

DEPARTMENT OF ECOLOGY

July 26, 1994

TO: Robert Barwin and Phelps Freeborn
Central Regional Office

THROUGH: Will Kendra *WK*
EILS Program, Watershed Assessments Section

FROM: Tapas Das *TD*
Watershed Assessments Section

SUBJECT: Wenatchee River Basin Class II Inspection at the City of Cashmere
Wastewater Treatment Plant

An announced Basin Class II inspection was conducted at the above facility on September 4-6, 1993. My original intent was to provide the usual inspection report. However, due to the recent reprogramming of Class II activities in EILS, it was necessary to abbreviate the reporting effort on some of my remaining projects. This transmittal memo summarizes the significant findings from my review of the inspection data (attached):

- The plant effluent met NPDES permit/Order limits for five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and flow during the inspection. However, effluent pH levels were higher than the permit limit. This was a permit violation.
- Fecal coliform counts in the effluent were 640 and 670 #/100 mL. If fecal counts remained at these levels throughout the week and month, then the weekly and monthly averages would have exceeded permit limits. The City should be chlorinating its effluent before discharge to the river.
- The permittee's overall laboratory performance as revealed by sample splits was acceptable, except for the effluent BOD₅ split. Performance evaluation standards be used during the next Class II inspection.
- Ecology's municipal influent sampler collected a weaker sample than the City's compositor. This was likely due to different sampler locations (Figure 2).
- Ecology's industrial influent sampler collected a much weaker sample than the City's compositor. This occurred because the City's sampler was in operation before Tree Top shut down for the weekend, whereas Ecology sampled somewhat later. The variable discharge of industrial effluent to the lagoons makes influent-effluent comparisons difficult.

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- The City's composite sample temperatures were much higher than the recommended 4°C. The coolers should be inspected and adjusted as necessary to provide better sample cooling.

I transferred to the Air Quality Program at Ecology HQ on June 27. If you have any questions concerning this memo, please contact Norm Glenn at 407-6683.

TD:blt
Attachments

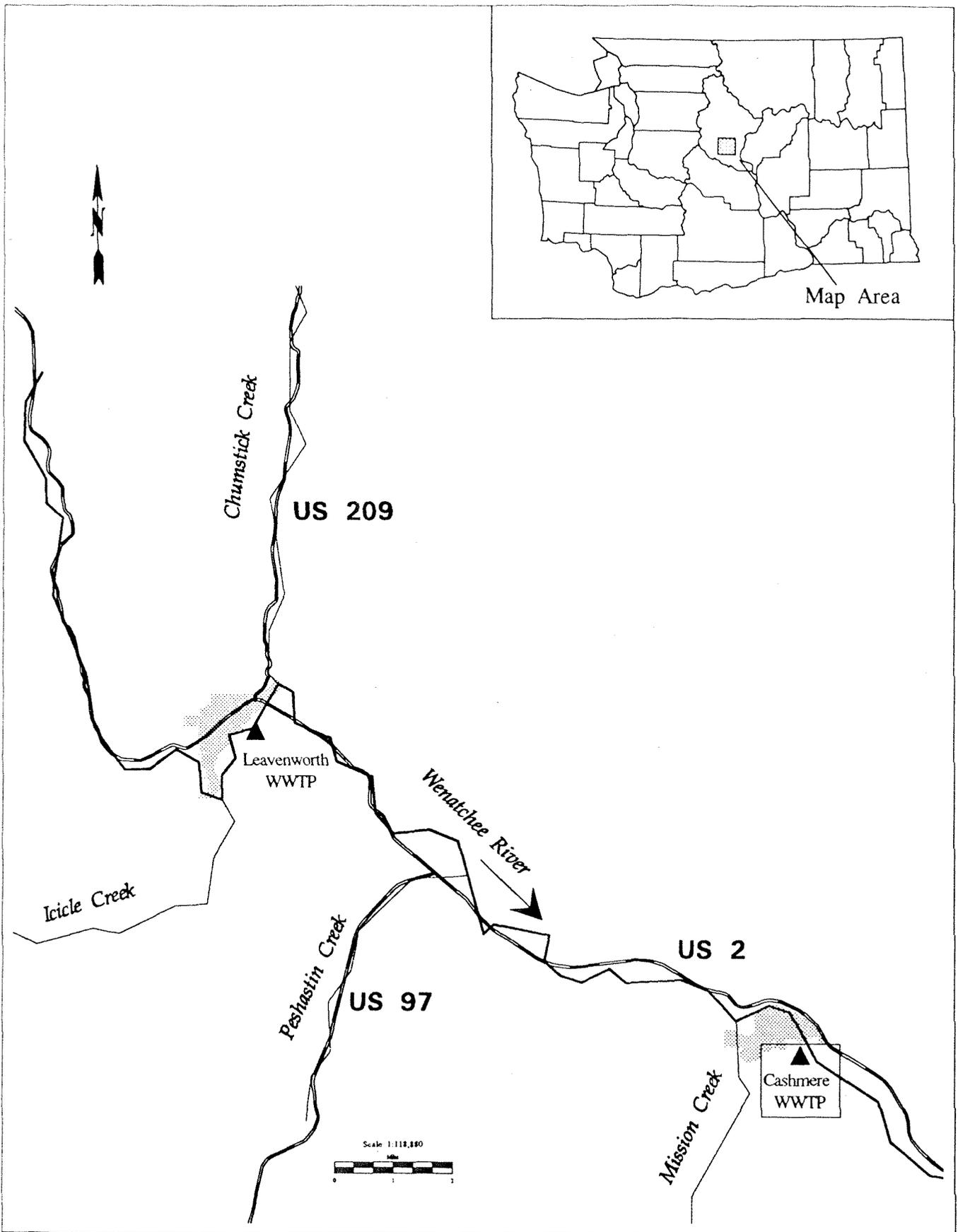


Figure 1. Locations of two WWTP s – Wenatchee River Basin Class II Inspections, 9/93

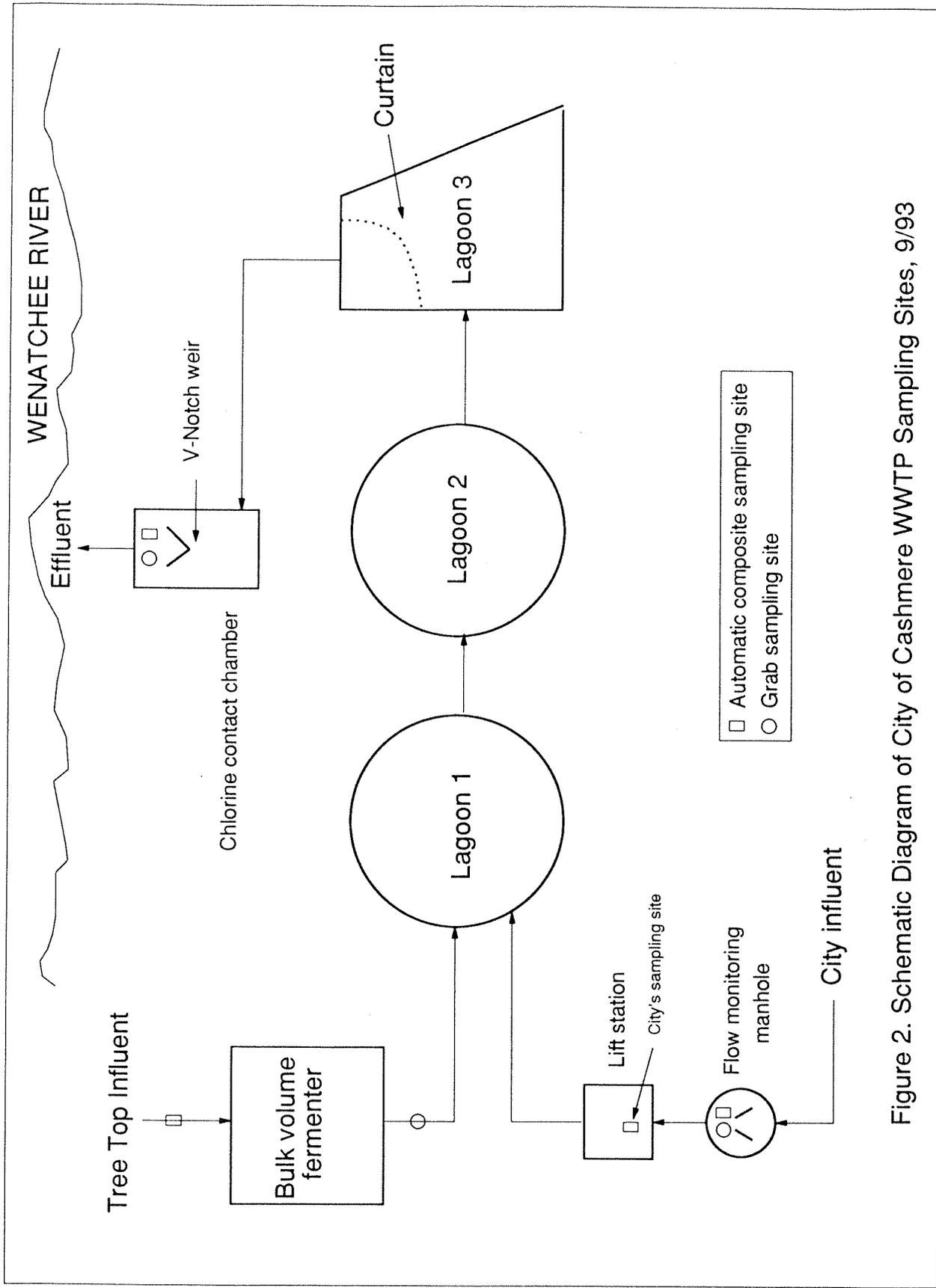


Figure 2. Schematic Diagram of City of Cashmere WWTP Sampling Sites, 9/93

Table 1. Analytical Methods and Laboratories, City of Cashmere WWTP -
Wenatchee River Basin Class II Inspections, 9/93

Parameter	Method*	Lab used
Turbidity	EPA, 1983: 180.1	Ecology; Manchester, WA
Chloride	EPA, 1983: 330.0	Ecology; Manchester, WA
Alkalinity	EPA, 1983: 310.1	Ecology; Manchester, WA
SOLIDS4		
TS	EPA, 1983: 160.3	Ecology; Manchester, WA
TNVS	EPA, 1983: 160.4	Ecology; Manchester, WA
TSS	EPA, 1983: 160.2	Ecology; Manchester, WA
TNVSS	EPA, 1983: 160.4	Ecology; Manchester, WA
BOD5	EPA, 1983: 405.1	Sound Analytical Services, Inc; Tacoma, WA
NUTRIENTS		
NH3-N	EPA, 1983: 350.1	Sound Analytical Services, Inc; Tacoma, WA
NO2+NO3-N	EPA, 1983: 300.0	Sound Analytical Services, Inc; Tacoma, WA
T-phosphorus	EPA, 1983: 365.1	Sound Analytical Services, Inc; Tacoma, WA
Ortho-phosphate	EPA, 1983: 300.0	Sound Analytical Services, Inc; Tacoma, WA
Total Kjeldahl nitrogen	EPA, 1983: 351.2	Sound Analytical Services, Inc; Tacoma, WA
Fecal coliform (MF)	APHA, 1989: 9222D	Ecology; Manchester, WA

* APHA, 1989. Standard Methods for the Examination of Water and Wastewater.
EPA, 1983. Methods for Chemical Analyses of Water and Waste.

Table 2. General Chemistry Results, City of Cashmere WWTP - Wenatchee River Basin Class II Inspections, 9/93
 (Composite sample results should be used with caution since sample temperatures were above the recommended 4°C.)

Parameter	Station:	BVF/In/E	BVF/In/CC	BVF-Out	Inf-E	Inf-CC	Eff-E	Eff-I	Eff-T
	Type:	comp	comp	grab	comp	comp	comp	grab	grab
	Date:	9/5-6	9/5-6	9/6	9/5-6	9/5-6	9/5-6	9/6	9/6
	Time:	0700-0700	UNK	1225	0700-0700	0700-0700	0700-0700	1150	1200
	Lab ID#3782:	-82	-86	-87	-83	-84	-85	-88	-89
Turbidity (NTU)		3.6	139	19	79	117	37	37	38
Chloride (mg/L)			46.6				75.3	78.3	76.2
Alkalinity (mg/L)		57	443	1,140	179	253	561	567	568
TS (mg/L)					539		929		
TNVS (mg/L)					241		598		
TSS (mg/L)		4	486	18	114	225	90	81	73
TNVSS (mg/L)					24		20		
BOD5 (mg/L)		74	780	15	230	280	63	56	68
NH3-N (mg/L)		<0.04	0.08	56	18+	22	0.53	1.1	1.1
NO2+NO3-N (mg/L)		<0.10	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
Total phosphate (mg/L)		0.13	2.1	21	5.6	8.7	5.8	6.4	6.9
Ortho-phosphate (mg/L)		0.07					4.3	4.6	4.5
TKN (mg/L)		0.67 J	3.3	52 J	30 J	46	11	8.9	10
F-Coliform MF (#/100 mL)								640	670

FIELD OBSERVATIONS

Flow (MGD)	0.034*	0.034*	0.034*	0.238*	0.238*	0.238*	0.373*		
Temperature (°C)	6.7+	16.9+	30.4	6.2+	9.2+	9.2+	4.6+	19.8	20.6
pH (S.U.)			6.7					9.2	9.5
Conductivity (µmhos/cm)	880	>1,000	>1,000	430	480	480	580	960	980

Eff - Effluent, Inf - City's sewer influent, E - Ecology sample, CC - City of Cashmere WWTP sample
 BVF/In - Wastewater from Tree Top influent to bulk-volume-fermenter (BVF), BVF/Out - Effluent from BVF to lagoon
 T - Ecology replicate sample.
 J - The analyte was positively identified; the associated numerical result is an estimate.
 UNK - Unknown.

* Flow was obtained from plant's totalizer for a 24-hour time period (9/5-6).
 + Iced composite sample.

Table 3. Comparison of Inspection Results to NPDES Permit/Order Limits – City of Cashmere WWTP – Wenatchee River Basin Class II Inspections, 9/93

MUNICIPAL EFFLUENT					
Effluent Parameter	NPDES Permit/Order Limits+				
	Monthly Average*	Weekly Average*			
BOD5 (mg/L)	30	45			
(lbs/day)	80	120			
TSS (mg/L)	75	113			
(lbs/day)	200	302			
Fecal Coliform (#/100 mL)	200	400			
pH (S.U.)	6.0 ≤ pH ≤ 9.0				
Flow (MGD)	0.573	0.762			
INDUSTRIAL WWTP EFFLUENT TO LAGOON					
Effluent Parameter	NPDES Permit/Order Limits+		Inspection Data & Derived Loading		
	Monthly Average*	Weekly Average*	Ecology Composite	Grab Samples	Derived Loading
BOD5 (mg/L)	480	762		15	
(lbs/day)	1,120	1,779			4
TSS (mg/L)	987	1,373		18	
(lbs/day)	2,305	3,206			5
Flow (MGD)	0.370	0.533	0.034		
COMBINED MUNICIPAL/INDUSTRIAL EFFLUENT DISCHARGE TO RIVER					
Effluent Parameter	NPDES Permit/Order Limits+		Inspection Data & Derived Loading		
	Monthly Average*	Weekly Average*	WWTP Composite	Grab Samples	Effluent Loading
BOD5 (mg/L)	240	380	63		
(lbs/day)	1,200	1,899			200
TSS (mg/L)	501	701	90		
(lbs/day)	2,505	3,508			280
Fecal coliform (#/100 mL)	200	400		650	
pH (S.U.)	6.0 ≤ pH ≤ 9.0			9.2;9.5	
Flow (MGD)	0.943	1.295	0.373		

* The monthly and weekly averages for BOD5 and TSS are based on the arithmetic mean of the sample taken. The averages for fecal coliform are based on the geometric mean of the samples taken.

+ Docket limits from Order DE 89–C373.

Table 4. Comparison of Sample Splits, City of Cashmere WWTP - Wenatchee River Basin Class II Inspections, 9/93

Station: Lab ID#: Date: Sampler:	BVF/In/E 378282 9/5-6 Ecology	BVF/In/CC 378286 9/5-6 CC	Inf-E 378283 9/5-6 Ecology	Inf-CC 378284 9/5-6 CC	Eff-E 378285 9/5-6 Ecology
Laboratory:	Ecology	WWTP	Ecology	WWTP	Ecology
	WWTP	WWTP	WWTP	WWTP	WWTP
BOD5 (mg/L)	74	72	230	280	63
TSS (mg/L)	4	10	114	225	90
		333	110	274	104

BVF/In - Wastewater from Tree Top to bulk-volume-fermenter, CC - Cashmere sample, E - Ecology sample,
 Inf - City's sewer influent, Eff - Combined effluent.