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CONFIDENTIAL SETTLEMENT MATERIALS
SUBJECT TO FRE 408

January 18, 2011

Mr. Evan L. Pearson
Senior Enforcement Counsel, RCRA Enforcement Branch
U.S. EPA - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Draft Consent Agreement and Final Order --
The Dow Chemical Company, Plaquemine, Louisiana

Dear Evan:

We appreciated the opportunity to discuss the above-referenced matter with you and Ryan Rosser last month. At our meeting you asked for additional information concerning the historical permitting of Solvents Unit Outfall 521, as well as information on other streams potentially implicated under EPA's interpretation of RCRA applicability. Taking these issues out of order, Dow is not aware of any other streams containing K-listed wastes that are discharged to the canal system. However, Dow is examining whether there may be additional negligible amounts of potentially listed waste produced from the Vinyl 2 Unit and the Chlorinated Methanes Plant that discharge wastewaters after appropriate treatment into an internal outfall. As to the NPDES treatment of Outfall 521, Dow believes the following relevant facts are important in evaluating this matter.

Since the earliest application of the NPDES program to Plaquemine, state and federal regulators have chosen to regulate discharges from the Solvents Unit at the lateral into which Outfall 521 flows as point source discharges. As discussed in LDEQ's 1984 Permit Rationale:

> Dow delivers the river water to the intake canal and each unit utilizes cooling water as required and places it in the effluent canal. In addition each unit <u>treats</u> and <u>discharges</u> process and utility after treatment <u>except</u> streams of biodegradable waste water is sent *[sic]* to the <u>central treatment system</u> which in turn discharges to the very end of the effluent canal. This arrangement requires regulation of each source prior to dilution with huge CW. The single exception is Vinyl I and solvents are located on a lateral to the effluent canal which can be monitored as discharged. For this situation Vinyl I

> will be regulated in the lateral which flows by Solvents. Solvents is also regulated downstream. Since similar pollutants are involved, the contribution of Vinyl I can be subtracted from the latter for compliance monitoring purposes.

LDEQ Permit Rationale at DOWLAO000003 (Exhibit 1). In reaching this conclusion the agency was fully aware that:

> The process/rainwater stripper overhead product is incinerated on the site. The HCl product is scrubbed and discharged to the canal where it is neutralized.

Id. at DOWLAO000020. And the agency:

> . . . determined to monitor the combined discharges at the existing sampling points 005A and 005B as outfalls 511 and 521 . . . 521 contains . . . HC1 scrubber water . . ..

Id. at DOWLAO000021-22. Ultimately, the agency chose to require biomonitoring at Outfall 521 in accordance with similar protocols outlined for the 300 Area for the permit written and issued by EPA. *See* Proposed Permit at 18, 124-7 (Exhibit 2).

By applying water quality-based standards to Outfall 521, the agency signaled its decision to treat Outfall 521 as a final outfall for compliance purposes. In the two decades since doing so, both EPA and LDEQ have repeatedly re-permitted the facility under both the NPDES program and the RCRA program without suggesting any issue. Indeed, RCRA permitting materials, dating back to 1985 depict discharges of stripper effluent to the solvents lateral. *See* '85/'86 Plant Schematics (Exhibit 3). At no time has any permitting authority taken issue with this configuration. Similarly, the agencies have pursued Outfall 521-related enforcement exclusively under the NPDES program with the site including this outfall and any excursions from applicable LPDES criteria in its monthly discharge monitoring reports.

This treatment of Outfall 521 as a final outfall for NPDES purposes is consistent with the approach taken for similar outfalls that discharge to the Dow canal system. For instance, LPDES Permit #LA0115100 for the co-located Ineos oxide facility in Plaquemine regulates discharges to the Dow canal system as if such discharge were a final outfall. The AEP facility, now owned by Dow, and the Dexco Polymers facility are handled similarly. Moreover, in choosing to regulate certain outfalls to the canal system as final outfalls for NPDES permitting, the agency is acting well within its discretion. *See Williams Pipe Line Co. v. Bayer Corp.*, 964 F.Supp. 13800, 1325-6 (S.D. Iowa 1997) (holding that wetland upstream of NPDES outfall and used for treatment was water of the United States and that RCRA exclusion applied).

This regulatory treatment of discharges from Outfall 521 is also consistent with the nature of the materials at issue. The stripper water stream is produced from a PCB-rated incinerator that achieves a documented 99.999999% destruction efficiency. In light of such efficiencies, the EPA has chosen not to apply MACT standards to wastewater streams from such units as these streams do not contain significant quantities of HAPs. *See* 40 C.F.R. Part 63, Subpart EEE (National Emission Standard for Hazardous Air Pollutants from Hazardous Waste Combusters). More specifically, LDEQ identified this same fact as a basis for its choosing to regulate discharges of this stream at Outfall 521:

> Process wastewater and rainwater contaminated with purgeable halocarbons can be successfully treated by physical/chemical treatment methods such as stream/air stripping and activated carbon absorption to virtually any degree of reduction.

Permit Rationale at DOWLAO000020-21. The residual concentration of solvents in any effluent from the steam stripping process is essentially unmeasurable and well below the amounts seen in other exempt streams under RCRA's *de minimis* exemption. While Dow does not contend that stripper blowdown qualifies for the *de minimis* exemption, it is clear that discharge of the stream in question is of far less real impact than many other routine discharges from similar plants. In light of this fact, Dow is considering, as you suggested, strategies for delisting the stream in order to avoid any possible confusion as to RCRA applicability.

I hope that the attached material helps clarify Dow's position. As we said in the meeting, we are looking forward to working with you on an efficient and appropriate resolution of this matter. After you have had a chance to review the attached materials, we would appreciate an opportunity to discuss next steps with you. As always, please do not hesitate to call if you have additional comments or questions.

Sincerely,

J. Scott Janoe

JSJ/00320

EXHIBIT 1

COMPLETE

File "B" R
LA0003301

PERMIT RATIONALE

1. DOW CHEMICAL USA
LA DIV, Plaquemine
LA 3301

2. The expiring permit is being reissued at the BAT abatement level.

3. The following items were utilized & considered in developing the terms of the proposed draft permit:
a. Existing NPDES Permit LA 3301, effective February 10, 1980, expiration March 31, 1981 and extended by regulations upon application by permittee.
b. NPDES application (Form 1 & 2C) dated January 5, 1981 and supplemental information August 14, 1983; April 15, 1983; September 9, 1983;
c. 40 CFR Part 414 + 416 proposed March 21, 1983 Org. Chem. guidelines.
d. 40 CFR Part 415 promulgated June 29, 1983 Inorg. chem guidelines.
e. Plant site visit January 10, 1983
f. The Organic and Inorganic Chemical Development Documents,
g. Consultations with LDNR.

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4. The discharge is to Miss. River and Bayou Bourbeaux. The WQM plan is for the Lower Mississippi Basin Plan in Segment NO. 0701. Bayou Bourbeaux is in the Atchafalaya Basin Plan. Both streams are effluent limited. The Mississippi River, however, is water quality limited for classical chemicals which tend to impart taste and odor to this body.

5. The permit does not contain a schedule. The Clean Water Act requires attainment of BAT for priority pollutants by July, 1984.

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Permit strategy and overview

The use of up to ≅ 520,833.6 gpm (97.42) .750 MGD once-through cooling water comingled with up to 20 MGD process and utility wastewater places unique demands the regulatory strategy for this permit. Dow delivers the river water to the intake canal and each unit utilizes cooling water as required and places it in the effluent canal. In addition each unit treats and discharges process and utility after treatment except streams of biodegradable waste water is sent to the central treatment system which in turn discharges to the very end of the effluent canal. This arrangement requires regulation of each source prior to dilution with large CW. The single exception is Vinyl I and Solvents are located on a lateral to the effluent canal which can be monitored as discharged. In this situation Vinyl I will be regulated in the lateral which flows by Solvents. Solvents is also regulated down stream. Since similar pollutants are involved, the contribution of Vinyl I can be subtracted from the latter for compliance monitoring purposes.

Σ = 534,333.6 gpm

The only production facilities in which guidelines have been promulgated are chlor-alkali II and Chlorine plant. The guidelines requirements were applied at the process and cooling water for the caustic evaporators were of necessity placed on a net basis. Entrained caustic in the barometric condensers were not regulated since the alternative would be to utilize weak cell liquor for neutralizing

excess HCl. The latter would result in higher overall salinity in the final discharge.

BAT technology was derived by hypothetical modular treatment systems of proven capability and determined to be BAT. This concept is important because we have utilized empirical data and experience in establishing BAT in numerous permits throughout Region 6 and Dow's unique process's exhibit, at times, inordinate water reuse. These flow reductions, being an integral part of abatement, must be evaluated on a regional/national basis rather than a case by case basis. The latter could result in restrictive limits compared to other similar facilities which have not achieved such process flow reductions,

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Outfall 0001 - Final Combined discharge to Mississ. R.
The discharge is comprised of approximately 15 MGD of process wastewater. The remainder is utility, mainly OTCW, and storm runoff that fall on and adjacent to process areas. The normal average flow is 643 MGD to 769 MGD (30-day average).

The pH is monitored continuously, a side stream from each of the seven outfall pumps is sent to the pH monitoring system. The retention time is limited 15 min maximum. The usual 99% compliance of pH 6 to 9 is required pursuant to 40 CFR Part 401. Neutralization is accomplished upstream in the effluent canal.

Since monitoring and control is established upstream in the plant at the sources of the pollutants, monitoring only is asked at this point for total residual chlorine, total purgeable halocarbons and total purgeable aromatics. Such monitoring will show that the upstream treatment is addressing all sources of contaminants.

Biomonitoring is asked for at the final outfall on a quarterly frequency. This testing will help in assessment of the BAT to remove toxics at the upstream abatement.

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area 100 – Chlorinated Polyethylenes outfalls (101)

Process Polyethylene $\xrightarrow{Cl_2}$ chlorinated polyethylene + HCl

The consolidated application did not identify any priority pollutants. Treatment is settling and skimming prior to discharge to effluent canal. There is not sufficient soluble organics to support a biotreatment system. The BOD_5 is well below the BCT proposed plastics G/L. The present BPT = BCT for TOD and TSS even though the surrogate BOD, i.e., TOD is used for regulation of outfall 101 at the overflow of the final settling pond.

Total Residual Chlorine (TRC) is the only toxic component of the discharge. A daily maximum requirement of 2 mg/L was derived. TRC can be entirely eliminated by use of excess reducing agent. The inorganic chemical development document established 0.9 and ~~1.8~~ 1.5 mg/L as BAT concentration limits for the chloro/alkali industry and it was determined that a similar limit is applicable at this outfall.

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area 200 = Methyl Cellulose

outfall 0211 = 4.3 MGD once-through cooling Water (OTCW)
outfall 0221 = segregated storm runoff from first flush rainwater impoundment.

Process wastewater is sent to the environmental operations header (EOH) which sends the stream to the central treatment plant (CTP) - unox system. OTCW is discharged directly to the return canal for discharge at 0001 outfall. Dow operates an inline analyser which detects chlorinated organics in water (COW analyser) by vapor phase chromatography. A daily maximum net TOD limit of 5 mg/l was established to limit leaks, spills or other contamination of this OTCW at the 0211 monitoring point.

for area 200 only?

The company has constructed a rainwater impoundment system with the capacity to remove the initial 3/4 inch of rainfall event. Presumably this collected or impounded stormwater will have most of the potential contaminants in this "first flush" and the excess or uncollectable stormwater will be relatively free of contamination.

limit both?

We have determined to regulate this excess stormwater by establishing a daily maximum TOD limit of 200 mg/l whenever flow occurs. The limit

is technologically feasible by application of proper spill prevention and containment measures, good house keeping practices and timely maintenance of the equipment. The permittee also has the option to increase the flows to the CTP to meet the permit limitations at the stormwater outfall 0221.

The stormwater is pretreated by oil removal equipment prior to entering the rainwater impoundment.

The target date for completion is December, 1984. Since this is not a BAT requirement, i.e., no priority pollutants involved, reporting TOD only is required until December 31, 1984.

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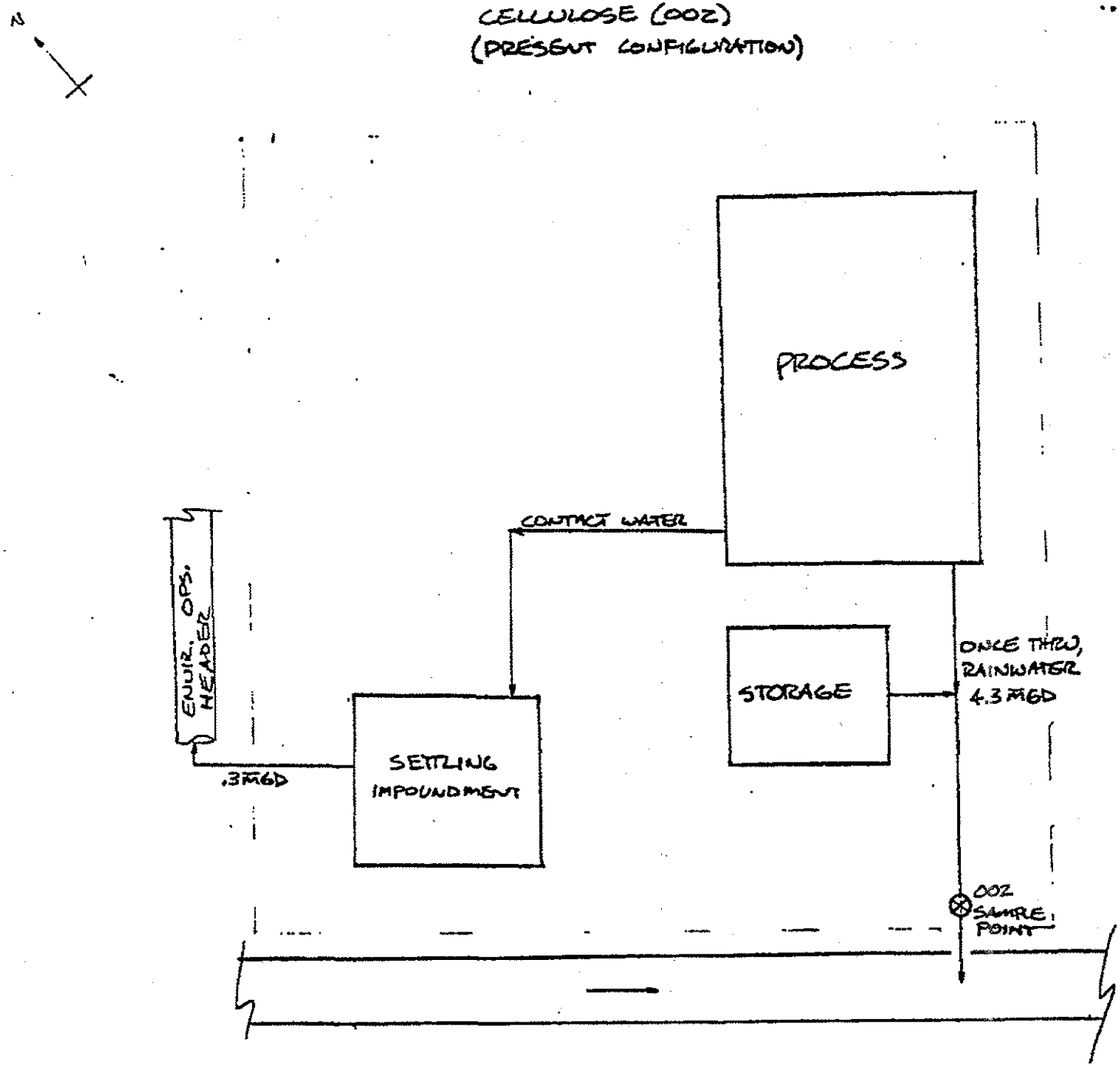
CELLULOSE (002)
(PRESENT CONFIGURATION)



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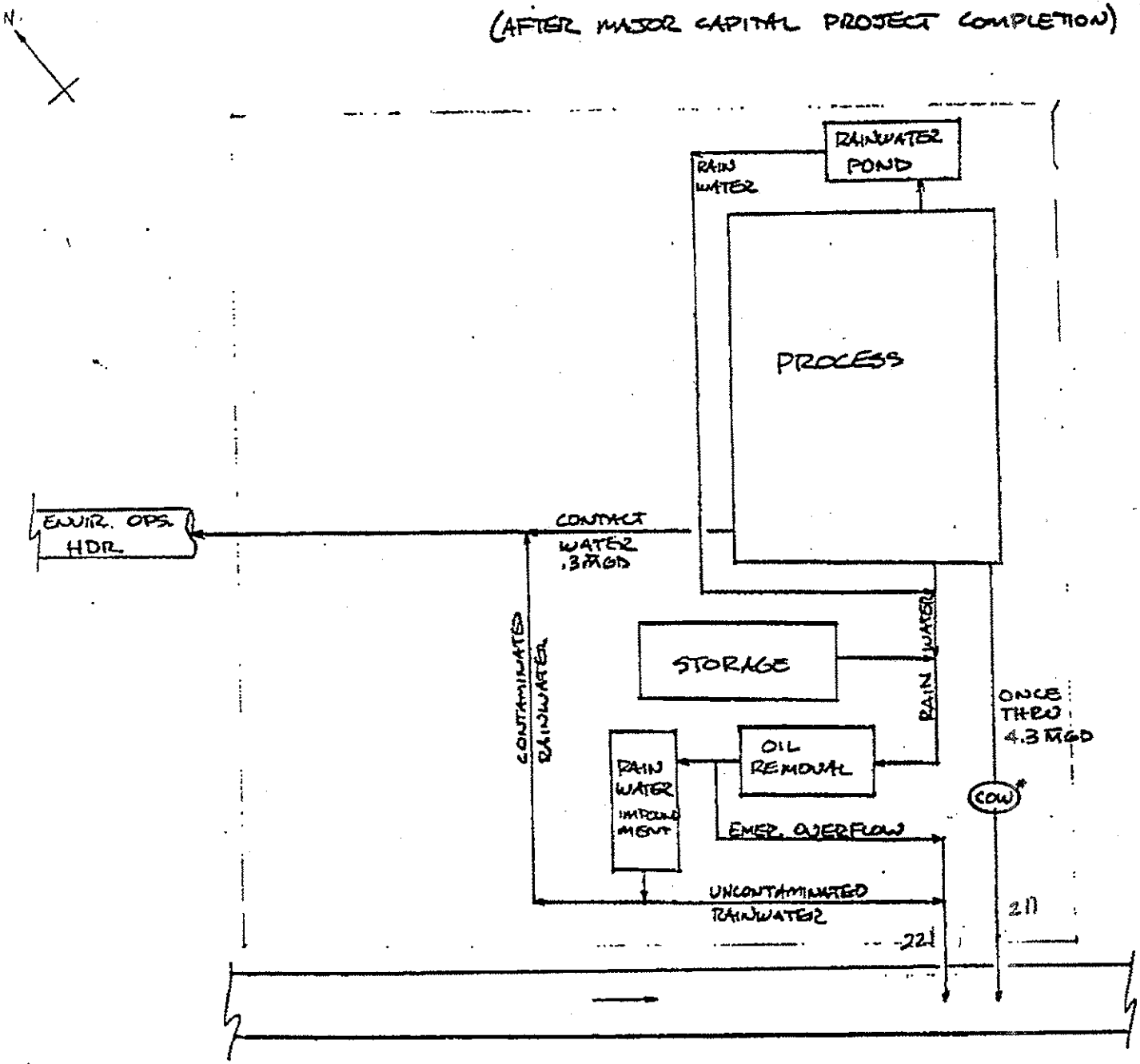
CELLULOSE (002)
(AFTER MAJOR CAPITAL PROJECT COMPLETION) Target date Dec. 1984



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*CHLORINATED ORGANICS IN WATER ANALYZER

DOWLAO000010

area 300 - Chlro/alkali I and Chlorine Plant.

The Inorganic Chemical guidelines - chlor/alk subcategory apply to this area. 40CFR Part 415.62 (BCT)
40CFR Part 415.63 (BAT)

Chlorine Production 2.2 MM lbs/day
chlor/alk I 2200 1000 lbs/day at outfall 311
chlorine 3980 1000 lbs/day at outfall 321

331, 341, 351, 361, 371 are OTCW and barometric condenser water.

		G/L (BCT/BAT)	2200(311)		3980 (321)	
	TSS	1.1 / 0.51 (BCT)	1122/2420		2030/4378	
Diaphragm cell G/L	Cu	.012 / .0049 (BAT)	10.8	26.4	19.5	47.8
	lead	.0054 / .0024 (BAT)	5.3	13.0	9.6	23.5
	Ni	.0097 / .0037 (BAT)	8.1	21.3	14.7	38.6
	TRC	.013 / .0079 (BAT)	17.4	28.6	31.4	51.7

Purgeable Halocarbon have no G/L.

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outfall 311 (003A in appn)

Non-contact CW	1.62 MGD
CTBD	0.1
Brine Treatment effluent	0.05
contact water	0.001

outfall 321 (003D in appn)

non-contact CW	35.55 MGD
Brine treatment effluent	0.47
Runoff from cell area	0.14

The guidelines were applied to these process discharges based upon the production rates reported in the application for each guideline parameter as shown above.

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The consolidated application application showed treatable quantities of volatile chlorinated organics in the process outfalls. These components may be analyzed for by EPA Method 601 for total purgeable halocarbons. The Inorganic chemical development document did not find these components in significant and reliable quantities to establish effluent guidelines. These pollutants may be derived from the reaction of residual chlorine and natural organics in the surface intake water, from chlorination of the graphite electrodes, contamination from other areas of the plant in the water or from air emissions.

It appears that Dow has expended much effort in reducing the process flow. The reduction in flow is a significant factor in overall abatement. Therefore the promulgated guideline flows and BAT achievability will be derived to develop BAT permit limitations. The flows are taken from the Dev. Doc., Table 11-19 as follows.

Cell room wash/wastes	0.38	M^3/Kkg
Chlorine condensate	0.49	
spent H_2SO_4	0.01	
Tail gas scrubber	0.17	
Brine mud	0.42	
Total applicable	1.47	

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$$\frac{1.47 \times 1000 \times 2.2}{8.34 \times 2.2} = 176 \text{ gal}/1{,}000 \text{ lbs}$$

2200 X 176 = .387 MGD for 311 (avg flow)

3980 X 176 = .700 MGD for 321

2C Parameter	BAT Phy/Chem, ug/l	Org Chem G/L. Avg / Max ug/l	
Bromoform	100	N/A	
Carbon Tetrachloride	✓	N/A	50
$HCClBr_2$	✓	N/A	50
$HCCl_3$	✓	50	75
$HCCl_2Br$	✓	N/A	N/A
1,2-EDC	✓	100	150
Tetrachloro ethane	✓	N/A	N/A
Tetrachloro ethylene	✓	✓	✓
Total	800		

The technological abatement level for each priority pollutant reported is roughly twice the proposed Org. Chem guideline requirement which was based upon Act. Sludge biotreatment.

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Calculations of total purgeable halocarbons

outfall 311 - 0.387 X 8.34 X 0.8 = 2.58 or 3 Avg 6 Max

outfall 321 - 0.700 X 8.34 X 0.8 = 4.67 5 Avg 10 Max

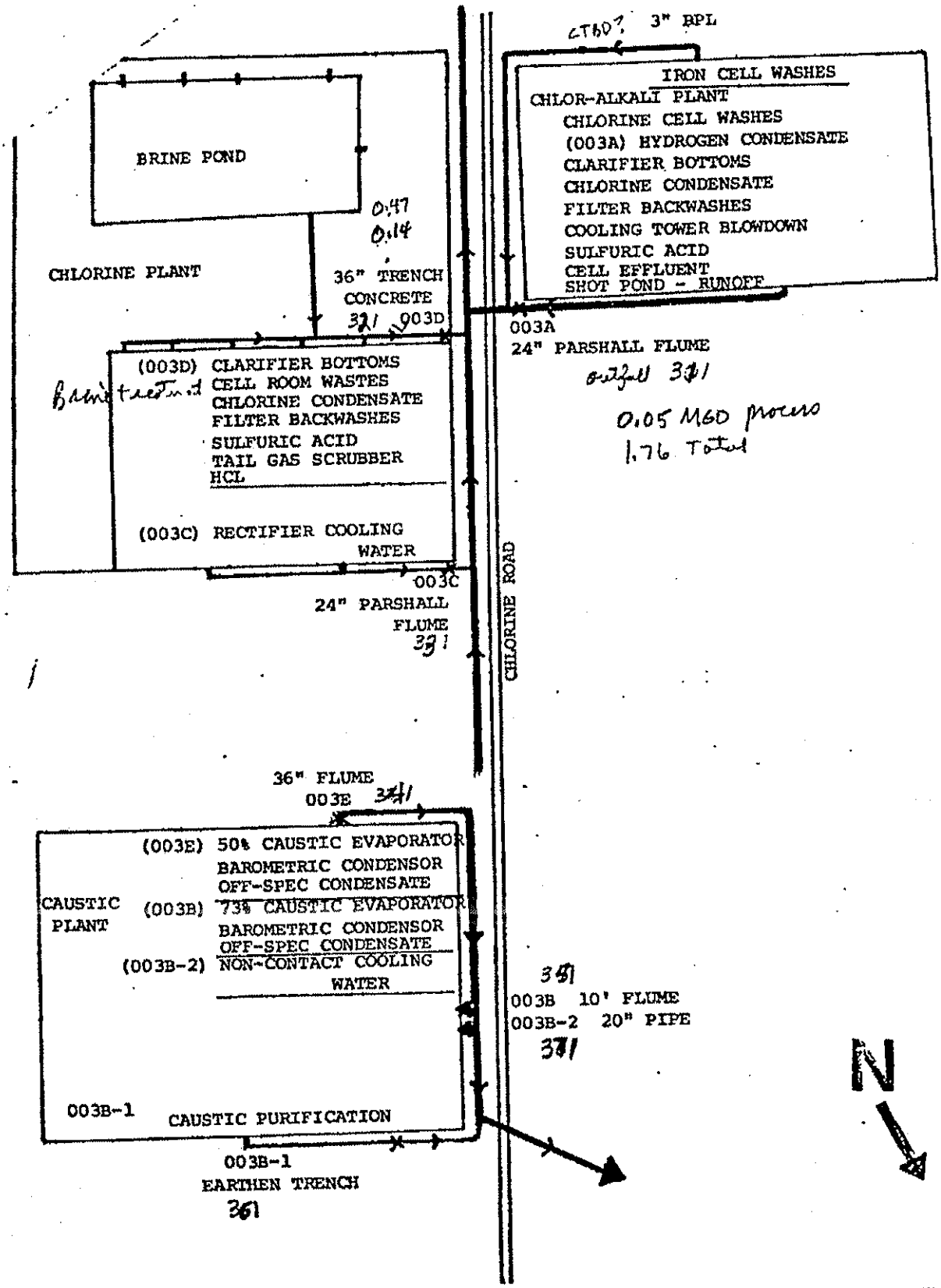
6/2200 = .00273 lbs/1000 lbs chlorine

10/3980 = .00251 lbs/1000 lbs chlorine

This is about 1/4 the allowances generally allotted to modern EDC/VCM plants, i.e., constructed after 1978. Dow may be able to comply with the proposed limitations by control of residual chlorine or treat selected streams with high contamination. Treatment options are activated sludge, activated sludge or steam stripping technology to meet the limits.

ATTACHMENT 4

CHLOR-ALKALI DISCHARGE MAP



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area 400 — Glycol I, propylene oxide, etc.

Propylene oxide is produced by the chloro hydrin process

$CH_3CH=CH_2 \xrightarrow{HOCl} CH_3CHOHCH_2Cl \xrightarrow{-HCl} CH_3CH-CH_2$ (O)

The process waste water is sent to CTP and will meet the limit at 2001 as applicable. The monitoring points established in the 400 area are as follows:

411	14 MGD	OTCW + incinerator scrubber water
421	17 MGD	OTCW + incinerator scrubber water
431	intermittent	collected first flush stormwater
441	int.	excess stormwater
451	1.005 MGD	OT non water and rainwater.

The only priority pollutant identified in the 2C appl was 1,2-dichloropropane at 566 µg/l (184 lbs/day). There is no treatment in the 400 area. However, they have under construction a storm water impoundment capable of collecting the first 3/4 inch of rainfall which is essentially the same design as the methyl cellulose area sans oil separator.

The once-through CW is required to meet a 5 mg/l daily maximum TOD limitation on a net increase above the intake water. Such limitations were established at outfall 411 and 421. The collected stormwater is sent to CTP along with process water but the capability of direct discharge if uncontaminated was constructed. We have determined that discharge of untreated storm water at less than 200 mg/l

is BAT for outfalls 431, 441 and 451 and is incorporated in the draft proposed permit. The limit is attainable by application of technology similar to that described for the methyl cellulose area.

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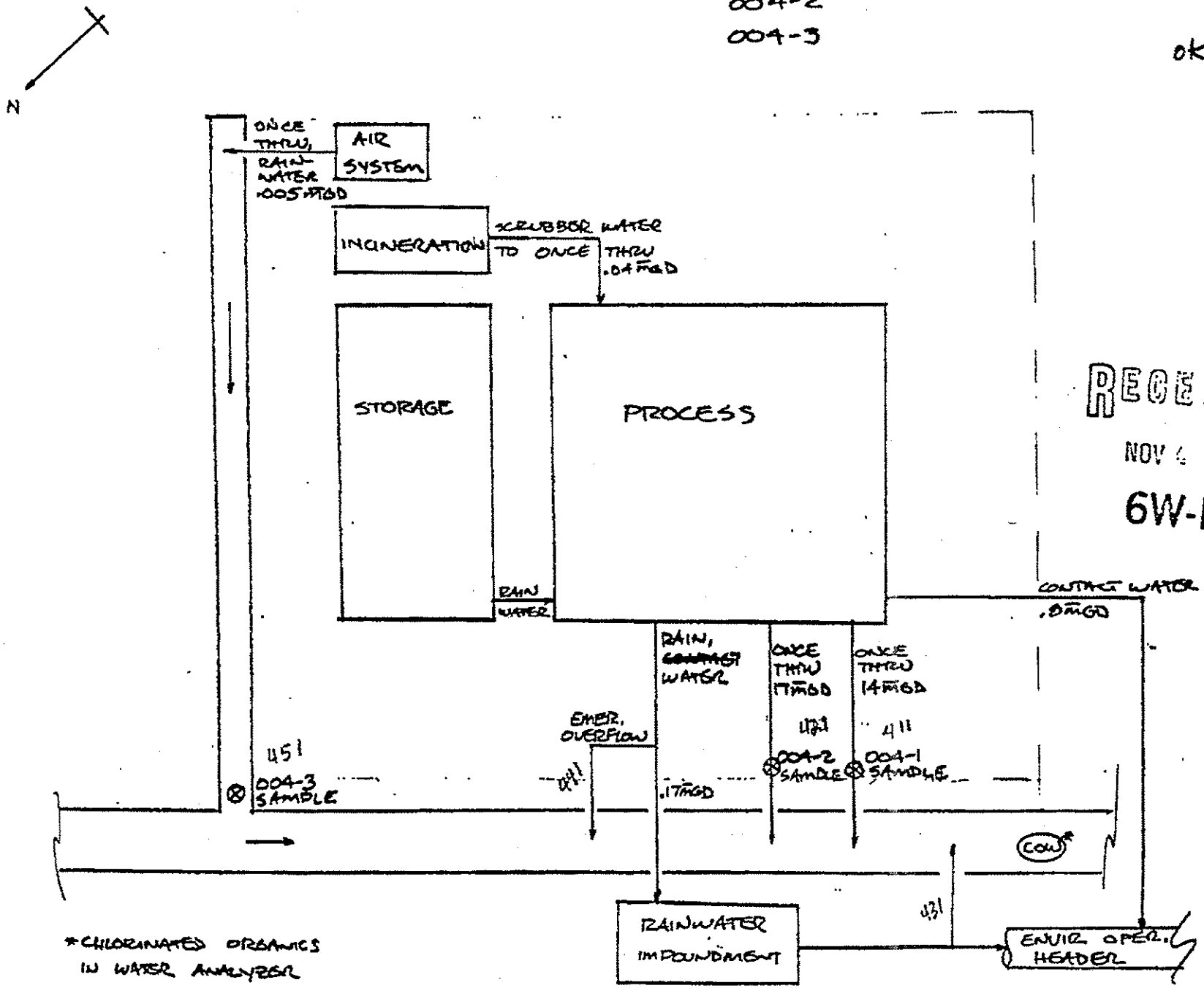
GLYCOL I 004-1
004-2
004-3

11/83

ok



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area 500 - Chlorinated Solvents

$CH_2Cl - CH_2Cl \xrightarrow{-HCl} CH_2 = CHCl \xrightarrow{Cl_2} CH_2Cl\,CHCl_2$

$CH_2Cl\,CHCl_2 \xrightarrow{-HCl} CHCl = CHCl \xrightarrow{Cl_2} CHCl = CCl_2 + HCl$

others.

This area produces several C_2 chlorinated solvents by chlorination, cracking and thermal rearrangements. The consolidated application reported 343 lbs/day nickel in an average 80.66 MGD flow. The organic priority pollutants were reported as follows:

Volatile Organic Priority pollutant	Daily Max lbs/day
Benzene	46.8
√1,1-dichloroethane	728.4
√1,2-dichloroethane	104.7
1,2-dichloroethylene	45.7
√1,1,2,2-tetrachloroethane	26.5
Tetrachloroethylene	17.9
Toluene	7.6
√1,1,2-trichloroethane	45.0
√Vinyl chloride	490.7
Total	1513.3 max* lbs/day

* Individual max of 5 samples and therefore did not occur on same day. Average <100 lbs/day.

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Reported discharges	MGD	Treatment
non-contact river water	30.55	discharge
contact river water	2.15	steam strippers and thermal oxidizer
contact process water	0.38	pH neutralization
non-contact condensate	0.04	discharge

The company has made changes in the operation from the 1981 2C application above; see attached diagram. Contact process wastewater and contaminated stormwater has been reduced to 0.15 MGD. The first 3/4" of rainwater is collected for treatment via steam stripping and the remainder, being much less contaminated, is discharged to the effluent canal. The process/rainwater stripper overhead product is incinerated on the site. The HCl product is scrubbed and discharged to the canal where it is neutralized.

Although the 2C application indicated the presence of aromatics, the source of these components is the by-product alkalinity from Light Hydrocarbons area. Dow is constructing equipment for removal of the contaminants at the source and this permit will regulate these pollutants and the new treatment system at 700 and 2200 areas.

Process wastewater and rainwater contaminated with purgeable halocarbons can be successfully treated by physical/chemical treatment methods such as steam/air stripping and activated carbon adsorption

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to virtually any degree of reduction. Steam stripping is generally preferred because the overhead can be recycled back to process for recovery or disposed of in small bulk.

The key component, based upon relative volatility and water solubility, is 1,2-dichloroethane (EDC). Data presented in Section III.3.1.19 of the EPA Treatability Manual, EPA 600/2-82/001, September 1981 (Revised) indicate that EDC can be reduced to a range of 0.05 to 5 mg/l with removal efficiencies greater than 99%. Data presented in the proposed Organic Chemicals Guidelines Development Document, EPA 440/1-83/009-b, February 1983, Volume III, pages E-54 to E-69, describe steam stripping of the organic volatile priority pollutants. For example, EDC may be steam stripped from its water solubility limit (about 900 mg/l) to 0.05 mg/l utilizing 8 theoretical trays and 0.018 lbs steam per lbs total feed (Table E-14). Using aqueous reflux (Table E-13) indicates only 6 theoretical trays are required.

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Here again, reduction of process wastewater is a large portion of BAT treatment and the nature of this facility makes it practically impossible to limit this facility on process flows alone. For example, the large amount of OTCW above.

We have determined to monitor the combined discharges at the existing sampling points

005A and 005B as outfalls 511 and 521. Monitoring point 511 contains the majority of the flow from area 500 and all of area 600. 521 contains Tank Farm HCl scrubber water, uncontaminated storm runoff, excess of first flush contaminated storm water and incinerator utility water. The limits will to the sum of 511 and 521 less 611.

The 2.53 MGD process waste water may be steam stripped to 0.1 mg/l for each of the halocarbons shown above and the limit calculated as:

$2.53 \times 8.34 \times 0.6 = 12.51$ lbs/day daily average

The daily maximum or 99% confidence level derived is 2X daily average. The OTCW and storm runoff reported is about 90 MGD reported but reduced since 1981 to 15 MGD. Discharge Monitoring Report data indicated the flow from 600 area averaged 52 MGD for 1982+83 while the combined flow averaged 67 MGD in the same period for an increase of 15 MGD. Cooling water contamination should be restricted to 50 µg/l for BAT containment and the allowance for this source is calculated as: $15 \times 8.34 \times .05 = 6.25$ lbs/day total purgeable halocarbons in the OTCW.

Excess storm runoff from the rainwater impoundment after the first flush is collected is mixed with uncontaminated storm runoff from the storage area. This flow totals 1.5 MGD at old outfall 005B. For this discharge we have determined that source control in the form of spill prevention and

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containment, timely maintenance, curbs, and overall good housekeeping would result in an effluent at 0521 (oed 005B) of less than 1 mg/l total purgeable halocarbons. Calculation:
1.5 X 8.34 X 1 = 12.5 lbs/day.

The total purgeable halocarbons and sources are listed below:

source	lbs/day
OTCW	6.25
process WW	12.7
storm runoff	12.5
	31.45 lbs/day 30-day Avg.

This limitation shows total purgeable halocarbons in the discharge to be within 0.005 lbs/1000 lbs of production. This falls in line with most modern chlorinated hydrocarbon production facilities in Region 6.

No allowances were established at the storm runoff from the HCl storage area.

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Nickel was reported in very high concentration in the consolidated applications at this outfall. It has been shown that median achievable concentration of 0.19 mg/l nickel is appropriate (p. 106 Inorganic Chemical Development Document; Table 8-12) for lime/filtration technology. The 30-day average was established at 0.3 mg/l. It is our best professional judgement that this limit applies for outfall 0511. The limit is calculated:

2.54 X 8.34 X 0.3 = 6.3 lbs/day 30-day average
12.6 lbs/day daily maximum.

Residual Chlorine can be reduced to any degree by addition of excess reducing agent and allowing sufficient time for the reaction to approach completion. We have determined that treatment to 0.5 mg/l daily average and 1.0 mg/l daily maximum is technically feasible for this discharge. Calculation:

(2.54 + 1.5) X 8.34 X 0.5 = 17 lbs/day TRC.
34 lbs/day daily maximum.

Biomonitoring - see area 300

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005 combined discharges from Solvents and vinyl I plant.

		Conc	Max lbs	Avg
Metals -	Nickel	0.52	343	
Org	Benzene	.068	47	~20
	1,1-dichloro ethane	1.1	728	~120
	1,2-dichloro ethane	.152	105	~70
	1,1-dichloro ethylene	.069	46	<10
	1,1,2,2-tetrachloro ethane	.04	26	~20
	tetrachloro ethylene	.027	18	10
	Toluene	.011	8	6
	1,1,2-trichloro ethane	.068	45	~30
	Vinyl chloride	.741	490	~8
	resid chlorine	—		
				300

006 only Vinyl I only

EDC	.178	99	~60
Tetra chloroethane	.046	28	~15
trichloro ethane	.066	36	~30
resid chlorine	—		105

permit 250/500

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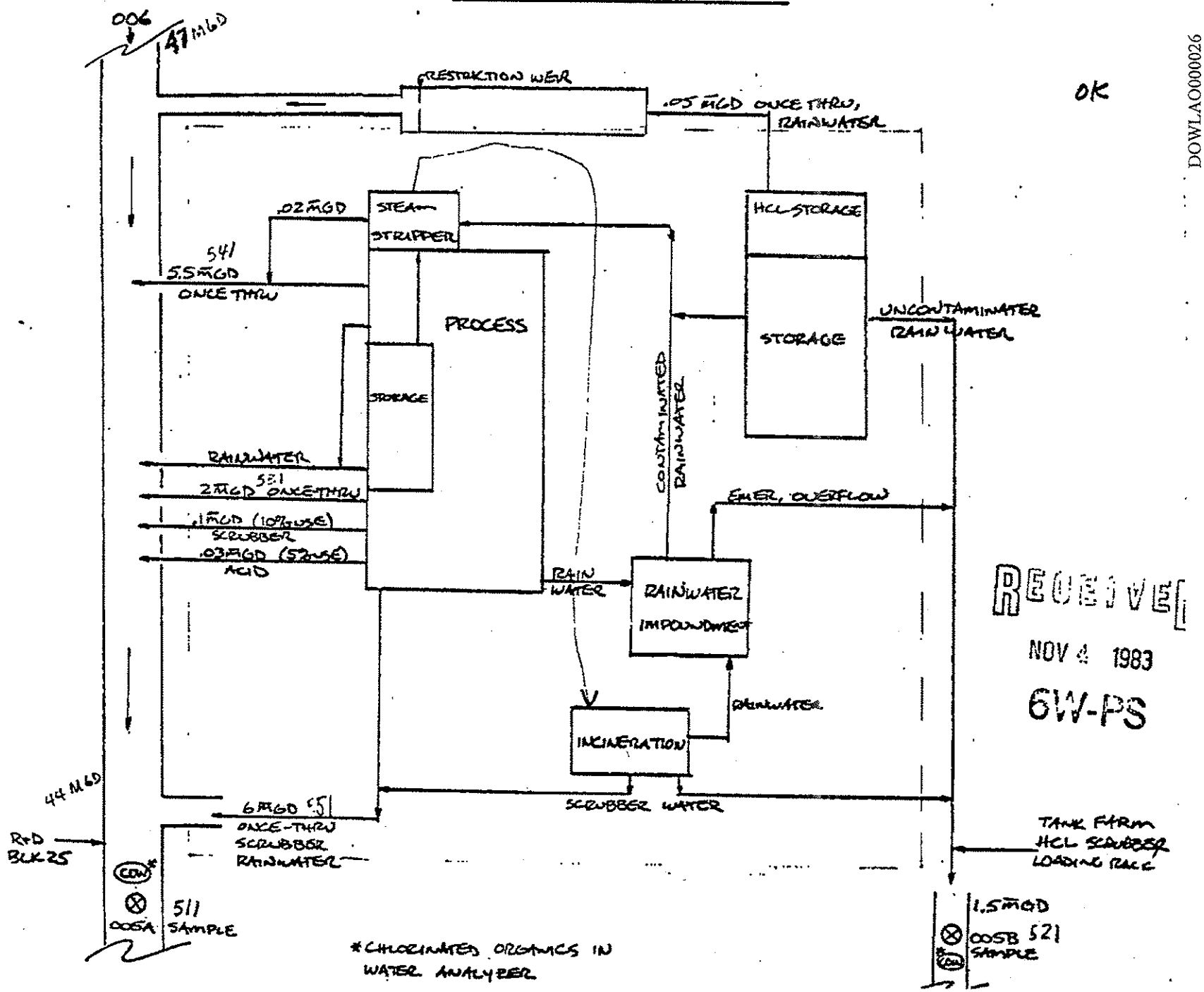

DOWLA000026

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Area 600 Vinyl I

Process: (1) $CH_2=CH_2 \xrightarrow{Cl_2} ClCH_2-CH_2Cl$ (EDC)

(1,A) $CH_2=CH_2 + 2HCl \xrightarrow{1/2 O_2} EDC + 1/2 H_2O$

(2) $ClCH_2CH_2Cl \xrightarrow{\Delta} CH_2=CHCl + HCl$

note recycle HCl to 1,A above.

1981 2C reported parameters	Daily Max lbs/day
1,2-dichloro ethane	178
1,1,2,2-tetrachloro ethane	28.3
1,1,2-trichloro ethane	35.7

stream	MGD	treatment
non-contact river water	59.64	discharge
non-contact condensate	0.26	discharge
contact process water	0.10	pH neutralization
treated contact process	0.03	steam stripper

1983 info

once through river water	47 MGD	discharge
treated storm water	.07	stripper
contact water	.004	stripper
incinerator scrubber	.25	discharge.
excess storm water	N/A	
SW from storage	N/A	

Treatment Technology discussed for area 500 is essentially the same for this area of the plant. Physical/chemical or steam stripping followed by incineration of the removed halocarbons. For EDC/VCM plants in general, the principal pollutant is 1,2-dichloroethane (EDC) which in general constitutes about 90% of the halocarbons in the discharge. Chloroform amounts to about 8% and minor amounts of carbon tetrachloride. Permittee reported EDC, tetrachloroethane and trichloroethane as the principal pollutants.

The Discharge monitoring reports of 1982 + 1983 show the OTCW flow averaged 52 MGD. For BAT best professional judgement, such stream should not contain more than 0.05 mg/l contaminants. Such allowance for the daily average can be calculated as:

$52 \times 8.34 \times .025 = 11$ lbs/day. average

Treated storm water (from first flush) and process waste water may be treated to 0.1 for each component and may be calculated as follows:

$0.13 \times 8.34 \times 0.6 = .65$ or 1 lbs/day. average

The scrubber water can be contaminated at times so this stream may contain up to ½ the above contamination and calculated as:

$0.25 \times 8.34 \times 0.3 = .63$ or 1 lbs/day average.

Excess stormwater (after first flush) and stormwater from storage may be subject to contamination. In our best professional judgement such streams may not contain in excess of 1 mg/l of

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contamination for BAT based upon, leak and spill prevention and containment, over-all ~~good~~ housekeeping, and vigilant preventive maintenance. Since the Vinyl I area is the same size as the solvents area the same allowances for storm water is adopted regulating this area, i.e., 6 lbs/day daily average and 12 lbs/day daily maximum.

Summary of sources:

sources	daily Avg	daily Max
OTCW	11	22
process + SW	1	2
scrubber	1	2
storm drainage	6	12
	19	38

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This rationale is consistent with many other EDC/VCM producers in Region 6. We have empirical data and experience in EDC/VCM permitting and all modern or up-to-date plants are capable of reductions to achieve effluent loading within .005 lbs/1000 lbs product. The proposed limit is within our empirical comparison and represents the application of BAT technology.

There are sources of chlorine at this facility which must be controlled or treated. Air borne sources may contaminate ditches, stormwater, etc. The 2C application indicated < 0.05 mg/l total residual chlorine in both outfall 005 and 006. However, potential is great for its presence and it is our

best professional judgement that the two plants should be similarly regulated at 17 lbs/day daily average and 34 lbs/day daily maximum.

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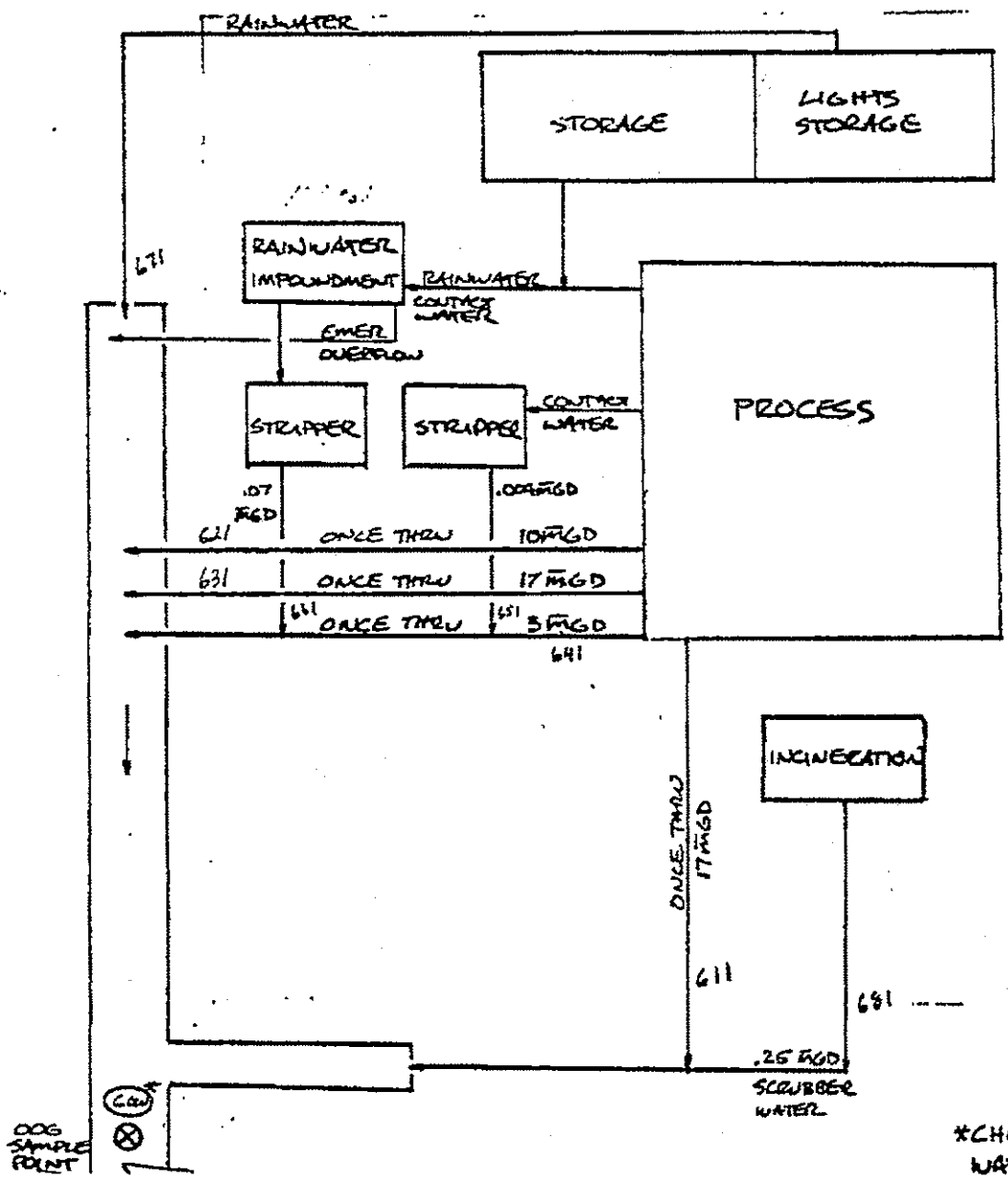
VINYL I (006)

N

.07
.004
.25
.324



OK

Rain ?

stripper	.07
	.004
scrubber	.25
	.324

17
17
10
3
47 MGD

*CHLORINATED ORGANICS IN WATER ANALYZER

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DOWLA0000031

Area 700 - Light Hydrocarbons II

The principal product is ethylene with other olefins.
The technology is thermal/catalytic cracking.

2C Application Priority Pollutants	007 Max lbs/day	007C Max lbs/day	Tg S/L Avg / Max
Benzene	4.2	6.2	.075 / .125 mg/l
Toluene	2.1	2.9	.125 / .225 ✓
ethylbenzene	.21	.69	.150 / .225 ✓
phenol	.88	.09	N/A .05 ✓
acenaphthene	.25	ND	N/A .05
isophorone	ND	ND	N/A .05
acenaphthalene	.674	.021	N/A .05
fluorene	.645	ND	N/A .05
phenanthrene	.412	ND	N/A .05
chrysene	.248	✓	
fluoranthene	1.000	✓	
Indeno (1,2,3-cd) pyrene	.015	✓	
naphthalene	2.100	0.160	
anthracene	.412	ND	
Benzo pyrene	.127	✓	
Benzo (ghi) perylene	.019	✓	
Benzo (k) fluoranthene	.127	✓	
pyrene	1.000	✓	

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2C metals	007 Max mg/l	007C Max mg/l	
Antimony		2.5	
Arsenic		1.4	
Cadmium		0.36	
Chromium		.07	
Copper	.03	0.55	
Lead		1.6	
Nickel	0.25	2.1	
Selenium		8.0	
Thallium		2.2	
Zinc	.012	0.14	
phenol	4.3	1044	
other			
BOD	184	680	42/106
COD	1302	2100	
TOC	125	260	
TSS	33	88	84/236

DRAFT

The 1981 2E application indicated 007 was sent to Oil/water separator prior to discharge, 007C, by-product alkalinity was sent to activated carbon adsorption prior to being discharged or sent to various other units, e.g., solvents in area 500, Dow is currently constructing a proprietary benzene removal treatment system for these outfalls after internal process changes that resulted in changes in contact water. Contact water flow reduced from 0.25 MGD to .03 MGD.

The present discharges are as follows:

stream	Flow	Treatment	Monitoring point
OTCW	150 MGD	discharge	711
contact water	.03 MGD	Benzene Removal	721
By-product alk	.13 MGD	Benzene Removal	731
Wash, rainwater	2.5 MGD	discharge	741

40 CFR Part 414.34 proposed BAT guideline for organic Chemicals subpart C, is appropriate for this process discharge. Calculation at 721:

BOD_5	.03 X 8.34 X 42	=	10.5	lbs/day
	.03 X 8.34 X 106	=	26.5	
TSS	.03 X 8.34 X 84	=	21	
	X 236	=	60	

Total purgeable aromatics

	.03 X 8.34 X 0.2	=	.05	lbs/day
	.03 X 8.34 X 0.35	=	.09	lbs/day

DRAFT

concentration guidelines (above) applied for phenol, acenaphthalene and fluorene. Report only for naphthalene was asked for in the permit since this pollutant was reported at 1. mg/l and the treatment should reduce this parameter.

Biomonitoring was asked to be reported only on this outfall to assess the capability of the BAT treatment to reduce toxicity in a similar manner as area 300 process streams.

Calculations at 731, by-product alkalinity:
Flow rate: 0.3 MGD

BOD_5	0.3 X 8.34 X	42	=	105	avg
		106	=	265	max
TSS	0.3 X 8.34 X	84	=	210	
	X	236	=	590	
TPA	0.3 X 8.34 X	.12	=	0.5	lbs/day avg
	X	.35	=	0.9	lbs/day max

See 2221 -

The requirements were developed in concentrations to enable treatment of LHC II (700) and LHC III (≥200) at either plant. This allows flexability for turn-arounds without notification for failure to meet lbs/day limitations.

DRAFT

Metals Requirement -- 40CFR § 414 + 416 have been proposed for several metals. The limits apply to a properly operated Act. Sludge system with pretreatment. The G/L do not apply since this stream utilizes Act Carbon adsorption. The company has a multimillion capital expenditure going on at present to treat this waste stream. The by-product alkalinity and process water stream's metals characteristic may change. Until that time, requirements for copper, lead and monitoring for nickel will be proposed utilizing the proposed org chem G/L. The levels are commensurate with the metals removal data presented in the Inorganic Chemical G/L Doc. Doc. These requirements are equivalent to BAT technology by BPT determination.

Total phenols monitoring and total purgeable aromatics requirements are proposed. The new treatment facility should be able to meet the proposed Org chem G/L — the basis for the requirements at 721 and 731.

Biomonitoring is asked for at these streams. Provisions for pH neutralization is provided in Part III so any mortality observed will be attributable to toxics as opposed to high pH.

DRAFT

			MGD	
701 721	007	process water	0.26	
~~711~~	~~007A~~	~~CW~~	~~74.7~~	NL-OTCW
~~721~~ 711	007B	CW	116.	contaminated
731	007C		0.19	(April 15 open)

Total pergeable aromatics - proposed Org Chem G/L § 414.34

BAT.	Benzene	75 /	125
	toluene	125	225
	total	0.2	0.35 (mg/l)

Dow proposal 33.1 lbs/day Benzene

$$\frac{33.1}{0.26 \times 8.34} = 15.26 \text{ mg/l}$$ unacceptable

~~Recommend 007C to Central Treatment,~~

DRAFT

0711	Net TOD	5 mg/l TOD		150 MGD DTCW
0721	BOD	42	106	.03 MGD contact water.
	TSS	84	236	
	TOD	report	report	
	O&G	10	15	
	TPA	0.2	0.35	
	phenol	0.1	0.2	
	Acenaphthalene		.05	
	Flourene		.05	
	Naphthalene	report		
0731	BOD	42	106	By-prod alk 0.3 MGD
	TSS	84	236	
	TOD	report	report	
	Total phenols	0.1	0.2	
	TPA	0.2	0.35	
	Naphthalene	report	report	
	Cu			
	lead			
	Ni			
	O&G	10	15	
0741	TOC		50	wash/rain water ~ 0.5 MGD
	O&G		15	
	Total phenols		report	
	TPA	0.2	0.35	

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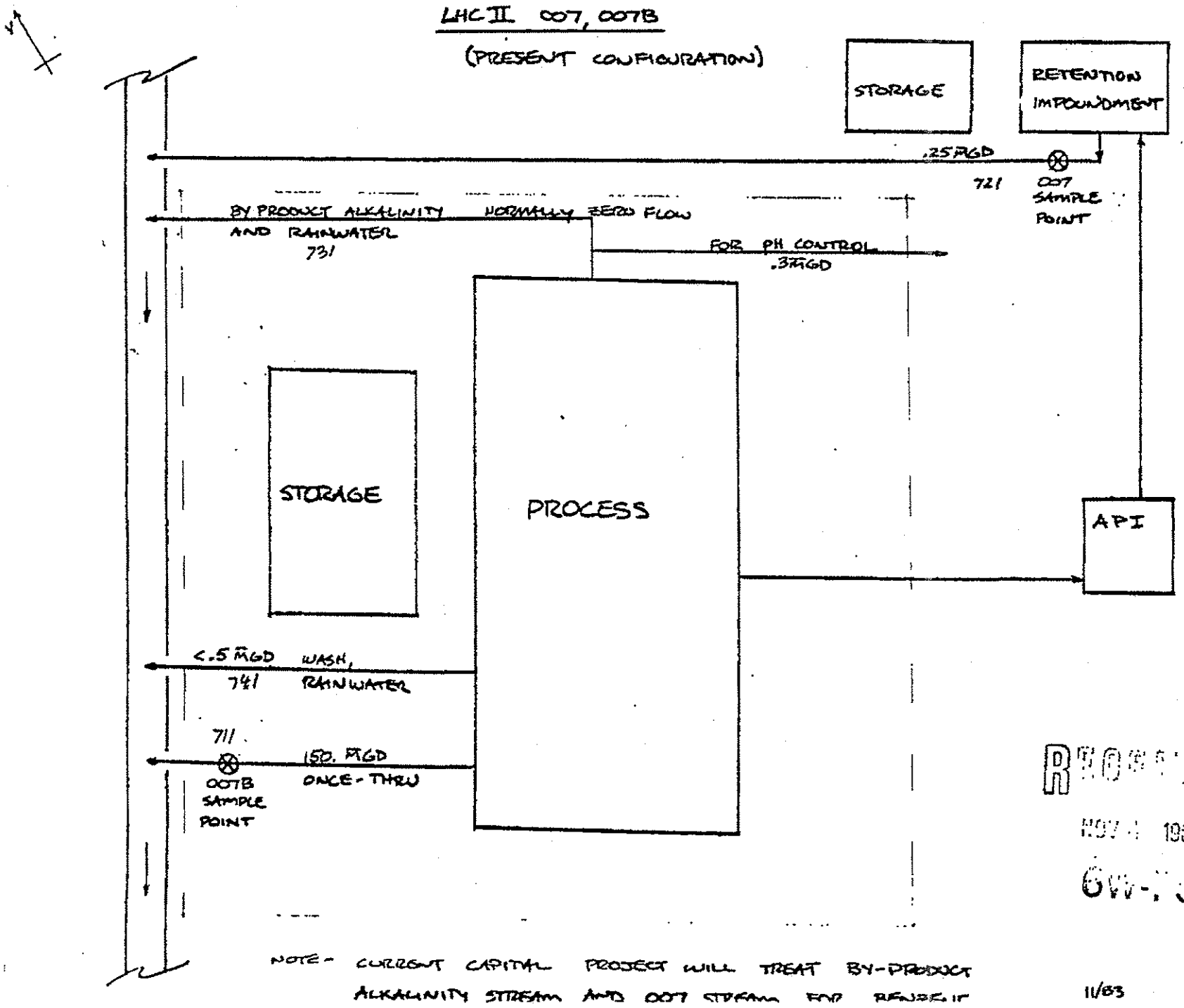
LHC II 007, 007B

(PRESENT CONFIGURATION)



NOTE - CURRENT CAPITAL PROJECT WILL TREAT BY-PRODUCT ALKALINITY STREAM AND 007 STREAM FOR BENZENE

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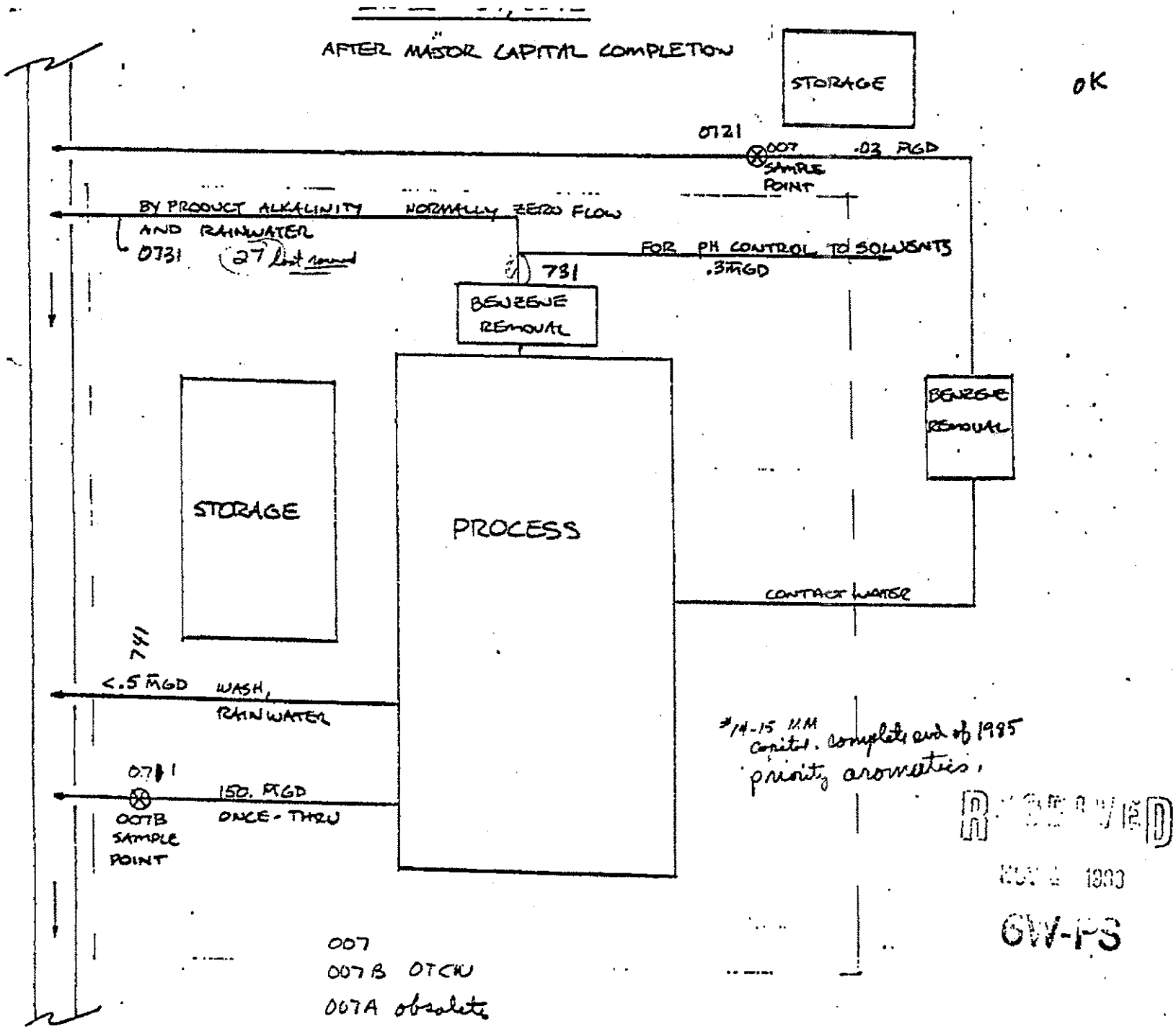
DOWLAO000039



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DOWLA000040

Area 800 – Glycol II

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2C Stream		Treatment
Contact process waste water	0.36	sent to CTP
Demineralizer washings	0.26	pH neutralization
CTBD	0.22	chromium removal
Washdown, utilities	0.21	discharge.

The only priority metal identified in the 2C application was nickel. The Inorganic Chemical Development Document (Table 8-11) indicates nickel can be treated to 0.2 mg/l 30-day average and 0.5 mg/l daily maximum by sulfide precipitation / filtration Technology (See calc. below.)

The company reported changes in the flow pattern at this area (see attached diagrams). Storm water is collected, monitored and sent to effluent canal if uncontaminated and to CTP if contaminated. This stream is identified as outfall 811 in the new permit.

The company plans to eliminate chromium/zinc corrosion inhibitors in several cooling towers elsewhere in the plant. The towers will be renovated to remove traces of chromium and plan to treat the removed materials in area 800 and have asked for 8 lbs/day during such intermittent operation. This will be elaborated on and provided for in Part III of the permit. BAT concentration limits of 0.5 mg/l avg and 1.0 mg/l daily maximum.

The storm water leaving as 011 must be treated if contaminated. The CTP effluent must be less than 453 at the 92% confidence level, i.e., 30-day average. The long term average (LTA) must be maintained in the 250 mg/l range. Therefore, in order to achieve a reduction of pollutants at CTP 011 must be more contaminated than the CTP LTA.

Another consideration is the proposed Org. Chem. guidelines. A BOD_5 of 106 mg/l daily maximum and 42 mg/l 30-day average is appropriate. The latter choice was made because most of the time the discharge is uncontaminated storm runoff.

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Calculations:

Nickel. 0.47 X 8.34 X 0.2 = 0.78 oz 1 lbs/day Ni Avg.
X 0.5 = 1.95 oz 2 lbs/day Max.

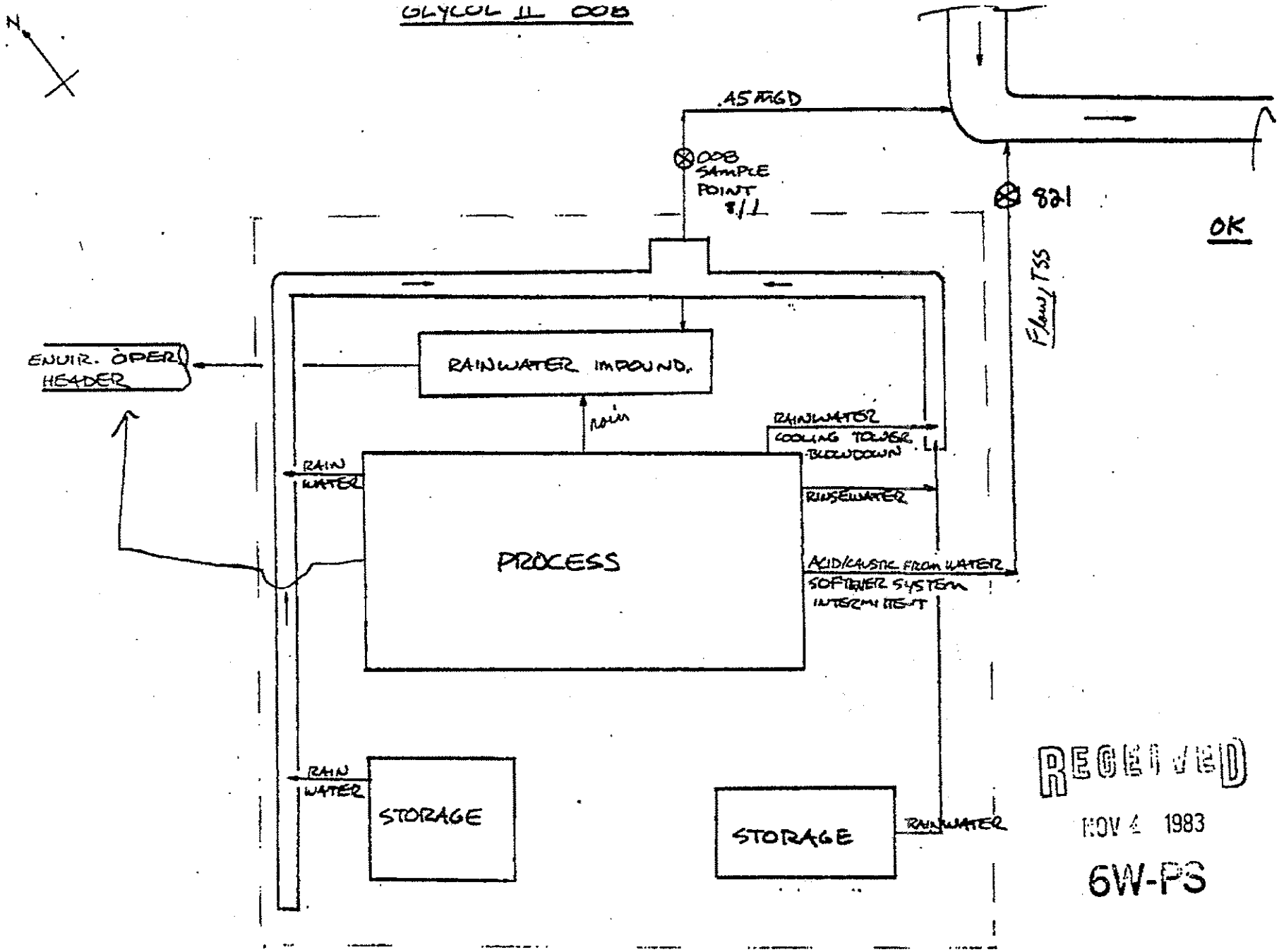
Chromium 0.22 X 8.34 X 0.5 = 0.9 oz 1 lbs/day Cr. Avg.
X 1.0 = 2 lbs/day Cr Max.

Note: Zinc will track Cr in the treatment at 1.0 mg/l avg and 2 mg/l maximum.

TSS is not appropriate for a storm water related discharge.

Flow only is required from the water softener since this is strictly a utility stream.

GLYCOL IL 008



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DOWLA000043

Area 900 - Polyethylene B. (Hi Density)

There are three outfalls from the 900 area which were reported in the consolidated application as follows:

Outfall	stream	Flow	description
009	OTCW	1.8 MGD	discharge
* 009	contact condensate	0.14	settling pond.
009A	OTCW	11.28 MGD	discharge
009A	non-contact condensate	0.11	discharge
009A	CTBD	0.04	discharge
009B	OTCW	1.0	discharge

* BPT permit applies to settling pond discharge since this is the process wastewater.

Storm water leaves the area through sumps provided with skimming devices to remove floating polyethylene pellets. Such storm water is authorized to be discharged provided the characteristics of the storm water a). does not exceed 55 mg/l TOC on a grab sample basis b). does not exceed 15 mg/l Oil + Grease on a grab sample basis. Any monitoring results must be reported as outfall 911

The contact condensate is the only process wastewater leaving the facility and the permit limitations apply at the settling pond and the monitoring point is designated outfall 911. It is our best professional judgement that BPT = BCT for this facility and those requirement are retained in the new BAT permit. These were derived from the

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old rescended BPT plastics guidelines which were more restrictive than the proposed plastics only subcategory for plastics only.

The once-through cooling water must meet a net TOD increase of 5 mg/l.

009 OTCW will be designated 921
009A OTCW, 009A non-contact condensate, 009A CTBD are designated as 931
009B OTCW is designated as 941

Storm water leaving the area which by-passes the settling pond may be discharged in non-descreet outfalls. However, any discharge must: 1) be free of floating solids in other than trace amounts, 2) not exceed 55 mg/l TOC, 15 mg/l Oil + Grease and 3) be within the pH range of 6 to 9 on a grab sample basis.

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area 1000 – polyethylene A (Lo density)

The permittee applied for two outfalls in the polyethylene A area. Outfall 010, designated out 1011 in this permit, and 010A, designated outfall 1021 in this permit. They were described as follows:

Stream	Flow	Treatment designation
Non-contact cooling water	25.78 MGD	discharge (010)
washdown, safety, etc	0.61 MGD	discharge (010)
Non-contact condensate	0.02 MGD	discharge (010)
Compressor condensate	0.23 MGD	oil coalescer (010A)

The three streams described in 010 and designated as outfall 1011 in this permit are essentially uncontaminated. The regulatory requirement derived for these outfalls are a maximum net increase in TOD of 5 mg/l based upon a 1/day grab sample. The limits are achievable through rigorous source control, leak + spill prevention and containment along with timely maintenance and good housekeeping. The wash water may be sent to the coalescer if it is too highly contaminated.

The compressor condensate at 010A is designated as outfall 1021 for this permit. The BPT permit limitations apply at this outfall. All process pollutants should be discharged at this outfall. It is our best professional judgement that BPT = BCT for this facility and the BPT

DRAFT

permit requirements are therefore continued in the new permit. Such modern hi density polyethylene process results in such purity of process wastewater that increases in pollutant loadings is not necessary.

Storm water from this area also goes through skimming sumps prior to discharge. The discharge of storm water is authorized provided a) it does not exceed 55 mg/l TOC on a grab sample basis and b) it does not exceed 15 mg/l Oil & Grease on a grab sample basis. No monitoring schedule is mandatory but all monitoring results may be reported as outfall 1031.

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Area 1100 - Treated Sanitary effluent.

The treated sanitary sewage requirements reflect advanced secondary treatment applications. The TSS maximum was changed from 60 mg/l to 45 mg/l at the request of LDNR. The outfall is located adjacent to the Tank Car cleaning facility near block 41 and 30.

DRAFT

Area 1200 – Rail Car Cleaning and plant maintainance

Dow has committed to complete retention of rail car materials except sodium hydroxide caustic and sulfuric or hydrochloric acid which can be neutralized to salts in the effluent canal. Since rail loading occurs storm water requirements are appropriate for this outfall since process pollutants are not authorized to be discharged at this site. We have empirical data and experience which indicates storm run off from uncontaminated or natural areas are within 55 mg/l TOC, 15 mg/l O+G and 150 mg/l TOD greater than 99% of the time. This is the bases for the proposed limitations at this 1200 area.

The limitations apply to grab samples at a frequency of 1/day when flowing. The sample location is in block 40 and applies to all storm damage leaving the area.

The limitations can be achieved by various containment measures, leak and spill prevention and/or containment practices and timely maintainance and housekeeping procedures.

DRAFT

Area 1300 - Power I

The discharge is comprised of non-contact cooling water and boiler blowdown. The 2c application did not show the presence of process or priority pollutants in the effluent. Regulation of this outfall for other than reporting flow is not necessary.

Sample location is east side of block 28.

Area 1400 - Clarifier underflow.

This is the standard practice for regulating clarifier returns silt to the lower Mississippi River.

DRAFT

Area 1500 – Chlorinated Methanes

Process – The company reacts methanol with excess HCl to produce methyl chloride. Methyl chloride is the chlorinated to methylene chloride, chloroform or carbon tetrachloride as shown in the following reactions:

1. $CH_3OH + HCl \rightarrow CH_3Cl + H_2O$

2. $CH_3Cl + Cl_2 \rightarrow CH_2Cl_2 + HCl$
3. $CH_2Cl_2 + Cl_2 \rightarrow CHCl_3 + HCl$
4. $CHCl_3 + Cl_2 \rightarrow CCl_4 + HCl$

DRAFT

The permittees 2C application indicated the following 1981 discharges,

stream	Flow	Treatment description
015 non-contact river water	19.9 MGD	discharge
015 non-contact condensate	0.08 MGD	✓
015A contact process water	0.2 MGD	pH neutralization

In November, 1983 the permittee submitted changes in the operation which indicated treatment of contaminated storm water and process flow changes as follows:

contact process water	.03 MGD	flow reduction
H_2SO_4	.004	flow segregation
incinerator scrubber	.25	discharge
treated storm water	*	steam stripper
excess storm water		discharge

*intermittent ~0.17 MGD for severe storm event.

area 1500

The permittee reported completion of a portion of their capital project for rainwater containment and treatment in the chlorinated methanes plant on December 29, 1981. They reported complete segregation of once-through cooling water from contact and rainwater and will monitor daily by grab sample for reporting purposes. The 20M60 stream has shown chlorinated organics are well below 10 lbs/day daily maximum since analyses began. We have determined the exclusion of chlorinated organics in this OTCW stream is appropriate. In our best professional judgement the maximum allowable total purgeable halocarbons can be maintained below 0.04 mg/l or ~ 7 lbs/day daily maximum at new outfall 1511.

The 2C application indicated treatable quantities of priority pollutants for daily maximums as follows:

Parameter	015 lbs/day	015A lbs/day	Proposed Day Chem Guidelines
$CHCl_3$	65.7	2.5 (10 mg/l)	.075 mg/l max
CH_3Cl	125.1	14.0 (56 mg/l)	.05 mg/l max
CH_2Cl_2	78.2	12.6 (48 mg/l)	.05 mg/l max
CCl_4	ND	ND	.05 mg/l max
1,1-dichloroethane	ND	0.6	.225 ✓ max
1,2-dichloroethane	ND	0.4	.150 ✓ max.

The reductions achieved already for 1511 appear to be BAT abatement for this OTCW stream.

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The chlorinated methanes area is approximately 750 ft by 500 ft in area. Collection of the first 3/4 inch of runoff would perhaps collect 1/2 of the potential 5 ft of annual average rainfall. The 1st flush collected can be calculated as follows:

$$\frac{750 \times 500 \times 2.5 \times 7.35}{365 \times 10^6} = 0.02 \text{ MGD LTA}$$

$$\frac{750 \times 500 \times .75 \times 7.35}{12 \times 10^6} = 0.17 \text{ MGD collected for 1st flush.}$$

During rainfall events the treated stormwater may be up to .17 MGD from the strippers. The incinerator scrubber water flow is 0.25 MGD for a total of 0.42 MGD total treatable waste water not counting excess storm water that cannot be collected in the first flush impoundment. This flow cannot be estimated from any engineering basis but after collection of the first flush such contamination should be minimal if containment of leaks, drips + spills and timely maintenance + house keeping procedures are practiced.

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Calculation at 1521:

Incinerator	.25 X 8.34 X 1	=	2.1
treated first flush	.17 X 8.34 X 1	=	1.4
untreated excess		=	1.4
			5 lbs/day Maximum
			2.5 lbs/day Daily Avg.

TOC limitations were derived by BPJ. Incinerator water may increase the normal storm water of 55 mg/l TOC.

to 138 mg/l TOC.

The water of reaction in the first step above is calculated at closer to 0.05 MGD. Combining the two streams flow would yield 0.054 MGD for treatment. The potential pollutants are methyl chloride, methylene chloride, chloroform and carbon tetrachloride at 0.1 mg/l each.

Calculation: .054 X 8.34 X 0.4 = 0.2 lbs/day.

This can be rounded up to 1 lbs/day Avg and 2.0 lbs/day daily max-imum.

1500 Summary purgeable halocarbons

Stream	Avg	Max
OTCW 1511	~ 3.5	7.0
Incin + SW 1521	2.5	5
process 1531+41	1.0	2.0
	7	14

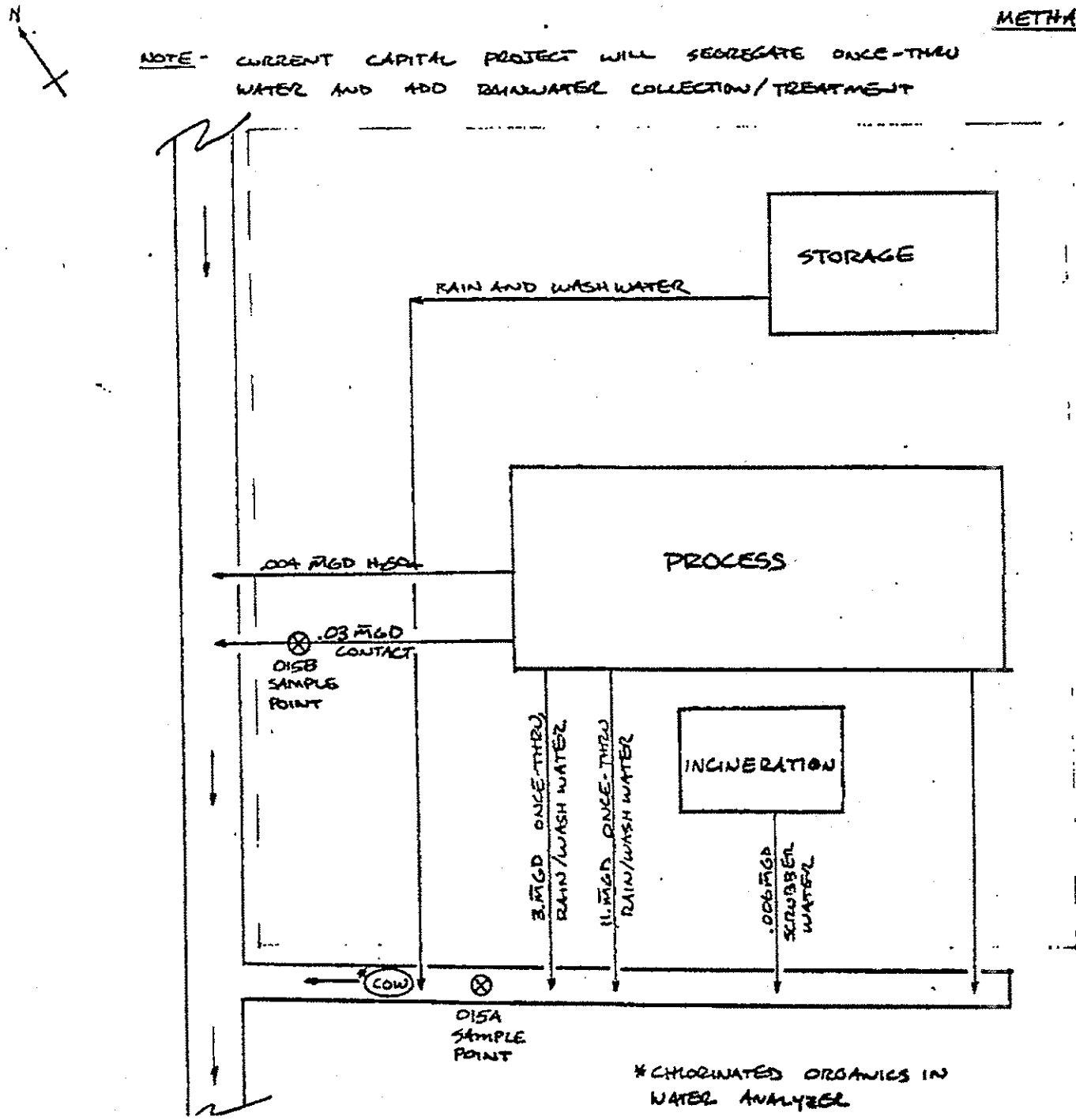
7/1212 = 0.006 lbs/1000 lbs. This is certainly comparable to other chlorinated solvents producers regulated in Region 6.

1551 storm runoff from methyl chloride storage area should not contain purgeable halocarbons because methyl chloride is too volatile. Therefore our standard storm water requirement of 55 mg/l max TOC and 15 mg/l Max. O+G were applied to this discharge.

DRAFT

METHANES 015A, 015B

NOTE - CURRENT CAPITAL PROJECT WILL SEGREGATE ONCE-THRU WATER AND ADD RAINWATER COLLECTION/TREATMENT



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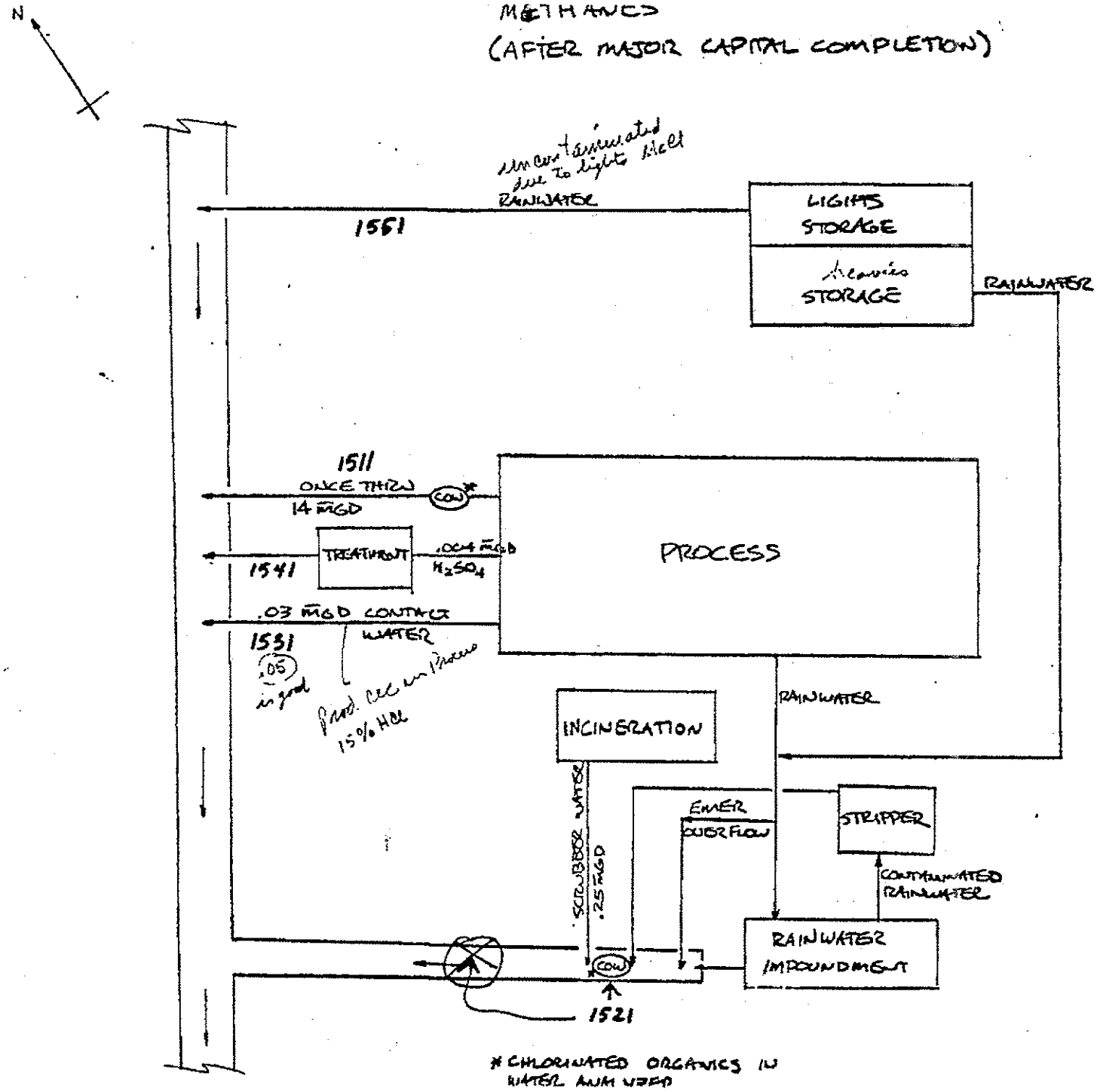
METHANOL
(AFTER MAJOR CAPITAL COMPLETION)

1/83



3 lbs/day at 1521, 1531, 1541, 1551. (.234 MGD)

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DOWLA000056

Outfall 1601 - Dow Industrial Ser.

Mostly neut. excess acid.

Was asked to send their procedures - not received yet.

BMP in Part III

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Area 1700 - Vinyl II

Process: $CH_2=CH_2 + Cl_2 \rightarrow CH_2Cl\,CH_2Cl$

$CH_2=CH_2 + 2HCl + \frac{1}{2}O_2 \rightarrow \quad + H_2O$

$CH_2Cl\,CH_2Cl \xrightarrow{\Delta} CH_2=CHCl + HCl$

$2666.7 \times \frac{18}{60} \times \quad = \quad 0.4$ MGD water of reaction.

The permittee reports 0.08 MGD process waste to CTP after steam stripping and 3 MGD of contact process, incineration scrubber water and treated rainfall runoff.

✓ In general, the pollutants are 90+% EDC, ~5% chloroform and minor amounts of other halocarbons. BAT treatment should result in a steam stripper product at 0.3 mg/l maximum concentration based upon 3 major halocarbons potentially present in the 0.12 MGD process water to CTP. Since CTP removes about 70% by biological reduction, the limit leaving the Vinyl II area should be ~1.0 mg/l

Calculation: $0.12 \times 8.34 \times 1 = 1.0$ lbs/day 30-day Avg.

It is our best professional judgement that total purgeable halocarbons in the process wastewater stream at outfall 1741 shall be limited to 1.0 lbs/day 30-day average and 2.0 lbs/day daily maximum.

The ecology area at outfall 1711 is comprised of CTBD, incinerator scrubber water, wash water and contaminated first flush collected stormwater. The flows are approximated as follows:

stream	Flow
CTBD	0.72 MGD
Scrubber Water	2.1
storm water	0.2
	3.02 MGD

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storm water scrubber	0.2 X 8.34 X 1	=	4 lbs/day
Scrubber water	2.1 X 8.34 X .4	=	7
CTBD	0.72 X 8.34 X .1	=	1
			12

Emergency overflow at 1721 should be the same order of magnitude of the stripped storm water or 1 mg/l. This stream will be regulated by concentration at outfall 1721. The limit is attainable by process containment measures such as leak + spill prevention, ample curbs and/or dikes, good house keeping and timely maintenance practices.

The storm water scrubber should be operated at well below 1 mg/l total purgeable halocarbons. Based upon the nature of this flow the 30-day average and daily maximum should achieve levels not to exceed 4 and 8 lbs/day average + maximum.

Incinerators should operate on a high efficiency and the scrubber water may not contain detectable chlorinated organics when operating within design rates. However, flow and operating changes may result in rapid departure from ideal conditions and considerable halocarbons could contaminate

the scrubber water. Therefore in our best professional judgement we feel 0.4 mg/l in the overhead is acceptable performance of the incinerator (see above calculation). The CTBD is subject to contamination but nearly as likely as the incinerator scrubber system. We therefore establish 0.1 mg/l as the average concentration allowable in the cooling tower source.

1700 area Summary (purgeable halocarbons).

		Flow	Avg	Max
1711	ecology area	3.0	12	24
1721	excess SW	N/A		1 (mg/l)
1731	Venting SW	N/A	—	—
1741	pre-treat PW	0.12	1	2
			13	

13/2667 = .005 lbs RCL/1000 lbs product.

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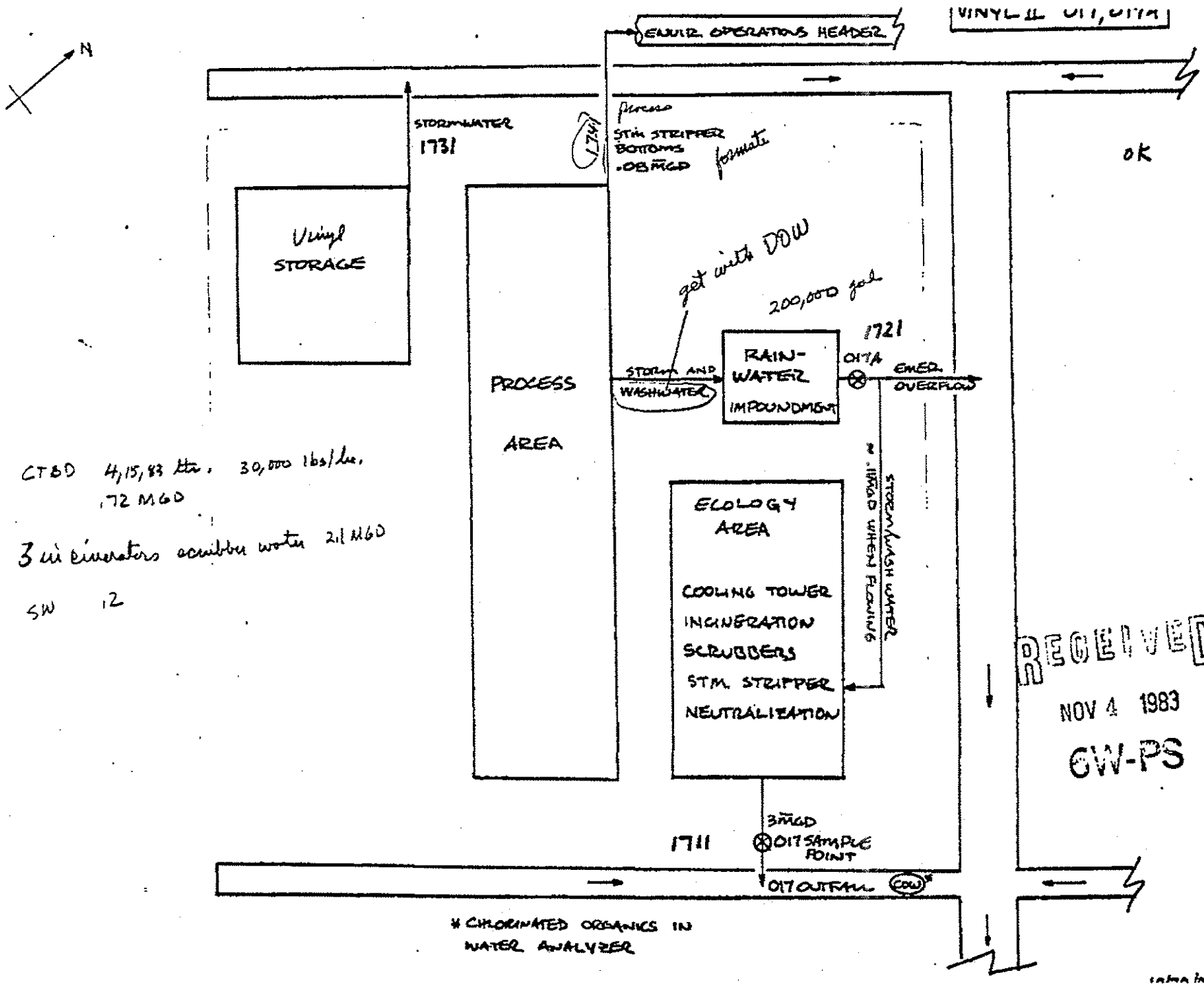
Total residual chlorine is a pollutant in the Vinyl II area. Outfall 1711, the ecology area, would constitute the major source at the incinerator scrubber. Excess sulfite addition could reduce residual chlorine to detection. However, we have determined that 0.5 mg/l represents BAT for this parameter at the incinerator scrubber system.

Calculation: 2.1 x 8.34 x 0.5 = 9 lbs/day 30-day Avg.

This limit will be applied at 1711. In addition, we are asking for a TOD analysis at 1711 as an indicator of overall pollution abatement.

DRAFT



DOWLAO000062

Area 1800 - Dowanols / Ethanolamines

Process concerns the reaction of ethylene oxide with ammonia and water to obtain ethanolamines and glycol ethers.

The 2C application indicated all process wastewaters are sent to central treatment. This is about 5000 gallons per day at this plant. CTBD flow rate reported was 0.06 mgd at a segregated sump. Since CTBD no longer uses cr/zn inhibitor the stream will not be regulated.

Non-contact stormwater is discharged from two sumps, 1811 and 1821 and the standard storm water requirements of Region 6 are applied.

DRAFT

Area 2000, Central Biological Treatment System.

The consolidated application reported a total of 7.2 MGD of wastes were collected from Glycol I + II, cellulose, dowanols, and sanitary sewage from the new expansion area. Subsequently, data were provided on specific flows as follows:

Area	Flow	Note
Glycol I	0.8 MGD	(propylene glycol)
	5.5	
Glycol II	0.1	(ethylene glycol)
Dowanols	0.005	(plus ethanolamines)
Vinyl II	0.12	(steam stripped - HCOOH)
Cellulose	0.3	
sanitary sewage	N/A	

The bio system is comprised of a 10 acre equilization pond, three trains of unox reactors followed by clarification with sludge recycle and/or sludge dewatering for disposal.

DRAFT

Flow Balance to CTP 3-14-84

Glycol I	0.8 MGD	6.3	propylene glycol.
	5.5 MGD		
Dowanols	0.005 MGD		
Glycol II	0.1		
Vinyl II	0.12		
cellulose	0.3		

No light Hydrocarbons

DRAFT

Subpart C, high water use, oxidation subcategory of the proposed Organic Chemical guidelines apply to this outfall. The BOD_5 and TSS standards were established in concentration. ~~Reporting of COD was asked for~~. Effluent limtations for TOD, purgeable halocarbons and purgeable aromatics were established based upon best engineering judgement technology.

About 90% of the wastewater treated at CTP is from the glycol units. The only organic priority pollutants detected during the priority pollutant monitoring for the 2C application was 1,2-dichloropropane and bis (2-chloroethyl) ether. These are by-products of propylene glycol chlorohydrin process. There is a potential for purgeable halocarbons, purgeable aromatics and polynuclear aromatics in the treated effluent. The proposed Organic Chemical guidelines were utilized in establishing the effluent limitations for purgeable halocarbons and purgeable aromatics. The company will analyse the discharge by EPA Method 601, 602, 603 or 624 and meet the limits proposed in the Organic Chemical guidelines.

The Organic Chemicals proposed guidelines were the basis for BOD_5 and TSS. Subport C - Oxidation Subcategory for "high water use" standards are 42 mg/l 30-day average and 106 mg/l daily maximum for BOD_5 and 84 mg/l 30-day average and 246 mg/l daily maximum TSS.

The BPT permit controlled TOD as the sum of outfalls 001, 007, 017 and 020 which were chlorinated polyethylenes, light hydrocarbons, EDC/VCM and central treatment system. Past performance data reported on Discharge Monitoring Reports (DMR) from July, 1981, to June, 1983, were used to establish TOD limits for this outfall. The long term average discharge of TOD was 13429 lbs/day with a standard deviation of 5611 lbs/day. The 99% confidence level for the 30-day average TOD at the central treatment system calculates to be 26500 lbs/day. The monthly average data appears to be normally distributed:

$$U_{.99} = R/S + \frac{28031-5080}{5611} = 4.09 \text{ for the 24 data pts.}$$

that was SPT/BCT

Goodness of fit for 25 determinations allow an R/S to be as high as 5.06.

DRAFT

The daily maximum/30-day average ratio for TOD in the BPT permit was 1.35. Such ratio applied to the above average would yield 26500 × 1.35 = 35850 lbs/day TOD daily maximum. Although the DMR's report only a single maximum for each month, the 99 percent of these reported daily maximum values were within 36,000 lbs/day. Such limit would have resulted in only two daily maximum violations in the 24 month period of evaluation. Therefore it is our best professional judgement that 26,500 lbs/day TOD

30-day average and 36000 lbs/day TOD daily maximum is BCT for this facility.

Biomonitoring was asked for at 2001 which follows the previously mentioned Region 6 rationale for assessment of BAT treatment facilities ability to remove toxics. The 2C application reported 1,2-dichloropropane and bis (2-chloroethyl) ether as the only priority organic in the effluent. The levels are not different from that expected by the treatment employed at Dow. The priority metals reported in the treated discharge were present at levels readily detected by the analytical method employed but well below levels obtainable by the application of BAT treatment.

further

Estimated BOD: Permittee reported the follow correlations on Aug 18, 1983 for CTP effluent:

TOD/TOC = 7.91 (σ = 1.15)

BOD/TOC = 1.36 (σ = 0.49)

$$\frac{26500}{7.2 \times 8.34} = 441 \text{ mg/l TOD}$$

$$441 \times \frac{1.36}{7.91} = 76 \text{ mg/l equivalent } BOD_5.$$

$$LTA \quad \frac{13500}{4.7 \times 8.34} = 344 \times \frac{1.36}{7.91} = 59 \text{ mg/l}$$

DRAFT

Outfall 2100 - Combined LHC II + III by-product Alk.

The permittee has requested that, after treatment, the combined by-product alkalinity streams sent to be utilized for pH control below the Solvents (500) and Vinyl I (600) plants be regulated in the header pipe transporting the streams to that location.

The technology basis is shown on the following calculation sheet for this outfall. There is an uncertainty factor involved in the application of the technology. These two plants produce high quantities of ethylene, propylene and benzene by state-of-the-art process and the process stream is relatively low volume. Such flow reductions may be considered a significant contribution in the overall effluent reductions but application of BAT reduction technology to such reduced flow places the company at a competitive disadvantage. For this reason the production factor was considered in the final requirement.

The permittee shall notify EPA of the elimination of 0731 and 2211 at the source and of their completion of the monitoring point at the by-prod. Alk. header. Upon such notification the monitoring at 0731 and 2211 will terminate and commence at 2101. The notification shall describe the exact location of the monitoring point.

DRAFT

Parameter	Technology level	Production factor	Daily Avg, lbs/day
Flow			(0.65 MGD)
Benzene	.2	5	5.4
Toluene	.2	5	5.4
Ethyl benzene	.1	5	2.7
PNA's	.1 (11 each)	N/A	5.9
Naphthalene	.1	5	2.7
BOD_5			42/106 (mg/l)
TSS			report
TOD			report
Oil & Grease			10/15 (mg/l)
phenol	0.1/0.2	2	1.0

DRAFT

area 2200 - Naphtha (Light Hydrocarbons III)

The permittee cracks ethane, propane and naphtha to ethylene, propylene and other olefinic components. Carbon dioxide is removed from the reaction mixture by absorption into a stream of weak cell liquor. The weak cell liquor is about 10% NaOH and 15% NaCl. The resultant sodium carbonate/bicarbonate alkalinity is used to neutralize excess acidity elsewhere in the plant. Dow calls this stream byproduct alkalinity and is used mainly in the solvents area.

The permittee tried activated carbon absorption treatment on this stream but performance proved to be only marginal removal of priority pollutants. The company has under construction a major capital expenditure a physical/chemical treatment system which they call benzene removal. Target date of completion is December, 1984.

The permittee also collects the first 3/4" of storm water in the 2200 area for treatment. The treated storm water is commingled with CTBD, monitored at 022C and discharged to the effluent canal.

The only other stream is the excess storm water that exceeds the containment in the rainwater storage tank. This stream is monitored when flowing at monitoring point 022B.

The by-product alkalinity stream was monitored

DRAFT

only if being directly discharged to effluent canal through monitoring point OZZH. However, the company has agreed to meeting permit limits at the naphtha plant treatment system regardless of the final destination of the stream.

The proposed Organic Chemicals guidelines weighed heavily in our selection of permit limitations for this process. Benzene, toluene, ethylbenzene and naphthalene along with several other poly-nuclear aromatics were reported on the 2C application for this areas discharges. The proposed guidelines were based upon activated sludge technology and Dow will be using a physical treatment scheme. Steam stripping is an effective treatment technology for the removal of volatile aromatics. For example, the development document describes operating conditions for steam stripping to 0.05 mg/l with respect to the number of theoretical trays required at a modest steam to feed ratio of .018 lbs/lbs.

DRAFT

The proposed Org. Chem. guidelines are therefore determined to be not applicable based upon our best professional judgement for the parameters benzene, toluene and ethylbenzene. Monitoring only for naphthalene was asked for as an indicator for all polynuclear aromatics (PNA).

Permittee has expended efforts in reducing the process waste water flow from this extremely large facility. Direct application of proposed treatable

treatable levels based upon biological treatment would impose a decided competitive disadvantage to this facility. Therefore a production factor estimated at 5 is allowed to adjust the proposed guidelines as applied to this effluent. The permittee is in process of constructing a proprietary treatment system to meet these levels.

Aromatics : see calc;

phenol , see calc

Naphthalene : see calc.

These considerations equally apply to outfall 0731.

DRAFT

The ZC applications indicated metals in the discharge in treatable concentrations. The technology for effective treatment of metals is thoroughly described in the Inorganic Chemical Development Document as follows:

BAT treatment, Lime Filtration

metal	Avg (mg/l)	Max, (mg/l)
copper	0.3	0.6
lead	0.15	0.3
nickel	0.3	0.6

DRAFT

BAT treatment, Sulfide Filtration

copper	.05 to 0.5
lead	.05 to 0.4
Nickel	.05 to 0.5

The permittee has a choice of treatment options above to meet the limitations.

Dow indicated the by-product alkalinity from LHC II (0731) and LHC III (0211) are sent to a common header and used to neutralize excess HCl coming from solvents and Vinyl II area. This stream is normally sent there except in the event of a shut down at solvents. Then the stream will go to the effluent canal near the respective treatment systems. In addition, the proprietary benzene removal treatment system will be designed to be able to treat the combined LHC by-product alkalinity streams in case one is being renovated or a failure occurs. It appears that regulation of these outfalls

can be accomplished by deriving concentration requirements and changes of flow, caused by one treatment system accepting both streams, would not affect compliance.

The effluent limitations and monitoring requirements for outfalls 0731 and 2211 are established for the following parameters:

TOD It is difficult to evaluate the new treatment system on the available data. However, using technology based upon activated sludge treatment a BOD_5 of 58 and 146 has been established in the Org Chem proposed guidelines. A TOD/BOD_5 ratio of 3 appears reasonable for non-biological treatment. ∴ 3 X 58 = 174 or 200 mg/l daily Avg and 3 X 146 = 438 or 400 mg/l daily maximum.

O&G API Separator technology is 10 mg/l 30-day average and 15 mg/l daily maximum O&G.

DRAFT

phenol Steam stripping technology can reduce phenol to 0.1 mg/l average + 0.2 mg/l daily maximum. Even though biological treatment could achieve lower phenol we have determined that the above technology is appropriate.

Total purgeable aromatics: Steam stripping, air stripping, activated carbon adsorption and biological treatment have been established as technology for removal of purgeable aromatic components benzene, toluene, ethylbenzene, etc. The achievable limits are set forth in the G/L Dev. Doc. and the proposed organic chemical guidelines as follows:

Component	30-day Avg	Daily Max
benzene, mg/l	.075	.125
toluene, mg/l	.125	.225
ethyl benzene, mg/l	.150	.275

Since all components will not necessarily be present at the same time the requirement for purgeable aromatics was established as 0.2 Avg and 0.35 daily maximum.

Naphthalene: This component was identified in the discharges and requires regulation. Very little data is available on the results of treatment technology for naphthalene. Apparently naphthalene is effectively removed by well operated bio-systems or else it would have been encountered in the organic chemical guideline development work. For this outfall naphthalene was considered an indicator parameter for the several polynuclear aromatics and the limit is based upon the organic chemical proposed guidelines for several of those components, i.e., 0.05 mg/l max. This was rounded up to 0.05 mg/l average and 0.1 mg/l daily maximum.

Cu, Pb + Ni: These levels were established in the Inorganic Chemical guideline Development Document. The proposed guidelines are not applicable since that rationale was based upon activated sludge technology.

DRAFT

The above rationale was used to establish limitations at outfalls 2221 and 2231. These discharges are treated (first flush) stormwater and cooling tower blowdown for 2221 and excess untreated storm water at 2231. Metals and TSS are not appropriate for these outfall requirements.

DRAFT

DRAFT

Outfall 2211, by-product alkalinity

			LTA TOD		
TOD	200	400			
O&G	10	15			
phenol	0.1	0.2			
TPA	0.2	0.35	Benzene	.075	.125
Naphthalene	.05	.1	Toluene	.125	.225
copper	0.3	0.6	ethylbenzene	.15	.275
Lead	0.15	0.3			
Ni	0.3	0.6			

Outfall 2221 treated stormwater + CTBD.

TOD	186	368	022 B+C	6%/.63×4.34 = 1.32 LTA
O&G	10	15		
phenol	.1	.2		
TPA	.2	.35		
Naphthalene	.05	.1		

outfall 2231 excess stormwater which cannot be collected in stormwater impoundment.

TOC	186	368
O&G	10	15
Benzene	.075	.125

Outfall 022 – 2C application for CTBD + storm runoff.

	Avg	Max		description
Flow	0.46	0.9	M.60	CTBD + storm runoff

BOD (mg/L)	2.4
COD	133
TOC	13
TSS	197
Lead	20.1
Chromium	5.5
Nickel	0.17
Copper	0.09
Zinc	5.4
phenols	0.014
Benzene mg/L	5.5
ethyl benzene	3.6
Toluene	4.2
acenaphthene	.029
Acenaphtylene	.052
Anthracene	.031
Fluorene	.056
naphthalene	1.7
phenanthrene	.031

DRAFT

19 mo X 30 = 570 5/570 = 99 percentile

outfall 220 DMR Summary.

	Flow		COD		TSS	
			022 B+C			
9-83	0.66	0.93	685	1500	44	119
8-83	0.79	1.72	725	1598	55	207
7-83	0.44	.80	386	795	45	164
6-83	.79	1.41	593	1221	83	397
5-83	.34	.90	295	819	43	204
4-83	.26	.70	276	632	116	468
3-83	.25	.64	296	1231	56	397
2-83	.02	.39	38	207	4	78
1-83	.24	.83	246	639	17	78
12-82	.49	1.33	429	852	42	296
11-82	.56	.89	624	2501.4	62	337
10-82	.6	.9	542	868	79	427
9-82	.9	1.53	923	2195.6	188	1055
8-82	.72	1.51	1279	3862.1	146	1074
7-82	.15	1.10	247	1708	25	258
6-82	1.15	1.39	1399	3125.2	158	278
5-82	.63	1.11	768	1824	73	768
4-82	.94	1.18	1185	3107	134	817
3-82	.56	1.23	468	2299.5	83	327
2-82	.71	1.05	996	2011	181	613
1-82	1.07	2.22	1104	2625.3	195	344

$\bar{X}_{19}$ 0.63 $\bar{X}$ 695.79

σ 0.28 σ 360.94

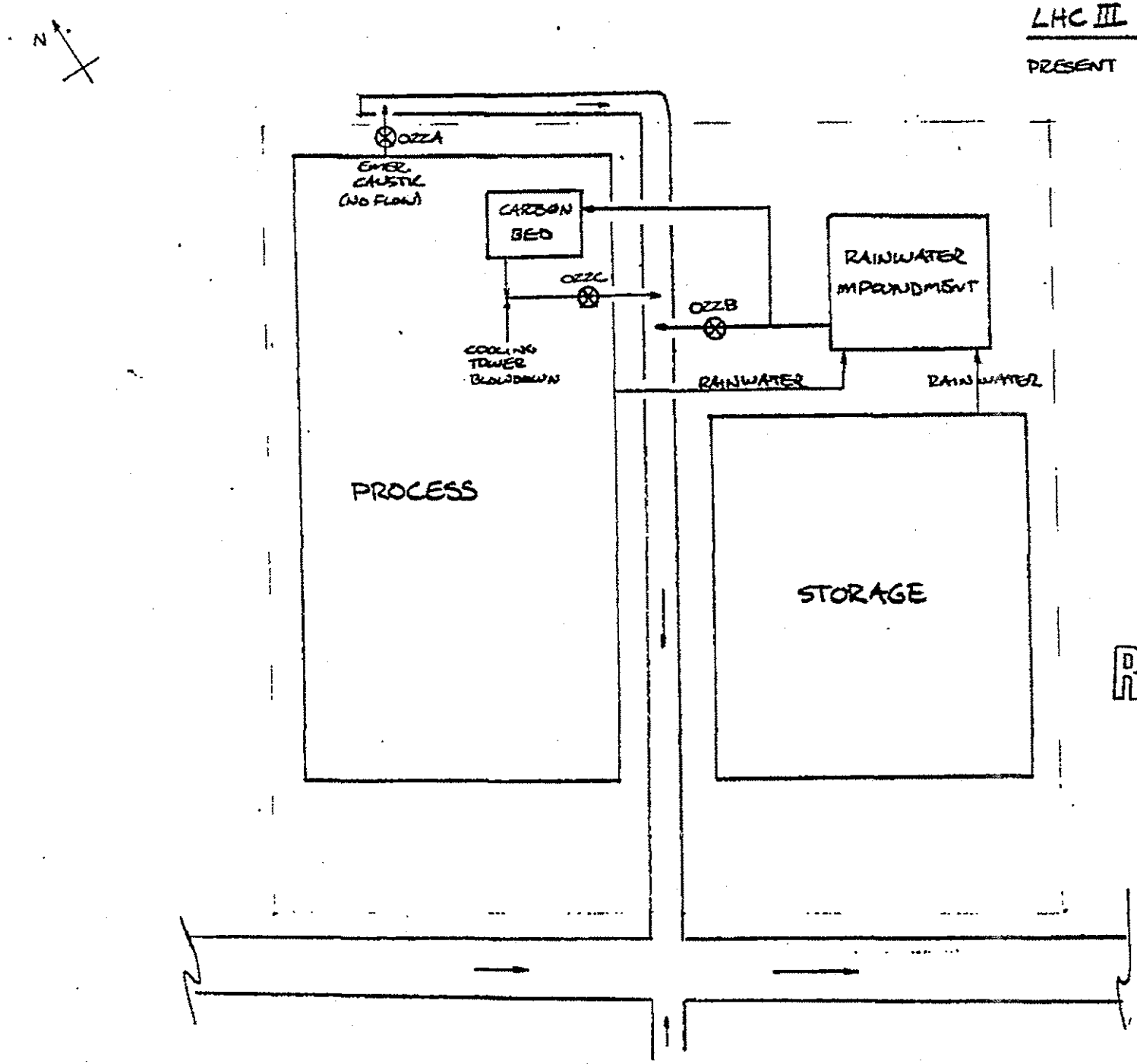
1536 99%

DRAFT

DOWLAO000079

LHC III 022A, 022B, 022C

PRESENT CONFIGURATION



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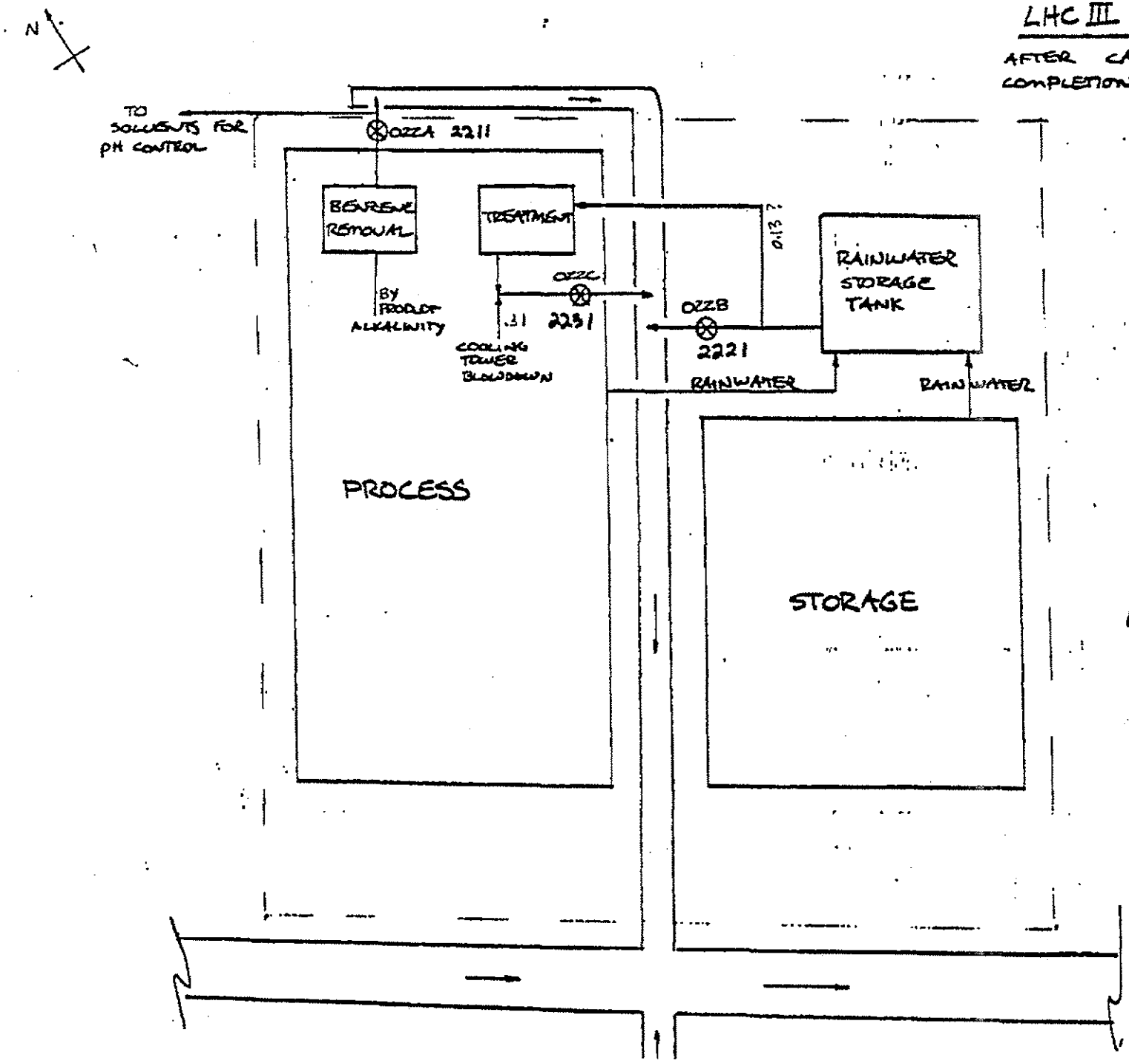
6W-PS

11/83

DOWLA0000080

LHC III 022A, 022B, 022C

AFTER CAPITAL PROJECT COMPLETION



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6W-PS

DOWLA0000081

Area 2400 - Research Pilot Plant Discharge.

This area conducts process research on organic and inorganic processes. The 2C application indicated the breakdown of the discharge as follows:

Stream	Flow
non-contact cooling water	0.145 MGD
contact condensate	.000025
condensate	.0073
contact process water	.00063
Treated brine	.00104
total	.153 MGD

conventional pollutant loadings on the combined discharge is as follows:

Pollutant	Max Conc.
BOD	8 mg/l
COD	129 mg/l
TSS	278 mg/l
O+G	not detectable
pH	12-13

other	
chloroform	0.7 mg/l

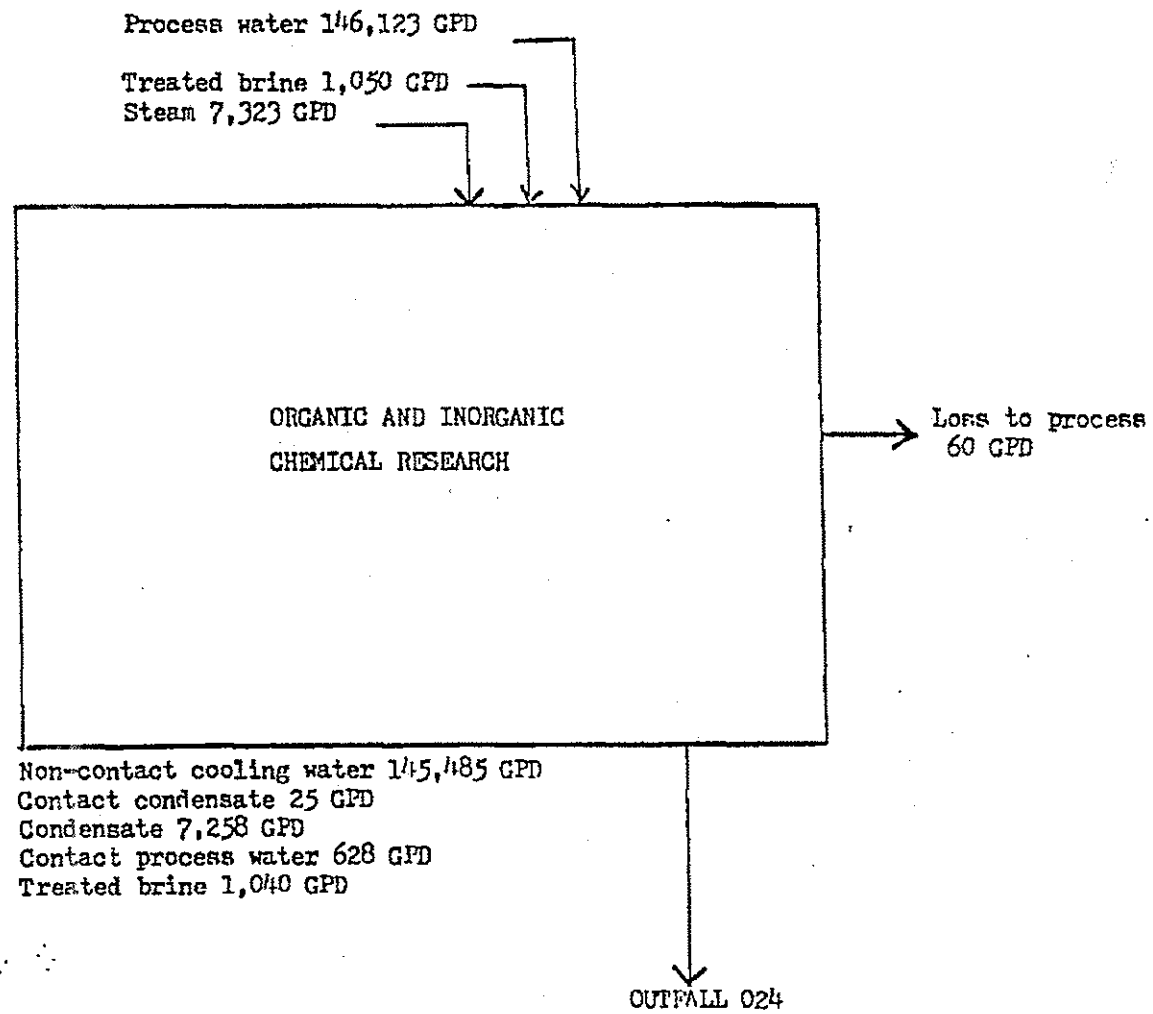
DRAFT

The majority of the discharge being OTCW, as reflected in the application, it is determined that monitoring only for BOD_5 and TSS is required. Any increase in BOD_5 would enable EPA to reopen the permit for gross increases in BOD. However, a limit for chloroform at 0.05 mg/l is applied at the combined outfall. This requirement can be met by elimination of chlorinated organics sources in the discharge.

DRAFT

II. A

R&D PILOT PLANTS DRAINAGE



MT:4/15/83

2400 Area.

DOWLA000084

Area 2500 - Catalyst Treatment Plant

The application indicated a flow of 0.59 MGD of relatively clean water except for the presence of 0.3 mg/l mercury. The mercury level does not meet BAT technology applied at the discharge. Applicable technology was derived from the Inorganic Chemicals Development Document as set forth in Table 11-15 Effluent Limitations (attached).

The mercury limit is calculated as the product of the above limit times the flow (see diagram from 2C) as follows:

$$.59 \times 8.34 \times .048 = 0.24 \text{ lbs/day Hg 30-day Avg.}$$
$$\times 1.11 = 0.54 \text{ lbs/day Hg Maximum.}$$

The organic chemicals guidelines have a limit for mercury. The proposed limit is .05 mg/l Avg and 0.09 mg/l daily maximum. These concentration limits were applied at 2501. Total suspended solids monitoring and reporting were asked for also.

The permittee indicates the presence of mercury could not be accounted for and they would resubmit data to support their contention. The limit will remain until such info is received.

DRAFT

Outfall 2501- Cat Treatment plant.

TABLE 11-15. EFFLUENT LIMITATIONS
Chlorine-Mercury Cell
Best Available Technology
Wastewater Flow: 2.1 m^3/kkg

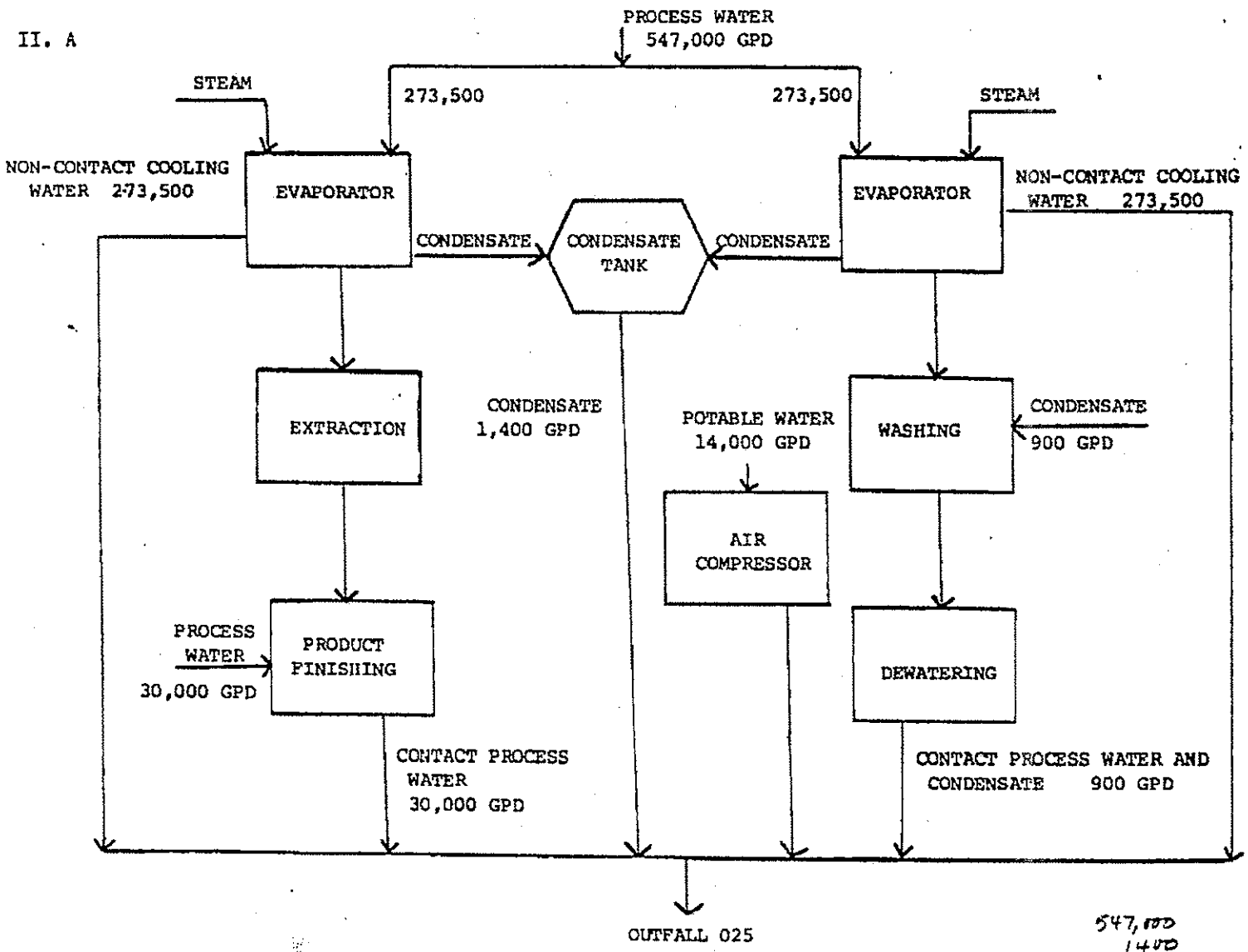
SUBCATEGORY	CHLORINE MERCURY CELL					
		Daily Variability Factor	Concentration Basis (mg/l)		Effluent Limit (kg/kkg)	
Pollutant	Subcategory Performance (mg/l)	30-day Avg. Variability Factor	Max. 30-day Avg.	24-hr. Max.	Max. 30-day Avg.	24-hr. Max.
Nonconventional Pollutants:						
Total Residual Chlorine(7)	0.64(1)	2.3/1.4	0.90	1.5	0.0019	0.0032
Toxic Pollutants:						
Antimony	0.23(2)	7.6/1.5	0.35	1.7	--(5)	--(5)
Arsenic	0.15(3)	6.7/1.4	0.21	1.0	--(5)	--(5)
Cadmium	0.050(2)	7.6/1.5	0.075	0.38	--(5)	--(5)
Chromium	0.044(2)	7.6/1.5	0.066	0.33	--(5)	--(5)
Copper	0.20(3)	7.6/1.5	0.30	1.5	--(5)	--(5)
Lead	0.10(3)	4.1/1.3	0.13	0.41	--(5)	--(5)
Mercury(6)	0.034(3)	3.1/1.4	0.048	0.11	0.00010	0.00023
Nickel	0.10(4)	5.7/1.4	0.14	0.57	--(5)	--(5)
Silver	0.067(2)	7.6/1.5	0.10	0.51	--(5)	--(5)
Thallium	0.17(2)	7.6/1.5	0.26	1.3	--(5)	--(5)
Zinc	0.12(3)	7.6/1.5	0.18	0.91	--(5)	--(5)

(1) Long-term average concentration from Appendix A.
(2) Average effluent concentration from verification sampling.
(3) Estimated achievable long-term average concentration from Table 8-13.
(4) Lower limit of literature treatability for sulfide/filter technology according to Table 8-11.
(5) No load limits; concentration limits are provided for guidance purposes.
(6) Limits are also applicable to PSNS, and NSPS.
(7) Limits are also applicable to NSPS.

DOWLAO000086

CATALYST TREATMENT PLANT

II. A

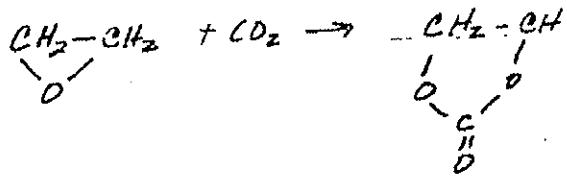


Hg .593 x 8.34 x .05 = 0.247 #/day.

547,000
1400
30,000
900
14,000
593,500

DOWLAO000087

Area 2600 – Ethylene Carbonate

The process reaction: 

The plant was not operating when the supplemental 2C information was submitted. No priority pollutants are expected from this area and perhaps the proposed organic chemical guidelines are the most appropriate criteria for regulation of this discharge.

40 CFR Part 414.43 Type 1 subcategory (condensation)

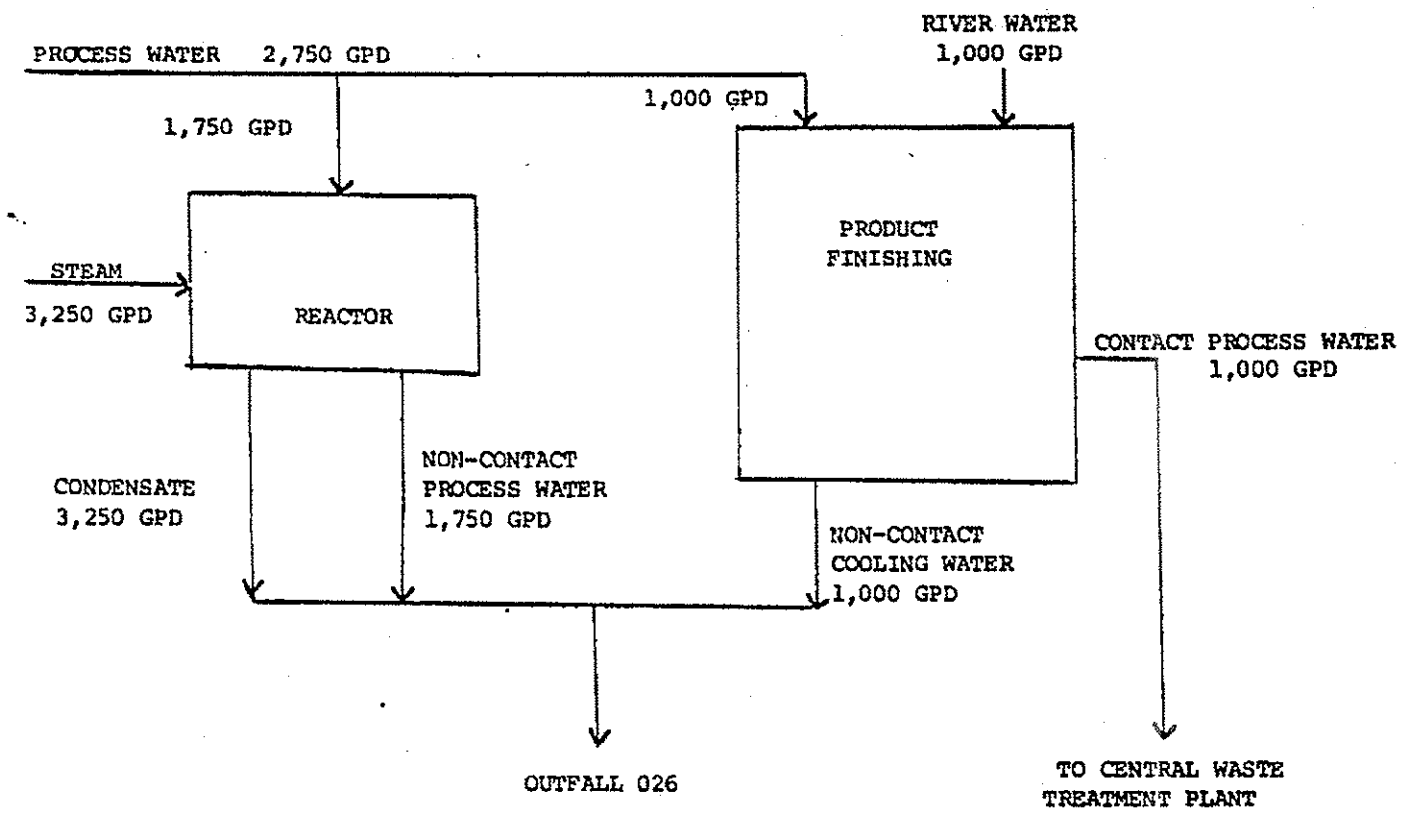
BOD_5	40 Avg	100 max	(mg/l)
TSS	47	137	(mg/l)

These limitations are proposed for the draft permit.

DRAFT

II. A

ETHYLENE CARBONATE PLANT



DOWLA000089

Area 2700 - Coal Gasification Proto Plant

The company react coal with steam and Oxygen to produce a syn gas product. The reactor is a Proto Scale unit to be operated a various conditions to define optimum operation at various objectives.

Priority Pollutants Reported in 2C.

DRAFT

Metals	Daily Max, mg/l
Chromium	.07
copper	0.18
lead	0.04
Nickel	0.13
Zinc	0.05

Organics	mg/l	lbs/day	Calc flow
benzene	6.0	42	.84
✓ Chloroform	0.03	0.2	.8 MGD
✓ dichlorobromomethane	0.014	0.1	.86
Toluene	0.25	1.8	.84
✓ Trichloro ethene	0.04	0.28	
O Acenaphthylene	.06	0.45	
O anthracene	.03	0.2	
O Benzo (a) pyrene	.03	0.2	
O Benzo (k) fluoranthene	.03	0.2	
O Chrysene	.026	0.18	
O Fluoranthene	.096	0.68	
O Fluorene	.023	0.16	
O naphthalene	0.23	0.16	
O Phenanthrene	0.031	0.22	
O Pyrene	0.096	0.68	

3.3 lbs/day. daily maximum

Flows : Non-contact CW 22 MGD
Contact process WW 1.87
Non-contact condensate 0.15

1983 data : flow 1.44 (close to Avg).
Benzene .07 mg/l 0.8 lbs/day
Feb 16, 1984 Toluene .006 .07
EB nil

No PNA data

DRAFT

Dow's later data indicated a decided drop in light aromatics but no info on the poly nuclear aromatics.

The pollutants to be regulated are purgeable halocarbons and aromatics plus PNA's.

There were only three halocarbons reported in the 2C. These components can be treated to 0.1 mg/l by application of steam stripping or other phy/chem treatment as set forth in Org chem Dev. Doc.

Calculation: 1.44 X 8.34 X 0.3 = 3.6

Benzene and toluene are at BAT in the latter data reported. 1.44 X 8.34 X 0.2 = 2.4 lbs/day.

PNA's reported totaled 3.3 lbs/day daily maximum. This is good for average since most can be reduced to .05 daily maximum by biotreatment. (10 X .05 = 0.5)

calculation: 1.44 X 8.34 X .5 = 6 lbs/day daily max.

The 22 MGD OTCW at 2721 is asked to maintain a net TOD increase of less than 5 mg/l. This limit can be achieved by early detection of leaks and prompt corrective action.

Parameter	Avg	Max
TPH	4	8
TPA	3	6
PNA's	3	6
naphthalene	1.2	2.4

DRAFT

Compliance with the effluent limitations from the Coal Gasification Proto Plant of course is achievable by end-of-pipe treatment mentioned above. However, the raw waste load of priority pollutants are greatly affected by the operation of the Proto Plant and indications are that these levels can be met by avoiding conditions for formation of these by-products. It is unlikely that optimum conditions for manufacture of the syn gas would be any where close to the conditions conducive to by-product formation.

DRAFT

Glenn McKenna 4/5/84

(504) 342-6363

Coal Gassification (5 SW from CTP Area)

TPH -	8.5 lbs/day	12.6 lbs
TPA	6.5	8.5
PNA's -	21	32

Total flow 1.44 MGD

BOD	3	O+G	5.8
COD	66	SO4	44
TOC	8	Fe	1.53
TSS	46		
NH_3-N	7		

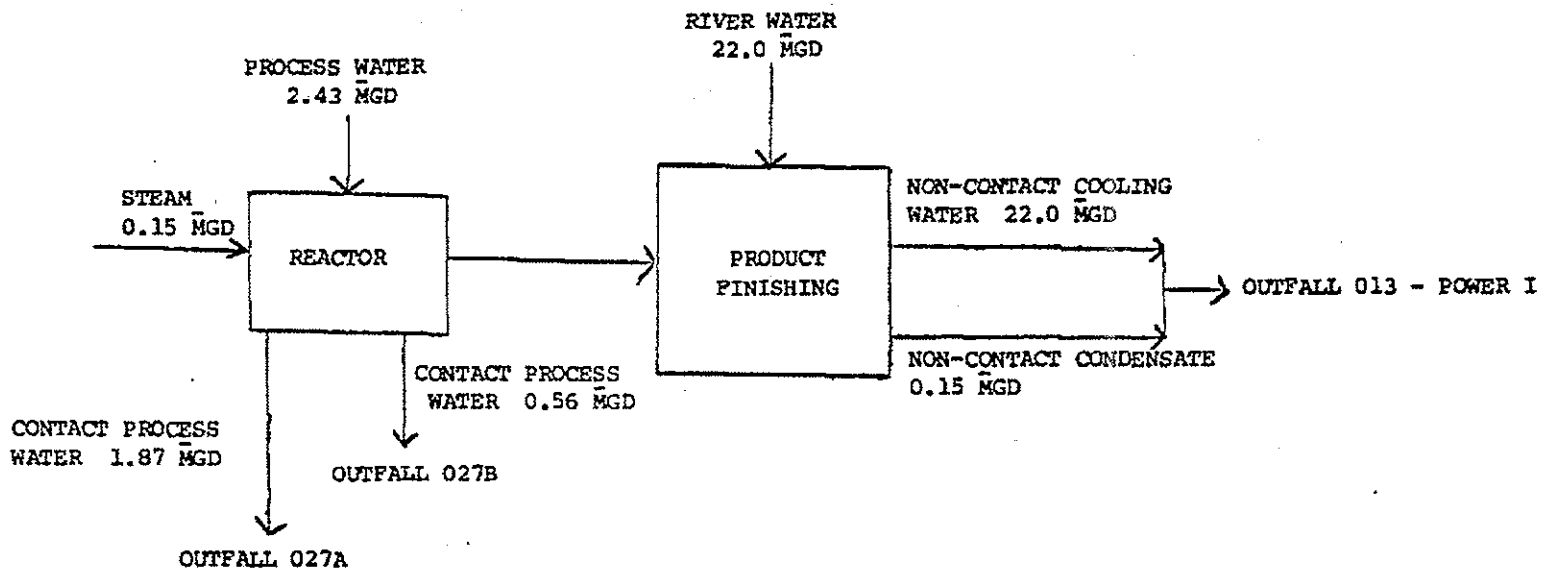
DRAFT

Toxics

Cu	0.18	Benzene	6 mg/l	
Ni	0.13	$CHCl_3$	.033	
Th	.1	C_2Cl_3	.014	
Total Phenol	.26	Toluene	.25	Total PNA' identified
		TCE	.039	11 X .05
		Naphthalene	0.23	1.44 X 8.34 X .05 X 11 = 6.6
		acenaphthalene	.063	
			.032	
		BY		1.87 Process
		BFA	.027	.56 Product finishing
		pyrene	.096	~2.5

II.A.

COAL GASIFICATION PILOT AND PROTO PLANTS



DOWLA000095

Outfall 2801, coal pile runoff

Effluent G/L for coal pile runoff from power plants 40CFR § 423.

TSS 50 mg/l daily maximum

pH 6.0 to 9.0.

The TSS appears applicable. pH is controlled downstream so report only 1/day when flowing.

DRAFT

2901 Tank Farm

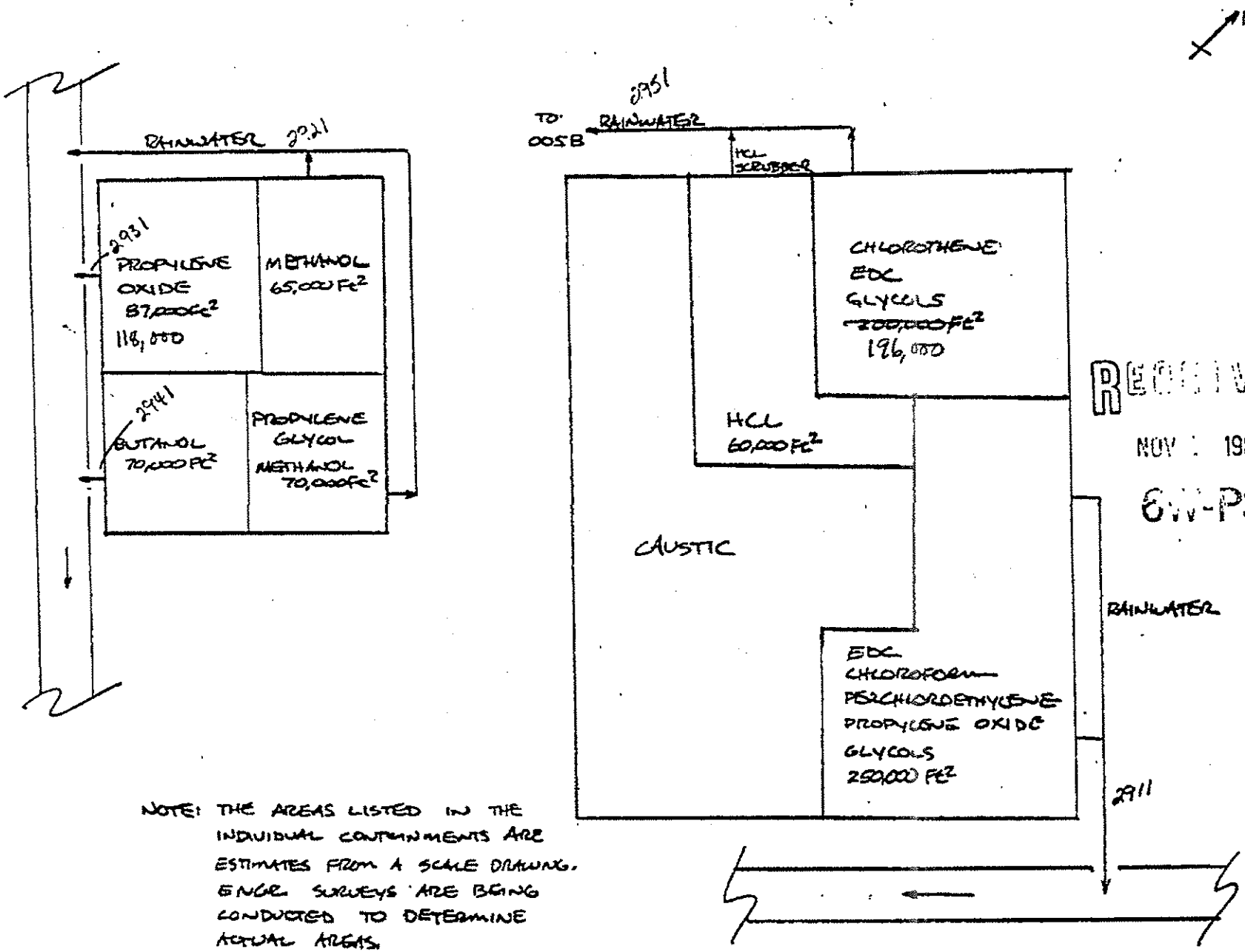
The intermittent storm drainage from this area is directed out at five outfalls as follows:

outfall	description
2911	EDC, chloroform, perchloroethylene, propylene oxide and glycols storage from 250,000 ft² area
2921	methanol storage from 65000 ft² area
2931	propylene oxide storage from 118,000 ft² area.
2941	Butanol storage from 70,000 ft² area
2951	chlorothene, EDC + glycols storage from 196,000 ft² area and HCl storage from 60,000 ft² mixed with HCl scrubber water.

The storm drainage must be within 55 mg/l daily maximum TOC and 15 mg/l daily maximum oil + grease. The samples from 2911 and 2951 must contain no greater than 750 ug/l chloroform nor 1500 ug/l EDC for a daily maximum via grab sample. The permittee may discharge storm drainage within these limitations or else collect the contaminated stormwater for treatment and discharge.

DRAFT

TANK FARM



NOTE: THE AREAS LISTED IN THE INDIVIDUAL CONTAINMENTS ARE ESTIMATES FROM A SCALE DRAWING. ENGR SURVEYS ARE BEING CONDUCTED TO DETERMINE ACTUAL AREAS.

RECEIVED
NOV 1 1983
EW-PS

DOWLA000098

DRAFT

Area 3000 - Northwest Landfill stormwater runoff

Permittee operates a landfill west of the LHCIII plant which is administrated under the RCRA Program by the State of Louisiana. The discharge is comprised of rainfall drainage outside active landfill area and adjacent uncontaminated area. The collected rainfall runoff is pumped from the collection sump to the Dow effluent canal. A measure of equilibration and settling is accomplished in the sump. Since the area is uncontaminated the pH should not depart from 6 to 9. TOC and O+G requirements represent EPA Region 6 requirements for uncontaminated storm runoff.

The permittee disposes of asbestos in the landfill area. They operate in conformance with NESHAP's requirements so no significant asbestos should be in the discharge and therefore total suspended solids requirements were not established for such discharge.

The proposed limitations are attainable by vigorous attention to transportation and handling procedures once the wastes are delivered to the landfill area. Good housekeeping, spill prevention and containment measures and timely maintenance of equipment are important details necessary for compliance. Such preventive measures would obviate the need for end-of-pipe treatment for permit compliance.

Outfall	002	SW	
	003	SW	Firefighting Training area
	004	SW	electrical Salvage Yard
	005	SW	Fab and Machine Shop
	006	SW	Poly B Plant
	007	SW	Railcar Switching & spare parts storage
	008	SW	CTP (5 each drains)

Region 6 has practical experience and empirical data to indicate that stormwater runoff from uncontaminated areas will be within 50 mg/l TOC, 15 mg/l O&G and within the pH range of 6.0 to 9.0 with a confidence level >99%. Therefore, stormwater within the above maximum limitations are considered uncontaminated and such discharge is authorized. Discharges containing TOC, O&G and alkaline or acidic components may be considered contaminated and subsequent discharge is not authorized by this permit. Such contaminated stormwaters should be collected, treated and discharged as process wastewaters and meet the applicable permit limitations at such discharge.

DRAFT

Discharge of uncontaminated storm water to Bayou Bourbeaux.

The permittee and LDNR identified the intermittent storm water discharges to Bayou Bourbeaux and Dow made NPDES application for permit to discharge on August 18, 1983. The discharges and locations are summarized below:

Map No.	Out-fall	Area	Location
1	002	N/A	Northwest of railcar cleaning
2	003	Firefighting training	North east of block 49
3	004	Electrical Salvage Yard	East of block 41
4	005	Fab + Machine Shop	North of Block 41
5.	006	North Poly B Plant	Northwest of Block 9
7.	007	Railcar switching and Spare Parts Areas	Northeast of Block 58
8	008	Cental Waste Treating	South of Env. Op. Dept.
	108		
	208		
	308		
	408		
	508		

DRAFT

Region 6 has practical experience and imperical data to indicate that storm runoff from uncontaminated areas are within 50 mg/l Total organic carbon., 15 mg/l Oil & Grease and within the pH range of 6.0 to 9.0 based upon grab samples with a confidence level > (greater than) 99%. Therefore, the permittee is authorized to discharge stormwater in compliance with such limitations at the above outfalls. Any discharges exceeding the requirements of TOC, O&G and pH range are not authorized by this permit. Such contaminated stormwater may be collected, treated and discharged as process wastewater and meet the applicable permit limitations at the process discharge where it is treated.

DRAFT

PROPOSED PERMIT

Permit No. LA0003301
Application No. LA0003301

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Dow Chemical U.S.A.
Louisiana Division
P.O. Box 150
Plaquemine, Louisiana 70764

is authorized to discharge from a facility located at Plaquemine, Louisiana

to receiving waters Mississippi River
Bayou Bourbeaux

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

Myron O. Knudson, P.E.
Director, Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Final Outfall 001

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from Outfall(s) serial number(s) 001, combined process, utility and storm runoff from the Division Return canal system to the Mississippi River.

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

Effluent Characteristic	Discharge Limitations kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	Report	Report
Temperature, °F	N/A	N/A	Report	Report
Total Residual Chlorine	Report	Report	N/A	N/A
Total Purgeable Halocarbons	Report	Report	N/A	N/A
Total Purgeable Aromatics	Report	Report	N/A	N/A
Phenols	Report	Report	N/A	N/A
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Continuous	~~Record~~ **
Temperature, °F	Continuous	Record
Total Residual Chlorine	1/Day	Grab
Total Purgeable Halocarbons	1/Month*	24-Hour Composite
Total Purgeable Aromatics	1/Month*	24-Hour Composite
Phenols	1/Month*	24-Hour Composite
Biomonitoring	(See Part III)	24-Hour Composite

*See Part III, 9.

** Calculated based upon number of pumps operating, their design capacity and pump running time.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuously and recorded (See Part III).

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): 001; the monitoring point for pH shall be in the sampling drum which receives water from all pumps which pump the discharge from the Divison Return Canal System to the Mississippi River. The residence time of water in this sampling drum will reflect the instantaneous pH of the combined flow, i.e., the holdup in the vessel shall be less than 15 minutes.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Internal Outfall 101

During the period beginning effective date and lasting through expiration date the permittee is authorized to discharge from Outfall(s) serial number(s) 101, process wastewater from the manufacture of chlorinated polyethylene.

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

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	Report	Report
Total Oxygen Demand	~~136(300)~~	272(600)	N/A	N/A
Total Suspended Solids (TSS)	~~175(385)~~	349(770)	N/A	N/A
Total Residual Chlorine	Report	Report	N/A	2(mg/l)

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Continuous	Indicate
Total Oxygen Demand	~~Daily~~ 3/week *	24-Hour Composite
Total Suspended Solids (TSS)	~~Daily~~ 3/week *	24-Hour Composite
Total Residual Chlorine	1/Week	Grab

544 (1200)
699 (1540)

* Noncompliance with a daily average or daily maximum requirement will increase the monitoring frequency to 3/week for four weeks without a noncompliance.

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored 1/day via grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): 101; Southwest corner of block 19, discharge of settling pond.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Internal Outfalls 211 and 221

During the period beginning effective date and lasting through expiration date the permittee is authorized to discharge from Outfall(s) serial number(s) 211 - once-through cooling water from methyl cellulose unit, 221 - treated and uncontaminated stormwater.

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

Effluent Characteristic	Discharge Limitations kg/day(lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	Report	Report
Net Total Oxygen Demand*	Report	Report	N/A	15 (mg/l)*
Total Oxygen Demand**	N/A	N/A	N/A	200 (mg/l)

Effluent Characteristic	Monitoring Requirements Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	~~Continuous~~ daily	~~Indicate~~ estimate
Net Total Oxygen Demand	Daily	Grab
TOD	Daily**	~~24-Hour Composite~~ Grab

*Net TOD limit applies to OTCW at 211.
**When 221 is flowing. Report TOD only until December 31, 1984.

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored 1/day via grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): 211, once-through cooling water; 221 treated and uncontaminated storm runoff.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 311

During the period beginning effective date and lasting through expiration date the permittee is authorized to discharge from Outfall(s) serial number(s) 311, Chlor-alkali II plant process discharge.

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

Effluent Characteristic	Discharge Limitations kg/day(lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	Report	Report
Total Suspended Solids (TSS)	509(1122)	1098(2420)	N/A	N/A
Total Residual Chlorine	7.9(17.4)	13.0(28.6)	N/A	N/A
Total Chromium**	0.23(0.5)	0.45(1.0)	N/A	N/A
Total Copper	4.9(10.8)	12.0(26.4)	N/A	N/A
Total Lead	2.4(5.3)	5.9(13.0)	N/A	N/A
Total Nickel	3.7(8.1)	7.3(21.3)	N/A	N/A
Total Purgeable Halocarbons*	1.3(3)	2.7(6)	N/A	N/A
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Continuous	Record
Total Suspended Solids (TSS)	1/Day	24-Hour Composite
Total Residual Chlorine	1/Day	Grab
Total Chromium	1/Week	24-Hour Composite
Total Copper	1/Week	24-Hour Composite
Total Lead	1/Week	24-Hour Composite
Total Nickel	1/Week	24-Hour Composite
Total Purgeable Halocarbons*	1/Week	24-Hour Composite
Biomonitoring	(See Part III)	24-Hour Composite

* EPA Method 601 or 624
** At CTBD

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored 1/day via grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): 311, chlor-alkali plant 24" parshall flume.