February 22, 1973

Publication No. 73-e40

State of Washington
Department of Ecology

MEMO TO: Bill Burwell

FROM: Ron Devitt

SUBJECT: Ace Galvanizing & Advance Electroplating

Objective

A memo from Bill Burwell dated November 16, 1972, proposed the following objectives for this survey:

1. To characterize the industrial discharges from Ace Galvanizing and Advance Electroplating.
2. To determine if the effluents are entering state waters.
3. To determine changes in effluent characteristics due to industrial process modifications.

Introduction

On December 18, 1972, Bill Burwell, Larry Ashley, and I sampled the various industrial effluents and storm sewers which enter the Duwamish River near S. 96th street. The parameters were pH, conductivity, and metals. Two grab samples were taken at Ace Galvanizing for oils.

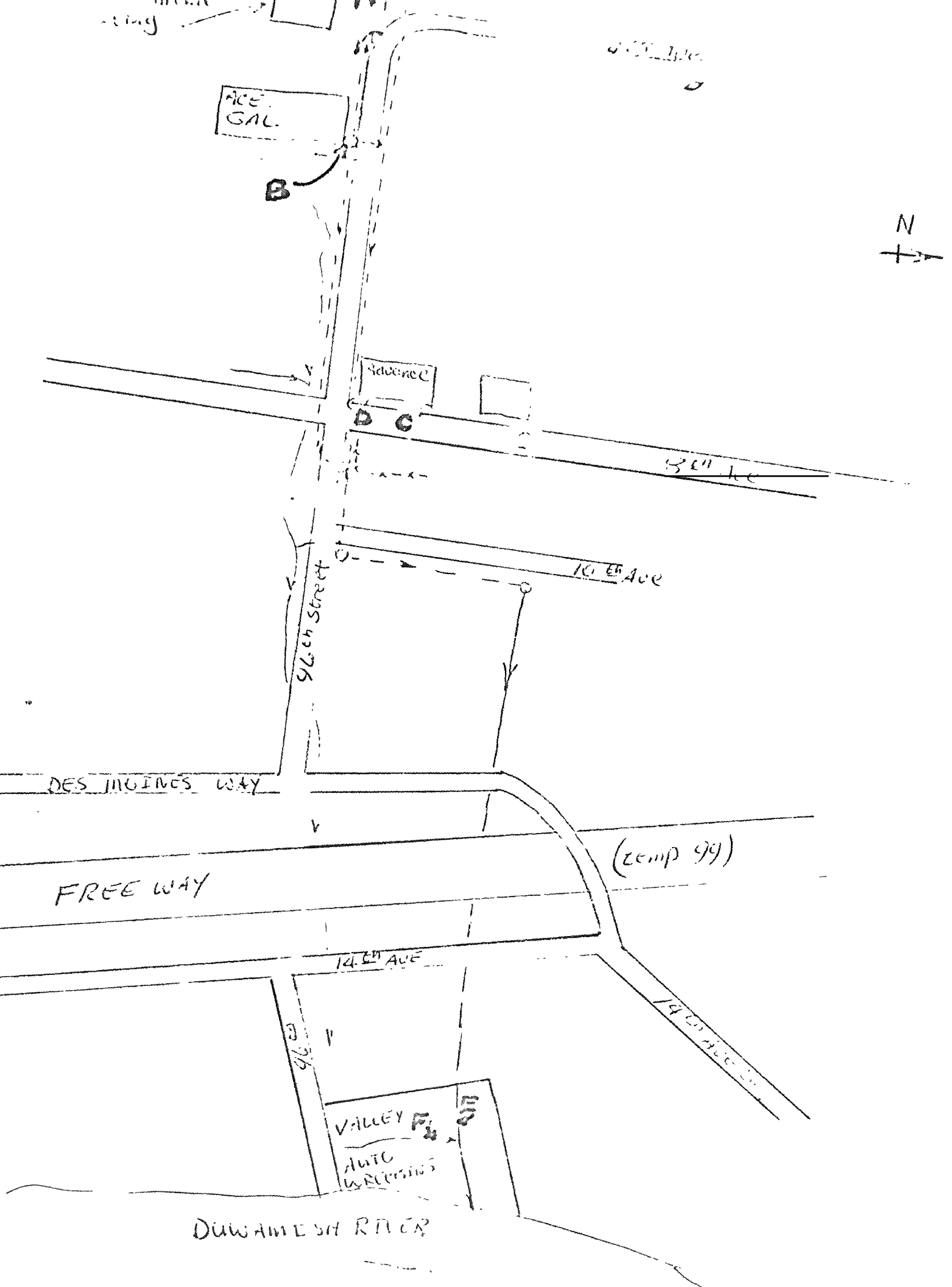
Sample Locations

The following sampling locations were sampled as indicated by the attached schematic diagram:

Station	Location
A	@ intersection of S. 96th Street and 4th Avenue S. behind cyclone fence - large pipe. (Upstream control)
B*	Sump @ N.E. corner of Ace Galvanizing (Partial discharge)
B-1	Well Water used by Ace Galvanizing - (raw water control).
B-2	Industrial water discharge from metal cleansing area.

B-3	Storm runoff from materials storage area.
B-4	Grab sample from oils sump in shop near metal cleansing area.
C	Manhole on 8th Avenue S. - upstream in storm drain on Advance Electroplating property - larger of two pipes (control for 8th Avenue S. drainage).
D	Intersection of S. 96th Street and 8th Avenue S. (total drainage from 8th Avenue S. and Northwest Galvanizing).
E	Combination of flows A-D plus storm runoff 10 yards upstream of confluence with F (@ Valley Auto Wrecking).
F	Storm and spring runoff from area south of S 96th Street (control @ Valley Auto Wrecking).

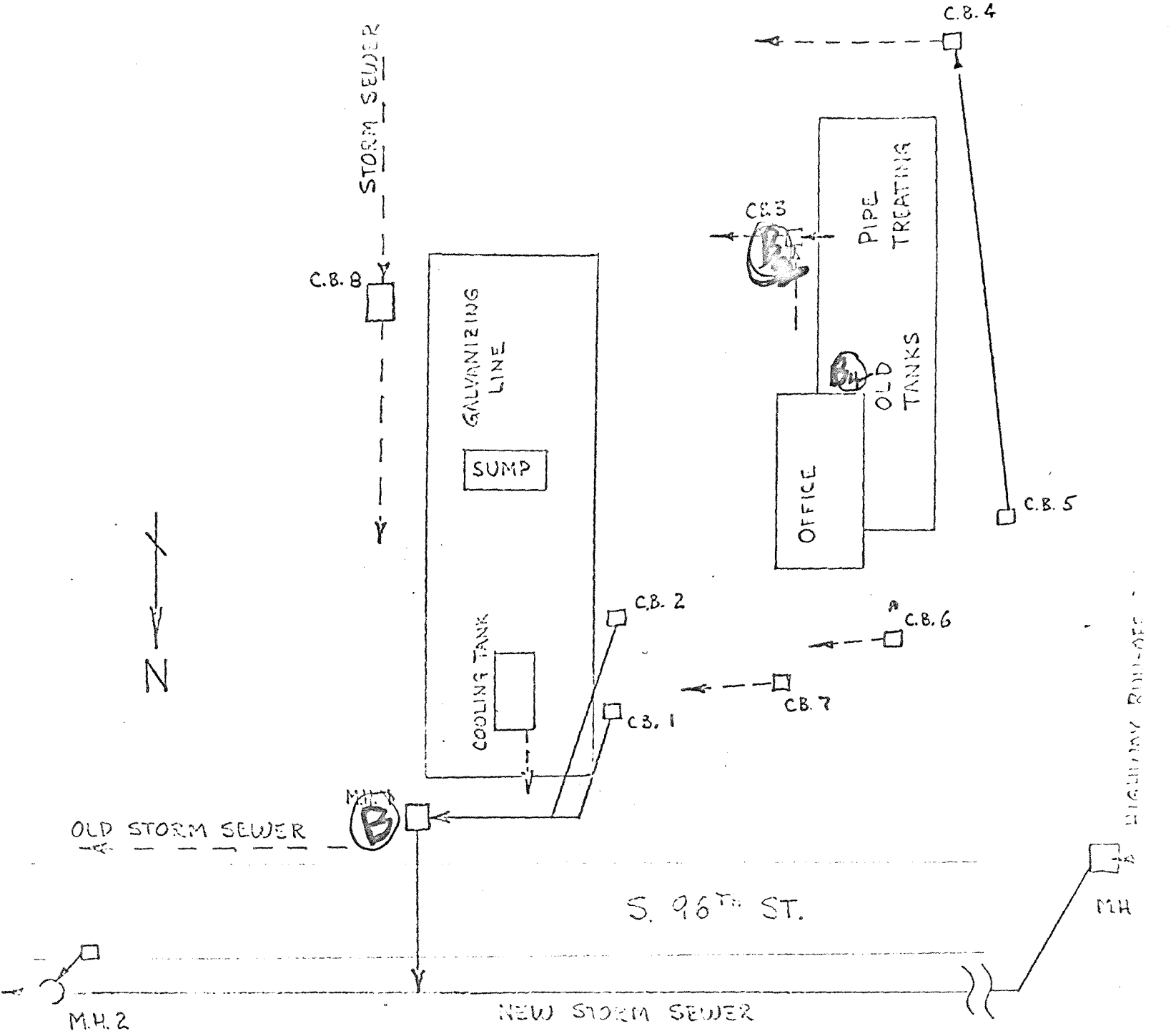
* B, B-1, B-2, B-3, B-4, all collected at Ace Galvanizing


ACE
GAL.
B
N
Residence
D
C
96th Street
DES MOINES WAY
FREE WAY
(temp 99)
14th Ave
VALLEY
AUTO
DUWAMISH RIVER

B WELL

NORTHWEST GALVANIZING DRAINAGE SYSTEM

B3



——— ESTABLISHED — — — — DIRECTION OF FLOW

ACE GALVANIZING & ADVANCE ELECTROPLATING

LOCATION RESULTS:	A	B	B	B	B-1	B-2	B-3	B-4	C	D	D	E	F
Time	1110	1010	1115	1330	1020	1050	1035	1100	1200	1205	1340	1230	1430
pH	7.0	6.3	-	6.8	7.8	7.3	-	-	7.2	7.3	7.2	-	7.1
Zn	.25	61	58	27	.02	13.1	2000	-	.39	1.8	1.5	3.6	0.1
Filtered Zn	.13	61	-	27	-	-	2000	-	.25	.96	.80	.82	-
Cr	<	<	<	<	<	ND	0.1	-	0.1	0.4	0.8	0.1	<
Cu	<	<	0.1	<	<	<	0.3	-	0.9	1.2	1.3	0.1	<
Cd	ND	ND	ND	ND	<	ND	0.2	-	ND	0.2	0.2	ND	ND
Ni	<	<	<	<	<	<	0.5	-	0.5	1.5	2.4	<	<
CN-	.01	-	.54	.16	-	-	-	-	.07	.16	.12	.09	.10
Sp. Cond.	97	560	-	370	180	300	-	-	63	115	150	390	250
Total Oils	-	-	-	-	-	8	-	68000	-	-	-	-	-
Flow (gpm)	-	4	40	4	-	-	-	-	-	52	-	-	-

Time: Military hours
Metals: ppm - unfiltered unless designated
Specific Conductivity: µmhos/cm @ 25°C
Oils: ppm
< = <0.1 ppm
ND = None Determined
- = Not Sampled

February 22, 1973
Bill Burwell

Discussion of Data

Controls - Stations A, B-1, and F were intended to be controls. The waters are characterized as follows:

Station B-1 - The well water was obviously least contaminated for the parameters sampled. The greatest concentration of metals was .02 ppm zinc. Other individual metals were less than .01 ppm.

Station F - Concentrations were 0.1 ppm unfiltered zinc and .01 ppm cyanide; each of the other significant parameters were less than .01 ppm.

Station A - This flow was primarily spring and rain runoff. Maximum concentrations were .25 ppm unfiltered zinc; .13 filtered zinc, and .01 cyanide. Chromium, copper, and nickel were <.01 ppm, no cadmium was detected.

Ace Galvanizing - Stations B, B-2, B-3, and B-4 were all sampled to typify drainages from Ace Galvanizing.

Station B - Three sets of grab samples were taken from the main discharge to the storm sewer at the northeast perimeter of the property. The flow which varied considerably was estimated by the length of time required to fill a three liter container. At the high flow rate, accuracy was probably ±100%. Not enough samples were taken to correlate wastewater characteristics to a particular flow rate; but based on the two samples taken at low flow it appears that the zinc was all in the dissolved state. It was not determined if the concentrations of zinc at the increased flow rate were dissolved or particulate.

Zinc samples were collected at this locations previously. Compared to values obtained from this survey, the concentrations have decreased; however gross amounts of zinc are still being discharged. The grab sample at 1115 hrs (.54 ppmCN-) indicated provisions should be included in their proposed waste discharge permit to govern cyanide concentrations.

		Filtered Zn	Unfiltered Zn
April 10, 1970		9.15	318.
December 8, 1970		-	355
December 17, 1970		99.9	98.6
December 18, 1972	1010 hrs	61	61
	1115 hrs	-	58
	1330 hrs	27	27

Their waste discharge permit #T-3954 which expired October 1, 1972, stipulated that concentrations of zinc in the effluent be less than 0.1 ppm. They are in obvious violation.

Station B-2 - Only one sample was taken from the discharge from metal cleaning area. There were 13.1 ppm zinc in this effluent.

Station B-3 - A sample taken in from standing water in the raw materials storage area (at the south section of the yard) had 2000 ppm dissolved zinc. To prevent runoff from entering the storm system, another storage technique should be used.

Station B-4 - A sample taken directly from the sump near the office had 68,000 ppm oils. The sump apparently had been pumped recently, and an oil sheen was observed being washed by the rain northeasterly across the main yard area to the catch basin in front of the shop door.

Advance Electroplating -

Station C - This was intended to be a control for the drainage from 8th street before being affected by Advance Electroplating, but some of their floor drains enter upstream.

Station D - This is the total discharge from Advance Electroplating and a small amount of storm water. Average flow was estimated by industrial personnel to be 72 gpm. Flow as determined with a "V" notch weir in the end of the pipe was 53 gpm @ 1205 hrs.

The following parameters indicate that at the time of sampling, Advance Electroplating was in violation of their Washington State Discharge Permit #T-3496.

Permit Condition#	Limitation	1205 hr Value	1340 hr Value
7A	Cn- = <.10 mg/l	.16*	.12*
7B	Cr = <.50 mg/l	.4	.8
7C	Zn = <.50 mg/l	1.8*	1.5*
7D	Cu = <.50 mg/l	1.2*	1.3*
7E	Ni = <.50 mg/l	1.5*	2.4*

*Violation

Salmon Creek -

Station E - Significantly more zinc exists in Salmon Creek which receives the effluents from Ace Galvanizing and Advance Electroplating than the tributary which is primarily storm and spring runoff.

Summary

1. Effluent Characteristics - The effluent from Ace Galvanizing contains excessive amounts of zinc. The minimum concentration of zinc in three samples collected from the direct discharge to storm sewer was 21 ppm. Maximum permissible limits were set at 0.1 ppm by their waste discharge permit. Concentrations of cyanide are significant enough to be included on their new permit.

The effluent from Advance Electroplating violated five of its permit conditions. It exceeded the established limits for cyanide, chromium, zinc, copper, and nickel.

2. Both of there effluents are entering state waters as evidenced by dye tracing. A more detailed report of the storm flow will be provided by Bill Burwell.

3. I am not sure what "process changes" have occurred at Ace Galvanizing but either the permit standards were established at an unreasonably low level, or the process changes were inadequate to allow permit compliance. The data indicate that concentrations of zinc have been reduced compared to previous surveys; however, gross concentrations are still being discharged. I have been aware of this problem for several years and if a survey were requested for enforcement action, I would be interested in participating.

Advance Electroplating was also violating permit conditions. Nickel concentrations were similar to prior sampling; zinc samples were somewhat higher.

MEMORANDUM

Department of Ecology

	Check
Information	
For Action	
Permit	
Other	

TO: Pete Hildebrandt, Ron Pine and Ron Devitt DATE: November 16, 1972

FROM: Bill Burwell BWB

SUBJECT: REQUEST FOR SURVEY, ACE GALVANIZING AND ADVANCE ELECTROPLATING

REFERENCE: Memo from Ron Devitt to Dave Nunnallee of May 6, 1970, "Advanced Electroplating and North West Galvanizing."

OBJECTIVE

1. To determine the characteristic of waste discharge from Ace Galvanizing (formerly Northwest Galvanizing) and from Advance Electroplating.
2. To determine if wastes are entering state water.
3. To determine the effect of process changes on discharge as compared to the survey reference above.

BACKGROUND

1. The above industries discharge directly to storm drains which flow to a small creek and eventually to the Duwamish River. See attached map.
2. Past surveys have indicated very high zinc content of effluent coming from Ace Galvanizing and unsatisfactory chromium, nickel and pH associated with Advance Electroplating.

ENTITY TO CONTACT

1. Tom Presleigh, president-general manager, Advance Electroplating
2. Dave Breiwick, Ace Galvanizing

EXPECTED RESULTS

Sample locations:

A. Above Ace Galvanizing, preferably between them and Advance's hard chrome shop, if possible, otherwise from highway runoff above;
B. Manhole at the north east corner of Ace Galvanizing;
C. Manhole upstream of Advance Electroplating;
D. Manhole at southeast corner of Advance, effluent from the plating operation;
E. Northwest (right) fork of stream flowing through Valley Auto Wrecking;
F. South (left) fork of stream flowing through Valley Auto Wrecking;
G. Left (south) discharge to manhole at the fence corner on 96th Street;
H. Right (north) discharge to manhole at the fence corner on 96th Street.

Sample required:

For all points sample for: flow, pH, temp, Zn, Cr, Cu, Cd, Ni and CN. Do not sample for flow at points E through N. Zinc determination should be made on filtered and unfiltered samples. Periodic sampling during the working day are requested at points B and D.

BB:mk
11-16-72

N
STORM SEWER
MH 1
CB 9
COOLING TANK
SUMP
GALVANIZING LINE
CB 1
CB 2
CB 7
CB 5
CB 3
OFFICE
OLD TANKS
PIPE TREATING
CB 4
CB 6

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