a. REQUIRED	4. FINAL COMPLIANCE DATE b. PROJECTED

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. ☐ **MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED**

 CONTINUE ON PAGE 3

CONTINUED FROM PAGE 2

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
NM0000019

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding — Complete one set of tables for each outfall — Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1.POLLUTANT	2. SOURCE
NA			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ **YES** *(list all such pollutants below)* ☐ **NO** *(go to Item VI-B)*

See Attachment A

NPDES PERMIT APPLICATION

VI. Potential Discharges not covered by Analysis:

Metals, Cyanide & total Phenols

Pollutant Listed in V-C:	CAS#	Component of:
1. Antimony, Total	7440-36-0	Coal Combustion byproducts (CCB), batteries, solder, lamps, shotgun shells
2. Arsenic, Total	7440-38-2	CCB's batteries, shotgun shells, threadlock
3. Beryllium, Total	7740-41-7	CCB's
4. Cadmium, Total	7440-43-9	CCB's, batteries
5. Chromium, Total	7740-47-3	CCB's, welding electrodes
6. Copper, Total	7440-50-8	CCB's, batteries, welding electrodes, shotgun shells
7. Lead, Total	7439-92-1	CCB's, batteries, solder, welding electrodes, lamps, shotgun shells
8. Mercury, Total	7439-97-6	CCB's lamps, batteries
9. Nickel, Total	7440-02-0	CCB/s, welding electrodes, flux
10. Selenium, Total	7782-49-2	CCB's
11. Silver, Total	7440-22-4	CCB's, solder, flux
12. Thallium, Total	7440-28-0	CCB's, welding electrodes
13. Zinc, Total	7440-66-6	CCB's, welding electrodes, flux, metal epoxies, batteries, shotgun shells, galvanizing compound

GC/MS FRACTION – VOLATILE COMPOUNDS

Pollutant listed in V-C:	CAS#	Component of:
1. Acrylonitrile	107-13-1	Caulk
2. Benzene	71-43-2	Petroleum fuels, thinner, coatings, transmission fluid
3. Chloroform	67-66-3	Lab reagent
4. Ethylbenzene	100-41-4	Silicone primer
5. Methylene chloride	75-09-2	Rubber cement, carburetor cleaner
6. 1,2-Trans-Dichloroethylene	156-60-5	Coatings
7. Trichloro-ethylene	79-01-6	Rubber cement, solvent, lubricant
8. Phenol cleaner	108-95-2	Coatings, adhesive, carburetor
9. Bis (2-Ethylhexyl) Phthalate	117-81-7	Rubber lining
10. Butyl Benzyl Phthalate	85-68-7	Coatings
11. 2-Chloronaphthalene	91-58-7	Oil
12. 1,2-Dichlorobenzene	95-50-1	Lubricant
13. 1,4-Dichlorobenzene	106-46-7	Lubricant, deodorizer
14. Dimethyl Phthalate	131-11-3	Coatings, epoxy, solvents
15. Di-N-Butyl Phthalate	84-74-2	Coatings
16. Naphthalene	91-20-3	Coatings, lubricants

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** *(identify the test(s) and describe their purposes below)* ☐ **NO** *(go to Section VIII)*

Chronic toxicity testing on 01A, Once through Cooling Water, was conducted in 2003 and 2004. Acute and Chronic toxicity testing on 01A, Once through Cooling Water, was conducted in 2005 as required by the NPDES Permit conditions with variance.

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ **YES** *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ **NO** *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE *(area code & no.)*	D. POLLUTANTS ANALYZED (list)
	See Tab 7 of this permit application.		

IX. CERTIFICATION

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

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
David L. Saliba, Plant Manager, Four Corners Power Plant	(505) 598-8209
C. SIGNATURE David L Saliba	D. DATE SIGNED 100405

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: NM0000019

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

OUTFALL NO. 001

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	3. UNITS *(specify if blank)* a. CONCENTRATION	b. MASS	4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	1.5	184.0					2	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	24.1	2,956.7					2	mg/l	lbs/day			
c. Total Organic Carbon *(TOC)*	7.0	858.8					2	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	2.0	245.4					2	mg/l	lbs/day			
e. Ammonia *(as N)*	<0.05	<6.13					2	mg/l	lbs/day			
f. Flow	VALUE 14.7		VALUE		VALUE		InSitu	MGD		VALUE		
g. Temperature *(winter)*	VALUE 23.6		VALUE		VALUE		Cont.	°C		VALUE		
h. Temperature *(summer)*	VALUE 33.2		VALUE		VALUE		Cont.	°C		VALUE		
i. pH	MINIMUM 7.90	MAXIMUM 8.44	MINIMUM	MAXIMUM			16	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		0.53	65.02					2	mg/l	lbs/day			
b. Chlorine, Total Residual	X		<0.1	<12.3					16	mg/l	lbs/day			
c. Color	X		12.5						2	Units				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		1.0	122.7					2	mg/l	lbs/day			
f. Nitrate—Nitrite *(as N)*	X		<0.03	<3.68					2	mg/l	lbs/day			

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		0.73	89.56					2	mg/l	lbs/day			
h. Oil and Grease	X		<1.0	<122.7					16	mg/l	lbs/day			
i. Phosphorus (as P), Total (7723-14-0)		X	<0.05	<6.13					2	mg/l	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		(±3.2) 5.3						2	pCi/L				
(2) Beta, Total	X		(±5.1) 7.4						2	pCi/L				
(3) Radium, Total	X		(±0.76) 1.44						2	pCi/L				
(4) Radium 226, Total	X		(±0.27) .27						2	pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		420	51,528					2	mg/l	lbs/day			
l. Sulfide (as S)		X	<0.05	<6.13					2	mg/l	lbs/day			
m. Sulfite (as SO_3) (14265-45-3)	X		<2.0	<245.4					2	mg/l	lbs/day			
n. Surfactants		X	<0.0250	<3.0671					2	mg/l	lbs/day			
o. Aluminum, Total (7429-90-5)	X		<0.10	<12.27					2	mg/l	lbs/day			
p. Barium, Total (7440-39-3)	X		0.19	23.31					2	mg/l	lbs/day			
q. Boron, Total (7440-42-8)	X		0.7	85.9					2	mg/l	lbs/day			
r. Cobalt, Total (7440-48-4)	X		<0.01	<1.23					2	mg/l	lbs/day			
s. Iron, Total (7439-89-6)	X		<0.05	<6.13					2	mg/l	lbs/day			
t. Magnesium, Total (7439-95-4)	X		37.4	4,588.4					2	mg/l	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		0.02	2.45					2	mg/l	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.016	1.963					2	mg/l	lbs/day			
w. Tin, Total (7440-31-5)	X		<0.01	<1.23					2	mg/l	lbs/day			
x. Titanium, Total (7440-32-6)	X		<0.0050	<0.6134					2	mg/l	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.020	<2.454					2	mg/l	lbs/day			
2M. Arsenic, Total (7440-38-2)	X			<0.0250	<3.067					2	mg/l	lbs/day			
3M. Beryllium, Total, 7440-41-7)	X			<0.001	<0.123					2	mg/l	lbs/day			
4M. Cadmium, Total (7440-43-9)	X			<0.0020	<0.2454					2	mg/l	lbs/day			
5M. Chromium, Total (7440-47-3)	X			<0.01	<1.23					2	mg/l	lbs/day			
6M. Copper, Total (7440-50-8)	X			<0.02	<2.45					2	mg/l	lbs/day			
7M. Lead, Total (7439-92-1)	X			<0.00750	<0.92014					2	mg/l	lbs/day			
8M. Mercury, Total (7439-97-6)	X			<0.0002	<0.0245					2	mg/l	lbs/day			
9M. Nickel, Total (7440-02-0)	X			<0.02	<2.45					2	mg/l	lbs/day			
10M. Selenium, Total (7782-49-2)	X			<0.040	<4.907					2	mg/l	lbs/day			
11M. Silver, Total (7440-22-4)	X			<0.01	<1.23					2	mg/l	lbs/day			
12M. Thallium, Total (7440-28-0)	X			<0.0150	<1.8403					2	mg/l	lbs/day			
13M. Zinc, Total (7440-66-6)	X			<0.08	<9.81					2	mg/l	lbs/day			
14M. Cyanide, Total (57-12-5)	X			<0.005	<0.613					16	mg/l	lbs/day			
15M. Phenols, Total	X			<0.015	<0.613					16	mg/l	lbs/day			
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1764-01-6)	X			DESCRIBE RESULTS Non-detectable in the parts per trillion range.											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				*See Note											
2V. Acrylonitrile (107-13-1)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
3V. Benzene (71-43-2)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
4V. Bis *(Chloromethyl)* Ether (542-88-1)				*See Note											
5V. Bromoform (75-25-2)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
6V. Carbon Tetrachloride (56-23-5)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
7V. Chlorobenzene (108-90-7)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
8V. Chlorodibromomethane (124-48-1)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
9V. Chloroethane (75-00-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
10V. 2-Chloroethylvinyl Ether (110-75-8)				*See Note											
11V. Chloroform (67-66-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
12V. Dichlorobromomethane (75-27-4)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
13V. Dichlorodifluoromethane (75-71-8)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
14V. 1,1-Dichloroethane (75-34-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
15V. 1,2-Dichloroethane (107-06-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
16V. 1,1-Dichloroethylene (75-35-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
17V. 1,2-Dichloropropane (78-87-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
18V. 1,3-Dichloropropylene (542-75-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
19V. Ethylbenzene (100-41-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
20V. Methyl Bromide (74-83-9)	X			<0.0005	<0.06134					2	mg/l	lbs/day			
21V. Methyl Chloride (74-87-3)	X			<0.0005	<0.06134					2	mg/l	lbs/day			

*Note: Pending lab analysis

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
24V. Tetrachloroethylene (127-18-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
25V. Toluene (108-88-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
29V. Trichloroethylene (79-01-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
30V. Trichlorofluoromethane (75-69-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
31V. Vinyl Chloride (75-01-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
GC/MS FRACTION — ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
6A. 2-Nitrophenol (88-75-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
7A. 4-Nitrophenol (100-02-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
9A. Pentachlorophenol (87-86-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
10A. Phenol (108-95-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
2B. Acenaphtylene (208-96-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
3B. Anthracene (120-12-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
4B. Benzidine (92-87-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
5B. Benzo *(a)* Anthracene (56-55-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
6B. Benzo *(a)* Pyrene (50-32-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
8B. Benzo *(ghi)* Perylene (191-24-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
16B. 2-Chloro-naphthalene (91-58-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
18B. Chrysene (218-01-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
19B. Dibenzo *(a, h)* Anthracene (53-70-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
24B. Diethyl Phthalate (84-66-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
31B. Fluoranthene (206-44-0)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
32B. Fluorene (86-73-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
33B. Hexachlorobenzene (118-74-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
36B. Hexachloroethane (67-72-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
38B. Isophorone (78-59-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
39B. Naphthalene (91-20-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
40B. Nitrobenzene (98-95-3)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0005	<0.0613					2	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
44B. Phenanthrene (85-01-8)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
45B. Pyrene (129-00-0)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.0005	<0.0613					2	mg/l	lbs/day			
GC/MS FRACTION — PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

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

OUTFALL NO. 01A

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	1.0	14,301					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	24.1	344,669					1	mg/l	lbs/day			
c. Total Organic Carbon *(TOC)*	10.9	155,888					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	<2.0	<28,603					1	mg/l	lbs/day			
e. Ammonia *(as N)*	<0.05	<715.1					1	mg/l	lbs/day			
f. Flow	VALUE	1,713.6	VALUE		VALUE		Est.	MGD		VALUE		
g. Temperature *(winter)*	VALUE	29.0	VALUE		VALUE		37	°C		VALUE		
h. Temperature *(summer)*	VALUE	38.5	VALUE		VALUE		37	°C		VALUE		
i. pH	MINIMUM 7.90	MAXIMUM 8.39	MINIMUM	MAXIMUM			8	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		0.22	3,146.4					1	mg/l	lbs/day			
b. Chlorine, Total Residual	X		<0.1	<1430..2					1	mg/l	lbs/day			
c. Color	X		5.0						1	Units				
d. Fecal Coliform		X												
e. Fluoride (16984-48-8)	X		1.4	20,022.3					1	mg/l	lbs/day			
f. Nitrate—Nitrite *(as N)*	X		0.03	429.1					1	mg/l	lbs/day			

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		0.78	11,155.3					1	mg/l	lbs/day			
h. Oil and Grease	X		<1.0	<14301.6					8	mg/l	lbs/day			
i. Phosphorus (as P), Total (7723-14-0)		X	<0.05	<715.1					1	mg/l	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		(±3.7) 6.1						1	pCi/L				
(2) Beta, Total	X		(±2.7) 10.6						1	pCi/L				
(3) Radium, Total	X		(±0.80) 1.24						1	pCi/L				
(4) Radium 226, Total	X		(±0.29) 0.32						1	pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		520	7,436,842.4					1	mg/l	lbs/day			
l. Sulfide (as S)		X	<0.05	<715.1					1	mg/l	lbs/day			
m. Sulfite (as SO_3) (14265-45-3)	X		<2.0	<28603.2					1	mg/l	lbs/day			
n. Surfactants		X	<0.0250	<357.5					1	mg/l	lbs/day			
o. Aluminum, Total (7429-90-5)	X		<0.10	<1430.2					1	mg/l	lbs/day			
p. Barium, Total (7440-39-3)	X		0.28	4,004.5					1	mg/l	lbs/day			
q. Boron, Total (7440-42-8)	X		1.1	15,731.8					1	mg/l	lbs/day			
r. Cobalt, Total (7440-48-4)	X		<0.01	<143.0					1	mg/l	lbs/day			
s. Iron, Total (7439-89-6)	X		<0.05	<715.1					1	mg/l	lbs/day			
t. Magnesium, Total (7439-95-4)	X		41.4	592,087.1					1	mg/l	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		0.02	286.0					1	mg/l	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.026	371.8					1	mg/l	lbs/day			
w. Tin, Total (7440-31-5)	X		<0.01	<143.0					1	mg/l	lbs/day			
x. Titanium, Total (7440-32-6)	X		<0.0050	<71.5					1	mg/l	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.020	<286.0					1	mg/l	lbs/day			
2M. Arsenic, Total (7440-38-2)	X			<0.0250	<357.5					1	mg/l	lbs/day			
3M. Beryllium, Total, 7440-41-7)	X			<0.001	<14.3					1	mg/l	lbs/day			
4M. Cadmium, Total (7440-43-9)	X			<0.0020	<28.6					1	mg/l	lbs/day			
5M. Chromium, Total (7440-47-3)	X			<0.01	<143.0					1	mg/l	lbs/day			
6M. Copper, Total (7440-50-8)	X			<0.02	<286.0					1	mg/l	lbs/day			
7M. Lead, Total (7439-92-1)	X			<0.00750	<107.3					1	mg/l	lbs/day			
8M. Mercury, Total (7439-97-6)	X			<0.0002	<2.9					1	mg/l	lbs/day			
9M. Nickel, Total (7440-02-0)	X			<0.02	<286.0					1	mg/l	lbs/day			
10M. Selenium, Total (7782-49-2)	X			<0.040	<572.1					1	mg/l	lbs/day			
11M. Silver, Total (7440-22-4)	X			<0.01	<143.0					1	mg/l	lbs/day			
12M. Thallium, Total (7440-28-0)	X			<0.0150	<214.5					1	mg/l	lbs/day			
13M. Zinc, Total (7440-66-6)	X			<0.05	<715.1					1	mg/l	lbs/day			
14M. Cyanide, Total (57-12-5)	X			<0.005	<71.5					8	mg/l	lbs/day			
15M. Phenols, Total	X			<0.005	<71.5					8	mg/l	lbs/day			
DIOXIN															
2,3,7,8 Tetrachlorodibenzo-P-Dioxin (1764-01-6)	X			DESCRIBE RESULTS Non-detectable in the parts per trillion range.											

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				*See Note											
2V. Acrylonitrile (107-13-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
3V. Benzene (71-43-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
4V. Bis *(Chloromethyl)* Ether (542-88-1)				*See Note											
5V. Bromoform (75-25-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
6V. Carbon Tetrachloride (56-23-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
7V. Chlorobenzene (108-90-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
8V. Chlorodibromomethane (124-48-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
9V. Chloroethane (75-00-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
10V. 2-Chloroethylvinyl Ether (110-75-8)				*See Note											
11V. Chloroform (67-66-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
12V. Dichlorobromomethane (75-27-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
13V. Dichlorodifluoromethane (75-71-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
14V. 1,1-Dichloroethane (75-34-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
15V. 1,2-Dichloroethane (107-06-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
16V. 1,1-Dichloroethylene (75-35-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
17V. 1,2-Dichloropropane (78-87-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
18V. 1,3-Dichloropropylene (542-75-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
19V. Ethylbenzene (100-41-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
20V. Methyl Bromide (74-83-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
21V. Methyl Chloride (74-87-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

*Note: Pending lab analysis

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
24V. Tetrachloroethylene (127-18-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
25V. Toluene (108-88-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
29V. Trichloroethylene (79-01-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
30V. Trichlorofluoromethane (75-69-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
31V. Vinyl Chloride (75-01-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
GC/MS FRACTION — ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
6A. 2-Nitrophenol (88-75-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
7A. 4-Nitrophenol (100-02-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
9A. Pentachlorophenol (87-86-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
10A. Phenol (108-95-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
2B. Acenaphtylene (208-96-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
3B. Anthracene (120-12-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
4B. Benzidine (92-87-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
5B. Benzo *(a)* Anthracene (56-55-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
6B. Benzo *(a)* Pyrene (50-32-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
8B. Benzo *(ghi)* Perylene (191-24-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
16B. 2-Chloro-naphthalene (91-58-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
18B. Chrysene (218-01-9)	X			<0.0005	<7.15088					1	mg/l	lbs/day			
19B. Dibenzo *(a, h)* Anthracene (53-70-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
24B. Diethyl Phthalate (84-66-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
31B. Fluoranthene (206-44-0)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
32B. Fluorene (86-73-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
33B. Hexachlorobenzene (118-74-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
36B. Hexachloroethane (67-72-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
38B. Isophorone (78-59-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
39B. Naphthalene (91-20-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
40B. Nitrobenzene (98-95-3)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0005	<7.1508					1	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
44B. Phenanthrene (85-01-8)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
45B. Pyrene (129-00-0)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.0005	<7.1508					1	mg/l	lbs/day			
GC/MS FRACTION — PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

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EPA I.D. NUMBER (copy from Item 1 of For	OUTFALL NUMBER
NM0000019	01A

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
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V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 01E

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*	<1.0	<158.5					1	mg/l	lbs/day			
b. Chemical Oxygen Demand *(COD)*	15.4	2,442.02					1	mg/l	lbs/day			
c. Total Organic Carbon *(TOC)*	4.70	745.3					1	mg/l	lbs/day			
d. Total Suspended Solids *(TSS)*	<2.0	<317.1					1	mg/l	lbs/day			
e. Ammonia *(as N)*	<0.05	<7.9					1	mg/l	lbs/day			
f. Flow	VALUE 19		VALUE		VALUE		Cont.	MGD		VALUE		
g. Temperature *(winter)*	VALUE 24.4		VALUE		VALUE		18	°C		VALUE		
h. Temperature *(summer)*	VALUE 42.2		VALUE		VALUE		18	°C		VALUE		
i. pH	MINIMUM 7.72	MAXIMUM 8.35	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
a. Bromide (24959-67-9)	X		0.14	22.2					1	mg/l	lbs/day			
b. Chlorine, Total Residual	X		<0.1	<158.6					1	mg/l	lbs/day			
c. Color	X		5.0						1	Units				
d. Fecal Coliform		X							1	mg/l	lbs/day			
e. Fluoride (16984-48-8)	X		1.4	222.0					1	mg/l	lbs/day			
f. Nitrate—Nitrite *(as N)*	X		0.03	4.8					1	mg/l	lbs/day			

CONTINUE ON REVERSE

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	MARK 'X' a. BELIEVED PRESENT	MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)	X		0.60	95.1					1	mg/l	lbs/day			
h. Oil and Grease	X		<1.0	<158.6					1	mg/l	lbs/day			
i. Phosphorus (as P), Total (7723-14-0)		X	<0.05	<7.9					1	mg/l	lbs/day			
j. Radioactivity														
(1) Alpha, Total	X		(±3.4) 4.1						1	pCi/L				
(2) Beta, Total	X		(±4.1) 7.7						1	pCi/L				
(3) Radium, Total	X		(±0.73) 1.16						1	pCi/L				
(4) Radium 226, Total	X		(±0.22) 0.16						1	pCi/L				
k. Sulfate (as SO_4) (14808-79-8)	X		520	82,458					1	mg/l	lbs/day			
l. Sulfide (as S)		X	<0.05	<7.9					1	mg/l	lbs/day			
m. Sulfite (as SO_3) (14265-45-3)	X		<2.0	<317.1					1	mg/l	lbs/day			
n. Surfactants		X	<0.0250	<3.9					1	mg/l	lbs/day			
o. Aluminum, Total (7429-90-5)	X		<0.10	<15.9					1	mg/l	lbs/day			
p. Barium, Total (7440-39-3)	X		0.19	30.1					1	mg/l	lbs/day			
q. Boron, Total (7440-42-8)	X		0.7	111.0					1	mg/l	lbs/day			
r. Cobalt, Total (7440-48-4)	X		<0.01	<1.6					1	mg/l	lbs/day			
s. Iron, Total (7439-89-6)	X		<0.05	<7.9					1	mg/l	lbs/day			
t. Magnesium, Total (7439-95-4)	X		36.8	5,835.5					1	mg/l	lbs/day			
u. Molybdenum, Total (7439-98-7)	X		<0.01	<1.6					1	mg/l	lbs/day			
v. Manganese, Total (7439-96-5)	X		0.038	6.0					1	mg/l	lbs/day			
w. Tin, Total (7440-31-5)	X		<0.01	<1.6					1	mg/l	lbs/day			
x. Titanium, Total (7440-32-6)	X		<0.0050	<0.8					1	mg/l	lbs/day			

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CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X			<0.020	<3.2					1	mg/l	lbs/day			
2M. Arsenic, Total (7440-38-2)	X			<0.0250	<3.9					1	mg/l	lbs/day			
3M. Beryllium, Total, 7440-41-7)	X			<0.001	<0.16					1	mg/l	lbs/day			
4M. Cadmium, Total (7440-43-9)	X			<0.0020	<0.32					1	mg/l	lbs/day			
5M. Chromium, Total (7440-47-3)	X			<0.01	<1.6					1	mg/l	lbs/day			
6M. Copper, Total (7440-50-8)	X			<0.02	<3.2					1	mg/l	lbs/day			
7M. Lead, Total (7439-92-1)	X			<0.00750	<1.2					1	mg/l	lbs/day			
8M. Mercury, Total (7439-97-6)	X			<0.0002	<0.03					1	mg/l	lbs/day			
9M. Nickel, Total (7440-02-0)	X			<0.02	<3.2					1	mg/l	lbs/day			
10M. Selenium, Total (7782-49-2)	X			<0.040	<6.3					1	mg/l	lbs/day			
11M. Silver, Total (7440-22-4)	X			<0.01	<1.6					1	mg/l	lbs/day			
12M. Thallium, Total (7440-28-0)	X			<0.0150	<2.4					1	mg/l	lbs/day			
13M. Zinc, Total (7440-66-6)	X			<0.05	<7.9					1	mg/l	lbs/day			
14M. Cyanide, Total (57-12-5)	X			<0.005	<0.79					8	mg/l	lbs/day			
15M. Phenols, Total	X			<0.005	<0.79					8	mg/l	lbs/day			
DIOXIN															
2,3,7,8 Tetrachlorodibenzo-P-Dioxin (1764-01-6)	X			DESCRIBE RESULTS Non-detectable in the parts per trillion range.											

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				*See Note											
2V. Acrylonitrile (107-13-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
3V. Benzene (71-43-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
4V. Bis *(Chloromethyl)* Ether (542-88-1)				*See Note											
5V. Bromoform (75-25-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
6V. Carbon Tetrachloride (56-23-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
7V. Chlorobenzene (108-90-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
8V. Chlorodibromomethane (124-48-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
9V. Chloroethane (75-00-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
10V. 2-Chloroethylvinyl Ether (110-75-8)				*See Note											
11V. Chloroform (67-66-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
12V. Dichlorobromomethane (75-27-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
13V. Dichlorodifluoromethane (75-71-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
14V. 1,1-Dichloroethane (75-34-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
15V. 1,2-Dichloroethane (107-06-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
16V. 1,1-Dichloroethylene (75-35-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
17V. 1,2-Dichloropropane (78-87-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
18V. 1,3-Dichloropropylene (542-75-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
19V. Ethylbenzene (100-41-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
20V. Methyl Bromide (74-83-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
21V. Methyl Chloride (74-87-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			

*Note: Pending lab analysis

CONTINUE ON PAGE V-5

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
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CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — VOLATILE COMPOUNDS *(continued)*															
22V. Methylene Chloride (75-09-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
24V. Tetrachloroethylene (127-18-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
25V. Toluene (108-88-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
29V. Trichloroethylene (79-01-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
30V. Trichlorofluoromethane (75-69-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
31V. Vinyl Chloride (75-01-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
GC/MS FRACTION — ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
6A. 2-Nitrophenol (88-75-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
7A. 4-Nitrophenol (100-02-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
9A. Pentachlorophenol (87-86-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
10A. Phenol (108-95-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
11A. 2,4,6-Trichlorophenol (88-06-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FI THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
2B. Acenaphtylene (208-96-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
3B. Anthracene (120-12-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
4B. Benzidine (92-87-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
5B. Benzo *(a)* Anthracene (56-55-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
6B. Benzo *(a)* Pyrene (50-32-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
7B. 3,4-Benzo-fluoranthene (205-99-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
8B. Benzo *(ghi)* Perylene (191-24-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
9B. Benzo *(k)* Fluoranthene (207-08-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
16B. 2-Chloro-naphthalene (91-58-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
18B. Chrysene (218-01-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
19B. Dibenzo *(a, h)* Anthracene (53-70-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
20B. 1,2-Dichloro-benzene (95-50-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
21B. 1,3-Dichloro-benzene (541-73-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			

CONTINUE ON PAGE V-7

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
NM0000019	01E

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
23B. 3,3'-Dichlorobenzidine (91-94-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
24B. Diethyl Phthalate (84-66-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0005	<0.08					1	mg/l	lbs/day			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0005	<0.08					1	mg/l	lbs/day			
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
31B. Fluoranthene (206-44-0)	X			<0.0005	<0.08					1	mg/l	lbs/day			
32B. Fluorene (86-73-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			
33B. Hexachlorobenzene (118-74-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0005	<0.08					1	mg/l	lbs/day			
36B. Hexachloroethane (67-72-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)	X			<0.0005	<0.08					1	mg/l	lbs/day			
38B. Isophorone (78-59-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
39B. Naphthalene (91-20-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
40B. Nitrobenzene (98-95-3)	X			<0.0005	<0.08					1	mg/l	lbs/day			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0005	<0.08					1	mg/l	lbs/day			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0005	<0.08					1	mg/l	lbs/day			

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION — BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)	X			<0.0005	<0.08					1	mg/l	lbs/day			
44B. Phenanthrene (85-01-8)	X			<0.0005	<0.08					1	mg/l	lbs/day			
45B. Pyrene (129-00-0)	X			<0.0005	<0.08					1	mg/l	lbs/day			
46B. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.0005	<0.08					1	mg/l	lbs/day			
GC/MS FRACTION — PESTICIDES															
1P. Aldrin (309-00-2)															
2P. α-BHC (319-84-6)															
3P. β-BHC (319-85-7)															
4P. γ-BHC (58-89-9)															
5P. δ-BHC (319-86-8)															
6P. Chlordane (57-74-9)															
7P. 4,4'-DDT (50-29-3)															
8P. 4,4'-DDE (72-55-9)															
9P. 4,4'-DDD (72-54-8)															
10P. Dieldrin (60-57-1)															
11P. α-Endosulfan (115-29-7)															
12P. β-Endosulfan (115-29-7)															
13P. Endosulfan Sulfate (1031-07-8)															
14P. Endrin (72-20-8)															
15P. Endrin Aldehyde (7421-93-4)															
16P. Heptachlor (76-44-8)															

CONTINUE ON PAGE V-9

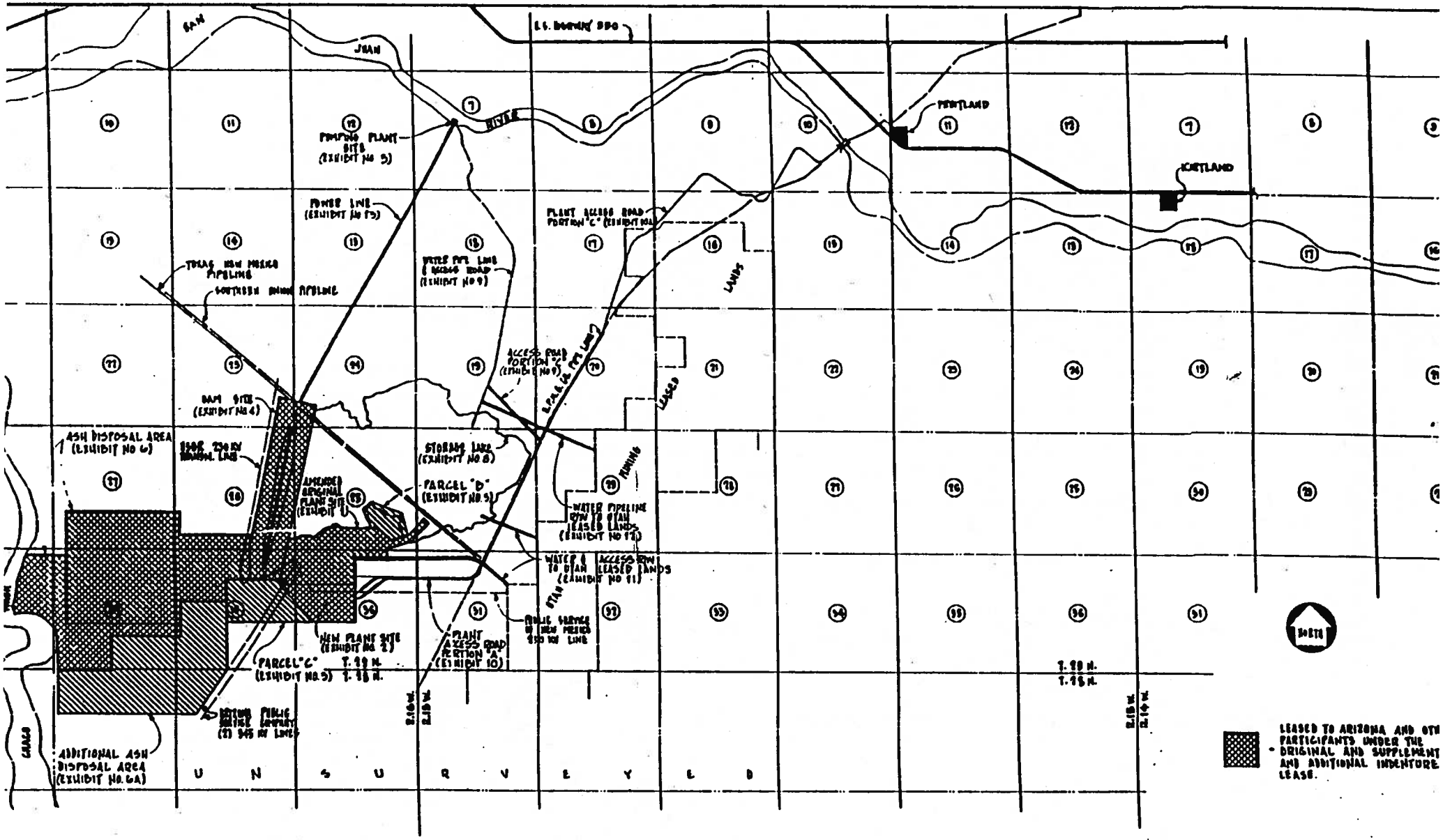
EPA I.D. NUMBER *(copy from Item 1 of Fo*	OUTFALL NUMBER
NM0000019	01E

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION — PESTICIDES *(continued)*															
17P. Heptachlor Epoxide (1024-57-3)															
18P. PCB-1242 (53469-21-9)															
19P. PCB-1254 (11097-69-1)															
20P. PCB-1221 (11104-28-2)															
21P. PCB-1232 (11141-16-5)															
22P. PCB-1248 (12672-29-6)															
23P. PCB-1260 (11096-82-5)															
24P. PCB-1016 (12674-11-2)															
25P. Toxaphene (8001-35-2)															

SECTION 6

Map of Four Corners Plant Lease Boundary


SAN
JUAN
RIVER
PUMPING PLANT SITE (EXHIBIT NO 5)
POWER LINE (EXHIBIT NO 13)
TEXAS NEW MEXICO PIPELINE
SOUTHERN UNION PIPELINE
WATER PIPE LINE & ACCESS ROAD (EXHIBIT NO 9)
PLANT ACCESS ROAD PORTION "C" (EXHIBIT NO 10)
ACCESS ROAD PORTION "B" (EXHIBIT NO 9)
DAM SITE (EXHIBIT NO 4)
ASH DISPOSAL AREA (EXHIBIT NO 6)
STORAGE LINE (EXHIBIT NO 8)
AMENDED ORIGINAL PLANT SITE (EXHIBIT 1)
PARCEL "D" (EXHIBIT NO 5)
WATER PIPELINE FROM TO UTAH LEASED LANDS (EXHIBIT NO 12)
WATER & ACCESS ROAD TO UTAH LEASED LANDS (EXHIBIT NO 11)
PUBLIC SERVICE OF NEW MEXICO 230 KV LINE
NEW PLANT SITE (EXHIBIT NO 2)
PLANT ACCESS ROAD PORTION "A" (EXHIBIT 10)
PARCEL "C" (EXHIBIT NO 5)
T. 29 N.
T. 28 N.
R. 16 W.
R. 15 W.
R. 14 W.
PUBLIC SERVICE COMPANY (2) 345 KV LINES
ADDITIONAL ASH DISPOSAL AREA (EXHIBIT NO 6A)
U N S U R V E Y E D
FARMINGTON
KIRTLAND
LANDS
LEASED
MINING
UTAH
NORTH
LEASED TO ARIZONA AND OTH PARTICIPANTS UNDER THE ORIGINAL AND SUPPLEMENT AND ADDITIONAL INDENTURE LEASE.

SECTION 7

Four Corners NPDES Analysis Performed by Contract Laboratories

NPDES APPLICATION ANALYSIS PERFORMED
By Contract Laboratories

1. Green Analytical Laboratories, Inc.
   75 Suttle Street
   Durango, CO 81303
   (970) 247-4220

   Parameters Analyzed:
   - Part A Except temperatures, pH and flow
   - Part B Except Chlorine
   - Part C Metals, cyanide and total phenol

2. Anatek Lab, Inc.
   1282 Aluruas Drive
   Moscow, ID 83843-8332
   (208) 883-2839

   Parameters Analyzed:
   - Part C Volatiles (EPA 624) and acid compounds (EPA 625)

3. Underwriters Laboratories, Inc.
   110 South Hill Street
   South Bend, IN 46617-2702
   (574) 232-4348

   Parameters Analyzed:
   - Part B Radiochemistry

4. SVL Analytical, Inc.
   PO Box 929
   Kellog, ID 83837-0929
   (208) 784-1258

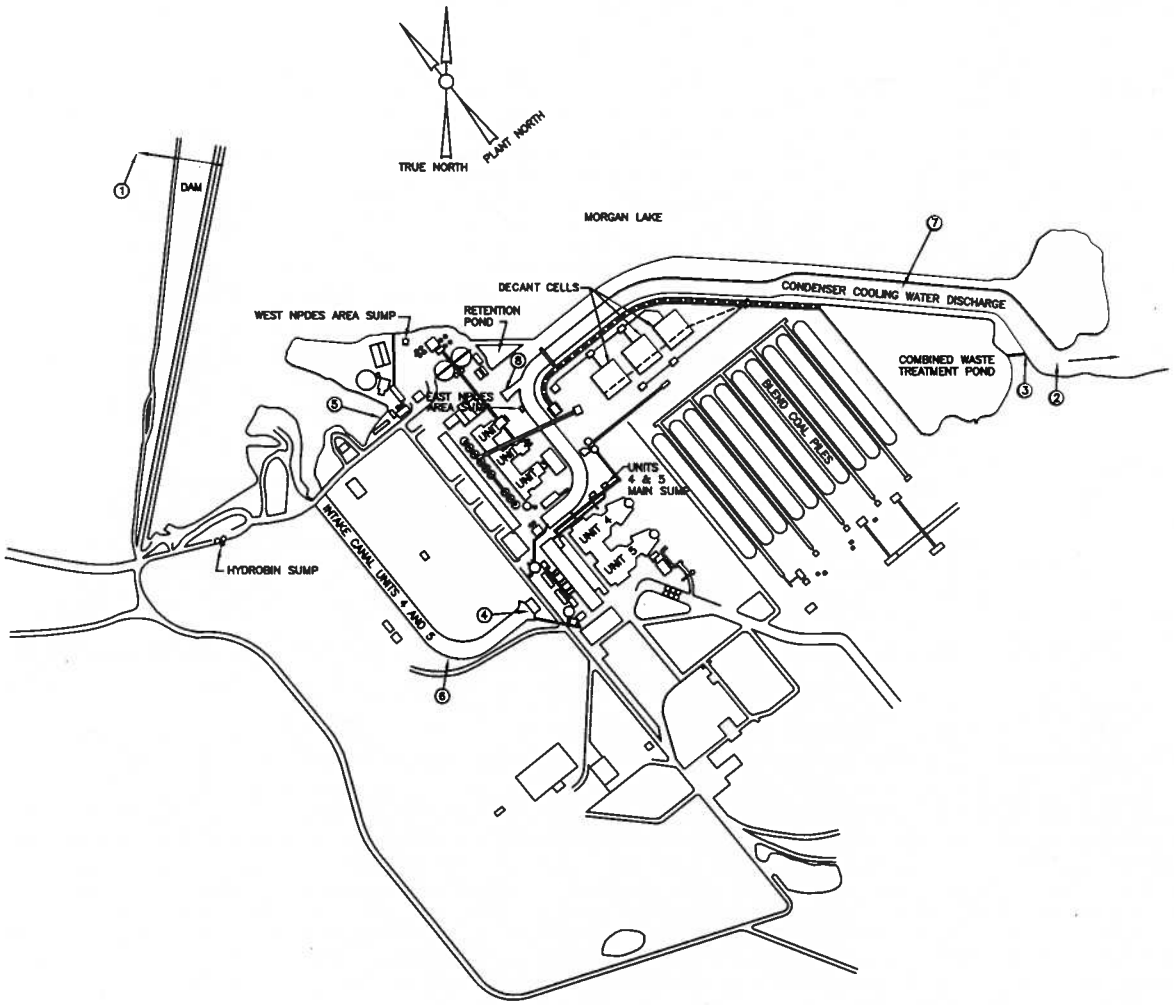
   Parameters Analyzed:
   - Part B & C Dioxin (EPA 613)

5. San Juan Basin Health Department Laboratory
   281 Sawyer Drive
   PO Box 140
   Durango, CO 81302
   (970) 247-5702

   Parameters Analyzed:
   - Part A BOD (Std. Methods, 20th ed., 2540C

SECTION 8

Four Corners NPDES Schematic of Existing Permit Sample Points



NPDES PERMITTED OUTFALLS

1. OUTFALL 001 – COOLING POND DISCHARGE
2. OUTFALL 01A – CONDENSER COOLING WATER DISCHARGE
3. OUTFALL 01E – COMBINED WASTE TREATMENT POND DISCHARGE

STORMWATER DISCHARGE POINTS

4. SW1 – UNITS 4 & 5 CIRCULATING COOLING INTAKE AREA
5. SW2 – UNITS 1, 2 & 3 CIRCULATING COOLING INTAKE AREA
6. SW3 – UNITS 4 & 5 CIRCULATING COOLING INTAKE AREA

OIL SPILL PREVENTION

7. OIL BOOM/ABSORBENT INSTALLATION
8. OIL ABSORBENT INSTALLATION

NO.	DATE	REVISION	DWN	CHD	DSD	RVWD	APVD	W.A.
3	09-07-05	ADDED DECANT CELLS	MDC		CM	CM	DS	
2	09-23-04	ADDED/REVISED DRAWS	MDC			WB	DS	
1	03-09-05	GENERAL REVISION	MDC			WB	DS	

FOUR CORNERS
COMMON
N.P.D.E.S. PERMITTED OUTFALLS AND STORMWATER DISCHARGE POINTS

APS

SCALE NONE DATE 05-18-93

DWN MDC
CHD WB
DSD RDB
RVWD

APPROVED
DAVID C. BLOOMFIELD
ENGINEERING SUPERVISOR

W A

UNIT	DISC	TYPE	SYS	NUMBER	SHEET
FC	C	16	CEM	114090	1

THIS DRAWING IS CONFIDENTIAL AND SHALL NOT BE USED OR REPRODUCED IN ANY PART WITHOUT WRITTEN CONSENT OF PINNACLE WEST CAPITAL CORPORATION.

DRAWING: T:\gen\NewerCharles\Cheable\FC-C-16-CEM-114090-1.dwg

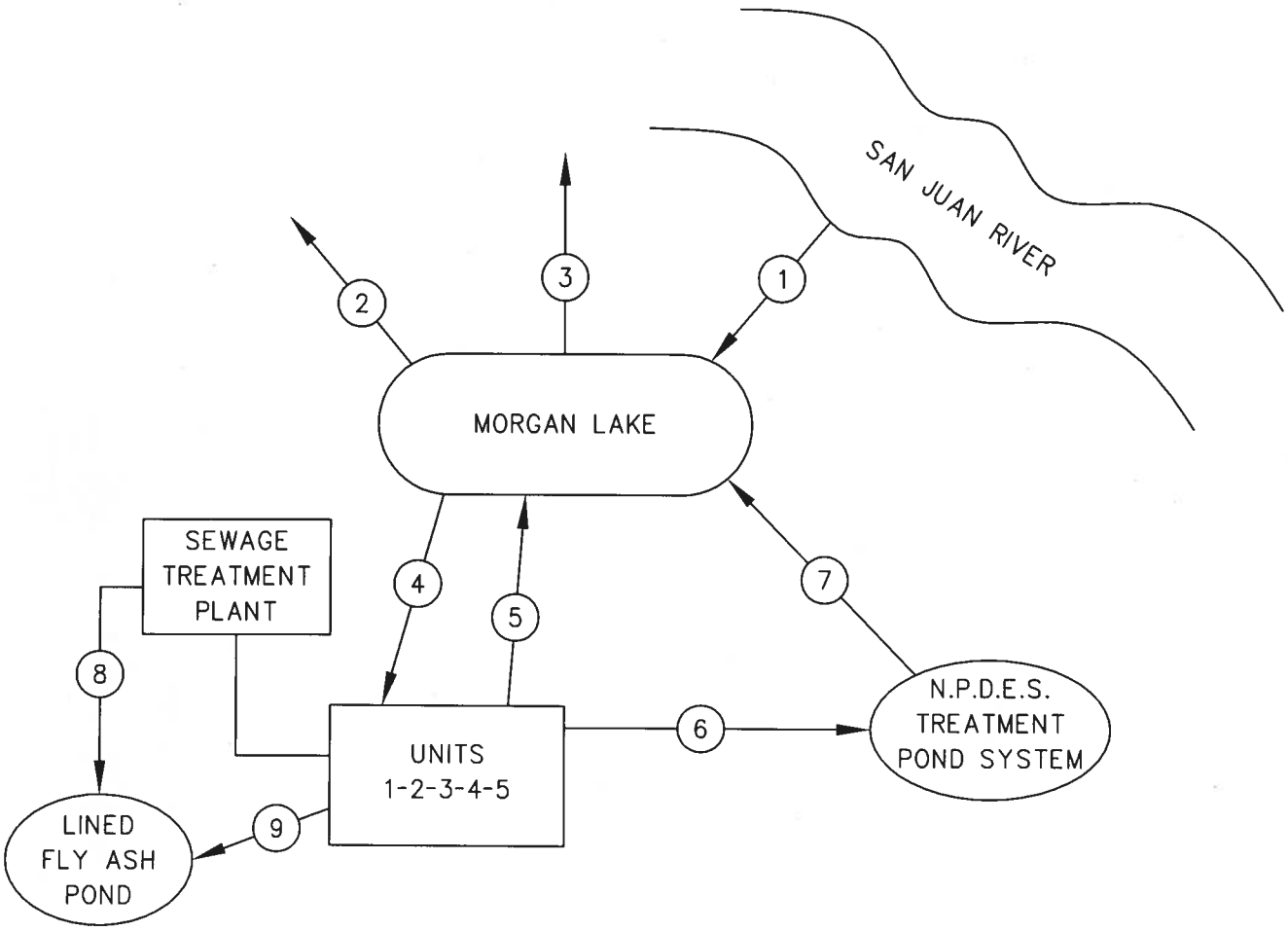
SECTION 9

Water Flow Line

NO.	TITLE	AVG. RATE (MGPD)
1	RIVER MAKE-UP	28
2	LAKE MORGAN BLOW-DOWN	14.6
3	SYSTEM EVAPORATION	13.3
4	PLANT SERVICE & ONCE THRU COOLING WATER *	1726.7
5	ONCE THRU COOLING WATER RETURN	1713.6
6	PLANT COMBINED WASTE STREAMS *	13.0
7	N.P.D.E.S. WATER RETURN	13.0
8	SANITARY SEWAGE	.04
9	METAL CLEANING WASTES	.100

* INCLUDES IN PLANT STORM WATER RUNOFF

2



NO.	DATE	REVISION	DWN	CHD	EXD	RVWD	APVD	W A
2	10-4-05	CHG. NO. 2 FROM 14.7 TO 14.6 MGPD	MDC		WB	WB	BS	
1	9-27-05	CHG. NO. 8 FROM .1 TO .04 MGPD & NO. 9 FROM .005 TO .100 MGPD AND REVISED TEXTS	MDC		CW	CW	BS	

FOUR CORNERS COMMON N.P.D.E.S PERMIT APPLICATION WATER FLOW LINE

DATE 08-24-02
SCALE NONE
W.A. _____

APS

DWN CK\MC | EXD RDB | CHD WB | RVWD DB

APPROVED
D. BLOOMFIELD
ENGINEERING SUPERVISOR

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UNIT	DISC	TYPE	SYS	NUMBER	SHEET
FC	C	16	CEM	114058	1

DRAWING: T:\gen\MonroeCharles\CheckOut\FC-C-16-CEM-114058-1.dwg

SECTION 10

Four Corners NPDES Once-Through Cooling Water Flow Diagram

UNITS 1, 2 & 3:

1. SCRUBBER SERVICE WATER BEARING COOLING
2. CIRCULATING WATER PUMP BEARING COOLING
3. FIRE WATER PUMP BEARING COOLING
4. SERVICE WATER PUMP BEARING COOLING
5. EQUIPMENT COOLING WATER (SEE SHEET 2 FOR SPECIFIC LIST)

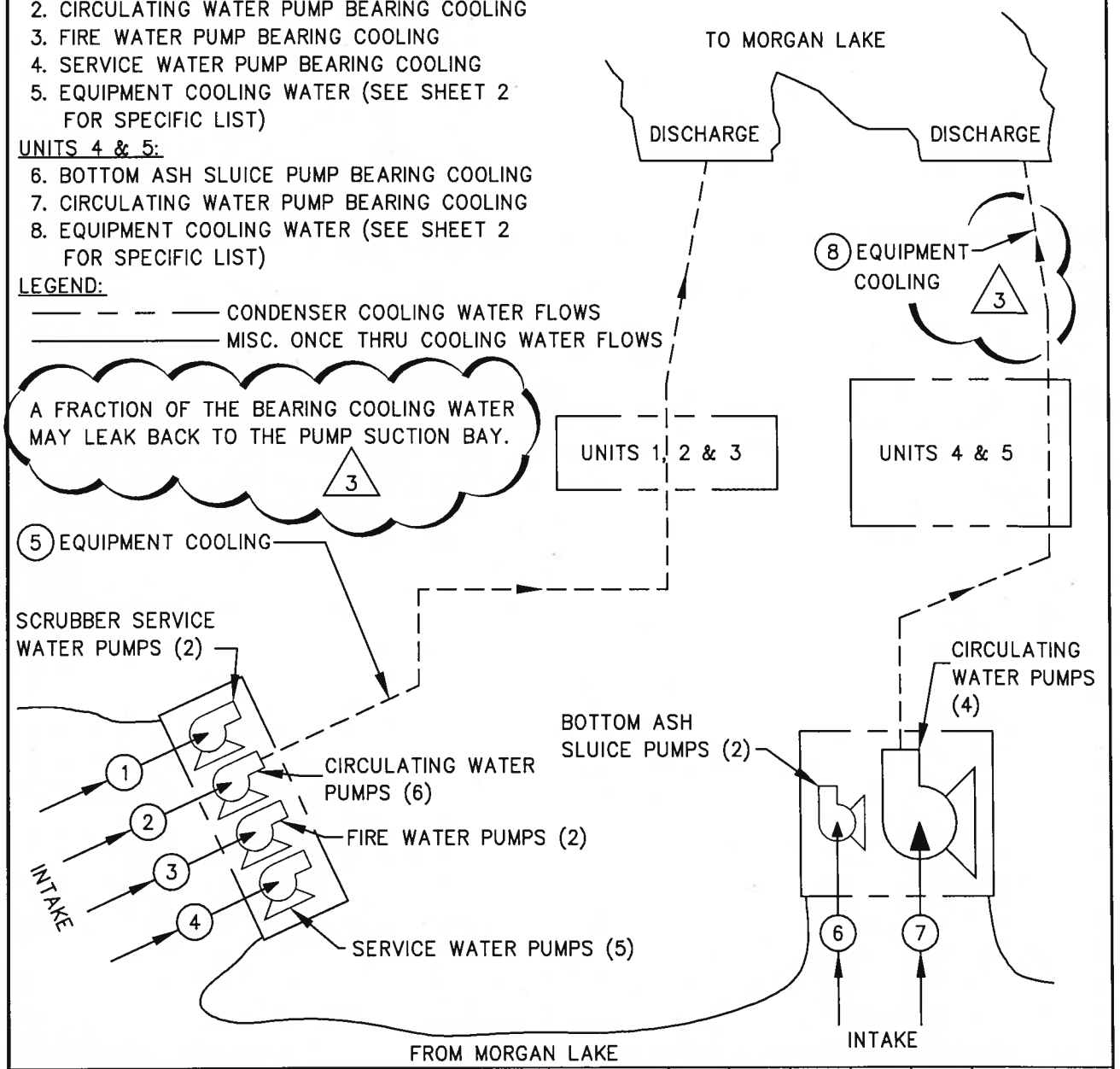
UNITS 4 & 5:

6. BOTTOM ASH SLUICE PUMP BEARING COOLING
7. CIRCULATING WATER PUMP BEARING COOLING
8. EQUIPMENT COOLING WATER (SEE SHEET 2 FOR SPECIFIC LIST)

LEGEND:

—— — — —— CONDENSER COOLING WATER FLOWS

———————— MISC. ONCE THRU COOLING WATER FLOWS



NO.	DATE	REVISION	DWN	CHD	EXD	RVWD	APVD	W A
3	09-30-05	ADDED NOTE	MDC		CW	CW	BS	
2	10-20-04	AS-BUILT	MDC		WB	WEB	BS	
1	10-19-04	REDRAWN ONTO AUTO-CAD	MDC		WB		DCB	

FOUR CORNERS
COMMON
N.P.D.E.S. ONCE THRU COOLING WATER
FLOW DIAGRAM

DATE 08-17-92
SCALE NONE
W.A. _____

APS

DWN MDC | EXD RDB | CHD WB | RVWD

APPROVED
D.C. BLOOMFIELD
ENGINEERING SUPERVISOR

UNIT	DISC	TYPE	SYS	NUMBER	SHEET
FC	C	16	CWS	114046	1

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DRAWING: T:\gen\MonroeCharles\CheckIn\FC-C-16-CWS-114046-1.dwg

(5) EQUIPMENT COOLING WATER

UNITS 1, 2 & 3:

SCRUBBER SERVICE WATER PUMP BEARING COOLING WATER (2-PUMPS)
CIRCULATING WATER PUMP BEARING COOLING WATER (6-PUMPS)
FIRE WATER PUMP BEARING COOLING WATER (2-PUMPS)
SERVICE WATER PUMP BEARING COOLING WATER (5-PUMPS)
TURBINE LUBE OIL COOLING WATER (3-UNITS)
HYDROGEN COOLER COOLING WATER (3-UNITS)

(8) EQUIPMENT COOLING WATER

UNITS 4 & 5:

BOTTOM ASH SLUICE PUMP BEARING COOLING WATER (2-PUMPS)
CIRCULATING WATER PUMP BEARING COOLING WATER (4-PUMPS)
TURBINE LUBE OIL COOLING WATER (2-UNITS)
SAMPLE CHILLER COOLING WATER (2-UNITS)
BOILER FEED BOOSTER PUMP BEARING COOLING (6-PUMPS)
AUXILIARY TURBINE LUBE OIL COOLING (2-UNITS)
AIR CONDITIONER COOLING RETURN (2-UNITS)
AIR COMPRESSOR (3-COMPRESSORS)
CONDENSER VACUUM PUMP COOLER COOLING (3-PUMPS)
ISOPHASE BUS COOLER COOLING (3-UNITS)
STATOR WINDING HEAT EXCHANGER COOLING (2-UNITS)
HP GENERATOR HYDROGEN COOLER COOLING (2-UNITS)
HP ALTERNATOR AIR COOLER COOLING (2-UNITS)
LP GENERATOR HYDROGEN COOLER COOLING (2-UNITS)
LP ALTERNATOR AIR COOLER COOLING (2-UNITS)
COOLING WATER PUMP BEARING (3-PUMPS)
BOTTOM ASH FLUSH BARING COOLING (2-PUMPS)
SEAL AIR FAN BEARING COOLING (4-FANS)
SCREEN WASH PUMP BEARING COOLING (2-PUMPS)

BAG HOUSE:

AIR COMPRESSOR COOLING (4-COMPRESSORS)
DIESEL FIRE PUMP COOLING (2-UNITS)

NO.	DATE	REVISION	DWN	CHD	EXD	RVWD	APVD	W A
2	10-20-04	AS-BUILT	MDC		WB	WEB	BS	
1	10-19-04	GEN REV. & REDRAWN ONTO AUTO-CAD	MDC		WB		DCB	

FOUR CORNERS
COMMON
N.P.D.E.S. ONCE THRU COOLING WATER
FLOW DIAGRAM

DATE 08-17-92
SCALE NONE
W.A.

APS

DWN MDC | EXD RDB | CHD WB | RVWD

APPROVED
D.C. BLOOMFIELD
ENGINEERING SUPERVISOR

THIS DRAWING IS CONFIDENTIAL AND SHALL NOT BE USED OR REPRODUCED IN ANY PART WITHOUT WRITTEN CONSENT OF PINNACLE WEST CAPITAL CORPORATION.

UNIT	DISC	TYPE	SYS	NUMBER	SHEET
FC	C	64	CWS	114046	2

DRAWING: T:\gen\MonroeCharles\CheckIn\FC-C-64-CWS-114046-2.dwg

SECTION 11

Water Treatment Chemicals Discharged through 01A and 01E

WATER TREATMENT CHEMICALS

Discharged or fed to Combined Waste Treatment Pond which flows through 01E:

GE Betz Resin Cleaner IEC5
GE Betz PC 1193
Elemental Flowable Sulfur
Chemstar Quicklime
Chemstar Dolomitic Lime
GE Betz BL 5400
Ammonium Hydroxide
Sulfuric Acid
Sodium Hydroxide
GE Betz BL 5301
GE Betz Corrshield NT402
Hydrazine
Uranine (fluorescent dye)
Dowex Cation Resin-650C
Dowex Anion Resin-550A
Trisodium Phosphate
GE Betz Solisep PS 9674 Polymer – 4/5 Bottom Ash
Calcium Chloride (De-icer)

Fed to Cooling Water Canal which flows through 01A:

GE Betz BL 5400
GE Betz BL 5301
Calcium Hypochlorite - HTH
Sodium Hypochlorite - Bleach

GE Betz

GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
Business telephone: (215) 355-3300

Material Safety Data Sheet

Issue Date: 01-JUL-2002

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

---

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

BETZDEARBORN IEC5

PRODUCT APPLICATION AREA:

WATER-BASED DEPOSIT CONTROL AGENT.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
9016-45-9	NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL Irritant (eyes and skin)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

3 HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Slight; Appearance: Colorless, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical/CO2/foam or water--slippery condition; use sand/grit.

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause slight gastrointestinal irritation.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

4 FIRST AID MEASURES

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:

No special instructions

5 FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical/CO2/foam or water--slippery condition; use sand/grit.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:

> 200F > 93C P-M(CC)

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

HANDLING:

Alkaline. Do not mix with acidic material.

STORAGE:

Keep containers closed when not in use. Protect from freezing.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:

adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.

If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:

neoprene gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.016	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	30	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-1		
Viscosity(cps 70F,21C)	34	% Solubility (water)	100.0

Odor	Slight
Appearance	Colorless
Physical State	Liquid
Flash Point P-M(CC)	> 200F > 93C
pH As Is (approx.)	12.7
Evaporation Rate (Ether=1)	< 1.00

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT: >2,000 mg/kg

NOTE - Estimated value

Dermal LD50 RABBIT: >2,000 mg/kg

NOTE - Estimated value

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Daphnia magna 48 Hour Static Renewal Bioassay

LC50= 170; No Effect Level= 137 mg/L

Fathead Minnow 96 Hour Static Renewal Bioassay

LC50= 29; No Effect Level= 17.9 mg/L

Rainbow Trout 96 Hour Static Renewal Bioassay

LC50= 34; No Effect Level= 6.3 mg/L

BIODEGRADATION

BOD-28 (mg/g): 75

BOD-5 (mg/g): 7

COD (mg/g): 252

TOC (mg/g): 117

13 DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D002=Corrosive(pH).

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

DOT HAZARD: Not Applicable

UN / NA NUMBER: Not applicable

DOT EMERGENCY RESPONSE GUIDE #: Not applicable

15 REGULATORY INFORMATION

TSCA:

All components of this product are listed in the TSCA inventory.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

SARA SECTION 312 HAZARD CLASS:

Immediate(acute)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	ALK	pH above 12.0
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status: 10-NOV-1997		** NEW **
14-JAN-1999		10-NOV-1997
28-NOV-2001	3,4	14-JAN-1999
01-JUL-2002	12	28-NOV-2001

BETZDEARBORN MATERIAL
SAFETY DATA SHEET

EFFECTIVE DATE: 08-NOV-2000
PRINTED DATE: 08-NOV-2000

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1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : KLARAID PC1193

PRODUCT APPLICATION AREA: A CLARIFICATION AID.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road, Trevose, Pa. 19053
Information phone number: (215) - 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Mild; Appearance: Yellow To Amber, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide or foam--Avoid water if possible.

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause gastrointestinal irritation.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin.

CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:
Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:
If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:
No special instructions

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:
dry chemical, carbon dioxide or foam--Avoid water if possible.

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:
> 200F > 93C P-M(CC)

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Normal chemical handling.

STORAGE:
Keep containers closed when not in use. Protect from freezing. Preferably stored between 40-100F (5-40C).

CONTINUED

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

ENGINEERING CONTROLS:
adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.
SKIN PROTECTION:
neoprene gloves-- Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.078	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	18	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-8		
Viscosity(cps 70F,21C)	2400	% Solubility (water)	100.0

Odor		Mild
Appearance		Yellow To Amber
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		6.0
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

CONTINUED

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"A"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>8,000 mg/kg
Dermal LD50 RABBIT:	>2,000 mg/kg

NOTE - Estimated value

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 96 Hour Static Acute Bioassay

LC50: .8 mg/L
No Effect Level: .1 mg/L

Daphnia magna 48 Hour Static Renewal Bioassay

LC50: 1.5 mg/L
No Effect Level: .15 mg/L

BIODEGRADATION

COD (mg/gm):	800
TOC (mg/gm):	190
BOD-5 (mg/gm):	0
BOD-28 (mg/gm):	8

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

CONTINUED

14) TRANSPORT INFORMATION

DOT HAZARD:	Not Applicable
UN / NA NUMBER:	Not applicable
DOT EMERGENCY RESPONSE GUIDE #:	Not applicable

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
FOOD AND DRUG ADMINISTRATION:
21 CFR 176.170 (components of paper and paperboard in contact with aqueous and fatty foods)
SARA SECTION 312 HAZARD CLASS:
Product is non-hazardous under Section 311/312
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

CONTINUED

16) OTHER INFORMATION

NFPA/HMIS	CODE TRANSLATION	
Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	29-JAN-1997		** NEW **
	15-AUG-1997	15	29-JAN-1997
	02-APR-1998	12	15-AUG-1997
	22-APR-1998	12	02-APR-1998
	08-NOV-2000	4,11	22-APR-1998

MATERIAL SAFETY DATA SHEET

SULPHUR

International Chemicals, Inc.

NFPA Code

Health Hazard	1
Flammability Hazard	1
Reactive Hazard	0
Maximum Personal Protection	G

NPCA Code

PRODUCT NAME:	Emulsified Sulphur	SYNONYMS:	Sulphur
CHEMICAL NAME:	Sulphur		
FORMULA:	S_8	MOLECULAR WEIGHT:	256.48
PHYSICAL DESCRIPTION:	A water base suspension of micronized sulphur & inert ingredient		

I PHYSICAL DATA (ACTIVE INGREDIENT)

BOILING POINT 760 mm Hg	444.6°C	FREEZING POINT	115 - 119°C
SPECIFIC GRAVITY	1.56	VAPOR PRESSURE	1mm at 183.8°C
VAPOR DENSITY	N/A	SOLUBILITY IN WATER	Negligible
% VOLATILES BY VOLUME	N/A		
APPEARANCE AND ODOR	Off white to yellow Mildly sulfurous		

II HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (UNITS)
Sulphur	70	Not established
Inerts, surface-active materials		
Water	30	Not established

III FIRE AND EXPLOSION HAZARDS

FLASH POINT (TEST METHOD)	N/A	AUTOIGNITION TEMPERATURE	N/A
FLAMMABLE LIMITS IN AIR	LOWER N/A	UPPER	N/A
FIRE FIGHTING PROCEDURES	When heated, sulphur emits highly toxic fumes of SO_2 Wear self-contained breathing apparatus		
UNUSUAL FIRE & EXPLOSION HAZARD	Flowable sulphur is not a fire or explosion hazard; Sulphur dust may explode when exposed to an ignition source; sulphur can react with oxidizing materials and other materials.		
EXTINGUISHING MEDIA	Water		

IV HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	Not established
EFFECTS OF OVEREXPOSURE	ACUTE: A nuisance dust CHRONIC: chronic inhalation may cause irritation of mucous membranes.
ROUTES OF EXPOSURE	INHALATION: An irritant SKIN CONTACT: An irritant SKIN ABSORPTION: None EYE CONTACT: An irritant INGESTION: Harmful if swallowed
EMERGENCY FIRST AID PROCEDURES	If swallowed: Drink 1-2 glasses water and induce vomiting. Eye Contact: Wash with water for 10-15 minutes

V REACTIVE DATA

UNSTABLE		CONDITIONS TO AVOID	Can react with materials listed below:
OMPATIBILITY EALS TO AVOID		Metals, charcoal, many other halogens, carbides, ammonia compounds, oxidizers	
ARDOUS OMPOSITION PRODUCTS		SO_2 (Sulphur Dioxide Gas)	
ARDOUS YMERIZATION		CONDITIONS TO AVOID	None Known
OCCUR			
NOT OCCUR	X		

VI SPILL OR LEAK PROCEDURE

PS TO BE TAKEN EVENT OF LEAK SPILL	Absorb on clay; sweep up. Do not allow to contaminate water sources or bodies of water
TE DISPOSAL HOD	Not RCRA-listed hazardous waste. Dispose in a facility approved for industrial wastes

VII SPECIAL PROTECTION INFORMATION

PIRATORY TECTION	Use respirator NIOSH approved for nuisance dust and mist if exposure is above $10mg/M^3$		
TILATION	Use good general ventilation. Avoid suspending dust in air in confined spaces (See below)		
D TECTION	Rubber or vinyl gloves	EYE PROTECTION	safety glasses

VIII SPECIAL PRECAUTIONS

CAUTIONARY ELING

HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION

Harmful if swallowed. Avoid breathing spray mist. May cause irritation of nose, throat or skin. Avoid contact with eyes, skin and clothing. Do not contaminate feed or foodstuffs.

If swallowed, drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

If on skin, wash thoroughly with soap and water.

If in eyes, flush with plenty of clear water for at least 15 minutes.

KEEP OUT OF REACH OF CHILDREN

ENVIRONMENTAL HAZARDS

Use this product in a manner not in accordance with the information on this label may injure domestic animals, wildlife, aquatic life or produce other undesirable results.

DLING AND RAGE	Where sulphur dusts may be formed and suspended in air, good ventilation or an inert atmosphere should be used. Store away from heat, or any ignition sources.

IX SHIPPING INFORMATION

PER NAME	Emulsified Sulphur				
ARD CLASS	None	I.D.NUMBER	None	LABEL	None

International Chemicals, Inc.

MATERIAL SAFETY DATA SHEET

SECTION I—NAME AND PRODUCT

Manufacturer: CHEMSTAR, Inc.
Emergency Telephone: (702) 565-8995 Contact: Dr. Starr Curtis
Address: P.O. Box 127, Henderson, NV 89015
Trade Name, Common Name: CALCIUM OXIDE

CALCIUM OXIDE, CaO, Lime, *Quicklime, Unslaked Lime*, CAS #1305-78-8, DOT #1910 NIOSH RTECS# EW3100000
Chemstar High Calcuim Lime, Chemstar High Calcium Pebble Lime
Specification: ASTM C5, C602, C911, C977
Chemical Family: Alkaline Earth Oxide

SECTION II—IDENTIFICATION OF INGREDIENTS

Chemical Name	%	Common Name	REG* (Y/N)	CAS No.	OSHA Permissive Exposure Limit	ACGIH TLV/TWA	Carcinogen? (Y/N)
Calcium Oxide	>90	Quicklime	Y	1305-78-8	5 Mg/cu.m.	2 mg/cu.m.	N
Calcuim Carbonate	<5	Limestone	N	1317-65-3	—	10 mg/cu.m.	N
Magnesium Oxide	<3	Periclase	Y	1309-38-4	15 mg/cu.m.	10 mg/cu.m.	N
Silicon Dioxide	<1	Quartz	Y	14808-60-7	0.1 mg/cu.m.	0.1 mg/cu.m.	Y
Other (Fe_2O_3, Al_2O_3)	<1	—	N	—	—	—	N

Purity depends on the limestone raw material and manufacturing, handling, and storage techniques. Hydrated lime may form upon exposure to air or moisture. Chemstar strives to maintain high purity and production quality. Calcium oxide is NOT listed by NTP, IARC, or OSHA as containing carcinogens; however, it contains detectable amounts of chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SECTION III—PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance and Odor: White solid; Odorless. Chemstar High Calcium Lime is available as lump, pebble, granules, or crushed form. Screened material is available in a range of particle sizes.

Melting Point: 4676 F/2580 C
Boiling Point: 5162 F/2850 C
Vapor Pressure: N/A
Vapor Density: N/A
Evaporation Rate: N/A
%Volatile by Vol: N/A
Solubility in Alcohol: NAIF**

Particle Specific Gravity: 3.2-3.4g/cc
Water Solubility: Slight

Temp.	Solubility	Solubility
0 C	1.40 g CaO/l	1.85 g Ca(OH) 2/1
25 C	1.21	1.59
50 C	0.97	1.28
100 C	0.54	0.71

Bulk Density:55-60lbs/cu.ft.
Aqueous Solution Behavior:

pH (sat'd sol'n)
13.42
12.44
11.71
–

Solubility in other solvents: Calcuim Oxide reacts with acids, forming calcium salts which may be soluble.

SECTION IV—FIRE AND EXPLOSION HAZARD DATA

Special Fire Fighting Procedures: In large amounts, lime in contact with water, steam or acids, will generate sufficient heat to ignite wood and other materials. In small amounts, the presence of lime in a fire does not hinder the use of any standard extinguishing medium. Wear self-contained breathing apparatus approved by NIOSH. Protect eyes from dust.
*Flashpoint:*Not Flammable Flammable Limits: N/A Extinguishing Media: Not Flammmable Explosion Potential: None

SECTION V—HEALTH, FIRST AID AND MEDICAL DATA

Threshold Limit Value(TLV): 2 mg/cu.m. Calcium oxide is a strongly alkaline material. Contact with skin and eyes will cause irritation and possible severe corrosion damage. Inhalation of dust may cause coughing, sneezing, or inflammation of the respiratory passages. *While short term exposure and irritation are generally without permanent effects, untreated contact and irritation can cause serious chemical and thermal burns and permanent scarring.* Prevention of contact and exposure under good working conditions is much preferred to first aid after injury. See Section VII below.
Calcium oxide is NOT listed by NTP, IARC, or OSHA as containing carcinogens; however, it contains detectable amounts of chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

FIRST AID

Inhalation: Remove from exposure to dust and get prompt medical help.
Eye Contact: Wash eyes immediately with running water for 15 minutes, including under eyelids. Get prompt medical attention!
Skin Contact: Wash exposure area with large amounts of water. Remove and wash contaminated clothing.
Ingestion: Get medical attention. Give large amounts of water to dilute, but do not induce vomiting.

*Regulated on lists: OSHA 29CFR 1910, subpart Z; ACGIH, HHS/NTP & IARC. **NAIF—No Applicable Information Found

SECTION VI—CORROSIVITY AND REACTIVITY DATA

Stability:	UNSTABLE Hazardous polymerization will NOT occur.
Incompatibilities:	Calcium oxide is incompatible with water, steam, acids, chemicals with water or crystallization, boric oxide, fluorine, and many organic materials. Lime is stable in sealed containers at normal temperatures. Flourine will attack calcium oxide, evolving much heat and some light.
Decomposition Products:	When exposed to air, this strongly alkaline compound will absorb and react with moisture and carbon dioxide. This decomposition reaction produces calcium hydroxide and calcium carbonate and results in a limited shelf life. Calcium salts are normal reaction products with other materials.
Conditions to be avoided:	Calcium oxide reacts with water to form calcium hydroxide with release of much heat. (Heat of hydration = 490 BTU/lb.) Chemstar High Calcium Lime is generally HIGHLY REACTIVE, commonly yielding a 50 C temperature rise in 3 minutes according to ASTM C110-84, 10. Contact between large amounts of lime with smaller amounts of water releases much heat and possibly steam. Lime will swell and generate heat when moistened and could burst containers.

SECTION VII - STORAGE, HANDLING AND USE PROCEDURES

Normal Storage and Handling:	Dry area, out of weather and flood danger.
Normal Use:	Standard equipment for quicklime use. Make adequate provision for dust-free operations and for venting steam and dissipating heat generated upon slaking.
Steps to be taken in Case of Leaks or Spills	Those involved in clean up must protect against skin contact with lime and inhalation of dust or mist. See Section VIII. Keep spilled material away from organic materials and water. Carefully pick up the solid with a minimum of dusting and collect in metal containers with covers for disposal. The small amounts of residue after shoveling and sweeping can be flushed to the drain, using plenty of water.
Waste Disposal Method:	Carefully add waste lime to an excess of water, dilute, and flush to the sewer. Large amounts may require neutralization by acid. Follow Federal, State and local regulations. Waste lime can be used for neutralizing waste acids or drying and stabilizing clay soils.

SECTION VIII - PERSONAL PROTECTION INFORMATION

Respiratory Protection:	NIOSH approved dust filter respirator in dusty conditions. In absence of dust, mechanical exhaust is adequate.
Eye Protection:	Approved tight-fitting safety goggles.
Protective Gloves:	Clean, dry rubber gloves.
Clothing:	Clean, body-covering protective clothing, such as long-sleeve shirt with buttoned collar; long pants extending over tops of work shoes.
Ventilation:	Provide general ventilation and local exhaust ventilation to meet TLV requirements for lime dust.
Other Equipment:	An eyewash station should be readily available near the work area.

SECTION IX – SPECIAL PRECAUTIONS

Store materials in sealed containers in a dry place. Avoid contact with water, acids and organic materials. Contact with water will release much heat and steam. Provide for steam venting and dissipation of heat when mixing lime with water. Exposure to air lowers the available calcium oxide reactivity over time.

SPECIAL REFERENCE: LIME HANDLING, APPLICATION, AND STORAGE, Nat. Lime Assoc. Bull. 213, 4th ed., 1982.

CHEMSTAR, Inc.
also produces the following quality products:

Type S Hydrated Lime	$Ca(OH)_2 \cdot Mg(OH)_2$
Dolomitic Quicklime,	$CaO \cdot MgO$
Type N Hydrated Lime,	$Ca(OH)_2$

Mortartek, a portland cement-lime mortar mix

Rev. 12/01/88 HSC

MATERIAL SAFETY DATA SHEET

SECTION I—NAME AND PRODUCT

Manufacturer: **CHEMSTAR, Inc.**
Emergency Telephone: (702) 565-8995 Contact: Dr. Starr Curtis
Address: P.O. Box 127, Henderson, NV 89015
Trade Name, Common Name: **DOLOMITIC HYDRATED LIME**

DOLOMITIC HYDRATED LIME, $Ca(OH)_2 \cdot Mg(OH)_2$. (No CAS #)
Chemstar Type S Hydrated Lime, Chemstar Pressure Hydrated Dolomitic Lime
Specification: ASTM C51, C206, C207, C911, C977
Chemical Family: Alkaline Earth Hydroxide

SECTION II—IDENTIFICATION OF INGREDIENTS

Chemical Name	%	Common Name	REG* (Y/N)	CAS No.	OSHA Permissive Exposure Limit	ACGIH TLV/TWA	Carcinogen? (Y/N)
Calcium Hydroxide	>50	Hydrated Lime	N	1305-62-0	—	5mg/cu.m	N
Magnesium Hydroxide	>35	Brucite	N	1309-42-8	—	—	N
Calcium Carbonate	<8	Limestone	N	1317-65-3	—	10mg/cu m.	N
Silicon Dioxide	<1	Quartz	Y	14808-60-7	0.1 mg/cu.m.	0.1mg/cu.m	Y
Other (Fe_2O_3, Al_2O_3)	<1	—	N	—	—	—	N

Purity depends on the dolomite starting material and manufacturing, handling, and storage techniques. Chemstar strives to maintain high purity and production quality. Type S Hydrated Lime is NOT listed by NTP, IARC, or OSHA as containing carcinogens; however, it contains detectable amounts of chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

SECTION III—PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance and Odor Soft white crystalline powder mixture of calcium hydroxide and magnesium hydroxide with properties intermediate between the two principal components. Odorless. Chemstar Type S Hydrated Lime is available in bags or bulk as a fine powder, generally 95% passing 200 mesh.

Melting Point: partially dehydrates at 350° C.
Boiling Point. 5162°F/2850°C
Vapor Pressure: N/A
Vapor Density: N/A
Evaporation Rate N/A
~Volatile by Vol: N/A
Solubility in Alcohol. NAIF**

Bulk Density: 30-40 lbs./cu ft
Water Solubility: Slight

Temp	Solubility (g/l)
0° C	~1.85
25° C	~1.59
50° C	~1.28
90° C	~0.71

Aqueous Solution Behavior:

pH(sat'd sol'n)
13.0
12.4
11.5
10.5

Solubility in other solvents: Dolomitic hydrated lime reacts with acids, forming calcium salts which may be soluble.

SECTION IV—FIRE AND EXPLOSION HAZARD DATA

Special Fire Fighting Procedures: Dolomitic hydrated lime dehydrates to magnesium oxide (350° C/662° F) and calcium oxide (580° C/1079° F) and steam. If these upper temperatures prevail, wear self-contained breathing apparatus approved by NIOSH Protect eyes from dust The presence of Type S hydrated lime in a fire does not hinder the use of any standard extinguishing medium
Flashpoint: Not Flammable Flammable Limits: N/A Extinguishing Media: Not Flammable Explosion Potential: None

SECTION V—HEALTH, FIRST AID, AND MEDICAL DATA

Threshold Limit Value (TLV): 5 mg/cu.m. Dolomitic hydrated lime is an alkaline material. In presence of moisture, contact with skin and eyes will cause irritation and possible severe corrosion damage. Inhalation of dust may cause coughing, sneezing, or inflammation of the respiratory passages While short term exposure and irritation are generally without permanent effects, untreated contact and irritation can cause dermatitis and chemical burns. Prevention of contact and exposure under good working conditions is much preferred to first aid after injury. See section VIII below. Type S Hydrated Lime is NOT listed by NTP, IARC, or OSHA as containing carcinogens; however, it contains detectable amounts of chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

FIRST AID:

Inhalation: Remove from exposure to dust and get prompt medical help.
Eye Contact: Wash eyes immediately with running water for 15 minutes, including under eyelids. Get prompt medical attention!
Skin Contact. Wash exposure area with large amounts of water. Remove and wash contaminated clothing
Ingestion: Immediately dilute the chemical by drinking large amounts of water or milk. Then neutralize by drinking dilute vinegar or fruit juice.

*Regulated on lists: OSHA 29CFR 1910, subpart Z; ACGIH, HHS/NTP & IARC. **NAIF—No Applicable Information Found

SECTION VI—CORROSIVITY AND REACTIVITY DATA

Stability.	STABLE Hazardous polymerization will NOT occur.
Incompatibilities:	Dolomitic hydrated lime is incompatible with acids, ammonium salts, phosphorus, and some organic compounds. It is stable in sealed containers at normal temperatures.
Decomposition Products:	When exposed to air, this strongly alkaline compound will absorb and react with carbon dioxide, producing calcium carbonate. This forms lumps, reduces the chemical activity and results in a limited shelf life. Calcium and magnesium salts are normal reaction products with other materials.
Conditions to be avoided:	Handling procedures which may generate dust. Contact with nitroparaffins, maleic anhydride or phosphorus.

SECTION VII—STORAGE, HANDLING, AND USE PROCEDURES

Normal Storage and Handling:	Dry area, out of weather and flood danger. Avoid dusting in handling.
Normal Use:	Standard equipment for hydrated lime use. Make adequate provision for dust-free operations.
Steps to be taken in Case of Leaks or Spills:	Those involved in clean up must protect against skin contact with lime and inhalation of dust or mist See Section VIII. Carefully pick up the solid with a minimum of dusting and collect in metal containers with covers for disposal. The small amounts of residue after shoveling and sweeping can be flushed to the drain, using plenty of water.
Waste Disposal Method:	Several methods may be suitable: a) Spread in a protected area to permit reaction with carbon dioxide in air. (Prevent air current dusting.) b) Neutralize with acid or waste acid. c) Use as a soil amendment. d) Use to stabilize clay soils. Follow Federal, State, and local regulations.

SECTION VIII—PERSONAL PROTECTION INFORMATION

Respiratory Protection:	NIOSH approved dust filter respirator in dusty conditions. In absence of dust, mechanical exhaust is adequate.
Eye Protection:	Approved tight-fitting safety goggles.
Protective Gloves:	Clean, dry rubber gloves.
Clothing:	Clean, body-covering protective clothing, such as long-sleeve shirt with buttoned collar; long pants extending over tops of work shoes.
Ventilation:	Provide general ventilation and local exhaust ventilation to meet TLV requirements for lime dust.
Other Equipment:	An eyewash station should be readily available near the work area.

SECTION IX—SPECIAL PRECAUTIONS

Store materials in sealed containers in a dry place. Avoid contact with acids and other incompatible materials. Exposure to air lowers the available dolomitic hydrated lime reactivity over time

SPECIAL REFERENCE: LIME HANDLING, APPLICATION, AND STORAGE, Nat Lime Assoc. Bull. 213, 4th ed., 1982.

CHEMSTAR, Inc.
also produces the following quality products:

Dolomitic Quicklime,	CaO-MgO
High Calcium Quicklime,	CaO
Type N Hydrated Lime,	$Ca(OH)_2$

Mortartiek, a portland cement-lime mortar mix

Company logo

GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
Business telephone: (215) 355-3300

Material Safety Data Sheet

Issue Date: 09-JUL-2002

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

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1 PRODUCT IDENTIFICATION

PRODUCT NAME:

DEPOSITROL BL5400

PRODUCT APPLICATION AREA:

WATER-BASED DEPOSIT CONTROL AGENT.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
2809-21-4	PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP) Corrosive (eyes)
10294-56-1	PHOSPHOROUS ACID (PHOSPHONIC ACID) Corrosive

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

3 HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

DANGER

May cause moderate irritation to the skin. Corrosive to the eyes. Inhalation of vapor or mist may cause severe nose, throat, and

respiratory tract irritation.

DOT hazard: Corrosive to steel
Emergency Response Guide #153
Odor: Mild; Appearance: Colorless To Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

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POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
Corrosive to the eyes.

ACUTE RESPIRATORY EFFECTS:
Inhalation of vapor or mist may cause severe nose, throat, and respiratory tract irritation.

INGESTION EFFECTS:
May cause severe irritation or burning of the gastrointestinal tract.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

4 FIRST AID MEASURES

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists.

EYE CONTACT:
URGENT! Immediately flush eyes with plenty of low-pressure water for at least 20 minutes while removing contact lenses. Hold eyelids apart. Get immediate medical attention.

INHALATION:
If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:
Material is corrosive. It may not be advisable to induce vomiting. Possible mucosal damage may contraindicate the use of gastric

lavage.

5 FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F > 93C SETA(CC)
MISCELLANEOUS:
Corrosive to steel
UN3265;Emergency Response Guide #153

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

HANDLING:
Acidic. Corrosive(Eyes). Do not mix with alkaline material.
STORAGE:
Keep containers closed when not in use. Do not freeze. If frozen, thaw and mix completely prior to use.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP)
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

PHOSPHOROUS ACID (PHOSPHONIC ACID)
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:
adequate ventilation
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR

1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:
PVC gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:
splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.453	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< -30	Vapor Density (air=1)	< 1.00
Freeze Point (C)	< -34		
Viscosity(cps 70F,21C)	85	% Solubility (water)	100.0

Odor		Mild
Appearance		Colorless To Yellow
Physical State		Liquid
Flash Point	SETA(CC)	> 200F > 93C
pH As Is (approx.)		< 1.0
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

STABILITY:
Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:
Will not occur.

INCOMPATIBILITIES:
May react with strong oxidizers.

DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT: 2,000 mg/kg
NOTE - RAT LD50: 2,400 mg/kg per alternate source
Dermal LD50 RABBIT: >7,940 mg/kg
NOTE - RABBIT LD50: 10,000 MG/KG ALTERNATE SOURCE
Skin Irritation Score RABBIT: 0
Eye Irritation Score RABBIT: CORROSIVE
90 Day Feed Study RAT: NOEL:10,000 ppm
NOTE - Hemopoeitic effects at 30,000 ppm
90 Day Feed Study DOG: .062-1%
NOTE - 2 year-feed study. Reversible anemia developed at 1% in diet.
90 Day Feed Study DOG: 20-60 mg/kg
NOTE - 30-day study. No pathological effects.

Ames Assay BACTERIA: NEGATIVE
NOTE - +/- metabolic activation
Non-Ames Mutagenicity : NEGATIVE
NOTE - Mouse Lymphoma Assay +/- metabolic activation

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Bluegill Sunfish 96 Hour Static Acute Bioassay
LC50= 1440; No Effect Level= 880 mg/L
Ceriodaphnia 48 Hour Static Renewal Bioassay (pH adjusted)
No Effect Level= 31.3; LC50= 113 mg/L
Daphnia magna 48 Hour Static Renewal Bioassay (pH adjusted)
LC50= 755; No Effect Level= 420 mg/L
Fathead Minnow 96 Hour Static Renewal Bioassay (pH adjusted)
LC50= 3040; No Effect Level= 1370 mg/L
Grass Shrimp (Palaemonetes pugio) 96 Hour Static Acute Bioassay
LC50= 2675 mg/L
Midge larvae (Chironomus tentans) 48 Hour Static Acute Bioassay
LC50= 14850 mg/L
Mysid Shrimp 48 Hour Static Renewal Bioassay (pH adjusted)
LC50= 319 mg/L
Rainbow Trout 96 Hour Static Acute Bioassay
LC50= 610; No Effect Level= 250 mg/L
Sheepshead Minnow 96 Hour Static Acute Bioassay
LC50= 3630; No Effect Level= 170 mg/L

BIODEGRADATION

BOD-28 (mg/g): 1
BOD-5 (mg/g): 1
COD (mg/g): 300
TOC (mg/g): 70

13 DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D002=Corrosive(pH, steel).

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

DOT HAZARD: Corrosive to steel
UN / NA NUMBER: UN3265
DOT EMERGENCY RESPONSE GUIDE #: 153

15 REGULATORY INFORMATION

TSCA:

All components of this product are listed in the TSCA inventory.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

SARA SECTION 312 HAZARD CLASS:

Immediate(acute)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	3	Serious Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	CORR	DOT corrosive
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	28-JAN-1997		** NEW **
	23-JUN-1997		28-JAN-1997
	03-MAY-2000	12	23-JUN-1997
	27-SEP-2000	4,11	03-MAY-2000
	30-MAY-2001	2,8,11	27-SEP-2000
	31-MAY-2001	15	30-MAY-2001
	02-AUG-2001	12	31-MAY-2001
	23-AUG-2001	4,12	02-AUG-2001
	09-JUL-2002	12	23-AUG-2001

THATCHER COMPANY MATERIAL SAFETY DATA SHEET
PRODUCT: AMMONIUM HYDROXIDE SOLUTION

MSDS Date: 8/1/2001 10:55 AM
Emergency Contact: 1-800-424-9300

SECTION I

PRODUCT NAME: Ammonium Hydroxide Solution (19% as NH_3)
CHEMICAL NAME: Ammonium Hydroxide
CHEMICAL FAMILY: Inorganic Base
SYNONYMS: Aqua Ammonia
FORMULA: NH_4OH
DOT SHIPPING INFORMATION: Ammonia Solutions, 8,
UN 2672; PG III
RQ = 1000 lbs

SECTION II - HAZARDOUS INGREDIENTS

This material contains no ingredients which are known by Thatcher Company to be hazardous unless listed below.

HAZARDOUS MATERIAL	CAS NUMBER	w/w %	EXPOSURE LIMITS IN AIR
Ammonium Hydroxide (19% as NH_3)	1336-21-6	39	TLV = 25 ppm (TWA)

The specific identity of some ingredients may be withheld for confidential business purposes. However, all known potential health effects from exposure to these ingredients are being addressed.

Ammonium Hydroxide is subject to the reporting requirements of EPCRA Section 101(14) (CERCLA; Pub. L. 96-510)

SECTION III - HEALTH HAZARD DATA

NFPA HAZARDOUS RATING: Health = 2 Flammability = 1 Reactivity = 0

Carcinogenic Listing:

NTP: No ingredients listed in this section.

IARC MONOGRAPHS: No ingredients listed in this section.

OSHA 29 CFR 1910: No ingredients listed in this section.

ENTRY ROUTES & EFFECTS OF OVEREXPOSURE:

Contact: Can be extremely irritating to eyes, and skin, causing possible burns and serious damage to eyes.

Inhalation: Vapor causes extensive irritation and/or burns to respiratory tract.

Ingestion: Harmful or fatal if swallowed, resulting in severe burns and pain to gastrointestinal system.

STATEMENT OF PRACTICAL TREATMENT:

Contact: Flush exposed area thoroughly with cool water. For eyes, flush for at least 15 minutes. GET PROMPT MEDICAL ATTENTION!

Inhalation: Immediately remove to fresh air. If breathing is difficult, administer oxygen. Consult a physician immediately.

Ingestion: If conscious, give several glasses of water or milk followed by dilute vinegar or citrus juice. DO NOT induce vomiting. Call a physician or local Poison Control Center at once!

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: nonflammable

FLAMMABLE LIMITS: Lel:N/A Uel: N/A

EXTINGUISHING MEDIA: Use any (Water, Chemical, CO_2, or Foam, etc.)

SPECIAL FIRE-FIGHTING PROCEDURES:
Firefighters should enter heavily-concentrated areas with self-contained breathing apparatus and full safety gear.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Ammonium hydroxide releases toxic ammonia gas when heated; protective gear should be worn. Rapid addition to concentrated mineral acids could create explosive conditions.

SECTION V - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
Use a respirator approved for ammonia, if the concentration in the air is above the ceiling limit.

VENTILATION:
Use ventilation to maintain TLV below 50 ppm. Mechanical ventilation is recommended.

EYE PROTECTION: Chemical splash goggles.

SKIN PROTECTION: Rubber gloves, rubber boots.

OTHER PROTECTIVE EQUIPMENT:
As needed to prevent contact with eyes and skin and to minimize exposure to vapor.

SECTION VI - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
Store in a cool place, away from heat. When opening the container, loosen cap or bung carefully to release any pressure that may ave built up. Do not breath the vapor.

SECTION VII - PHYSICAL DATA

BOILING POINT: 212 F*
*(loses ammonia gas when heated)

SPECIFIC GRAVITY: 0.90 – 0.94

VAPOR PRESSURE (mm Hg): Unknown

% VOLATILE, BY VOLUME: 100 %

VAPOR DENSITY (air = 1): Unknown

EVAPORATION RATE: N/A

pH: >14 **APPEARANCE AND ODOR:** Clear, water-white liquid with a sharp, pungent ammonia odor.

SECTION VIII - REACTIVITY DATA

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS OR MATERIALS TO AVOID:
Heat causes the release of ammonia gas. Do not mix with mineral acids; a large amount of heat is released through ensuing violent reaction.

HAZARDOUS DECOMPOSITION PRODUCTS:
Ammonia gas.

SECTION IX - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL SPILLS OR LEAKS:
Wear proper safety equipment; ventilate area thoroughly. Small spills can be neutralized with vinegar (dilute acetic acid) and absorbed with diatomaceous earth. Large spills should be diked and pumped into polyethylene drums. Neutralize any residual liquid and absorb into diatomaceous earth. Shovel the diatomaceous earth into polyethylene drums. After the removal of the material is complete, flush the contaminated area thoroughly with water and drain to the sewer, if permitted by local regulation agencies.

WASTE DISPOSAL METHOD:
Waste aqua ammonia is an EPA Characteristic Waste (DOO2, DOO3) due to corrosivity and reactivity. Contact an EPA approved waste disposal establishment or local environmental agency for approved disposal of this material. Comply with all local, state and federal regulations.

ACGIH = American Conference of Governmental Industrial Hygienists
CL = Ceiling Level
IARC = International Agency for Research on Cancer: Monographs
OSHA = Occupational Safety and Health Administration
N/A = Not Applicable
NTP = National Toxicology Program: Annual Report on Carcinogens
PEL = Permissible Exposure Level (OSHA)
TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average over 8 Hours

This information is, to the best of our knowledge, accurate but may not be complete. THATCHER COMPANY furnishes this information in good faith, but without warranty, representation or guarantee of its accuracy, completeness, or reliability.

Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is : 03/09/2005

PRODUCT NAME:	SULFURIC ACID 77-100%
MSDS NUMBER:	DQ4950CR
DATE ISSUED:	3/8/2005
SUPERSEDES:	2/23/2005
ISSUED BY:	004690

01 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

MATERIAL IDENTIFICATION

CAS NUMBER	: 7664-93-9
FORMULA	: H2SO4
MOLECULAR WEIGHT	: 98.08
CAS NAME	: SULFURIC ACID
GRADE	: 77 TO 100% TECHNICAL

COMPANY IDENTIFICATION

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
425-889-3400

PHONE NUMBERS
TRANSPORT EMERGENCY : CHEMTREC 1-800-424-9300(OUTSIDE U.S. 703-527-3887)

02 COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS

MATERIAL	CAS NUMBER	%
SULFURIC ACID	7664-93-9	
STRONG ACID MISTS CONTAINING SULFURIC ACID		
60 DEG TECHNICAL		77.7
66 DEG TECHNICAL		93.2
1.835 ELECTROLYTE		93.2
98% TECHNICAL		98
99% TECHNICAL		99

03 HAZARDS IDENTIFICATION
POTENTIAL HEALTH EFFECTS

EXPOSURE TO SULFURIC ACID MISTS BY INHALATION MAY CAUSE IRRITATION OF THE NOSE AND THROAT WITH SNEEZING, SORE THROAT OR RUNNY NOSE; NON-SPECIFIC EFFECTS SUCH AS HEADACHE, NAUSEA AND WEAKNESS. GROSS OVEREXPOSURE MAY CAUSE IRRITATION OF NOSE, THROAT, AND LUNGS WITH COUGH, DIFFICULTY BREATHING OR SHORTNESS OF BREATH. PULMONARY EDEMA (BODY FLUID IN THE LUNGS) WITH COUGH, WHEEZING, ABNORMAL LUNG SOUNDS, POSSIBLY PROGRESSING TO SEVERE SHORTNESS OF BREATH AND BLUISH DISCOLORATION OF THE SKIN; SYMPTOMS MAY BE DELAYED. REPEATED AND/OR PROLONGED EXPOSURE TO MISTS MAY CAUSE CORROSION OF TEETH.

SKIN CONTACT WITH LIQUID SULFURIC ACID MAY CAUSE SKIN CORROSION, BURNS OR ULCERS. CONTACT WITH A 1 % SOLUTION MAY CAUSE SLIGHT IRRITATION WITH ITCHING, REDNESS OR SWELLING. REPEATED AND/OR PROLONGED EXPOSURE TO MISTS MAY CAUSE IRRITATION WITH ITCHING, BURNING, REDNESS, SWELLING OR RASH.

EYE CONTACT WITH LIQUID SULFURIC ACID MAY CAUSE EYE CORROSION OR ULCERATION; BLINDNESS MAY RESULT. REPEATED AND/OR PROLONGED EXPOSURE TO MISTS MAY CAUSE EYE IRRITATION WITH TEARING, PAIN OR BLURRED VISION.

IMMEDIATE EFFECTS OF INGESTION OF SULFURIC ACID MAY INCLUDE BURNS OF THE MOUTH, THROAT, ESOPHAGUS AND STOMACH, WITH SEVERE PAIN, BLEEDING, VOMITING, DIARRHEA AND COLLAPSE OF BLOOD PRESSURE - DAMAGE MAY APPEAR DAYS AFTER EXPOSURE.

INCREASED SUSCEPTIBILITY TO THE EFFECTS OF THIS MATERIAL MAY BE OBSERVED IN PERSONS WITH PRE-EXISTING DISEASE OF THE LUNGS.

THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) CLASSIFIED "STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID" AS A CATEGORY 1 CARCINOGEN, A SUBSTANCE THAT IS "CARCINOGENIC TO HUMANS". THIS CLASSIFICATION IS FOR STRONG INORGANIC ACID MISTS ONLY AND DOES NOT APPLY TO SULFURIC ACID OR SULFURIC ACID SOLUTIONS. THE BASIS FOR THE IARC CLASSIFICATION RESTS ON SEVERAL EPIDEMIOLOGY STUDIES WHICH HAVE SEVERAL DEFICIENCIES. THESE STUDIES DID NOT ACCOUNT FOR EXPOSURE TO OTHER SUBSTANCES, SOME KNOWN TO BE ANIMAL OR POTENTIAL HUMAN CARCINOGENS, SOCIAL INFLUENCES (SMOKING, ETC.) AND INCLUDED SMALL NUMBERS OF SUBJECTS. BASED ON THE OVERALL WEIGHT OF EVIDENCE FROM ALL HUMAN AND CHRONIC ANIMAL STUDIES, NO DEFINITIVE CASUAL RELATIONSHIP BETWEEN SULFURIC ACID MIST EXPOSURE AND RESPIRATORY TRACT TUMORS HAS BEEN SHOWN.

"STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID" ARE ALSO LISTED BY THE NATIONAL TOXICOLOGY PROGRAM (NTP) AS "KNOWN HUMAN CARCINOGENS." THIS LIMITS THE CLASSIFICATION TO SULFURIC ACID AEROSOLS AND DOES NOT EXTEND TO THE LIQUID PRODUCT, UNLESS THE ACID IS USED UNDER CONDITIONS THAT RESULT IN THE FORMATION OF MISTS OR AEROSOLS. FUMING ACID IS COVERED BY THE CLASSIFICATION.

CARCINOGENICITY INFORMATION

THE FOLLOWING COMPONENTS ARE LISTED BY IARC, NTP, OSHA OR ACGIH AS CARCINOGENS.

MATERIAL	IARC	NTP	OSHA	ACGIH
STRONG ACID MISTS CONTAINING SULFURIC ACID	1	X		A2

04 FIRST AID MEASURES

FIRST AID

INHALATION

IF INHALED, IMMEDIATELY REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. PLEASE NOTE: SYMPTOMS MAY BE DELAYED; PROMPT MEDICAL ATTENTION MAY BE REQUIRED. CALL A PHYSICIAN.

SKIN CONTACT

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

WHILE THE PATIENT IS BEING TRANSPORTED TO A MEDICAL FACILITY, CONTINUE THE APPLICATION OF COLD, WET COMPRESSES. IF MEDICAL TREATMENT MUST BE DELAYED, REPEAT THE FLUSHING WITH COLD WATER OR SOAK THE AFFECTED AREA WITH COLD WATER TO HELP REMOVE THE LAST TRACES OF SULFURIC ACID. CREAMS OR OINTMENTS SHOULD NOT BE APPLIED BEFORE OR DURING THE WASHING PHASE OF TREATMENT.

EYE CONTACT

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN.

INGESTION

IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QUANTITY OF WATER. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIANS

CONTINUED WASHING OF THE AFFECTED AREA WITH COLD OR ICED WATER WILL BE HELPFUL IN REMOVING THE LAST TRACES OF SULFURIC ACID. CREAMS OR OINTMENTS SHOULD NOT BE APPLIED BEFORE OR DURING THE WASHING PHASE OF THE TREATMENT.

05 FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

WILL NOT BURN.

FIRE AND EXPLOSION HAZARDS:

REACTS WITH MOST METALS, ESPECIALLY WHEN DILUTE, TO GIVE FLAMMABLE, POTENTIALLY EXPLOSIVE HYDROGEN GAS. FOLLOW APPROPRIATE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CODES.

EXTINGUISHING MEDIA

USE MEDIA APPROPRIATE FOR SURROUNDING MATERIAL.

USE WATER SPRAY TO COOL CONTAINERS EXPOSED TO FIRE; DO NOT GET WATER INSIDE CONTAINERS.

FIRE FIGHTING INSTRUCTIONS

EVACUATE PERSONNEL TO A SAFE AREA. KEEP PERSONNEL REMOVED AND UPWIND OF FIRE. GENERATES HEAT UPON ADDITION OF WATER, WITH POSSIBLE SPATTERING. WEAR FULL PROTECTIVE CLOTHING. RUNOFF FROM FIRE CONTROL MAY CAUSE POLLUTION. NEUTRALIZE RUN-OFF WITH LIME, SODA ASH, ETC., TO PREVENT CORROSION OF METALS AND FORMATION OF HYDROGEN GAS. WEAR SELF-CONTAINED BREATHING APPARATUS IF FUMES OR MISTS ARE PRESENT.

06 ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL)

NOTE: REVIEW FIRE FIGHTING MEASURES AND HANDLING (PERSONNEL) SECTIONS BEFORE PROCEEDING WITH CLEAN-UP. USE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT DURING CLEAN-UP.

ACCIDENTAL RELEASE MEASURES

STOP FLOW IF POSSIBLE. REVIEW "FIRE AND EXPLOSION HAZARDS" AND "SAFETY PRECAUTIONS" BEFORE PROCEEDING WITH CLEAN UP. USE APPROPRIATE PROTECTIVE EQUIPMENT DURING CLEAN UP. SOAK UP SMALL SPILLS WITH DRY SAND, CLAY OR DIATOMACEOUS EARTH. DIKE LARGE SPILLS, AND CAUTIOUSLY DILUTE AND NEUTRALIZE WITH LIME OR SODA ASH, AND TRANSFER TO WASTE WATER TREATMENT SYSTEM. PREVENT LIQUID FROM ENTERING SEWERS, WATERWAYS, OR LOW AREAS.

IF THIS PRODUCT IS SPILLED AND NOT RECOVERED, OR IS RECOVERED AS A WASTE FOR TREATMENT OR DISPOSAL, THE REPORTABLE QUANTITY IS 1,000 LBS. (BASED ON THE SULFURIC ACID CONTENT OF THE SOLUTION SPILLED). COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES.

VENDOR EMERGENCY EXPOSURE LIMITS (EEL) ARE ESTABLISHED TO FACILITATE SITE OR PLANT EMERGENCY EVACUATION AND SPECIFY AIRBORNE CONCENTRATIONS OF BRIEF DURATIONS WHICH SHOULD NOT RESULT IN PERMANENT ADVERSE HEALTH EFFECTS OR INTERFERE WITH ESCAPE. EEL'S ARE EXPRESSED AS AIRBORNE CONCENTRATION MULTIPLIED BY TIME (CXT) FOR UP TO A MAXIMUM OF 60 MINUTES AND AS A CEILING AIRBORNE CONCENTRATION. THESE LIMITS ARE USED IN CONJUNCTION WITH ENGINEERING CONTROLS/MONITORING AND AS AN AID IN PLANNING FOR EPISODIC RELEASES AND SPILLS.

THE VENDOR EMERGENCY EXPOSURE LIMIT (EEL) FOR SULFURIC ACID IS 10 MG/M3 FOR 15 TO 60 MINUTES AND 20 MG/M3 FOR UP TO 15 MINUTES WITH A NOT-TO-EXCEED CEILING OF 20 MG/M3.

07 HANDLING AND STORAGE

HANDLING (PERSONNEL)

DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. AVOID BREATHING VAPORS OR MIST. WASH THOROUGHLY AFTER HANDLING.

KEEP CONTAINERS CLOSED. DO NOT ADD WATER TO CONTENTS WHILE IN CONTAINER BECAUSE OF VIOLENT REACTION.

STORAGE

KEEP OUT OF SUN AND AWAY FROM HEAT, SPARKS, AND FLAME. KEEP CONTAINER TIGHTLY CLOSED AND (DRUM) CLOSURE UP TO PREVENT LEAKAGE. LOOSEN CLOSURE CAREFULLY. RELIEVE INTERNAL PRESSURE WHEN RECEIVED AND AT LEAST WEEKLY THEREAFTER. DO NOT USE PRESSURE TO EMPTY. BE SURE CLOSURE IS SECURELY FASTENED BEFORE MOVING CONTAINER. DO NOT WASH OUT CONTAINER OR USE IT FOR OTHER PURPOSES; REPLACE CLOSURE AFTER EACH WITHDRAWAL AND RETURN IT WITH EMPTY CONTAINER.

08 EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

GOOD GENERAL VENTILATION SHOULD BE PROVIDED TO KEEP VAPOR AND MIST CONCENTRATIONS BELOW THE EXPOSURE LIMITS.

PERSONAL PROTECTIVE EQUIPMENT

HAVE AVAILABLE AND WEAR AS APPROPRIATE FOR EXPOSURE CONDITIONS WHEN HANDLING CONTAINERS OR OPERATING EQUIPMENT CONTAINING SULFURIC ACID: CHEMICAL SPLASH GOGGLES; FULL-LENGTH FACE SHIELD/CHEMICAL SPLASH GOGGLES COMBINATION; ACID-PROOF GAUNTLET GLOVES, APRON, AND BOOTS; LONG SLEEVE WOOL, ACRYLIC, OR POLYESTER CLOTHING; ACID PROOF SUIT AND HOOD; AND APPROPRIATE NIOSH RESPIRATORY PROTECTION. IN CASE OF EMERGENCY OR WHERE THERE IS A STRONG POSSIBILITY OF CONSIDERABLE EXPOSURE, WEAR A COMPLETE ACID SUIT WITH HOOD, BOOTS, AND GLOVES. IF ACID VAPOR OR MIST ARE PRESENT AND EXPOSURE LIMITS MAY BE EXCEEDED, WEAR APPROPRIATE NIOSH RESPIRATORY PROTECTION.

EXPOSURE GUIDELINES

EXPOSURE LIMITS

SULFURIC ACID, 77 TO 100%

PEL	(OSHA)	: 1 MG/M3, 8 HR. TWA
TLV	(ACGIH)	: 0.2 MG/M3, 8 HR. TWA A2 (SULFURIC ACID CONTAINED IN STRONG INORGANIC ACID MISTS)
AEL	(VENDOR)	: 0.5 MG/M3, 8 & 12 HR. TWA 1.5 MG/M3, 15 MINUTE TWA

AEL IS VENDOR S ACCEPTABLE EXPOSURE LIMIT. WHERE GOVERNMENTALLY IMPOSED OCCUPATIONAL EXPOSURE LIMITS WHICH ARE LOWER THAN THE AEL ARE IN EFFECT, SUCH LIMITS SHALL TAKE PRECEDENCE.

09 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

BOILING POINT	: 193-327 C (379-621 F) @ 760 MM HG
VAPOR PRESSURE	: <0.3 MM HG @ 25 C (77 F) <0.6 MM HG @ 38 C (100 F)
VAPOR DENSITY	: 3.4
MELTING POINT	: -35 TO 11 C (-31 TO 52 F)
EVAPORATION RATE	: <1 (BUTYL ACETATE=1.0)
SOLUBILITY IN WATER	: 100 WT%
PH	: <1
ODOR	: ODORLESS.
FORM	: OILY; CLEAR TO TURBID LIQUID
COLOR	: COLORLESS TO LIGHT GRAY

GRADE	BOILING PT.	MELTING PT.	SPECIFIC

	DEG C	DEG F	DEG C	DEG F	GRAVITY
60 DEG TECHNICAL	193	380	-12	10	1.706
66 DEG TECHNICAL	279	535	-35	-31	1.835
1.835 ELECTROLYTE	279	535	-35	-31	1.835
98% TECHNICAL	327	621	-2	29	1.844
99% TECHNICAL	310	590	4	40	1.842
100% TECHNICAL	274	526	11	51	1.839

10 STABILITY AND REACTIVITY

CHEMICAL STABILITY

STABLE, BUT REACTS VIOLENTLY WITH WATER AND ORGANIC MATERIALS WITH EVOLUTION OF HEAT.

INCOMPATIBILITY WITH OTHER MATERIALS

VIGOROUS REACTIONS WITH WATER; ALKALINE SOLUTIONS; METALS, METAL POWDER; CARBIDES; CHLORATES; FUMINATES; NITRATES; PICRATES; STRONG OXIDIZING, REDUCING, OR COMBUSTIBLE ORGANIC MATERIALS. HAZARDOUS GASES ARE EVOLVED ON CONTACT WITH CHEMICALS SUCH AS CYANIDES, SULFIDES, AND CARBIDES.

DECOMPOSITION

RELEASES SULFUR DIOXIDE AT EXTREMELY HIGH TEMPERATURES.

POLYMERIZATION

POLYMERIZATION WILL NOT OCCUR.

11 TOXICOLOGICAL INFORMATION

ANIMAL DATA

EYE:

ANIMAL TESTING INDICATES THIS MATERIAL IS CORROSIVE TO THE EYE, WHEN TESTED UNDILUTED. ANIMAL TESTING INDICATES THIS MATERIAL IS A MODERATE EYE IRRITANT, WHEN TESTED AS 10 % SOLUTION.

SKIN:

THE CONCENTRATED COMPOUND IS CORROSIVE. ANIMAL TESTING INDICATES THIS MATERIAL IS A SLIGHT SKIN IRRITANT, WHEN TESTED AS 10 % SOLUTION.

INGESTION:

LD50, RAT: 2,140 MG/KG.

INHALATION:

8 HOUR, LC50,.GUINEA PIGS: 30 MG/M3.
SINGLE AND REPEATED EXPOSURE CAUSED: IRRITATION OF THE RESPIRATORY TRACT. CORROSION OF THE RESPIRATORY TRACT. LUNG DAMAGE. LABORED BREATHING. ALTERED RESPIRATORY RATE. PULMONARY EDEMA. REPEATED EXPOSURE CAUSED: ALTERED RED BLOOD CELL COUNT.

CARCINOGENIC, DEVELOPMENTAL, REPRODUCTIVE, MUTAGENIC EFFECTS:

NO ADEQUATE ANIMAL DATA ARE AVAILABLE TO DEFINE THE CARCINOGENIC POTENTIAL OF THIS MATERIAL. LIMITED STUDIES DO NOT SUGGEST EFFECTS. IN ANIMAL TESTING THIS MATERIAL HAS NOT CAUSED DEVELOPMENTAL TOXICITY. NO ANIMAL DATA ARE AVAILABLE TO DEFINE THE FOLLOWING EFFECTS OF THIS MATERIAL: REPRODUCTIVE TOXICITY. THIS MATERIAL HAS NOT PRODUCED GENETIC DAMAGE IN BACTERIAL CULTURES. IT HAS NOT BEEN TESTED FOR GENETIC TOXICITY IN MAMMALIAN CELL CULTURES OR IN ANIMALS.

12 ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

AQUATIC TOXICITY:
SLIGHTLY TO MODERATELY TOXIC.
96 HOUR LC50 - BLUEGILL SUNFISH: 10.5 PPM.
48 HOUR TLM - FLOUNDER: 100-300 PPM

13 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

CLEANED-UP MATERIAL MAY BE AN RCRA HAZARDOUS WASTE ON DISPOSAL DUE TO THE CORROSIVITY CHARACTERISTIC. DO NOT FLUSH TO SURFACE WATER OR SANITARY SEWER SYSTEM. COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS. IF APPROVED, NEUTRALIZE AND TRANSFER TO WASTE TREATMENT SYSTEM.

14 TRANSPORTATION INFORMATION

SHIPPING INFORMATION

DOT/IMO

PROPER SHIPPING NAME	: SULFURIC ACID
HAZARD CLASS	: 8
UN NO.	: 1830
DOT/IMO LABEL	: CORROSIVE
PACKING GROUP	: II
REPORTABLE QUANTITY	: 1000 LB (454 KG)

15 REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA INVENTORY STATUS : REPORTED/INCLUDED.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

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

HAZARDOUS CHEMICAL LISTS

SARA EXTREMELY HAZARDOUS SUBSTANCE	: YES
CERCLA HAZARDOUS SUBSTANCE	: YES
SARA TOXIC CHEMICAL	: NO

STATE REGULATIONS (U.S.)

STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID ARE

KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

16 OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA RATING

HEALTH	: 3
FLAMMABILITY	: 0
REACTIVITY	: 2

WATER REACTIVE.

NPCA-HMIS RATING

HEALTH	: 3
FLAMMABILITY	: 0
REACTIVITY	: 2

PERSONAL PROTECTION RATING TO BE SUPPLIED BY USER DEPENDING ON USE CONDITIONS.

ADDITIONAL INFORMATION

BECAUSE OF ITS CORROSIVE CHARACTERISTICS AND INHERENT HAZARDS, SULFURIC ACID SHOULD NOT BE USED IN SEWER OR DRAIN CLEANERS OR ANY SIMILAR APPLICATION; REGARDLESS OF WHETHER THEY ARE FORMULATED FOR RESIDENTIAL, COMMERCIAL OR INDUSTRIAL USE. VENDOR WILL NOT KNOWINGLY SELL SULFURIC ACID TO INDIVIDUALS OR COMPANIES WHO REPACKAGE THE PRODUCT FOR SALE AS SEWER OR DRAIN CLEANERS, OR ANY OTHER SIMILAR USE.

For Additional Information:
Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

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END OF MSDS

Vulcan CHEMICALS

Business Unit of Vulcan Materials Co

MATERIAL SAFETY DATA SHEET

24 Hour Emergency Phone 316/524-5751

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Caustic Soda, 50% and Weaker Solutions

CHEMICAL NAME
Sodium Hydroxide Solution

SYNONYMS
Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye

MANUFACTURER
Vulcan Chemicals, P O Box 385015, Birmingham, AL 35238-5015

SECTION 2 COMPOSITION INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	% RANGE	OSHA PEL
Sodium Hydroxide	1310-73-2	50 and less	2 mg/m^3 Ceiling

This Material Safety Data Sheet is also valid for caustic soda solutions weaker than 50%. The boiling point, vapor pressure, and specific gravity will be different from those listed.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Colorless or slightly colored, clear or opaque; odorless.
DANGER! Causes severe burns to skin, eyes and digestive tract.
Harmful if swallowed or inhaled.

POTENTIAL HEALTH EFFECTS

INHALATION
Breathing this material is harmful and can cause death. Harmful effects include burns and permanent damage to the airways, including the nose, throat, and lungs.

SKIN
Causes skin burns and permanent skin damage.

EYES
Causes burns and permanent injury to eye tissue. Can cause blindness.

INGESTION
Swallowing this material may be harmful or cause death. Harmful effects include burns and permanent damage to the digestive tract, including the mouth, throat, stomach and intestines. Symptoms may include severe abdominal pain and vomiting of blood. Blood loss through damaged tissue can lead to low blood pressure and shock.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
May aggravate existing skin and/or eye conditions on contact.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
None known.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove individual to fresh air and get immediate medical attention. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration.

SKIN

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get immediate medical attention. Wash clothing before reuse and throw away shoes which cannot be thoroughly cleaned.

EYES

Hold the eyelids apart and flush the eye gently with a large amount of water for at least 15 minutes. Get immediate medical attention.

INGESTION

Get immediate medical attention. Do not induce vomiting unless directed to do so by medical personnel since this can damage the mouth and throat. Never give anything by mouth to an unconscious person.

See Section 11 for Toxicological Information

SECTION 5 FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT
None

AUTOIGNITION TEMPERATURE
None

FLAMMABLE LIMITS IN AIR (PERCENT BY VOLUME)
None

HAZARDOUS COMBUSTION PRODUCTS
None

EXTINGUISHING MEDIA
N/A

FIRE FIGHTING INSTRUCTIONS

Approach fire from upwind to avoid hazardous vapors. Use flooding quantities of water as fog or spray to keep fire-exposed containers cool. Extinguish fire using agent suitable for surrounding fire.

Firefighters should wear self-contained positive pressure breathing apparatus, and avoid skin contact. Refer to Reactivity Data, Section 10.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Cleanup personnel must wear proper protective equipment (refer to Section 8). Completely contain spilled material with dikes, sandbags, etc., and prevent run-off into ground or surface waters or sewers. Recover as much material as possible into containers for disposal. Remaining material may be diluted with water and neutralized with dilute hydrochloric acid. Neutralization products, both liquid and solid, must be recovered for disposal. Reportable Quantity (RQ) is 1000 lbs. Notify National Response Center (800/424-8802) of uncontained releases to the environment in excess of the RQ.

SECTION 7 HANDLING AND STORAGE

HANDLING

Follow protective controls set forth in Section 8 when handling this product. Do not taste or swallow. Avoid contact with skin and avoid breathing mist. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom. Any protective clothing or shoes which become contaminated with caustic should be removed immediately and thoroughly laundered before any reuse.

When diluting with water, slowly add caustic solution to the water. Heat will be produced during dilution. Full protective clothing, goggles and faceshield should be worn. Do not add water to caustic because excessive heat formation will cause boiling and spattering.

STORAGE

STORAGE CONDITIONS

Store in closed, properly labeled tanks or containers. Do not remove or deface labels or tags.

Contact of caustic soda cleaning solutions with food and beverage products (in enclosed vessels or spaces) can produce lethal concentrations of carbon monoxide gas. Do not enter confined spaces such as tanks or pits without following proper entry procedures as required by 29 CFR 1910.146.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT

Aluminum equipment should not be used for storage and/or transfer.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

ENGINEERING CONTROLS

VENTILATION

As necessary to maintain concentration in air below 2 mg/m^3 at all times.

PERSONAL PROTECTIVE EQUIPMENT

EYE AND FACE PROTECTION

Wear chemical goggles. A face shield should be worn in addition to goggles where splashing or spraying is a possibility.

SKIN PROTECTION

Wear chemical resistant clothing, boots, and gloves, which are made of neoprene, PVC, or rubber. Always place pants legs over boots.

RESPIRATORY PROTECTION

Where concentrations exceed or are likely to exceed 2 mg/m^3 use a NIOSH/MSHA approved high-efficiency particulate filter with full facepiece or self-contained breathing apparatus. Follow any applicable respirator use standards and regulations.

GENERAL

Safety shower and eyewash station must be located in immediate work area. To determine the exposure level(s), monitoring should be performed regularly. Protective equipment and clothing should be selected, used, and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer or the Vulcan Chemicals Technical Service Department.

EXPOSURE GUIDELINES

ACGIH: 2 mg/m^3 Ceiling (based on irritation effects)
OSHA: 2 mg/m^3 Ceiling

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH
IDLH: 10 mg/m^3

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL FORMULA
NaOH

MOLECULAR WEIGHT
40.00

APPEARANCE AND ODOR
Colorless or slightly colored, clear or opaque; odorless

SPECIFIC GRAVITY
50% Solution: 1.53 @ 60°F/60°F

VAPOR PRESSURE
50% Solution: 6.3 mm Hg @ 104°F

VOLATILES, PERCENT BY VOLUME
0

BOILING POINT
50% Solution: 293°F (145°C)

VAPOR DENSITY
N/A (Air = 1)

EVAPORATION RATE
0

SOLUBILITY IN WATER
100%

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY
Stable

CONDITIONS TO AVOID
Mixture with water, acid or incompatible materials can cause splattering and release of large amounts of heat (Refer to Section 8). Will react with some metals forming flammable hydrogen gas.

INCOMPATIBILITY WITH OTHER MATERIALS
Chlorinated and fluorinated hydrocarbons (i.e. chloroform, difluoroethane), acetaldehyde, acrolein, aluminum, chlorine trifluoride, hydroquinone, maleic anhydride, phosphorous pentoxide and tetrahydrofuran.

HAZARDOUS DECOMPOSITION PRODUCTS
Will not decompose.

HAZARDOUS POLYMERIZATION
Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

INHALATION
Inhalation of solution mist can cause mild irritation at 2 mg/m^3. More severe burns and tissue damage at the upper respiratory tract, can occur at higher concentrations. Pneumonitis can result from severe exposures.

SKIN

Major potential hazard - contact with the skin can cause severe burns with deep ulcerations Contact with solution or mist can cause multiple burns with temporary loss of hair at burn site. Solutions of 4% may not cause irritation and burning for several hours, while 25% to 50% solutions can cause these effects in less than 3 minutes.

EYE

Major potential hazard - Liquid in the eye can cause severe destruction and blindness. These effects can occur rapidly effecting all parts of the eye. Mist or dust can cause irritation with high concentrations causing destructive burns.

INGESTION

Ingestion of sodium hydroxide can cause severe burning and pain in lips, mouth, tongue, throat and stomach. Severe scarring of the throat can occur after swallowing. Death can result from ingestion.

ANIMAL TOXICOLOGY

Oral LD_{LO}: 500 mg/kg (rabbit)

CHRONIC TOXICITY

No known chronic effects.

CARCINOGENICITY

No studies were identified relative to sodium hydroxide and carcinogenicity. Sodium hydroxide is not listed on the IARC, NTP or OSHA carcinogen lists.

DEVELOPMENTAL TOXICITY

No studies were identified relative to sodium hydroxide and developmental toxicity.

SECTION 12 ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE

Water: Will dissolve readily in water, raising pH.

ECOTOXICITY

Acute TLm (48 Hours) for Bluegill:	99 mg/l
Acute TLm (96 Hours) for Mosquito Fish:	125 ppm

SECTION 13 DISPOSAL CONSIDERATIONS

All disposals of this material must be done in accordance with local, state and Federal regulations. Waste characterization and compliance with disposal regulations are the responsibilities of the waste generator.

SPILL RESIDUES

Recovered solids or liquids may be sent to a licensed reclaimer or disposed of in a permitted waste management facility. Consult federal, state, or local disposal authorities for approved procedures.

SECTION 14 TRANSPORT INFORMATION

DOT IDENTIFICATION NO.

UN 1824

DOT SHIPPING DESCRIPTION (49 CFR 172.101)

Sodium Hydroxide Solution, 8, UN 1824, PG II, RQ

PLACARD REQUIRED
Corrosive, 1824, Class 8

LABEL REQUIRED
Corrosive, Class 8.
Label as required by OSHA Hazard Communication Standard, and any applicable state and local regulations.

IMO REQUIREMENTS
EmS No.: 8-06 MFAG Table No.: 705 IMDG Code Page: 8226

SECTION 15 REGULATORY INFORMATION

U S FEDERAL REGULATIONS

REPORTABLE QUANTITY (RQ)
Reportable Quantity (RQ) is 1000 lbs.

TOXIC SUBSTANCES CONTROL ACT
Listed on TSCA Inventory

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III
Components identified with an asterisk (*) in Section 2 are subject to the reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

SARA HAZARD CATEGORIES (40 CFR 370.2)
HEALTH: Immediate Health.

INTERNATIONAL REGULATIONS

CANADA

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) CLASSIFICATION
WHMIS Classifications applicable to this product:
E (Corrosive Material) based on assignment to TDG Class 8

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
All components of this product are on the Domestic Substances List (DSL).

HAZARDOUS PRODUCTS ACT
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR).

EUROPE

EINECS No.: 215-185-5

STATE REGULATIONS

CALIFORNIA PROPOSITION 65
Not listed.

SECTION 16 OTHER INFORMATION

NFPA RATINGS
Health 3; Flammability 0; Reactivity 1

Medical Emergencies:
Call toll-free 24 hours a day
for emergency toxicological
information 888/211-9412

Other Emergency Information:
Call 316/524-5751 (24 Hours)

For any other information contact:
Vulcan Chemicals
Technical Service Department
P O Box 385015
Birmingham, AL 35238-5015
800/873-4898
8 AM - 5 PM, Central Time
Monday through Friday

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NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Date of Preparation: November 6, 2000

FORM 3239-210

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 29-JAN-1997
PRINTED DATE: 03-DEC-1998

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1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DEPOSITROL BL5301

PRODUCT APPLICATION AREA: WATER-BASED DEPOSIT CONTROL AGENT.

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road, Trevose, Pa. 19053
Information phone number: (215) - 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

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2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
2809-21-4	PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP) Corrosive (eyes)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause moderate irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard: Corrosive to steel
Emergency Response Guide #153
Odor: Mild; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause gastrointestinal irritation with possible nausea, vomiting, abdominal discomfort and diarrhea.

TARGET ORGANS:
No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
Remove contaminated clothing. Wash exposed area with a large quantity of soap solution or water for 15 minutes.

EYE CONTACT:
Immediately flush eyes with water for 15 minutes. Immediately contact a physician for additional treatment.

INHALATION:
Remove victim from contaminated area to fresh air. Apply appropriate first aid treatment as necessary.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:
> 200F > 93C P-M(CC)

MISCELLANEOUS:
Corrosive to steel
UN3265;Emergency Response Guide #153

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7) HANDLING AND STORAGE

HANDLING:
Acidic. Do not mix with alkaline material.

STORAGE:
Keep containers closed when not in use. Use approved containers only. Store in cool, well-vented area. Contact with metals may release flammable hydrogen gas.

 CONTINUED

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

CHEMICAL NAME	EXPOSURE LIMITS
PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS- (HEDP)	
PEL (OSHA):	NOT DETERMINED
TLV (ACGIH):	NOT DETERMINED

ENGINEERING CONTROLS:
adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:
rubber gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:
splash proof chemical goggles

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.406	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< -30	Vapor Density (air=1)	< 1.00
Freeze Point (C)	< -34		
Viscosity(cps 70F,21C)	80	% Solubility (water)	100.0

Odor		Mild
Appearance		Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		< 1.0
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

CONTINUED

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>4,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>4,000 mg/kg
NOTE - Estimated value	
Eye Irritation Score RABBIT:	9.3
NOTE - Maximum score at 48 hr; completely reversible by day 14	

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 48 Hour Static Screen
Toxicity estimated from product with similar formulation at a pH of 6-9.

0% Mortality: 500 mg/L

Daphnia magna 48 Hour Static Screen
Toxicity estimated from product with similar formulation at a pH of 6-9.

0% Mortality: 500 mg/L

BIODEGRADATION

COD (mg/gm):	329 Calculated
TOC (mg/gm):	89 Calculated
BOD-5 (mg/gm):	3 Calculated
BOD-28 (mg/gm):	7 Calculated

CONTINUED

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D002 = Corrosive(pH, steel).

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14) TRANSPORT INFORMATION

DOT HAZARD:	Corrosive to steel
UN / NA NUMBER:	UN3265
DOT EMERGENCY RESPONSE GUIDE #:	153

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
SARA SECTION 312 HAZARD CLASS:
Immediate(acute)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

CONTINUED

16) OTHER INFORMATION

NFPA/HMIS	CODE TRANSLATION	
Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	CORR	DOT corrosive
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	29-JAN-1997		** NEW **

GE Betz

GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
Business telephone: (215) 355-3300

Material Safety Data Sheet

Issue Date: 26-NOV-2002

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

CORRSHIELD NT402

PRODUCT APPLICATION AREA:

CORROSION INHIBITOR.

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
7632-00-0	SODIUM NITRITE Oxidizer; toxic (by ingestion); potential blood toxin
12179-04-3	BORIC ACID,DISODIUM SALT,PENTAHYDRATE Irritant (abraded skin); slight irritant (respiratory)

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

3 HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

WARNING

May cause moderate irritation to the skin. Severe irritant to the eyes. Mists/aerosols cause irritation to the upper respiratory tract.

DOT hazard: ORS (when container > RQ)
Emergency Response Guide #31
Odor: Slight; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: Flood with water. Use of CO_2 or foam may not be effective.

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin.

ACUTE EYE EFFECTS:
Severe irritant to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols cause irritation to the upper respiratory tract.

INGESTION EFFECTS:
Toxic;
May cause gastrointestinal irritation with possible nausea, vomiting, headache, dizziness, unconsciousness and injury to the kidneys and liver.

TARGET ORGANS:
Prolonged or repeated exposures may cause CNS depression and/or toxicity to the liver, kidney, and blood system.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin.

4 FIRST AID MEASURES

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists.

EYE CONTACT:
Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:
If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Dilute contents of stomach. Induce vomiting by one of the standard methods. Immediately contact a physician.

NOTES TO PHYSICIANS:
No special instructions

5 FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:
Flood with water. Use of CO2 or foam may not be effective.

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:
> 200F > 93C P-M(CC)

MISCELLANEOUS:
ORS (when container > RQ)
NA3082;Emergency Response Guide #31

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

HANDLING:
Contains an oxidizer. Avoid all contact with reducing agents, oils, greases, organics and acids. Do not allow to dry.

STORAGE:
Keep containers closed when not in use. Protect from freezing.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

SODIUM NITRITE
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

BORIC ACID,DISODIUM SALT,PENTAHYDRATE
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): 1 MG/M3

ENGINEERING CONTROLS:
Adequate ventilation to maintain air contaminants below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:

rubber gloves-- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.250	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	< < 0	Vapor Density (air=1)	< 1.00
Freeze Point (C)	< -18		
Viscosity(cps 70F,21C)	12	% Solubility (water)	100.0

Odor		Slight
Appearance		Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		11.6
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

STABILITY:

Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

Thermal decomposition (destructive fires) yields elemental oxides.

INTERNAL PUMPOUT/CLEANOUT CATEGORIES:

"B"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	~275 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>5,000 mg/kg
NOTE - Estimated value	

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Ceriodaphnia 48 Hour Static Renewal Bioassay
LC50= 61; No Effect Level= 15.6 mg/L

Daphnia magna 48 Hour Static Renewal Bioassay pH of test solutions was adjusted to a level of 6-9.
LC50= 100; No Effect Level= 38 mg/L

Fathead Minnow 96 Hour Static Renewal Bioassay
LC50= 1072; No Effect Level= 500 mg/L

Rainbow Trout 96 Hour Static Acute Bioassay
LC50= 180; No Effect Level= 100 mg/L

BIODEGRADATION

BOD-28 (mg/g): 1
BOD-5 (mg/g): 0
COD (mg/g): 79
TOC (mg/g): 4

13 DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

DOT HAZARD:	ORS (when container > RQ)
UN / NA NUMBER:	NA3082
DOT EMERGENCY RESPONSE GUIDE #:	31

15 REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
32 gallons due to SODIUM NITRITE;
SARA SECTION 312 HAZARD CLASS:
Immediate(acute);Delayed(Chronic)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:

CAS#	CHEMICAL NAME	RANGE
7632-00-0	SODIUM NITRITE	21.0-30.0%

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	2	Moderate Hazard
Fire	0	Minimal Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	13-FEB-1997		** NEW **
	23-JUN-1997		13-FEB-1997
	16-NOV-2001	15	23-JUN-1997
	09-OCT-2002	12	16-NOV-2001
	10-OCT-2002	4,16	09-OCT-2002
	26-NOV-2002	12	10-OCT-2002

****
PRODUCT IDENTIFICATION
****

PRODUCT NAME: HYDRAZINE 35%

MSDS#: P29071VS

DATE ISSUED: 05/21/01

SUPERSEDES: 07/13/00

ISSUED BY: 009771

BAYER CORPORATION
PRODUCT SAFETY & REGULATORY AFFAIRS
100 Bayer Road
Pittsburgh, PA 15205-9741

TRANSPORTATION EMERGENCY		NON-TRANSPORTATION	
CALL CHEMTREC:	800-424-9300	BAYER EMERGENCY PHONE...:	(412) 923-1800
INTERNATIONAL:	703-527-3887	BAYER INFORMATION PHONE.:	(800) 662-2927

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME : Hydrazine 35
PRODUCT CODE : V350
CHEMICAL FAMILY : Diamines
CHEMICAL NAME : Hydrazine
SYNONYMS : 54.7 % Hydrazine Hydrate; Aqueous Hydrazine Solution; Diamide Hydrate
FORMULA : $N_2H_4.H_2O$

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS		CONCENTRATION (%)
	*********HAZARDOUS INGREDIENTS*********		
Hydrazine 302-01-2	OSHA :	1.00 ppm TWA - Skin 1.30 mg/m3 TWA - Skin	Approx. 35 %
	ACGIH:	.01 ppm TWA - Skin .013 mg/m3 TWA - Skin	

3. HAZARDS IDENTIFICATION:

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EMERGENCY OVERVIEW

WARNING! Toxic; Color: Colorless to slightly yellow; Form: Liquid; Odor: Ammonia like (fishy); May cause eye, skin, and respiratory tract irritation; Harmful if inhaled or ingested; May cause allergic skin reaction; May be fatal if absorbed through skin; May cause liver damage; May cause kidney damage; May affect nervous system; May cause lung

damage; May cause blood disorders; May cause cancer based on animal data; Sudden reaction and fire may result when mixed with oxidizing agents; Use cold water spray to cool fire-exposed containers to minimize the risk of rupture; Toxic gases/fumes are given off during burning or thermal decomposition.
****

POTENTIAL HEALTH EFFECTS:

ROUTE (S) OF ENTRY : Inhalation; Eye Contact; Skin Contact; Skin Absorption

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE INHALATION:
In sufficient concentrations, hydrazine vapors will cause irritation to the upper respiratory tract. Symptoms may include coughing, sore throat, dizziness and nausea.
CHRONIC INHALATION:
Repeated or prolonged inhalation of hydrazine may lead to liver and kidney damage, hemolysis (destruction) of red blood cells, and pneumonia.
ACUTE SKIN CONTACT:
Direct skin contact with this product may cause local irritation resulting in possible symptoms such as discomfort, itching, reddening and swelling. Hydrazine can be absorbed through the skin. Extensive skin contamination may result in fatal or near fatal consequences due to hepatic (liver) effects, central nervous system effects or other systemic effects.
CHRONIC SKIN CONTACT:
Prolonged or repeated skin contact may cause dermatitis (inflammation) in the form of erythema (reddening of the skin), blistering or eczema-like (dermatitis) rash. Absorption of hydrazine may lead to liver and kidney damage and hemolysis of red blood cells. Some individuals have exhibited allergic skin reactions which disappear when removed from exposure to hydrazine.
ACUTE EYE CONTACT:
Direct eye contact with hydrazine causes irritation. Possible symptoms may include discomfort, reddening and tearing. Severe eye exposure to hydrazine vapors has been reported to cause temporary blindness, lasting for as long as twenty-four (24) hours. Eye irritation may be delayed following exposure to hydrazine vapors.
ACUTE INGESTION:
Hydrazine is irritating to the mucous membranes. Hydrazine is toxic by ingestion. Ingestion can result in fatal to near fatal consequences due to hepatic (liver) damage, central nervous system effects or other systemic effects.
CHRONIC INGESTION:
Repeated or prolonged absorption of hydrazine into the body may lead to liver and kidney damage and hemolysis of red blood cells.
OTHER EFFECTS OF EXPOSURE:
While hydrazine is known to be an animal carcinogen, no link has been established to cancer in humans. In an epidemiology study of hydrazine manufacturing workers covering more than thirty (30) years has found no unusual excess of cancer. (1)

CARCINOGENICITY
NTP:
Hydrazine is listed as a Substance Reasonably Anticipated to be Carcinogenic in the National Toxicology Program (NTP) Seventh Annual Report on Carcinogens, 1994.
IARC:
Hydrazine is listed by the International Agency for Research on Cancer (IARC) as Group 2B, Possible Human Carcinogen; human evidence inadequate, animal evidence sufficient.
OSHA:
Not regulated.
OTHER:
Based on the results of animal studies, the ACGIH has listed hydrazine in

appendix A3, Confirmed Animal Carcinogen with Unknown Relevance to Humans in the ACGIH Threshold Limit Values for 1998.

MEDICAL CONDITIONS
AGGRAVATED BY EXPOSURE:
Persons with preexisting eye, skin or respiratory tract, or impaired liver and/or kidney function conditions may be more susceptible to the effects of this chemical.
EXPOSURE LIMITS: Refer to Section 2.

1 Br. J. Ind. Med. 41, 31-34.

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4. FIRST AID MEASURES:

FIRST AID FOR EYES: Flush the eyes with large amounts of running water at room temperature for at least 15 minutes and see a physician, preferably an ophthalmologist, immediately.
FIRST AID FOR SKIN: Wash immediately with cool, running water while removing contaminated clothing and shoes. Avoid using hot water and hard rubbing. Consult a physician, particularly if exposure is extensive, prolonged, or irritation persists after washing. Wash contaminated clothing thoroughly before reuse.
FIRST AID FOR INHALATION: Persons acutely overexposed to hydrazine vapors should be removed from the contaminated environment as quickly as possible by properly protected rescue personnel. Trained persons can administer oxygen to ease breathing. Consult a physician immediately.
FIRST AID FOR INGESTION: Accidental ingestion of hydrazine solutions should be treated by taking large amounts of water. Never give anything by mouth to an unconscious person. Inducing vomiting is indicated in conscious patients, especially when there has been ingestion within the last thirty (30) minutes. A physician should be contacted immediately.
NOTE TO PHYSICIAN: There are no definitive antidotes for hydrazine exposure. Physicians should treat exposed persons symptomatically. Overexposed persons should be closely observed for symptoms of central nervous system involvement, respiratory irritation, bronchitis or edema, and treat accordingly. Parenteral pyridoxine administration has been used by some physicians to treat patients suffering acute central nervous system effects. (In one reported case, following pyridoxine administration parenterally, there was a rapid reversal of coma in 4 hours in a patient who had been comatose for over 60 hours.)

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5. FIRE FIGHTING MEASURES:

FLASH POINT:	Greater than 212 F (100 C); DIN 51758 (PMCC)
FLAMMABLE LIMITS:	
UPPER EXPLOSIVE LIMIT (UEL)(%):	83.4 % by volume in air at 1000 mbar
LOWER EXPLOSIVE LIMIT (LEL)(%):	9.3 % by volume in air at 1000 mbar
AUTO-IGNITION TEMPERATURE:	Greater than 590 F (310 C).
EXTINGUISHING MEDIA:	Dry Chemical; Foam; Carbon Dioxide; Water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear full protective clothing including self-contained breathing apparatus. Under fire conditions, hazardous vapors and gases may be emitted. Containers exposed to excessive heat may rupture violently. Use a water spray to keep containers cool. Fight fires from a protected area.

---

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES: Use appropriate protective equipment.
Contain small spills by diking and 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 (1 lb. of 35 % Hydrazine = 0.35 lbs. N_2H_4). Calcium hypochlorite or other oxidizing agents should never be allowed to mix with undiluted hydrazine solutions. The resulting reaction is very vigorous, releasing large amounts of heat and gas. Contaminated surfaces should be treated with household bleach or calcium hypochlorite solution to oxidize the residual hydrazine. In the event of larger spills, contain product, secure area and notify Bayer at (412-923-1800 during normal working hours of 9 am to 5 pm EST) or CHEMTREC at (800-424-9300).

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE (MIN/MAX): Ambient/122 F (50 C).
SHELF LIFE: Unlimited in tightly closed containers.
SPECIAL SENSITIVITY: Extreme heat, oxidizing materials or catalytic metals.
HANDLING/STORAGE PRECAUTIONS: When handling hydrazine, utilize protective clothing and equipment. Do not get in eyes or on skin. Do not breathe vapors or mists. Wash thoroughly after handling. Store in a dry place away from heat (below 122 F (50 C)) and away from ignition sources and oxidants, preferably outdoors. Shelter drums stored outdoors from direct sunlight. For indoor storage areas, continuous ventilation should be provided. This product may become electrostatically charged during filling and transferring. Make sure equipment is properly bonded and grounded. Store away from food and beverages.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS: Splash goggles or full face shield.
SKIN PROTECTION REQUIREMENTS: PVC, neoprene or nitrile splash suits, boots and gloves should be worn when spray or splash protection is required.
VENTILATION REQUIREMENTS: Use local exhaust or other means to maintain airborne hydrazine concentration below the current Permissible Exposure Limit (0.1 ppm).
RESPIRATOR REQUIREMENTS: Whenever the hydrazine levels exceed the current Permissible Exposure Limit (0.1 ppm), a positive pressure supplied air respirator is recommended.
ADDITIONAL PROTECTIVE MEASURES: Safety showers and eyewash stations should be readily available. Do not store or transfer hydrazine solutions in open containers. Because hydrazine can be absorbed into the body by all common routes of exposure, protective equipment must be used. Personal protective equipment is not an adequate substitute for safe work practices, proper equipment design and good maintenance practices.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FROM:	Liquid
COLOR:	Colorless to slightly yellow
ODOR:	Ammonia like (fishy)
ODOR THRESHOLD:	3 to 5 ppm
MOLECULAR WEIGHT:	(For hydrazine hydrate) 50.06
pH:	Greater than 12 @ 350 g/l water @ 68F (20C) original soln
BOILING POINT:	Approx. 228.9 F (109.4 C)
MELTING/FREEZING POINT:	Approx. -85 F (-65 C)
VISCOSITY (Dynamic):	Approx. 1.26 mPas @ 68 F (20 C)
SOLUBILITY IN WATER:	Soluble

SPECIFIC GRAVITY:	Approx. 1.021 @ 68 F (20 C)
BULK DENSITY:	Not Established
% VOLATILE BY VOLUME:	100 %
VAPOR PRESSURE:	15 mbar @ 68 F (20 C)
VAPOR DENSITY:	Approx. 1 (Air = 1)

10. STABILITY AND REACTIVITY:

STABILITY:	Stable at normal temperatures and pressures.
HAZARDOUS POLYMERIZATION:	Will not occur.
INCOMPATIBILITIES:	Brisk or dangerous reactions with strong oxidizers, catalytic metals (Lead, Copper, Zinc, Cadmium, Cobalt, Molybdenum, Gold and Silver) and certain alloys (such as Bronze and Brass).
INSTABILITY CONDITIONS:	Excessive temperatures. (Also, see INCOMPATIBILITIES)
DECOMPOSITION TEMPERATURE:	Refer to DECOMPOSITION PRODUCTS.
DECOMPOSITION PRODUCTS:	Under catalytic influence or elevated temperatures, H2, NH3 and N2 and other toxic or flammable nitrogen compounds can be formed. Slow reaction with oxygen from the air is possible at room temperature.

11. TOXICOLOGICAL INFORMATION:

ACUTE TOXICITY

ORAL LD50:	Hydrazine Hydrate: 129 mg/kg (Rat) Anhydrous Hydrazine: 60 mg/kg (Rat)
DERMAL LD50:	For 35 % hydrazine solution: greater than 200 mg/kg (Rabbit; DOT method); For hydrazine: 91 mg/kg (Rabbit).
INHALATION LC50:	For anhydrous hydrazine, LC50 = 570 ppm (Rat, 4 hours); For aerosols generated from a 64 % hydrazine solution, LC50 = 6.5 mg/L (5000 ppm) - the LC50 (1 hour) estimated in terms of hydrazine equivalents, LC50 = 4.2 mg/L (3200 ppm). (1)
EYE EFFECTS:	Irritating.
SKIN EFFECTS:	Not Corrosive (Rabbit; DOT protocol).
SENSITIZATION:	Some individuals (humans) have exhibited allergic skin reactions.
CHRONIC TOXICITY:	Several studies show increased tumor incidence in mice and rats following long term oral or intraperitoneal administration of hydrazine or its salts. The U.S. Air Force conducted a study concerning the chronic inhalation toxicity of hydrazine. The study concluded that hydrazine is a relatively weak tumorigen able to induce respiratory tumors in a dose related incidence at 1.0 and 5.0 ppm.

OTHER TOXICITY DATA: (Mutagenic, Teratogenic, Reproductive Tests):
Hydrazine has demonstrated mutagenic potential in several test systems such as bacteria, phage, higher plants, drosophila, and the host-mediated assay. It was negative in the dominant lethal assay in mice. Dermal contact with hydrazine at a dose causing skin damage and systemic effects has produced embryolethality in rats.

1 Huntingdon Research Centre, July 1993 (sponsored by the Chemical Manufacturer's Association, CMA).

12. ECOLOGICAL INFORMATION:

AQUATIC TOXICITY: Gold orfe (Leuciscus idus), LC50 (48 hrs.): 0.75 mg/l.
Do not allow to escape into waters, wastewater or soil.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:
Oxidize or incinerate in accordance with federal, state and local environmental control regulations.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME:	Hydrazine solution 35 %
FREIGHT CLASS BULK:	Item 50093 Compounds, Boiler Cleaning, Preserving
FREIGHT CLASS PACKAGE:	Item 50093 Compounds, Boiler Cleaning, Preserving
PRODUCT LABEL:	Hydrazine 35 %

DOT (DOMESTIC SURFACE)

PROPER SHIPPING NAME:	Hydrazine, Aqueous Solution
HAZARD CLASS OR DIVISION:	6.1
UN/NA NUMBER:	UN3293
PACKING GROUP:	III
DOT PRODUCT RQ lbs (kgs):	2.8 lbs (1.3 kgs)
HAZARD LABEL(s):	Toxic
HAZARD PLACARD(s):	Toxic

IMO/IMDG CODE (OCEAN)

PROPER SHIPPING NAME:	Hydrazine, Aqueous Solution
HAZARD CLASS DIVISION NUMBER:	6.1
UN NUMBER:	UN3293
PACKAGING GROUP:	III
HAZARD LABEL(s):	Toxic
HAZARD PLACARD(s):	Toxic

ICAO/IATA (AIR)

PROPER SHIPPING NAME:	Hydrazine, Aqueous Solution
HAZARD CLASS DIVISION NUMBER:	6.1
UN NUMBER:	UN3293
SUBSIDIARY RISK:	None
PACKING GROUP:	III
HAZARD LABEL(s):	Toxic
RADIOACTIVE?	Non-Radioactive
PASSENGER AIR - MAX. QTY.:	60 L
PASSENGER PACKING INSTRUCTION:	611
CARGO AIR - MAX. QTY.:	220 L
CARGO AIR PACKING INSTRUCTION:	618

15. REGULATORY INFORMATION:

OSHA STATUS	: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
TSCA STATUS	: On TSCA Inventory
CERCLA REPORTABLE QUANTITY	: Hydrazine: 1 lb. (0.454 kg).

SARA TITLE III:
SECTION 302 EXTREMELY

HAZARDOUS SUBSTANCES : Hydrazine, CAS# 302-01-2, Approx. 35 %.
SECTION 311/312
HAZARD CATEGORIES : Immediate Health Hazard; Delayed Health Hazard; Reactive Hazard

SECTION 313
TOXIC CHEMICALS : Hydrazine, CAS# 302-01-2, Approx. 35 %.
RCRA STATUS : When discarded in its purchased form, this product is a listed RCRA hazardous waste and should be managed as a hazardous waste. (40 CFR 261.20-24) Hydrazine has been assigned the hazardous waste number U133. Any contaminated soil, water or debris resulting from the cleanup of a hydrazine spill is considered to be a hazardous waste.

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

COMPONENT NAME /CAS NUMBER	CONCENTRATION	STATE CODE
Hydrazine 302-01-2	Approx. 35 %	PA2, CA, MA, NJ2, NJ3
Water 7732-18-5	Approx. 65 %	PA3, NJ4

CA = California Proposition 65
MA = Massachusetts Hazardous Substance List
NJ2 = New Jersey Environmental Hazardous Substance List
NJ3 = New Jersey Special Health Hazardous Substance List
NJ4 = New Jersey Other - included in 5 predominant ingredients > 1%
PA2 = Pennsylvania Special Substances List
PA3 = Pennsylvania Non-hazardous present at 3% or greater.

16. OTHER INFORMATION:

HMIS RATINGS:	Health	Flammability	Reactivity
	2*	1	1

0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe
* = Chronic Health Hazard

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS ratings are provided by Bayer as a customer service.

---------- FOR ADDITIONAL INFORMATION ----------
CONTACT: MSDS COORDINATOR VOPAK USA INC.
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400
---------- NOTICE ----------

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DAMAGES.**

DO NOT USE INGREDIENT INFORMATION AND/OR INGREDIENT PERCENTAGES IN THIS MSDS AS A PRODUCT SPECIFICATION. FOR PRODUCT SPECIFICATION INFORMATION REFER TO A PRODUCT SPECIFICATION SHEET AND/OR A CERTIFICATE OF ANALYSIS. THESE CAN BE OBTAINED FROM YOUR LOCAL VOPAK USA SALES OFFICE.

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, VOPAK MAKES NO REPRESE NTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VOPAKS 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.

* * * E N D O F M S D S * * *

FROM: Fisher Scientific TO: Extension PAGES: 1

**** MATERIAL SAFETY DATA SHEET ****

Uranine
24609

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

MSDS Name: Uranine
Catalog Numbers:
S71283, S800171, A833-100, A833-500, NC9471664
Synonyms:
Fluorescein, disodium salt;
9-o-Carboxyphenyl-6-hydroxy-3-isoxanthone, disodium salt; C.I. 45350 disodium salt; C.I. 766; C.I. Acid Yellow 73; D&C Yellow No. 8; Disodium 6-hydroxy-3-oxo-9-xanthene-o-benzoate; Fluorescein sodium; Fluorescein, water soluble; Resorcinol phthalein sodium; Sodium fluorescein; Sodium fluoresceinate; Soluble fluorescein; Uranine; Uranine Yellow.
Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Rec. # 89666

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

CAS#	Chemical Name	%	EINECS#
518-47-8	Fluorescein, disodium salt, anhydrous	100	208-253-0

Hazard Symbols: None Listed.
Risk Phrases: None Listed.

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: orange-red powder.
Caution! May cause respiratory tract irritation. Hygroscopic. May cause eye and skin irritation.
Target Organs: No data found.
Potential Health Effects

Eye:
May cause mild eye irritation.

Skin:
May cause mild skin irritation.

Ingestion:
Ingestion of large amounts may cause gastrointestinal irritation.

Inhalation:
Inhalation of dust may cause respiratory tract irritation.

Chronic:
←E
No information found.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation develops, get medical aid.

Skin:
Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:
If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid if irritation or symptoms occur.

Inhalation:
Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Notes to Physician:
Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:
As in any fire, wear a self-contained breathing apparatus in

pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media:
Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Autoignition Temperature: Not available.
Flash Point: Not applicable.
Explosion Limits, lower: Not available.
Explosion Limits, upper: Not available.
NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage:
Keep container closed when not in use. Store in a cool, dry,
←E
well-ventilated area away from incompatible substances. Store protected from moisture.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Fluorescein, disodium salt, anhydrous	none listed	none listed	none listed

OSHA Vacated PELs:
Fluorescein, disodium salt, anhydrous:
No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Powder
Appearance: orange-red
Odor: odorless
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: 320 deg C

Decomposition Temperature:
Solubility in water: Soluble.
←E
Specific Gravity/Density:
Molecular Formula: C20H10O5.2Na
Molecular Weight: 376.27

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Moisture.
Incompatibilities with Other Materials:
Strong oxidizing agents.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide, sodium oxide.
Hazardous Polymerization: Will not occur.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 518-47-8: LM5425000
LD50/LC50:
CAS# 518-47-8: Oral, mouse: LD50 = 4738 mg/kg; Oral, rat: LD50 = 6721 mg/kg.
Carcinogenicity:
Fluorescein, disodium salt, anhydrous -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No data available.
Teratogenicity:
No data available.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.
US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

**** SECTION 14 - TRANSPORT INFORMATION ****

←E
US DOT
No information available
Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 518-47-8 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
None of the chemicals in this material have an RQ.
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

Fluorescein, disodium salt, anhydrous is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level:
None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: Not available.
Risk Phrases:
Safety Phrases:
S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 518-47-8: 2

United Kingdom Occupational Exposure Limits

←E

Canada

CAS# 518-47-8 is listed on Canada's DSL List.
This product has a WHMIS classification of Not controlled..
CAS# 518-47-8 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 4/01/1998 Revision #2 Date 8/14/2002

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

Material Safety Data Sheet

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

24-Hour Emergency Phone Number: 989-636-4400

Product: DOWEX* MONOSPHERE* 650C (H) CATION EXCHANGE RESIN

Product Code: 10820

Effective Date: 03/26/03 Date Printed: 03/27/03 MSD: 001153

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

2. COMPOSITION/INFORMATION ON INGREDIENTS

Sulfonated copolymer of styrene and divinylbenzene in the hydrogen form	CAS# 069011-20-7	30-60%
Water	CAS# 007732-18-5	40-70%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

```
*********************************************************************
* Translucent to opaque, light yellow to brown fine solid beads.    *
* Causes severe eye burns.  Slipping hazard.                        *
*********************************************************************
```

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause severe eye irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

SKIN: Prolonged or repeated exposure not likely to cause significant skin irritation. May cause more severe response if skin is abraded (scratched or cut). No adverse effects anticipated by skin absorption.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

INHALATION: Vapors are unlikely due to physical properties.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: No relevant information found.

(Continued on page 2 , over)

* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CANCER INFORMATION: No relevant information found.

TERATOLOGY (BIRTH DEFECTS): No relevant information found.

REPRODUCTIVE EFFECTS: No relevant information found.

4. FIRST AID

EYE: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: No emergency medical treatment necessary.

INHALATION: Move person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES
FLASH POINT: Not applicable
METHOD USED: Not applicable
AUTOIGNITION TEMPERATURE: >500C

FLAMMABILITY LIMITS
LFL: Not applicable
UFL: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to: hydrocarbons, sulfur oxides, organic sulfonates, carbon monoxide, carbon dioxide, benzene compounds.

OTHER FLAMMABILITY INFORMATION: This material will not burn until the water has evaporated. Residue can burn.

EXTINGUISHING MEDIA: Water, carbon dioxide, dry chemical.

(Continued on page 3)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Cool surroundings with water to localize fire zone. Soak thoroughly with water to cool and prevent reignition.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or a safe distance.

6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Spilled material may cause a slipping hazard. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls/Personal Protection.

PROTECT THE ENVIRONMENT: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

CLEANUP: Contain spilled material if possible. See Section 13, Disposal Considerations for additional information.

7. HANDLING AND STORAGE

HANDLING: Do not get in eyes. Wash thoroughly after handling.

STORAGE: Keep containers tightly closed when not in use. Store between 35F-100F.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Use chemical goggles.

SKIN PROTECTION: If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures.

(Continued on page 4 , over)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

RESPIRATORY PROTECTION: No respiratory protection should be needed.

EXPOSURE GUIDELINES: None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: Light yellow to brown solid (beads)
ODOR: Not applicable.
VAPOR PRESSURE: Not applicable
VAPOR DENSITY: Not applicable
BOILING POINT: Not applicable
SOLUBILITY IN WATER/MISCIBILITY: Insoluble
SPECIFIC GRAVITY OR DENSITY: Approximate density 50 lb/ft3

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions. See Storage Section.

CONDITIONS TO AVOID: Product can decompose at elevated temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with oxidizing materials. The severity of the reaction with oxidizing materials can vary from slight degradation to an explosive reaction. Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials. Hazardous decomposition products may include and are not limited to: aromatic compounds, hydrocarbons, organic sulfonates, sulfur oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The dermal LD50 has not been determined.

(Continued on page 5)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

INGESTION: The oral LD50 for rats is >5000 mg/kg.

MUTAGENICITY: No relevant information found.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: No bioconcentration of the polymeric component is expected because of its high molecular weight. In the terrestrial environment, material is expected to remain in the soil. In the aquatic environment, material will sink and remain in the sediment.

DEGRADATION & PERSISTENCE: Based largely or completely on information for copolymer: Surface photodegradation is expected with exposure to sunlight. No appreciable biodegradation is expected.

ECOTOXICITY: Not expected to be acutely toxic, but pellets may mechanically cause adverse effects if ingested by waterfowl or aquatic life.

13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: incinerator or other thermal destruction device, landfill.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums.

(Continued on page 6 , over)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

Telephone Dow's Customer Information Center at
800-258-2436 or 989-832-1556 for further details.

14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): This product is not regulated by D.O.T. when shipped domestically by land.

CANADIAN TDG INFORMATION: This product is not regulated by TDG when shipped domestically by land.

15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS
==========

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

(Continued on page 7)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

REGULATORY INFORMATION (CONTINUED)

Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CANADIAN REGULATIONS
==========

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

D2B - eye or skin irritant
Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program.

- - - - -

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

- - - - -

HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

COMPONENTS:	CAS #	AMOUNT(%w/w)
SULFONATED COPOLYMER OF STYRENE AND DIVINYLBENZENE IN THE HYDROGEN FORM	069011-20-7	30-60%

16. OTHER INFORMATION

MSDS STATUS: Revised Sections 3, 4, 6, 7, 8, 11, 12, and 15.

* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY
The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

Material Safety Data Sheet

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

24-Hour Emergency Phone Number: 989-636-4400

Product: DOWEX* MONOSPHERE* 550A ANION EXCHANGE RESIN

Product Code: 01303

Effective Date: 01/30/02 Date Printed: 01/31/02 MSD: 001152

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

2. COMPOSITION/INFORMATION ON INGREDIENTS

Styrene, divinylbenzene and ethylstyrene copolymer, chloromethyl trimethylamine functionalized in the chloride form	CAS# 069011-19-4	20-65%
Water	CAS# 007732-18-5	35-80%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

****
* White to amber beads. Odorless to amine odor. Slipping hazard. *
*
****

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause slight transient (temporary) eye irritation. Solid or dust may cause irritation or corneal injury due to mechanical action.

SKIN CONTACT: Prolonged or repeated exposure not likely to cause significant skin irritation. May cause more severe response if skin is abraded (scratched or cut). Skin absorption is unlikely due to physical properties.

INGESTION: Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

INHALATION: No adverse effects are anticipated from inhalation.

(Continued on page 2 , over)

* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

Vapors are unlikely due to physical properties.

SYSTEMIC & OTHER EFFECTS: No significant toxicologic effects were observed in laboratory animals fed this material in their diets for 1 month.

CANCER INFORMATION: No relevant information found.

TERATOLOGY (BIRTH DEFECTS): No relevant information found.

REPRODUCTIVE EFFECTS: No relevant information found.

4. FIRST AID

EYES: Flush eyes with plenty of water; remove contact lenses after the first 1-2 minutes then continue flushing for several minutes. Only mechanical effects expected.

SKIN: Wash off in flowing water or shower.

INGESTION: No emergency medical treatment necessary.

INHALATION: No emergency medical treatment necessary.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not applicable
METHOD USED: Not applicable

FLAMMABLE LIMITS
LFL: Not applicable
UFL: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to organic amines, nitrogen oxides, hydrogen chloride, hydrocarbons, carbon monoxide, benzene compounds and carbon dioxide.

OTHER FLAMMABILITY INFORMATION: This material does not burn. In a fire situation, residue can burn.

(Continued on page 3)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EXTINGUISHING MEDIA: Water, carbon dioxide, dry chemical.

FIRE-FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Cool surroundings with water to localize fire zone. Soak thoroughly with water to cool and prevent re-ignition.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Pellets or beads may present a slipping hazard.

PROTECT THE ENVIRONMENT: Avoid contamination of all waterways.

CLEANUP: Sweep up. See Section 13, Disposal Considerations.

7. HANDLING AND STORAGE

HANDLING STATEMENTS: See Section 8, Exposure Controls/Personal Protection.

STORAGE STATEMENTS: Keep containers tightly closed when not in use. Store between 2-27C (35-80F).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions.

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Use safety glasses. If there is a potential for exposure to particles which could cause mechanical injury to the eye, wear chemical goggles.

SKIN PROTECTION: Use gloves impervious to this material when prolonged or frequently repeated contact could occur. If hands are cut or scratched, use gloves impervious to this material even for brief exposures.

(Continued on page 4 , over)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

RESPIRATORY PROTECTION: No respiratory protection should be needed.

EXPOSURE GUIDELINE: None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: White to amber beads
ODOR: Odorless to amine
VAPOR PRESS: Not applicable
VAPOR DENSITY: Not applicable
BOILING POINT: Not applicable
SOLUBILITY IN WATER: Insoluble
SPECIFIC GRAVITY: Density 44 lb/ft3

10. STABILITY AND REACTIVITY

STABILITY AND REACTIVITY: Stable under recommended storage conditions. See Storage, Section 7.

CONDITIONS TO AVOID: Product can decompose at elevated temperatures.

INCOMPATIBILITY MATERIALS: Oxidizing agents such as nitric acid attack organic exchange resins under certain conditions. Before using strong oxidizing agents, consult sources knowledgeable in handling such materials. The severity of the reaction with oxidizing materials can vary from slight degradation to an explosive reaction. Avoid contact with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to chlorinated hydrocarbons, aromatic compounds, hydrocarbons, hydrogen chloride and organic amines.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

INGESTION: Single dose oral LD50 has not been determined.

(Continued on page 5)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

MUTAGENICITY: No relevant information found.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONTMENTAL FATE:

MOVEMENT & PARTITIONING: No relevant information found.

DEGRADATION & PERSISTENCE: No relevant information found.

ECOTOXICITY: Not expected to be acutely toxic, but pellets may mechanically cause adverse effects if ingested by waterfowl or aquatic life.

13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted incinerator or other thermal destruction device, landfill.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 989-832-1556 for further details.

14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): For D.O.T. regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow representative.

(Continued on page 6 , over)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CANADIAN TDG INFORMATION: For TDG regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow representative.

15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS
==========

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: This product is not known to contain any

(Continued on page 7)
* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

REGULATORY INFORMATION (CONTINUED)

substances subject to the disclosure requirements of

New Jersey
Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD:

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CANADIAN REGULATIONS
==========

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

This product is not a "Controlled Product" under WHMIS.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

All substances in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. OTHER INFORMATION

MSDS STATUS: Revised Section 2.

* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY
The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

MATERIAL SAFETY DATA SHEET

HydroChem INDUSTRIAL SERVICES, INC.

DATE PREPARED: 03/17/1997
MSDS No: M008
Trisodium Phosphate, dodecahydrate

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Trisodium Phosphate, dodecahydrate
Product Code: M008
Product Name: Trisodim Phosphate, Dodecahydrate
Molecular Formula: $Na_3PO_4{:}12H_2O$
Generic Name: Sodium phosphate, tribasic

MANUFACTURER:
HydroChem Industrial Services, Inc.
900 Georgia Ave.
Deer Park, TX 77536
Customer Service: (800) 934-9376

24 HR. EMERGENCY TELEPHONE NUMBERS:
Emergency Contact: HydroChem ER
Emergency Phone (800) 569-4889

2. COMPOSITION/INFORMATION ON INGREDIENTS

	wt.%	CAS Registry #
Trisodium Phosphate Dodecahydrate	~100	10101-89-0

COMMENTS:
The TLV for this product is 10 mg/m3 for dust.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
IMMEDIATE CONCERNS:
No hazard in normal industrial use.
Dust may be irritating to eyes and respiratory tracts.

4. FIRST AID MEASURES

EYES:
Immediately flush eyes with water for 30 minutes while holding eyelids open. Seek medical attention.

SKIN:
Immediately wash with soap and water. Rinse thoroughly. Seek medical attention if effects occur. Launder contaminated shoes and clothing before reuse.

INGESTION:
If swallowed, induce vomiting with ipecac (preferred), or by giving water and sticking finger down throat. After vomiting give milk (preferred) or water and consult physician.

INHALATION:
Remove to fresh air. See a doctor at once. If breathing has stopped, begin artificial respiration.

5. FIRE FIGHTING MEASURES

Flashpoint and Method: Not Applicable
Flammable Limits: Not applicable
Autoignition Temperature: Not Determined

EXTINGUISHING MEDIA:
Use alcohol foam, carbon dioxide, dry chemical or water spray when fighting fires involving this material.

HAZARDOUS COMBUSTION PRODUCTS:
Phosphorus oxide

FIRE FIGHTING EQUIPMENT:
As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

GENERAL PROCEDURES:
Sweep up and place in bag.
Avoid raising dust.
Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

GENERAL PROCEDURES:
Refer to Section 8.

STORAGE:
No special precautions required.
Avoid wetting.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Ventilation - General and local ventilation are required.

PERSONAL PROTECTION
EYES AND FACE:
Chemical goggles required and an eye wash in work area.

RESPIRATORY:
None normally needed. For protection from dust and mist, use NIOSH approved respirator with dust and mist protection.

PROTECTIVE CLOTHING:
Clean body covering and chemical resistant gloves.

OTHER USE PRECAUTIONS:
Safety shower and eye wash in the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Crystal
Color: White
pH: 11.6
Percent Volatile: Not Available
Vapor Pressure: Not Determined
Melting Point: 167°F 75°C Decomposes
Solubility in Water: 28
Specific Gravity: 1.62 (water=1)

COMMENTS:
pH: pH listed above is for a 1% solution
Water Solubility: Solubility listed above is grams per 100 grams.

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

HAZARDOUS DECOMPOSITION:
Phosphorus oxide

INCOMPATIBLE MATERIALS:
Strong acids

11. TOXICOLOGICAL INFORMATION

ACUTE
Eyes: Severe irritant. Causes pain and redness. Prolonged or repeated contact may cause mild burn.
Skin: Irritant. May cause pain, redness, dermatitis. Not likely to be absorbed in toxic amounts.
Ingestion: Irritant. May cause pain or discomfort to mouth, throat and stomach.
Inhalation: Severe irritant. Causes pain, choking, coughing, burning sensation. Can cause soreness.

TARGET ORGANS:
Respiratory tract

GENERAL COMMENTS:
Carcinogens: Not listed by IARC, USA NTP, or USA OSHA.

COMMENTS:
Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented in this document. See the actual entry in RTECS for complete information.

RTECS Number: TC9575000

12. ECOLOGICAL INFORMATION

GENERAL COMMENTS:
Degradability: Not biodegradable.
Fish Toxicity: Low toxicity to fish.

13. DISPOSAL CONSIDERATIONS

PRODUCT DISPOSAL:
Dispose of in accordance with ALL applicable federal, state and local regulations.

EMPTY CONTAINER:
Send empty bags to sanitary landfill. Render other types of containers unuseable by puncturing or crushing and sending to a sanitary landfill unless prohibited by local regulations.

RCRA/USEPA WASTE INFORMATION:
This material is not a RCRA regulated material.

COMMENTS:
Always follow ALL applicable federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)
Proper Shipping Name: Environmentally Hazardous Substance, solid, N.O.S. (sodium phosphate, tribasic)
Hazard Class: 9
NA/UN Number: UN3077
Packing Group: III
Reportable Quantity (RQ) Under CERCLA: 5000 lb
Placards: Class 9
Label: Class 9

SPECIAL SHIPPING NOTES:
Not regulated unless RQ exceeded in a single container.

15. REGULATORY INFORMATION

UNITED STATES
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

Fire: No Pressure Generating: No Reactivity: No Acute: Yes Chronic: No

Title III Notes: This product contains no substances which are defined as toxic chemicals under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (40 CFR Part 372).

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)
Reportable Spill Quantity: 5000 lb

TSCA (TOXIC SUBSTANCE CONTROL ACT)
TSCA Status: All components of this material are on the TSCA inventory.

STATE REGULATIONS
PROPOSITION 65 STATEMENT:
This product does not contain any substance(s) which are defined by the state of California to cause cancer, birth defects, or other reproductive effects.

16. OTHER INFORMATION

Approved by: Charles M Maddin, PhD, FAIC
Approval date: 08/18/1998

REVISION SUMMARY
Revision #: 1

This MSDS replaces the November 17, 1997 MSDS. Any changes in information are as follows:
In Section 1
Approved by [ ] Print CHEMTREC Phone Number

In Section 4
Firstaid - Skin

In Section 5
(Group Field) for Flash Point

In Section 9
Water Solubility Comments

In Section 14
DOT U.S. Surface Freight Class Labels

In Section 15
SARA Title III Notes

NFPA CODES
Fire: 0 Health: 2 Reactivity: 0

HMIS CODES
Fire: 0 Health: 2 Reactivity: 0

MANUFACTURER DISCLAIMER:
[™] Indicates a trade or service mark of HydroChem Industrial Services, Inc.

The information herein is believed to be accurate and is presented in good faith; however, no warranties or representations are made by HydroChem Industrial Services, Inc. regarding the accuracy or completeness of the information.

HydroChem Industrial Services, Inc. shall not be held liable for any damage resulting from the handling, or from contact with the above product.

BETZDEARBORN MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 22-MAY-2000
PRINTED DATE: 22-MAY-2000

1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : SOLISEP PS9674

PRODUCT APPLICATION AREA: FLOCCULANT

COMPANY ADDRESS:
BetzDearborn Inc.
4636 Somerton Road, Trevose, Pa. 19053
Information phone number: (215) - 355-3300

EMERGENCY TELEPHONE (HEALTH/ACCIDENT): (800)-877-1940 (USA)

2) COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
64742-47-8	ISOPARAFFINIC PETROLEUM DISTILLATE Combustible liquid; irritant

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

CONTINUED

3) HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

CAUTION

May cause moderate irritation to the skin. May cause dermatitis. May cause moderate irritation to the eyes. Vapors, gases, mists or aerosols may cause irritation to the upper respiratory tract. Prolonged exposure may cause dizziness and headache.

DOT hazard: ORS (when container > RQ)
Emergency Response Guide #171
Odor: Ammonia; Appearance: White To Off-White, Emulsion

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide or foam--Avoid water if possible.

****

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause moderate irritation to the skin. May cause dermatitis.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Primary route of exposure;Vapors, gases, mists or aerosols may cause irritation to the upper respiratory tract. Prolonged exposure may cause dizziness and headache.

INGESTION EFFECTS:
May cause gastrointestinal irritation. Small amounts aspirated during ingestion or vomiting may cause lung injury, possibly leading to death.

TARGET ORGANS:
Prolonged or repeated exposures may cause CNS depression and/or defatting-type dermatitis.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
Excessive dermal exposure causes defatting and drying of skin. Excessive inhalation of vapors causes dizziness, headache and nausea.

CONTINUED

4) FIRST AID MEASURES

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists.

EYE CONTACT:
Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:
Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get immediate medical attention.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:
No special instructions

5) FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:
dry chemical, carbon dioxide or foam--Avoid water if possible.

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.

FLASH POINT:
> 200F > 93C P-M(CC)

MISCELLANEOUS:
ORS (when container > RQ)
3082 ;Emergency Response Guide #171

6) ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

CONTINUED

7) HANDLING AND STORAGE

HANDLING:
Clean spill immediately. Wash contaminated skin promptly.
STORAGE:
Keep containers closed when not in use. Store in cool ventilated location. Store away from oxidizers.

8) EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

CHEMICAL NAME

ISOPARAFFINIC PETROLEUM DISTILLATE
PEL (OSHA): 400 PPM
TLV (ACGIH): NOT DETERMINED

ENGINEERING CONTROLS:
Adequate ventilation to maintain air contaminants below exposure limits.
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with organic vapor cartridges.
SKIN PROTECTION:
neoprene gloves-- Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

CONTINUED

9) PHYSICAL AND CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.082	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	~ 23	Vapor Density (air=1)	> 1.00
Freeze Point (C)	~ -5		
Viscosity(cps 70F,21C)	2800	% Solubility (water)	ND

Odor		Ammonia
Appearance		White To Off-White
Physical State		Emulsion
Flash Point	P-M(CC)	> 200F > 93C
pH 0.5% Sol. (approx.)		8.7
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

10) STABILITY AND REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
BETZDEARBORN INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11) TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>5,000 mg/kg
Dermal LD50 RABBIT:	>2,000 mg/kg
Inhalation LC50 RAT:	>20 mg/L/4hr
Skin Irritation Score RABBIT:	MODERATE
Eye Irritation Score RABBIT:	MODERATE

CONTINUED

12) ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY

Fathead Minnow 96 Hour Static Acute Bioassay

LC50: 17.3 mg/L
No Effect Level: 7.8 mg/L

Daphnia magna 48 Hour Static Acute Bioassay

LC50: 6.2 mg/L
No Effect Level: .81 mg/L

BIODEGRADATION
No Data Available.

13) DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14) TRANSPORT INFORMATION

DOT HAZARD:	ORS (when container > RQ)
UN / NA NUMBER:	3082
DOT EMERGENCY RESPONSE GUIDE #:	171

15) REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
Treat as oil spill
SARA SECTION 312 HAZARD CLASS:
Immediate(acute);Delayed(Chronic)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds

CONTINUED

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16) OTHER INFORMATION

NFPA/HMIS	CODE TRANSLATION	
Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	01-JUL-1999		** NEW **
	11-FEB-2000	12	01-JUL-1999
	22-MAY-2000	4,16	11-FEB-2000

MATERIAL SAFETY DATA SHEET

HydroChem INDUSTRIAL SERVICES, INC.

DATE PREPARED: 12/29/1997
MSDS No: S001
Calcium Chloride

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Calcium Chloride
Product Code: S001
Product Name: Calcium Chloride
Chemical Family: Salt

MANUFACTURER:
HydroChem Industrial Services, Inc.
900 Georgia Ave.
Deer Park, TX 77536
Customer Service: (800) 934-9376

24 HR. EMERGENCY TELEPHONE NUMBERS:
Emergency Contact: HydroChem ER
Emergency Phone (800) 569-4889

2. COMPOSITION/INFORMATION ON INGREDIENTS

	wt.%	CAS Registry #
Calcium Chloride	77 – 80	10043-52-4
Water	20 – 23	7732 -18-5

COMMENTS:
Product Exposure Limits:
Nuisance Dust - OSHA PEL: 15 mg/m3 ACGIH TLV: 10 mg/m3
Respirable Fraction - OSHA PEL: 5 mg/m3

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
IMMEDIATE CONCERNS:
No hazard in normal industrial use.
Dust may be slightly irritating to eyes and respiratory tracts.

4. FIRST AID MEASURES

EYES:
Immediately flush eyes with water for 30 minutes while holding eyelids open. Seek medical attention.

SKIN:
Immediately wash with soap and water. Rinse thoroughly. Seek medical attention if effects occur. Launder contaminated shoes and clothing before reuse.

INGESTION:
DO NOT induce vomiting. Drink large quantities of milk (preferred) or water. Take to hospital at once.

INHALATION:
Remove to fresh air. See a doctor if effects occur.

5. FIRE FIGHTING MEASURES

Flashpoint and Method: Not Applicable
Flammable Limits: Not Applicable
Autoignition Temperature: None

EXTINGUISHING MEDIA:
Material will not burn.

6. ACCIDENTAL RELEASE MEASURES

GENERAL PROCEDURES:
Scoop into appropritate containers.
Flush residual with plenty of water.

7. HANDLING AND STORAGE

GENERAL PROCEDURES:
Refer to Section 8.

STORAGE:
No special precautions required.
Avoid wetting.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Ventilation - General and local ventilation are required.

PERSONAL PROTECTION
EYES AND FACE:
Chemical goggles required and an eye wash in work area.

RESPIRATORY:
None normally needed. For protection from dust, use NIOSH approved respirator with dust protection.

PROTECTIVE CLOTHING:
Clean body covering and chemical resistant gloves.

OTHER USE PRECAUTIONS:
Safety shower and eye wash in the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Flake or Pellet
Color: White
pH: 6
Percent Volatile: 0
Melting Point: 1422°F 772°C
Solubility in Water: 74 at 20°C
Specific Gravity: 2.15 (water=1)

COMMENTS:
pH: for a 1% solution
Water Solubility: Solubility listed above is grams per 100 grams of water.

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

HAZARDOUS DECOMPOSITION:
Chlorine, chlorine oxides and hydrogen chloride

INCOMPATIBLE MATERIALS:
Most common metals

11. TOXICOLOGICAL INFORMATION

ACUTE
Eyes: Irritant. May cause pain, redness, discomfort.
Skin: No effect expected. Prolonged or repeated contact may cause mild irritation.
Ingestion: No effect expected. Swallowing large amounts may cause illness.
Inhalation: Irritant. May cause pain and coughing.

GENERAL COMMENTS:
Carcinogens: Not listed by IARC, USA NTP, or USA OSHA.

COMMENTS:
Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented in this document. See the actual entry in RTECS for complete information.

RTECS Number: EV9810000

12. ECOLOGICAL INFORMATION

GENERAL COMMENTS:
Degradability: Not biodegradable.
Fish Toxicity: LC50 (P. promelas) = 11,500 mg/L

13. DISPOSAL CONSIDERATIONS

PRODUCT DISPOSAL:
Dispose of in accordance with ALL applicable federal, state and local regulations.

EMPTY CONTAINER:
Send empty bags to sanitary landfill. Render other types of containers unuseable by puncturing or crushing and sending to a sanitary landfill unless prohibited by local regulations.

RCRA/USEPA WASTE INFORMATION:
This material is not a RCRA regulated material.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)
Proper Shipping Name: Calcium Chloride – NOT REGULATED
Reportable Quantity (RQ) Under CERCLA: None
Placards: None
Label: None

15. REGULATORY INFORMATION

UNITED STATES
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)
Fire: No Pressure Generating: No Reactivity: No Acute: Yes Chronic: No
311/312 Hazard Categories: Does not meet any hazard category.
313 Reportable Ingredients: None

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)
Reportable Spill Quantity: Not Established

TSCA (TOXIC SUBSTANCE CONTROL ACT)
TSCA Status: All components of this material are on the TSCA inventory.

16. OTHER INFORMATION

Approved by: Charles M. Maddin, PhD, FAIC
Approval date: 12/11/1998

REVISION SUMMARY
Revision #: 4

This MSDS replaces the December 08, 1998 MSDS. Any changes in information are as follows:

NFPA CODES
Fire: 0 Health: 1 Reactivity: 0

HMIS CODES
Fire: 0 Health: 1 Reactivity: 0

MANUFACTURER DISCLAIMER:
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The information herein is believed to be accurate and is presented in good faith; however, no warranties or representations are made by HydroChem Industrial Services, Inc. regarding the accuracy or completeness of the information.

HydroChem Industrial Services, Inc. shall not be held liable for any damage resulting from the handling, or from contact with the above product.

MSDS Date August 18, 1998
Emergency Contact 1-800-424-9300

SECTION I

PRODUCT NAME: Calcium Hypochlorite, Granular
SYNONYMS: Chlorinated Lime
FORMULA: $Ca(OCl)_2$
CHEMICAL NAME: Calcium Hypochlorite
CHEMICAL FAMILY: Hypochlorites

DOT SHIPPING INFORMATION: Calcium hypochlorite, Hydrated, 5 1, UN 2880 PG II

SECTION II - HAZARDOUS INGREDIENTS

This material contains no ingredients which are known by Thatcher Company to be hazardous unless listed below

HAZARDOUS MATERIAL	CAS NUMBER	w/w %	EXPOSURE LIMITS IN AIR
Calcium hypochlorite	7778-54-3	------	None established Nuisance dust limit is 15 mg/m3 (OSHA)

The specific identity of some ingredients may be withheld for confidential business purposes However, all known potential health effects from exposure to these ingredients are being addressed

SECTION III - PHYSICAL DATA

BOILING POINT (F) N/A

SPECIFIC GRAVITY: 0 97

VAPOR PRESSURE (mm Hg) N/A

% VOLATILE, BY VOLUME: N/A

VAPOR DENSITY (air = 1) N/A

EVAPORATION RATE N/A

SOLUBILITY IN WATER: 217 gm/l

APPEARANCE AND ODOR: White, granular solid with mild chlorine odor

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT
Nonflammable

FLAMMABLE LIMITS Lel N/A Uel N/A

EXTINGUISHING MEDIA:
Water only

SPECIAL FIRE-FIGHTING PROCEDURES:
Firefighters should wear full protective gear Elevated temperatures may cause decomposition to toxic fumes

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Dangerous fire risk in contact with organic materials or reducing agents

SECTION V - REACTIVITY DATA

STABILITY:
Stable

HAZARDOUS POLYMERIZATION:
Will not occur

CONDITIONS OR MATERIALS TO AVOID:
Avoid contact with organic and combustible materials Store away from any source of heat or flame

HAZARDOUS DECOMPOSITION PRODUCTS:
Acid or ammonia contamination or excessive heat will cause the release of chlorine gas

SECTION VI - HEALTH HAZARD DATA

NFPA HAZARDOUS RATING: Health = 3 Flammability = 0 Reactivity = 2

Carcinogenic Listing

NTP No ingredients listed in this section

IARC MONOGRAPHS No ingredients listed in this section

OSHA 29 CFR 1910 No ingredients listed in this section

ENTRY ROUTES & EFFECTS OF OVEREXPOSURE:

Contact: Skin contact can cause severe irritation or burns

Inhalation: Dust can cause severe irritation or burns to the respiratory tract

Ingestion: Harmful or fatal if swallowed, resulting in extensive burns to the gastrointestinal tract

STATEMENT OF PRACTICAL TREATMENT:

Contact: Immediately flush exposed area with cool water For eyes, flush with cool water for at least 15 minutes and get prompt medical attention

Inhalation Remove to fresh air If breathing has stopped, administer artificial respiration (or oxygen if breathing is difficult) Call a physician at once!

Ingestion: If conscious, give several glasses of water or milk **Do not** induce vomiting Call a physician at once!

SECTION VII - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
Avoid contact with eyes and skin Do not take internally Avoid breathing dust Store in a cool, dry area away from organic and combustible material Keep containers closed

STEPS TO BE TAKEN IF MATERIAL SPILLS OR LEAKS:
Evacuate area Wear proper safety equipment Sweep up product and recover into drums Drench residue with large amounts of water, dike and recover into drums **Do not** flush to sewer unless properly treated (1 part 35% hydrogen peroxide per pound of calcium hypochlorite) and ONLY if permitted by all applicable regulations

WASTE DISPOSAL METHOD:

Waste product is an EPA hazardous waste due to reactivity (D003), and must be disposed of at an EPA-approved waste disposal facility Comply with all local, state and federal regulations

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

None normally required; respirator should be available

VENTILATION:

Maintain adequate ventilation

EYE PROTECTION:

Chemical goggles

SKIN PROTECTION:

Rubber gloves, rubber boots, long-sleeved shirt

OTHER PROTECTIVE EQUIPMENT:

As needed to prevent contact with eyes and skin, and to avoid inhalation of any dust

ACGIH = American Conference of Governmental Industrial Hygienists
CL = Ceiling Level
IARC = International Agency for Research on Cancer Monographs
OSHA = Occupational Safety and Health Administration
N/A = Not Applicable
NTP = National Toxicology Program Annual Report on Carcinogens
PEL = Permissible Exposure Level (OSHA)
TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average over 8 Hours

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THATCHER COMPANY MATERIAL SAFETY DATA SHEET
PRODUCT: SODIUM HYPOCHLORITE SOLUTION

MSDS Date: June 23, 2003
Emergency Contact: 1-800-424-9300

SECTION I

PRODUCT NAME: Sodium Hypochlorite Solution
CHEMICAL NAME: Sodium hypochlorite solution
CHEMICAL FAMILY: Hypochlorite
DOT SHIPPING INFORMATION: Hypochlorite solution, 8,
UN 1791, PG III RQ = 100 lbs
*(Not required if less than 100 lbs)

SECTION II - HAZARDOUS INGREDIENTS

This material contains no ingredients which are known by Thatcher Company to be hazardous unless listed below.

HAZARDOUS MATERIAL	CAS NUMBER	w/w %	EXPOSURE LIMITS IN AIR
Sodium hypochlorite	7681-52-9	----	None determined.

The specific identity of some ingredients may be withheld for confidential business purposes. However, all known potential health effects from exposure to these ingredients are being addressed.

SECTION III - PHYSICAL DATA

BOILING POINT (F): Approx. 212

SPECIFIC GRAVITY: 1.08

VAPOR PRESSURE (mm Hg): Essentially water

% VOLATILE, BY VOLUME: Unknown

VAPOR DENSITY (air = 1): Essentially water

EVAPORATION RATE: Unknown

SOLUBILITY IN WATER: Complete

APPEARANCE AND ODOR: A clear, greenish-yellow liquid with a chlorine odor.

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: Nonflammable

FLAMMABLE LIMITS: Lel: N/A Uel: N/A

EXTINGUISHING MEDIA: Use any.

SPECIAL FIRE-FIGHTING PROCEDURES: Self-contained breathing apparatus should be available.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Under some conditions, bleach could release chlorine gas and/or oxygen

SECTION V - REACTIVITY DATA

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS OR MATERIALS TO AVOID:
Heat causes the product to break down. Also, avoid contamination with acids, ammonia and oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine, oxygen.

SECTION VI - HEALTH HAZARD DATA

Carcinogenic Listing:

NTP: No ingredients listed in this section.

IARC MONOGRAPHS: No ingredients listed in this section

OSHA 29 CFR 1910: No ingredients listed in this section

ENTRY ROUTES & EFFECTS OF OVEREXPOSURE:

Contact: Can cause severe irritation and/or burns to eyes and skin.

Inhalation: Can be irritating to lungs and mucous membranes.

Ingestion: Harmful if swallowed. Can cause nausea, abdominal irritation and possible burns to the gastrointestinal tract.

STATEMENT OF PRACTICAL TREATMENT:

Contact: Flush exposed area thoroughly with water. For eyes promptly flush with cool water for at least 15 minutes and obtain medical attention.

Inhalation: Remove to fresh air. Treat symptomatically

Ingestion: If conscious, give several glasses of milk or water, followed by vegetable oil, raw egg white or bread soaked on milk. DO NOT induce vomiting. Call a physician at once!

SECTION VII - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
Do not get in eyes or skin. Do not take internally. Avoid breathing vapor. Store in a cool, dry location. Use with good ventilation. Keep container lids tightly sealed.

STEPS TO BE TAKEN IF MATERIAL SPILLS OR LEAKS:
Ventilate the area. Wear proper safety equipment. Flush small spills to sewer with large amounts of water (If permitted by local regulations). For larger spills, dike and recover the product into drums. If permitted, flush the residue to sewer with large amounts of water.

WASTE DISPOSAL METHOD:
Waste sodium hypochlorite (with a pH > 12.5) is an EPA hazardous waste due to corrosivity (D002) and must be disposed of at an EPA-approved disposal facility. Comply with all local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: None normally required.

VENTILATION: Use adequate ventilation.

EYE PROTECTION: Chemical-splash goggles.

SKIN PROTECTION: Rubber gloves and rubber boots.

OTHER PROTECTIVE EQUIPMENT:
As needs to avoid skin and eye contact and to minimize exposure to vapor.

ACGIH = American Conference of Governmental Industrial Hygienists
CL = Ceiling Level
IARC = International Agency for Research on Cancer: Monographs
OSHA = Occupational Safety and Health Administration
N/A = Not Applicable
NTP = National Toxicology Program: Annual Report on Carcinogens
PEL = Permissible Exposure Level (OSHA)
TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average over 8 Hours
STEL = Short Term Exposure Limit (ACGIH)
ND = Not Determined

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