

WA-PS-0070

TO: Mike Price, Ron Robinson,
Ron Pine & Files

FROM: Jim Armstrong

SUBJECT: Westside Water District Sewage Lagoons

DATE: October 14, 1973

State of
Washington
Department
of Ecology



On Tuesday, September 18, 1973, an efficiency study was conducted at the Westside Water District near Tacoma, Washington. The survey lasted for seven hours, from 0930 hours to 1630 hours. Samples were taken every one half hour.

The grounds around the lagoon are well fenced but the number of warning signs is not adequate.

Composite samples were taken from the effluents of both the north and south ponds to compare reduction efficiencies.

Total flow was not recorded as there is no totalizer.

Average BOD reduction was 56%, total solids reduction was 21.5%.

Coliforms and chlorine residuals were taken from a manhole near the road that passes by the lagoons.

JA:jmh

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

City Westside Water DisPlant Type Lagoon Population 4929 Design 4929
 Served Capacity
 Receiving Water Puget Sound (Tacoma Narrows) Engineer Mike Price
 Date Sept. 18, 1973 Survey Period 0930-1630 hours Survey Personnel Jim Armstrong
 Comp. Sampling Frequency Every 1/2 hr. Weather Conditions Clear-warm.
 (last 48 hours)
 Sampling Alequot 500 mls.

PLANT OPERATION

Total Flow average flow for 7 hrs./ .2MGD How Measured V notch weir
 Max. (Flow) .2335 MGD Time of Max. 1000 to 1400 Min. .1618 MGD Time of Min. 1530
 Pre Cl₂ _____ #/day Post Cl₂ 15 #/day

FIELD RESULTS

Determinations	Influent				North Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	20.6	19.8	20.2	20.2	20.0	18.4	19.1	19.0
pH	7.8	7.4		7.6	7.4	7.2		7.4
Conductivity (umhos/cm)	950	600	696.7	650	700	700	700	700
Settleable Solids	14	9	12	13	1.5	1	1.8	1.5

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
		North Pond	
5-Day BOD	269	109	59
COD	490	280	43
T.S.	621	508	18
T.N.V.S.	319	285	11
T.S.S.	227	131	42
N.V.S.S.	29	19	34
pH	7.6	7.6	
Conductivity	750	750	
Turbidity	72	48	33

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

City Westside Water Displant Type Population Design
 Served Capacity

Receiving Water Engineer

Date Survey Period Survey Personnel

Comp. Sampling Frequency Weather Conditions
 (last 48 hours)

Sampling Alequot

PLANT OPERATION

Total Flow How Measured

Max. (Flow) Time of Max. Min. Time of Min.

Pre Cl₂ #/day Post Cl₂ #/day

FIELD RESULTS

Determinations	Influent				South Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	20.6	19.8	20.2	20.2	20.0	18.6	19.2	19.0
pH	7.8	7.4		7.6	7.4	7.3		7.4
Conductivity (umhos/cm)	950	600	696.7	650	700	650	693.3	700
Settleable Solids	14	9	12	13	<.1	<.1	<.1	<.1

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
		South Pond	
5-Day BOD	269	127	53
COD	490	210	57
T.S.	621	467	25
T.N.V.S.	319	278	87
T.S.S.	227	79	65
N.V.S.S.	29	7	86
pH	7.6	7.7	
Conductivity	750	730	
Turbidity	72	36	50

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

City Westside Water DisPlant Type _____ Population _____ Design _____
 Served _____ Capacity _____
 Receiving Water _____ Engineer _____
 Date _____ Survey Period _____ Survey Personnel _____
 Comp. Sampling Frequency _____ Weather Conditions _____
 (last 48 hours) _____
 Sampling Alequot _____

PLANT OPERATION

Total Flow _____ How Measured _____
 Max. (Flow) _____ Time of Max. _____ Min. _____ Time of Min. _____
 Pre Cl₂ _____ #/day Post Cl₂ _____ #/day

FIELD RESULTS

Influent

Effluent

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C								
pH								
Conductivity (umhos/cm)								
Settleable Solids								

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	% Reduction	% Reduction	% Reduction - Mean
	North Pond	South Pond	
5-Day BOD	59	53	56
COD	43	57	50
T.S.	18	25	21.5
T.N.V.S.	11	87	49
T.S.S.	42	65	53.5
N.V.S.S.	34	86	60
pH			
Conductivity			
Turbidity	33	50	41.5

BACTERIOLOGICAL RESULTS

Na₂S₂O₃ added to sample Before Sampling After _____ min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)	Cl Residual	
			ppm	(after secs)
73-3389	1021	<4,000		.75
73-3390	1321	<4,000		---
73-3391	1545	<4,000		---

Operator's Name _____ Phone # _____

Comments: _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO:
J. ARMSTRONG
COPIES TO:
.....
.....
LAB FILES

DATA SUMMARY

Source West Side W.D. Lagoons

Collected By J.A.

Date Collected 9-19-73

Goal, Pro./Obj. _____

Log Number:	73-3386	87	88	89	90	91					STORET
Station:	1NF	SOUTH EFF	NORTH EFF	1021	1321	1545					
pH	7.6	7.7	7.6								00403
Turbidity (JTU)	72.	36.	48.								00070
Conductivity (umhos/cm)@25°C	750.	730.	750								00095
COD	490	210	280								00340
BOD (5 day)	269	127	109								00310
Total Coliform (Col./100ml)	-	-	-	18,000	<10,000	<10,000					31504
Fecal Coliform (Col./100ml)	-	-	-	<4,000	<4,000	<4,000					31616
NO3-N (Filtered)											00620
NO2-N (Filtered)											00615
NH3-N (Unfiltered)											00610
T. Kjeldahl-N (Unfiltered)											00625
O-PO4-P (Filtered)											00671
Total Phos.-P (Unfiltered)											00665
Total Solids	621	467	508								00500
Total Non Vol. Solids	319	278	285								
Total Suspended Solids	227	79	131								00530
Total Sus. Non Vol. Solids	29	7	19								

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 D. Roll Date 10-9-73