

June 13, 1974

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WA-34-1032

Memo to: Howard Buntin

From: Dan Glantz

Subject: Garfield STP Efficiency Study

On April 30, 1974, the writer conducted an efficiency study at the Garfield Sewage Treatment Plant. Composite sampling of influent and effluent commenced at 0800 and continued at one half hour intervals until 1500 hours. During this time, six coliform grab samples also were taken.

This plant suffered from severe flooding the past winter. Silver Creek, the receiving stream, experienced an ice jam causing back up over the entire plant site to a depth of two feet. The high water mark is still evident on the buildings. The cleanup is very mediocre and an unpleasant odor prevails.

It is immediately apparent the plant is not operating efficiently. Hydraulic load is heavy due to infiltration. The clarifier has considerable brown algae around the edges and heavy floc is prevalent in it's effluent, which flows partially to the chlorine treatment chamber and partially to the trickling filter unit. Incidentally, the filter discharges entirely into the influent well for recirculation to the clarifier. Sludge beds are overflowing and some of the excess has been spread in the back of the yard for lack of a proper disposal site elsewhere.

The lab results confirm the poor performance of the plant. Total coliform in excess of 40,000 and fecal coliform in excess of 4,000. Reduction is poor and although chlorine residual is high the remaining solids and floc in the effluent apparently are nullifying the intended effect.

DG:jmh

STP Survey Report Form

Efficiency Study

City Garfield Plant Type Secondary Pop. Served 600 Design 999
 Receiving Water Silver Creek Perennial X Intermittent _____
 Date 4-30-74 Survey Period 0800-1500 Survey Personnel D. Glantz
 Comp. Sampling Frequency 1/2 hr. Sampling Alequot 1000 ml (Adj. to flow)
 Weather Conditions (24 hr) Sunny, 70° Are facilities provided for complete by-
 pass of raw sewage? _____ Yes X No/Frequency of bypass Daily in winter
 Reason for bypass Sewer infiltration Is bypass chlorinated? _____ Yes _____ No X
 Was DOE Notified? No Discharge - Intermittent X Continuous _____

Plant Operation

Total flow 152,000 GPD How measured Parshall Flume (Chart)
 Maximum flow 291,000 GPD Time of Max. 0800-0900
 Minimum flow 100,000 GPD Time of Min. 1100
 Pre Cl₂ None #/day Post Cl₂ 5 #/day

Field Results

15 Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C	13.0	11		12.0	13.0	10.2		12.0
pH (Units)	7.3	7.0		7.1	7.3	7.2		7.2
Conductivity (µmhos/cm ²)	625	410		550	575	450		525
Settleable Solids (mls/l)	18.0	2.0	7.5	5.3	0.6	0.0	0.3	0.4

Laboratory Results on Composites

	Influent	Effluent	% Reduction
Laboratory No.	<u>74-1408</u>	<u>1409</u>	
5-Day BOD ppm	<u>55</u>	<u><40</u>	<u>27</u>
COD ppm	<u>83</u>	<u>63</u>	<u>24</u>
T.S. ppm	<u>399</u>	<u>345</u>	<u>14</u>
T.N.V.S. ppm	<u>238</u>	<u>217</u>	<u>9</u>
T.S.S. ppm	<u>55</u>	<u>22</u>	<u>60</u>
N.V.S.S. ppm	<u>15</u>	<u>13</u>	<u>13</u>
pH (Units)	<u>7.5</u>	<u>7.5</u>	
Conductivity (µmhos/cm ²)	<u>560</u>	<u>580</u>	
Turbidity (JTU's)	<u>30</u>	<u>15</u>	

Laboratory Bacteriological Results

Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual	
		Total Coliform	Fecal Coliform	Fecal Strep	15"	3 Min
74-1410	0800	>40,000	>4,000		0.3	0.5
11	0900	11,000	1,600		0.2	0.75
12	1000	>40,000	>4,000		0.3	1.0
13	1100	>40,000	>4,000		0.4	0.75
14	1200	>40,000	>4,000		0.4	0.75
15	1300	>40,000	est 4,000		0.4	0.75

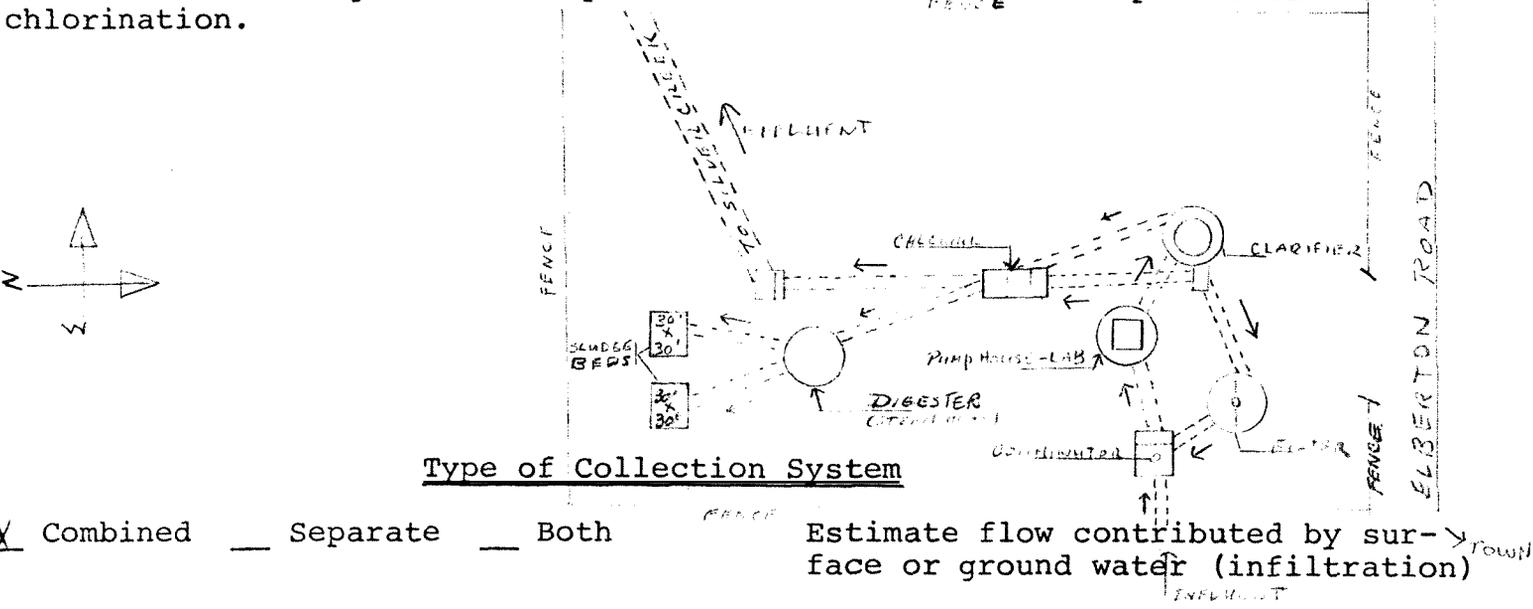
Additional Laboratory Results

NO ₃ -N ppm	-	3.10	
NO ₂ -N ppm	-	0.3	
NH ₃ -N ppm	-	2.35	
T. Kjeldahl-N ppm	-	3.8	
O-PO ₄ -P ppm	-	1.6	
T-PO ₄ -P ppm	-	3.18	

Operator's Name Wm. Houss

Phone No. 509-635-4485 or (4441)

Furnish a flow diagram with sequence and relative size and points of chlorination.



Type of Collection System

Combined Separate Both

Estimate flow contributed by surface or ground water (infiltration) _____

MGD

Plant Loading Information

Annual average daily flow rate (mgd) _____

Peak flow rate (mgd) _____

Dry _____

Dry _____

Wet _____

Wet _____

COMMENTS: Above information not available from operator.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: G. GLANTZ
COPIES TO:
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LAB FILES

DATA SUMMARY

Source GARFIELD STP

Collected By D.J. GLANTZ

Date Collected 4-30-74

Goal, Pro./Obj. _____

Log Number:	74-1408	09	10	11	12	13	14	15		STORET
Station:	1NF	EFF	0800	0900	1000	1100	1200	1300		
pH	7.5	7.5								00403
Turbidity (JTU)	30.	15.								00070
Conductivity (umhos/cm)@25C	560.	580.								00095
COD	83	63								00340
BOD (5 day)	55	<40								00310
Total Coliform (Col./100ml)	-	-	>410 ⁴	11,000	>410 ⁴	>410 ⁴	>410 ⁴	>410 ⁴		31504
Fecal Coliform (Col./100ml)	-	-	>4000	1600	>4000	>4000	>4000	4000 EST		31616
NO3-N (Filtered)		3.10								00620
NO2-N (Filtered)		0.3								00615
NH3-N (Unfiltered)		2.35								00610
T. Kjeldahl-N (Unfiltered)		3.8								00625
O-PO4-P (Filtered)		1.60								00671
Total Phos.-P (Unfiltered)		3.18								00665
Total Solids	399	345								00500
Total Non Vol. Solids	238	217								
Total Suspended Solids	55	22								00530
Total Sus. Non Vol. Solids	15	13								

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10³) prior to entry into STORET

Summary By Stephen P. Roll Date 5-13-74

TIME	CARFIELD STP TREATMENT				INLET FLOW	EFFLUENT					
	TEMP ^o	PH	COND	S.S.		TEMP ^o	PH	COND	S.S.	CL ₂	COLIF
0800	11 ^o	7 ^o	550	4.5	219,000	11 ^o	7 ^o	525	0.10	15" 0.3 3' 0.3	✓
0830	11 ^o	7 ^o	540		219,000	10 ^o	7 ^o	510			
0900	11 ^o	7 ^o	575	6.0	162,000	10 ^o	7 ^o	510	0.6	15" 0.2 3' 0.75	✓
0930	11 ^o	7 ^o	590		207,000	11 ^o	7 ^o	540			
1000	12 ^o	7 ^o	560	2.5	118,000	11 ^o	7 ^o	525	0.2	15" 0.3 3' 1.0	✓
1030	11 ^o	7 ^o	550		156,000	11 ^o	7 ^o	540			
1100	12 ^o	7 ^o	560	2.0	144,000	12 ^o	7 ^o	540	TR	15" 0.4 3' 0.75	✓
1130	12 ^o	7 ^o	575		144,000	11 ^o	7 ^o	525			
1200	12 ^o	7 ^o	550	12.0	156,000	12 ^o	7 ^o	575	0.4	15" 0.4 3' 0.75	✓
1230	12 ^o	7 ^o	625		162,000	12 ^o	7 ^o	460			
1300	12 ^o	7 ^o	540	18.0	162,000	12 ^o	7 ^o	525	TR	15" 0.4 3' 0.75	✓
1330	12 ^o	7 ^o	525		162,000	12 ^o	7 ^o	540			
1400	13 ^o	7 ^o	450		162,000	13 ^o	7 ^o	450		15" 0.3 3' 0.5	
1430	13 ^o	7 ^o	425		162,000	13 ^o	7 ^o	500			
1500	13 ^o	7 ^o	410		162,000	13 ^o	7 ^o	500		15" 0.3 3' 0.5	

WM. HOUSS - OPERATOR = 509-635-4485
 GENE BRADBE - CLERK