REPORT

ON

WASTEWATER

DISCHARGE MODIFICATIONS

PRESSWARE PLANT

CORNING GLASS WORKS

CORNING, NEW YORK

OCTOBER, 1975

NOTE: Due to the proprietary nature of the contents of this report, Corning Glass Works requests that only authorized personnel be permitted to review this report and that every effort will be made to honor the confidential status of this information.

Rumi N. Mazda
Senior Engineer
Facilities Design Department
Facilities Engineering and
Construction

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

APPLICATION FOR APPROVAL OF PLANS AND/OR FOR PERMIT TO CONSTRUCT A WASTE DISPOSAL SYSTEM

1. Name of Applicant:	2. Location of Works (C,V,T):	3. County	4. Entity or Area Served
Pressware Plant Corning Glass Works	Steuben Street Corning, New York	Steuben	Pressware Plant

5. Type of Ownership:

☐ Municipal	☐ Commercial	☐ Private-Other	☐ Authority	☐ Interstate
☒ Industrial	☐ Sewage Works Corp.	☐ Private-Institutional	☐ Federal	☐ International
	☐ Private-Home	☐ Board of Education	☐ State	☐ Indian Reservation

6. Type & Nature of Construction:

	Collection System	Treatment and/or Disposal
	☒ New	☒ New
	☐ Additions or Alterations	☐ Additions or Alterations

7. Estimated Cost of Construction:

Collection System $58,500 Treatment and/or Disposal $24,900

8. Type of Waste: ☐ Sewage ☒ Industrial Specify Contact Cooling Water ☐ Other Specify

9. Name of Receiving Treatment Works:

10. Point of Discharge: Location (C,V,T) See Appendix "A" this Report.

Surface Water: Name of Watercourse Chemung River Class C

Ground Water: Name of Watercourse to which ground water is tributary Class

11. Is State or Federal Aid Applied For?
☐ Yes - Give Project
☐ No Number

12. Name of Design Engineer: G. J. Dudick N.Y. State License No. 39776

Address: Corning Glass Works MP 50-3 Corning, N.Y. Telephone No. (607) 974-7551

13. Water Consumption (GPD): Present See Appendix "B" this Report Future Design Year

14. Population Served: Present 500+ Future Design Year

15. Average Daily Flow for New or Existing Treatment Works (GPD): Present See Appendix "B" this Report. Future Design Year

16. Source of water supply (if private well; give location; type; depth and character of soil)

Combination of wells and City of Corning water supply.

17. Design Equivalent Population (BOD Basis):

N/A Industrial contact cooling water supply.

18. Give number, character and distance of any buildings which may be affected by the proposed treatment works

See Appendix "A" this report.

19. Describe Proposed or Existing Storm Water Disposal:

To Chemung River through Outfall 002 (CGW #1)

Additional information must be submitted for private and institutional systems.

20. Indicate on U.S.G.S. Topographic Map exact location of sewage treatment works and adjacent buildings. Show location of all wells or other sources of water supply within 200' of the proposed works. Give description of these sources and character of soil.

For topographic map see Appendix "E" this report. For location of wells and buildings see Appendix "A" this report. For character of soil see item 22 below.

21. State depth below existing ground surface at which ground water is encountered

25 feet
Ref: Same as item 22.

22. Describe soil at site of proposed works. Give design basis and observed soil percolation rate data (use additional sheet, if necessary)

Compact silty sand and gravel to 7½ feet depth. Quite dense sand and gravel below 10 feet depth. Reference test boring done by H. C. Nutting Company, Cincinnati, Ohio. Report #B-16265jh dated July 20, 1966/

NOTE: All applications must be accompanied by plans, specifications and completed Form San. 65 (appropriate portions). The submission must conform to a previously approved engineering report describing the system in detail. The plans must be stamped with the designing engineer's seal and must be of sufficient clarity and legibility to permit satisfactory microfilming. Only white prints will be accepted because of the difficulty of microfilming blue prints. There must be a blank area, at least 4" x 7", in the lower right corner of each sheet so that the approval stamp may be placed on the face of the plans.

Any deviation from the Department's standards for wastewater collection and treatment facilities must be explained in detail.

Approved plans are to be returned to: [X] Applicant [ ] Engineer

If the application is signed by a person other than the applicant shown in Item 1, the application must be accompanied by a letter of authorization. Failure to comply with this provision may be grounds for the rejection of any submission.

Signatures and Official Titles: John J. Chambers, Manager Environmental Control

Mailing Address: Corning Glass Works
Main Plant 8-4, Corning, New York 14830

Date of Application: October 1, 1975

REMARKS:

INTRODUCTION

The Pressware and Fallbrook Plants are currently operating under modified NPDES Permit No. NY0003981 effective August 29, 1975 and expiring on November 29, 1979. The Permit covers Pressware Outfalls 001 (CGW #1A), 002 (CGW #1), and 003 (CGW #2). (Outfall 003 (CGW #2) was formerly known as Fallbrook's Outfall.) The Schedule of Compliance calls for the submittal of final plans and specifications by October 1, 1975, with construction to begin by January 1, 1976; be completed by May 1, 1977, and operational levels to be achieved by July 1, 1977. This report and accompanying drawings comprise the final plans and specifications as mentioned above.

George N. Hudick
10-1-75

SUMMARY

The following plant wastewater system is proposed. The start up of a new furnace Tank #52 with its related manufacturing processes, and the impending shutdown of an existing furnace Tank #48 are incorporated into the proposal.

All contact wastewater from Pressware's plant and compressor room will be transferred to the lagoons for oil and suspended solids reduction before being combined with Fallbrook plant's wastewater and on to Outfall 003 (CGW #2). All non-contact water and storm-water from Pressware's plant and compressor room will be combined and diverted to Outfall 002 (CGW #1). Under normal conditions, no wastewater is expected to be discharged through Outfall 001 (CGW #1A).

Flow monitoring and sampling will be done at the manholes on the river dyke just preceeding Outfalls 002 (CGW #1) and 003 (CGW #2).

DISCUSSION

I. SCOPE OF WORK (See drawing #11293-13251-WT1 and Appendix "B")

Contact water from Pressware Tanks #47, #51, and #52 will be rerouted through the two lagoons for oil and suspended solids reduction before discharging through Outfall 003 (CGW #2). In addition, contact water from Pressware's compressor house will also be diverted through the lagoons, as will Fallbrook's contact water from its washing operations. (The latter is routed through the waste treatment plant and will be treated with Oakite Defoament 5, when required, before discharging into the lagoons.)

Non-contact water and stormwater from the Pressware plant and compressor house will be segregated from the contact water, combined, and routed through Outfall 002 (CGW #1). Hence, no industrial wastewater is expected to flow through Outfall 001 (CGW #1A).

Flow rates and samples will be taken from Outfalls 002 (CGW #1) and 003 (CGW #2) and results reported as specified by the Permit.

II. BACKGROUND

An "Application for Approval of Plans and for Permit to Construct a Waste Disposal System" was filed on November 10, 1974 by Corning Glass Works with NYSDEC. The application was for the construction of a wastewater system for Tank #52 at the Pressware Plant. It was accompanied by a "Report on Industrial Wastewater - #52 Tank Expansion Pressware Plant" with drawings #11293-12141-BS6, -12071-C1, -12081-C2, and -12151-E1. The drawings detailed all the construction work to be done on the wastewater disposal system for Tank #52 and its manufacturing lines. The report discussed the existing status of Pressware's wastewater system, what the expected flows from Tank #52 and related areas were expected to be and a detailed description of Tank #52's proposed wastewater treatment system.

Pursuant to the Schedule of Compliance in the original EPA Permit No. NY0003981 issued to the Pressware Plant on October 23, 1974 and effective November 29, 1974 a "Preliminary Report on Wastewater - NPDES Compliance Pressware Plant" was submitted on March 3, 1975. This report outlined a tentative wastewater disposal system to bring all three Outfalls viz. Pressware's 001 (CGW #1A), 002 (CGW #1), and Fallbrook Plant's 001 (CGW #2) into compliance by November 29, 1976. Expected wastewater flows from both Pressware and Fallbrook plants were submitted, together with a proposed combined wastewater treatment system. Mention was made in the report, of Corning Glass Works' intent to propose to the EPA an NPDES permit modification to reassign Fallbrook's Outfall 001 (CGW #2) as Pressware's Outfall 003 (CGW #2). The proposal for modification and time schedule for conformance were negotiated as indicated in the introduction.

III. DESCRIPTION OF WASTEWATER SYSTEM

A. Outfall 001 (CGW #1A). (See drawings #11293-13251-WT1 and -13261-WT2.)

Currently about 511,000 GPD of wastewater comprising of approximately 2000 GPD of condensate and contact water, and roughly 509,000 GPD of non-contact cooling water, flows out of the Pressware Plant's compressor house to Outfall 001 (CGW #1A). The 2000 GPD of condensate and contact water will be collected in a new sump "B" and pumped in an overhead line leading to the main contact water line in Building #20. The remaining 509,000 GPD of non-contact cooling water will be rerouted through a new overhead line to the existing reclaim tank and eventually to Outfall 002 (CGW #1). An emergency overflow with a tee-type outlet from sump "B" will be connected to Outfall 001 (CGW #1A) to minimize loss of oil in the event that wastewater does overflow from the sump. However, under normal operating conditions no wastewater is expected to flow through Outfall 001 (CGW #1A).

B. Outfall 002 (CGW #1). (See drawings #11293-13251-WT1 and -13271-WT3.)

A new overflow line from the existing reclaim tank will be connected to a new stormwater drain which will divert all non-contact water and stormwater around new sump "A" and discharge into the existing drainline leading to Outfall 002 (CGW #1). An emergency overflow from sump "A" will also be connected to this drainline. However, under normal operating conditions only stormwater and approximately 609,000 GPD of non-contact cooling water is expected to flow through Outfall 002 (CGW #1).

C. Outfall 003 (CGW #2). (See drawings 11293-13251-WT1, -13271-WT3, -12141-BS6, and -11851-BS31.)

The main contact water line in Building #20 will discharge all contact water from the compressor house and from Tanks #47 and #51 into new sump "A", from which it will be pumped through an overhead line to the lagoons. Contact water from Tank #52 will be pumped to the lagoons in the same overhead line. An oil skimmer will be mounted on each lagoon, accumulating skimmed oil in individual waste oil storage tanks for periodic removal by an approved hauler. (Northeast Oil Service of Syracuse for instance, will, under contract, periodically haul away the waste oil from the tanks.) Recommended API procedures for designing gravity type oil separators indicate the existing lagoons are adequately sized for this purpose (see Appendix "D").

D. Overflow Precautions

Even though there will be emergency overflows, from contact water sumps "A" and the one for Tank #52, connected directly to drainlines leading to Outfalls 002 (CGW #1) and 003 (CGW #2) sufficient precautions have been taken to prevent contact water from ever overflowing directly to these Outfalls without prior treatment. A pair of pumps will be installed in each sump with an alternator to evenly distribute the pumping load over both pumps. Each pump will be powered from separate transformers to minimize total breakdown from localized power failures. Three separate float switches will be installed in each sump to insure against switch failure. The high level switch will flash a warning light should the water approach the overflow level. In the event the water does overflow, the tee-type outlets will minimize any direct loss of accumulated oil from the sumps.

E. Flow Measurement and Sampling. (See drawing #11293-13281-WT4.)

Graduated weirs will be installed inside two manholes located on the river dyke, to measure wastewater flows for Outfalls 002 (CGW #1) and 003 (CGW #2). Outfall 001 (CGW #1A) will, ordinarily, have zero flow and therefore no weir is planned.

Grab and composite samples will be taken at these manholes consistent with the Permit requirements.

F. Defoamant Addition

Under normal operating conditions in the Fallbrook Plant approximately 10,500 GPD of contact water from its three washing operations is discharged to the waste treatment plant. Settleable solids are removed in the equalization tank and the old clarifier tank. However, soluble detergents remain in the effluent at times causing a foaming effect in the Chemung River. To minimize foaming it is proposed to add as needed Oakite Defoamant 5 directly into the equalization tank at a concentration of 120 mg/l (based on a flow of 10,500 GPD). Therefore, the expected concentration of the defoamant at Outfall 003 (CGW #2) with an expected flow of 1,275,000 GPD is less than 1 mg/l.

The chemical composition of Oakite Defoamant 5 was submitted directly to Mr. J. F. Kelleher of N.Y.S.D.E.C., Albany by letter dated September 8, 1975 from Geogi St. John, Assistant Technical Information Administrator, Chemical Research Department, Oakite Products, Inc. This was submitted because the "Oakite" product was considered by them to be proprietary.

G. Lead Monitoring. (See Appendix C - Table I.)

The modified NPDES Permit No. NY0003981 stipulates the following limits for total Pb in mg/l for Outfall 003 (CGW #2).

From August 29, 1975 through June 30, 1977 --

Total Pb - Daily Average 0.43 mg/l

as monitored by a weekly composite sample.

From July 1, 1977 through November 29, 1979 --

Total Pb - Daily Average 0.1 mg/l
- Daily Maximum 0.2 mg/l

as monitored by a monthly composite sample.

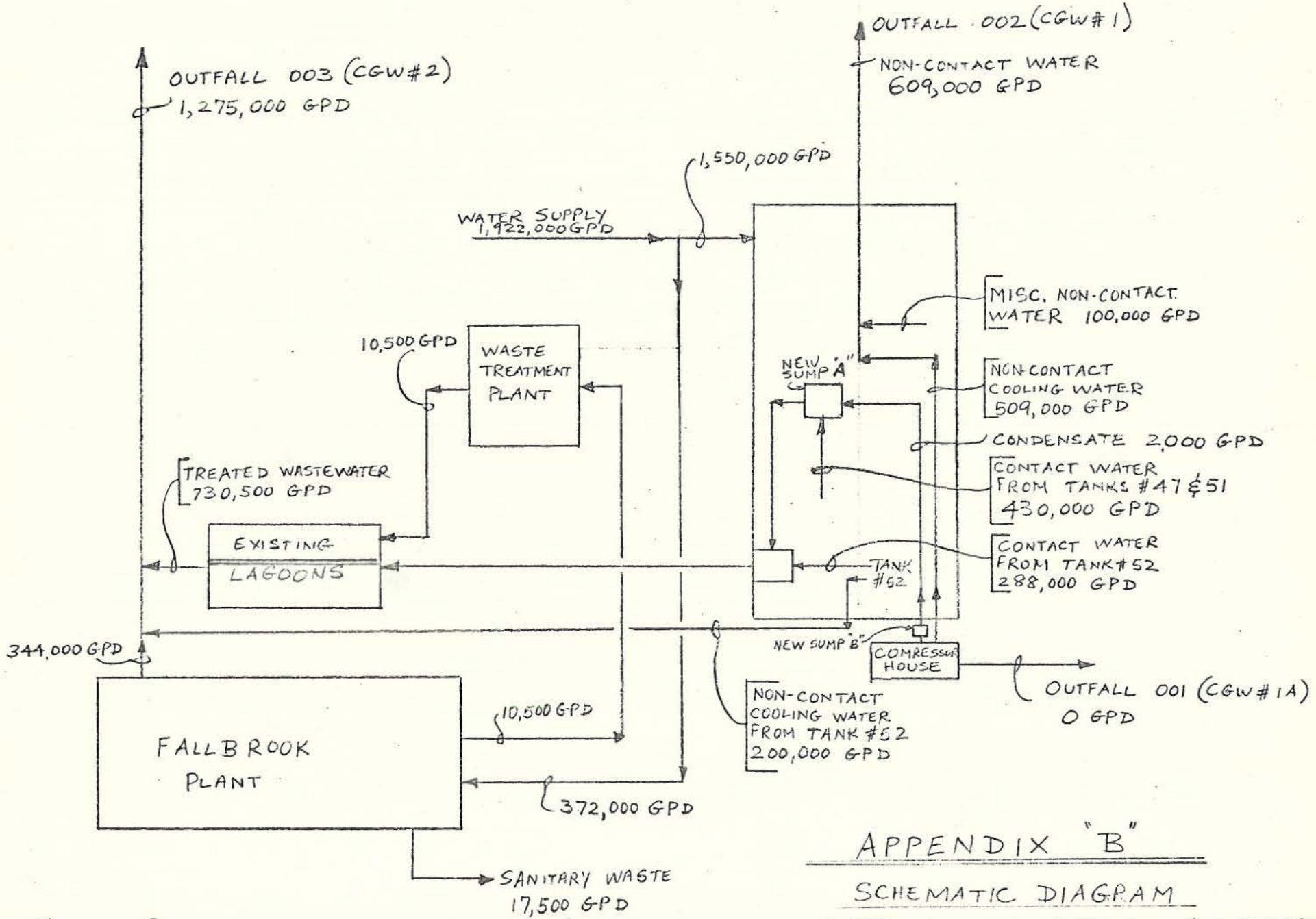
Table I (Appendix C) shows the total Pb concentrations in mg/l as monitored by weekly samples since December 4, 1974. Prior to July 17, 1975 the Fallbrook Plant was the sole contributor of wastewater to Outfall 003 (CGW #2). The average flow recorded during this period through Outfall 003 (CGW #2) was 344,000 GPD. From July 15, 1975 through September 16, 1975 Pressware's Tank #52 was also contributing wastewater to Outfall 003 (CGW #2). The average flow during this period was 544,000 GPD (see Appendix B).

The total Pb figures in Table I indicate occasional high levels in the months of July and August. However, the daily average total Pb concentrations for July and August are 0.263 mg/l and 0.193 mg/l respectively. Neither one of these values violate the interim daily average limit of 0.43 mg/l.

If these average daily Pb levels for the two months are extrapolated over the expected flow rate of 1,275,000 GPD from Outfall 003 (CGW #2) after July 1, 1977 the average daily Pb concentrations would be 0.071 mg/l and 0.082 mg/l. Neither one of these values would violate the final daily average limit of 0.1 mg/l. However, if individual daily values were extrapolated, as shown in Table I, then the 0.210 mg/l on July 9, 1975, and 0.239 mg/l on August 13, 1975 would constitute violations of the final daily maximum limit of 0.2 mg/l. Fortunately, the prompt analysis of samples by the Fallbrook laboratory have enabled the plant to pinpoint the exact reasons for the high total Pb values for the two dates in question. On July 9, 1975 the evaporative spray cooling tower walls were manually washed before tank start up and contaminated water inadvertently entered the Outfall. A similar incident with batch material hoppers took place on August 13, 1975. These occurrences will be controlled by strict housekeeping measures.

Based on past monitoring of flow and total Pb levels of wastewater in Outfall 003 (CGW #2) no future violations of either the interim or final limitations should occur.

/k



NOTE: STORM WATER NOT INCLUDED IN THIS SCHEMATIC

APPENDIX "B"

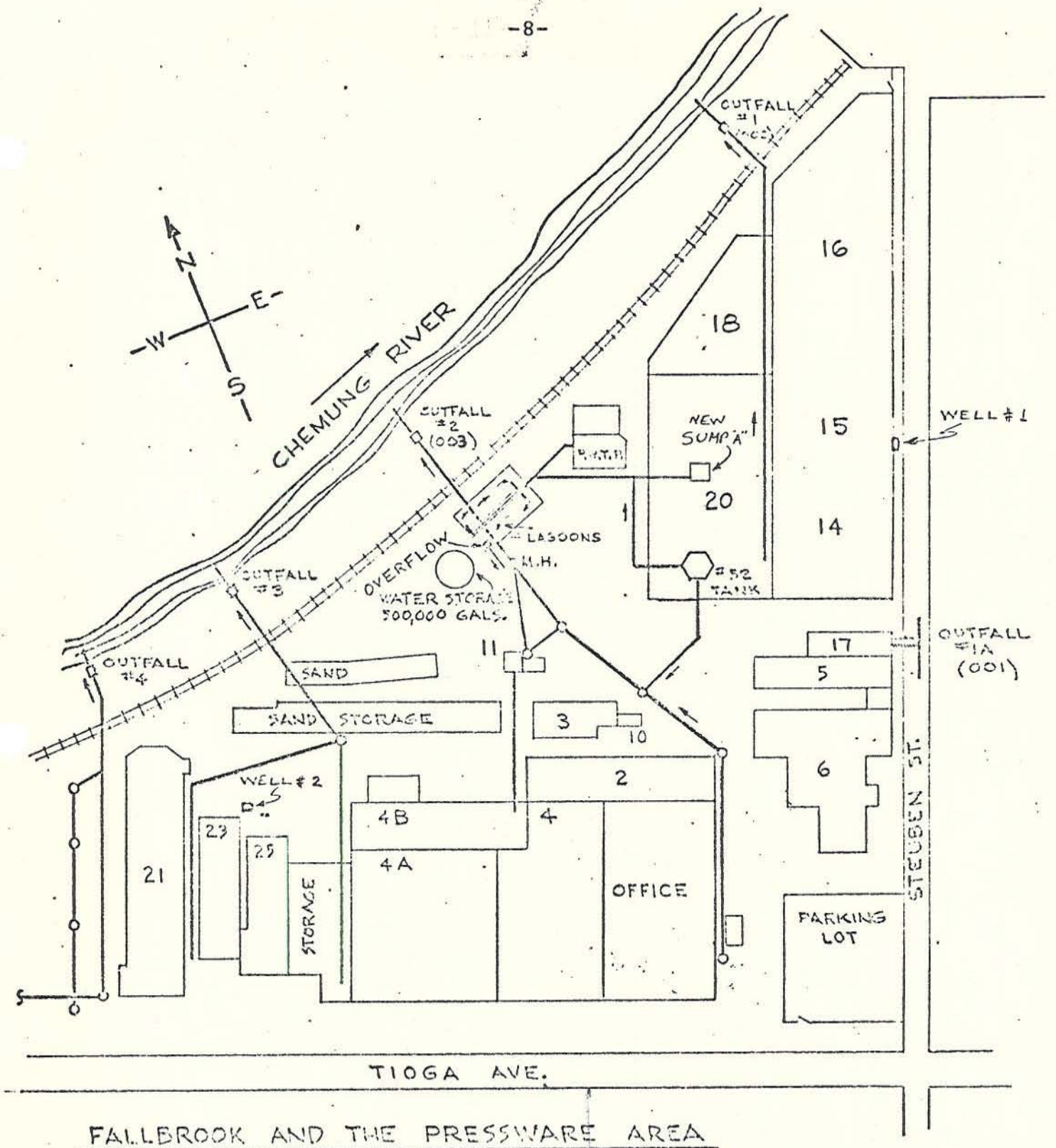
SCHEMATIC DIAGRAM

EXPECTED WATER INTAKE & DISCHARGE

IN PRESSWARE & FALLBROOK PLANTS

CORNING, N.Y.

(AS OF JULY 1, 1977)



FALLBROOK AND THE PRESSWARE AREA

CORNING GLASS WORKS

CORNING, N.Y.

SCALE: 1" = 200'

APPENDIX "A"

LOCATION PLAN

FALLBROOK & PRESSWARE PLANTS

CORNING, NEW YORK

October, 1975

DATE	TOTAL Pb (MG/L) AT AVERAGE FLOW OF 0.344 MGPD	EXPECTED TOTAL Pb (MG/L) IN OUTFALL 003 AT FLOW OF 1.275 MGPD	DATE	TOTAL Pb (MG/L) AT AVERAGE FLOW OF 0.544 MGPD	EXPECTED TOTAL Pb (MG/L) IN OUTFALL 003 AT FLOW OF 1.275 MGPD
12/04/74	0.05	0.013	07/23/75	0.04	0.017
12/12/74	0.06	0.016	07/30/75	0.07	0.030
12/18/74	0.06	0.016	08/07/75	0.07	0.030
01/02/75	0.04	0.011	08/13/75	0.56	0.239*
01/10/75	0.31	0.084	08/20/75	0.06	0.026
01/15/75	0.06	0.016	08/27/75	0.08	0.034
01/30/75	0.05	0.013	09/03/75	0.13	0.055
02/07/75	0.04	0.011	09/10/75	0.05	0.021
02/14/75	0.04	0.011	09/16/75	0.07	0.030
02/18/75	0.04	0.011			
02/26/75	0.04	0.011			
03/05/75	0.11	0.030			
03/14/75	0.09	0.024			
03/21/75	0.36	0.097			
03/25/75	0.33	0.089			
04/02/75	0.31	0.084			
04/10/75	0.22	0.059			
04/16/75	0.24	0.065			
04/23/75	0.11	0.030			
05/02/75	0.23	0.062			
05/08/75	0.12	0.032			
5/15/75	0.17	0.046			
05/22/75	0.13	0.035			
05/28/75	0.05	0.013			
06/04/75	0.05	0.013			
06/11/75	0.08	0.022			
06/17/75	0.04	0.011			
06/25/75	0.41	0.111			
07/02/75	0.14	0.038			
07/09/75	0.78	0.210*			
07/10/75	0.46	0.124			
07/17/75	0.09	0.124			

*Possible violations of final daily maximum limit of 0.2 mg/l.

APPENDIX "C"
TABLE I - TOTAL Pb CONCENTRATIONS AT OUTFALL 003
(CGW #2)

APPENDIX "D"

CALCULATIONS FOR A GRAVITY OIL SEPARATOR USING API DESIGN CRITERIA[1]

Wastewater Flow: 609,000 GPD = 57 CFM
From Equation (7) Pg. 19, Rate of Rise $V_t = \frac{0.0241\ (Sw-So)}{\mu}$

Temp. ^{o}F at above flow (from Outfall CGW #1 data) = $67^{o}F$
From Fig. 2 Pg. 19. Specific gravity of wastewater, Sw = 0.997
From Fig. 3 Pg. 19. Absolute viscosity of oil, μ = 0.0103
From Manufacturer's Label, Specific gravity of oil, So = 0.882

$$V_t = \frac{0.0241\ (0.977-0.882)}{0.0103}$$

$$V_t = 0.269$$

From Figure 4 Pg. 24. Since $V_t > 0.2$, Horizontal Velocity V_h= 3 Ft/Min.
From Figure 4 Pg. 24. Theoretical cross sectional area A_c= 19 $Ft.^2$
From Figure 4 Pg. 24. Theorectical depth, d = 3.1 Ft.

Therefore, theoretical width, $B = \frac{19}{3.1} = 6.1$ Ft.

Theoretical ratio $\frac{V_h}{V_t} = \frac{3}{0.269} = 11.2$

From Figure 7. Pg. 25. Theorectical length, L = 54 Ft.
Theoretical depth to width ratio $\frac{d}{b} = \frac{3.1}{6.1} = 0.508$

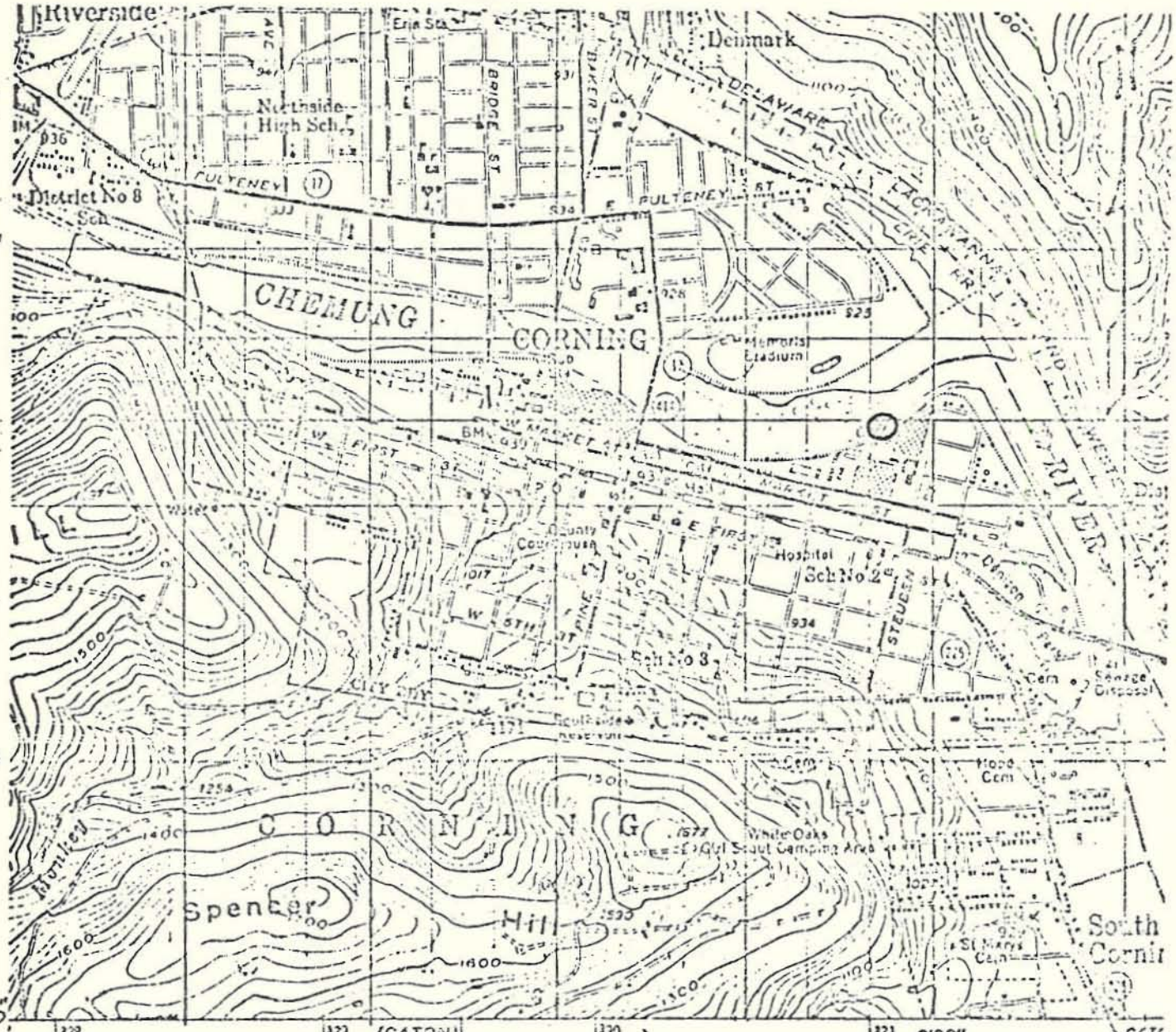
Dimensions of theoretical separator recommended by API are --

54 Ft. long X 6.1 Ft. wide X 3.1 Ft. depth (liquid)

Dimensions of each existing lagoons at Pressware Plant 100' long X 30' wide X 7' depth (liquid)

Both lagoons will be used in series.

[1] REF: API manual on disposal of Refinery Wastes - Vol. I, 7th Ed. Chapter 2.



OUTFALL #2 (001)

APPENDIX "E"

TOPOGRAPHIC MAP

CORNING, NY.

NE/4 CORNING 15' QUADRANGLE
N4207.5 -W7700/7.5
U.S.G.S. MAP
1963
AMS 5566 II NE-SERIES V881

CHEMUNG RIVER AT CORNING
COUNTY OF STEUBEN
STATE OF NEW YORK
CORNING GLASS WORKS 6/30/71