



# **Spokane River PCB Source Monitoring Follow-up Study November and December 1995**

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# **Spokane River PCB Source Monitoring Follow-up Study November and December 1995**

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July 1996

Water Body Nos. WA-57-1010, WA-54-1020

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# Abstract

Monitoring of several point sources believed to be contributing PCBs to the Spokane River was conducted in November and December 1995. The monitoring was a follow up to an investigation conducted during the summer of 1994. The three sources monitored were Liberty Lake Wastewater Treatment Plant, Kaiser Aluminum (Trentwood), and the Spokane Industrial Park.

Data from the Liberty Lake Wastewater Treatment Plant sludge indicate low levels of PCB-1248 in two of three samples with concentrations less than one tenth of the concentration from the single 1994 grab sample. Data from the Kaiser 001 discharge show PCB-1248 concentrations ranging from 0.025 µg/L to 0.034 µg/L, or 19% to 62% higher than in 1994. No PCBs were detected in Kaiser 002 effluent, compared with 1994 sampling which found PCB-1260. Two samples of Spokane Industrial Park wastewater showed PCB-1248 concentrations of 0.055 and 0.043 µg/L. No PCBs had been found in the Spokane Industrial Park wastewater in 1994. With the relatively high flow of the Kaiser outfall 001, the calculated PCB loadings from 1994 and 1995 sampling ranged from 1.7 g/day - 2.3 g/day over both years, more than 30 times the loadings from Kaiser outfall 002 in 1994 and SIP in 1995.

Remediation to remove PCBs from effluent and wastewater at Kaiser and the Spokane Industrial Park is recommended.

# Recommendations

- Periodic PCB monitoring of the discharge from the Kaiser 001 outfall should be continued.
- Kaiser should take steps to reduce the loading of PCB-1248 to the Spokane River from outfall 001.
- Sources of PCB contamination of the Spokane Industrial Park wastewater discharge should be eliminated to reduce discharges of PCBs to the city of Spokane wastewater collection system.

# Introduction

The objective of this study is to follow up an investigation of point source discharges for polychlorinated biphenyls (PCBs) into the Spokane River. The initial investigation was conducted by the Washington State Department of Ecology (Ecology) during the summer of 1994 (Ecology, 1995).

The Liberty Lake Wastewater Treatment Plant (WWTP) discharges to the Spokane River, water body number WA-57-1010. During the 1994 study, sludge samples from the Liberty Lake WWTP were collected and analyzed. PCBs were found in those sludge samples. Liberty Lake WWTP personnel report that subsequent testing of sludge found no PCBs. Further sampling and analysis of Liberty Lake sludges was carried out in this 1995 study for an independent assessment of any PCB contamination of Liberty Lake sludges (Figure 1).

Kaiser Aluminum (Trentwood) discharges to the Spokane River, water body number WA-57-1010. Spokane Industrial Park (SIP) discharges untreated wastewater to the city of Spokane wastewater collection system. The city of Spokane WWTP discharges to the Spokane River, water body number WA-54-1020. In 1994 effluent samples from Kaiser and wastewater samples from the SIP were collected and analyzed. Samples from these facilities from the same locations were again collected and analyzed in this 1995 study (Figure 2).

Kaiser was selected for sampling because PCBs had been found in the discharge in 1994 (Golding, 1994 - Table 1). SIP was selected for sampling because PCBs had been found in high concentrations in sludge from the SIP oxidation ditch (Golding, 1994; Davis and Yake, 1994 - Table 2). The oxidation ditch is no longer in operation.



# Procedures

The project took place in two phases:

1. Preliminary screening of Liberty Lake aerobic digester and sludge drying bed sludges for PCBs.
2. Sampling of Kaiser discharges to the Spokane River and the SIP discharge to the city of Spokane wastewater collection system.

A two-phased approach was adopted to give the study flexibility in investigating the Liberty Lake WWTP and possible sources of PCBs to the WWTP if PCBs were found in the first phase sampling effort. The 1994 Ecology summer investigation showed 4,400 mg/Kg-dry PCB-1248 in sludge from the plant's active aerobic digester. Liberty Lake reported that analytical results of samples of drying bed sludge taken in May 1995 showed no detected PCBs with a detection limit of 200 mg/Kg-dry for PCB-1248. Phase 1 sampling was more extensive than previous sampling to provide for an independent assessment of detectable PCB concentrations, if any, in Liberty Lake sludges.

Sampling for phase 1 was conducted November 1, 1995. Sampling for phase 2 was conducted December 5 and 6, 1995. The results of phase 1 analyses were to determine the need, if any, for further sampling of the Liberty Lake WWTP or industrial contributors to the Liberty Lake WWTP during phase 2.

A summary of sampling station descriptions and sampling procedures appears in Appendix A. Ecology analytical methods appear in Appendix B. Ecology field and laboratory QA/QC are summarized in Appendix C. Quality assurance cleaning procedures are included in Appendix D.

# Results and Discussion

## Phase 1

Liberty Lake sludge samples were collected on November 1, 1995. David T. Knight of the Ecology Eastern Regional Office carried out the phase 1 sampling effort. Results of PCB analyses for Liberty Lake aerobically digested sludge and sludge drying bed sludge appear in Table 3. No PCBs were detected in the composite digester sample at a detect limit of 1050 mg/Kg-dry. PCB-1248 was detected in the drying bed sludge samples at concentrations of 300 mg/Kg-dry and 220 mg/Kg-dry.

Sludge-1 was a sample of drying bed sludge from beds #11, 12, and 13. The age of the sludge in the beds ranged from the fall of 1994 to the spring of 1995. Sludge-2 was a sample of drying bed sludge from beds #5 - 9. The sludge age was 1 1/2 to 3 years old. These two samples were designed to represent the sludge sampled from an aerobic digester on August 3, 1994.

## Comparison of 1994 and 1995 Liberty Lake PCB Sludge Analyses

Sludge PCB results for the summer 1994 sampling of several sources, including Liberty Lake WWTP, appear in Table 2. A maximum of 300 mg/Kg-dry PCB-1248 among the three sludge samples collected in 1995 compares with 4,400 mg/Kg-dry resulting from the single sample of aerobic digester sludge collected in 1994. PCB-1248 in the 1995 Liberty Lake sludge samples was lower in concentration than the city of Spokane WWTP sludge (510 mg/Kg-dry) in 1994. With the exception of 140 mg/Kg-dry PCB-1260 at the Post Falls WWTP, no congeners other than PCB-1248 were found in any of the 1994 or 1995 sludge samples.

The November 1995 sampling was more extensive than the August 1994 sampling. The finding of low concentrations of PCB-1248 in the November 1995 samples suggests the high (4,400 mg/Kg-dry) PCB-1248 concentration in the single August 1994 sample was an anomaly. The 1995 results are considered more representative of PCB concentrations in the Liberty Lake sludge. Additional sampling at Liberty Lake in phase 2 was ruled out as phase 1 results showed low PCB concentrations in Liberty Lake sludge samples.

## Phase 2

Phase 2 of this study consisted of sampling Kaiser discharges to the Spokane River and the SIP discharge to the city of Spokane wastewater collection system. The samples were collected on two consecutive days. Results of the 1995 follow-up sampling are summarized and compared with 1994 sampling results in Table 4. Results of 1995 sampling are shown in Tables 5, 6, and 7.

Analyses for the four samples from the Kaiser 001 discharge for December 1995 show PCB-1248 concentrations from 19% to 62% higher than the single sample analysis from August 1994 (Table 4). The four sample analyses for Kaiser 002 for December 1995 show no PCBs. The single sample analyzed in 1994 showed 0.034 µg/L PCB-1260. It should be noted that the 1995 detection limits for 002 of 0.031 - 0.033 prevented the detection of low PCB concentrations (Table 6).

Detect limits for Kaiser 001 transfer blanks were approximately equal to the detected PCB-1248 concentrations (Table 5). This limited the usefulness of the transfer blanks in verifying that detected PCB was real and not an artifact of sampling and analysis. It should be noted, however, that PCB contamination of Ecology transfer blanks for the 1994 and 1995 studies has not been found.

PCB-1248 was detected on two consecutive days in the SIP wastewater (Table 7). No PCBs were detected in the 1994 wastewater (Table 1). The 1995 results and the historic presence of high concentrations of PCB in the SIP sludge suggests that some existing facilities within the SIP may remain contaminated. It may be that a contaminated facility was not discharging during the 1994 survey but was discharging during the 1995 survey.

Loadings of PCBs to the Spokane River from Kaiser and the SIP are shown in Table 8. With the relatively high flow of the Kaiser outfall 001, the calculated PCB loadings from 1994 and 1995 sampling, 1.7 - 2.3 g/day, were more than 30 times the 1995 SIP loadings.

There is no evidence of a significant reduction in PCB loadings being discharged since the summer 1994 monitoring study. It should be noted that while loadings from SIP were relatively low, less than 3% of the PCB-1248 loadings identified in this study, the concentrations of PCBs from SIP in 1995 were the highest of any sources sampled. Remediation to remove PCBs from effluent and wastewater at Kaiser and the SIP is recommended.

# References

Davis, D., and Yake, W., 1994. Memo to Carl Nuechterlein with attached tables, July 13, 1994.

Ecology, 1994. Laboratory User's Manual (Fourth Edition). Manchester Environmental Laboratory, Manchester, Washington.

Ecology, 1995. 1993-94 Investigation of PCBs in the Spokane River. Pub. # 95-310.

Golding, S., 1994. Memo to Carl Nuechterlein and Pat Hallinan with attached tables, December 22, 1994.

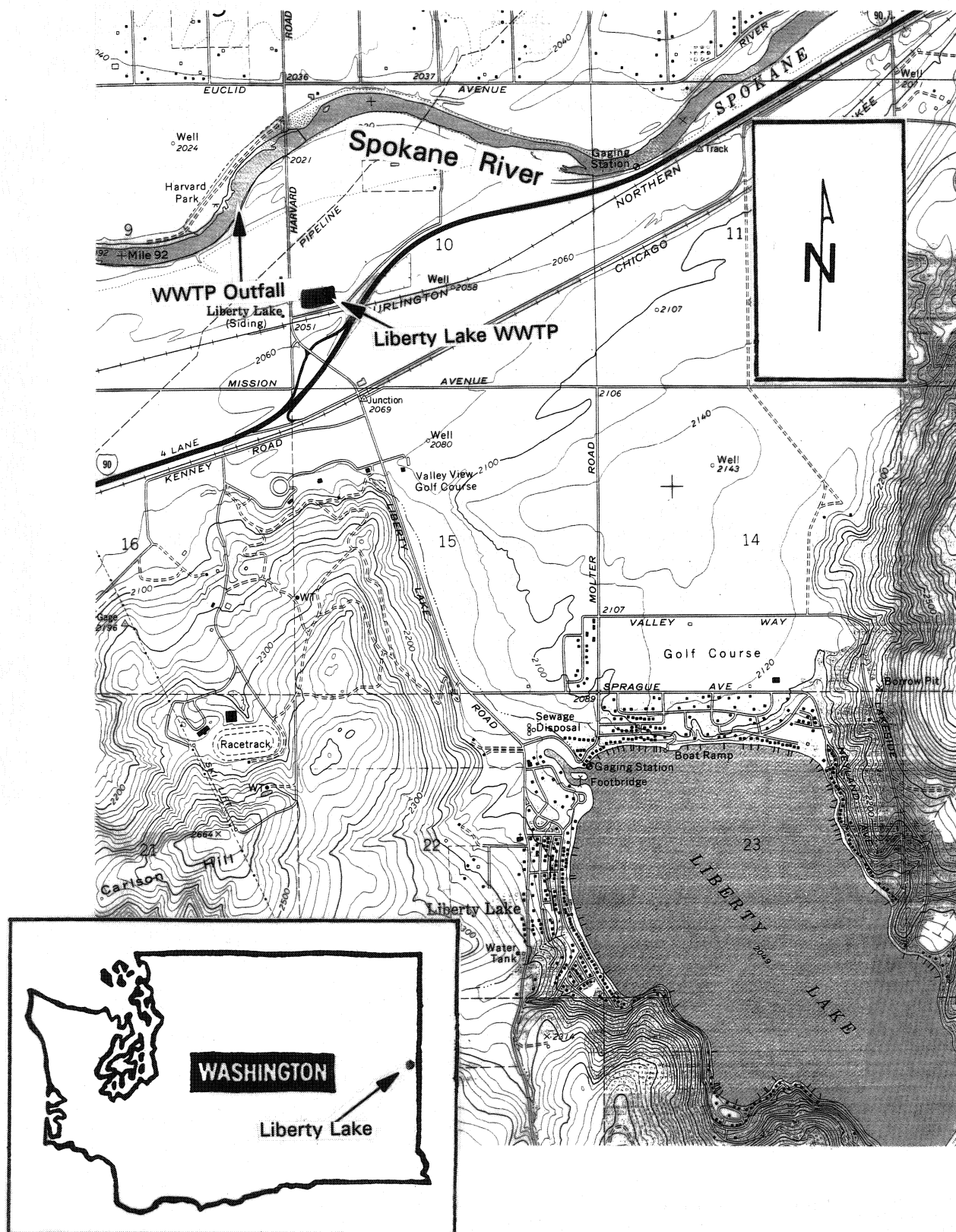


Figure 1 - Liberty Lake WWTP Location Map - Spokane River PCB Follow-Up, 1995.

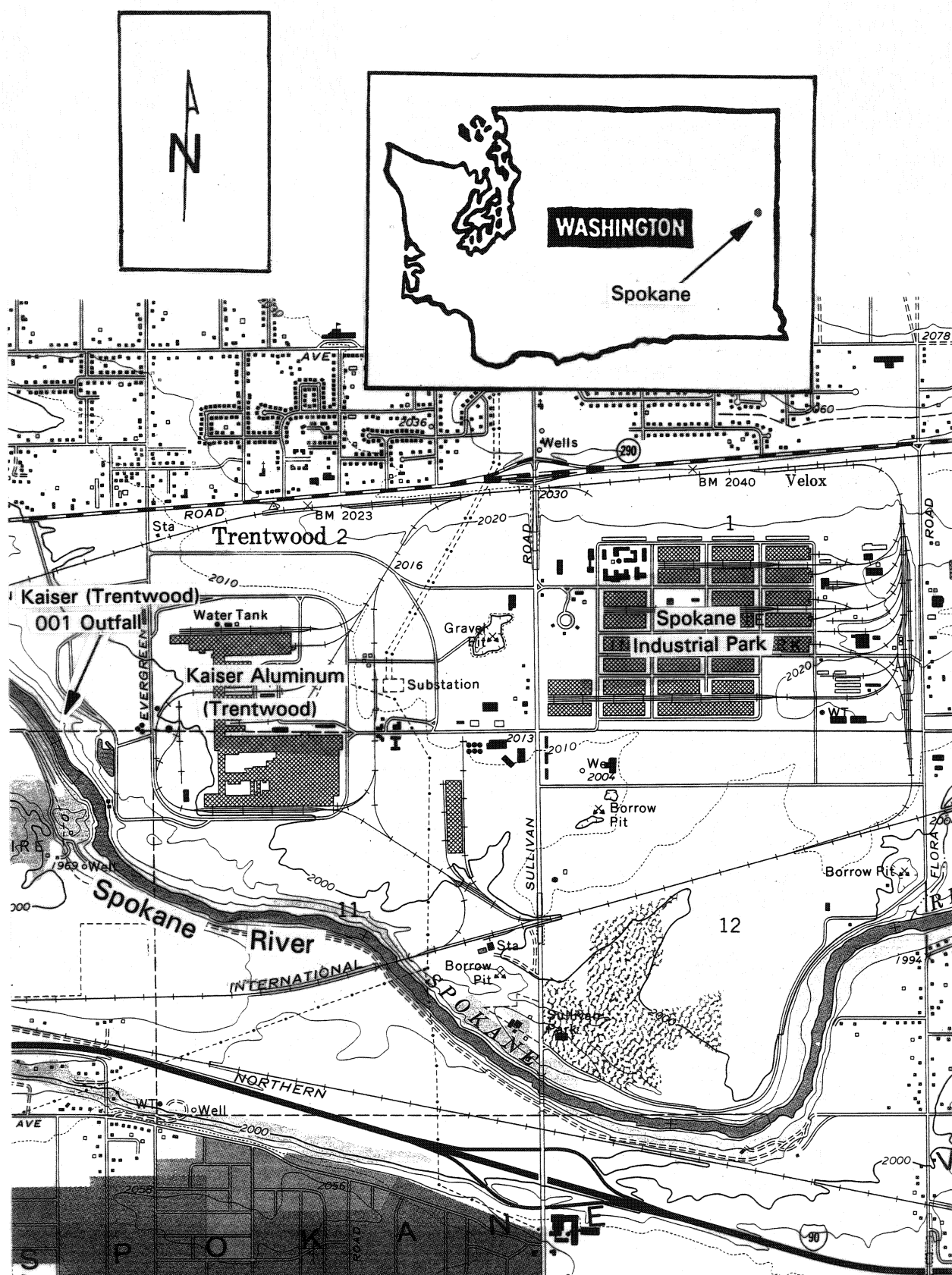


Figure 2 - Kaiser (Trentwood) and SIP Location Map - Spokane River PCB Follow-Up, 1995.

Table 1 - Spokane River PCB Contamination Investigation - Water Sample Results - July, August 1994.

Location:	Kaiser 001	Kaiser 002	SIP-1	SIP-3	Kaiser 001	SIP-1
Type:	grab	grab	grab	grab	transf blank	transf blank
Date:	8/1/94	8/1/94	7/31/94	8/4/94	08/01/94	7/31/94
Time:	1500	1520	1430	1250	1500	1430
Lab Log:	318155	318156	318157	318179	318153	318154
PCB - 1016 (ug/L)	0.009U	0.009U	0.009U	0.031U	0.009U	0.009U
PCB - 1221 (ug/L)	0.009U	0.009U	0.009U	0.031U	0.009U	0.009U
PCB - 1232 (ug/L)	0.009U	0.009U	0.009U	0.031U	0.009U	0.009U
PCB - 1242 (ug/L)	0.009U	0.009U	0.009U	0.031U	0.009U	0.009U
PCB - 1248 (ug/L)	0.021	0.009U	0.009U	0.031U	0.009U	0.009U
PCB - 1254 (ug/L)	0.009U	0.009U	0.009U	0.031U	0.009U	0.009U
PCB - 1260 (ug/L)	0.009U	0.034	0.009U	0.031U	0.009U	0.009U

TSS (mg/L)	2	3	22
TOC (mg/L)	3.4	1.6	13.9
Flow (MGD)	28.8		

Kaiser 001 - Kaiser Trentwood 001 effluent sample

Kaiser 002 - Kaiser Trentwood 002 effluent sample

SIP - Spokane Industrial Park effluent sample

Blank - field blank of distilled water collected before effluent samples were collected.

 - detected analyte

Table 2 - 1994 Spokane River PCB Investigation - PCB Solids Results - July, August 1994.

Station:	SIP-2	Spok-1	LibLk-1	Post Falls
Date:	07/31	08/02	8/03	8/10
Time:	1430	1430	1430	
Lab Log#:	318166	318169	318174	328407
PCB-1016 (ug/Kg-dry)	1720 U	210 U	340 U	63 U
PCB-1221 (ug/Kg-dry)	1720 U	210 U	340 U	63 U
PCB-1232 (ug/Kg-dry)	1720 U	210 U	340 U	63 U
PCB-1242 (ug/Kg-dry)	1720 U	210 U	340 U	63 U
PCB-1248 (ug/Kg-dry)	11000	510	4400	84
PCB-1254 (ug/Kg-dry)	1720 U	210 U	340 U	63 U
PCB-1260 (ug/Kg-dry)	1720 U	210 U	340 U	140
% solids	96.5	18.3	2.0	15

SIP-2 - Spokane Industrial Park sludge from inactive oxidation ditch

Spok-1 - City of Spokane WWTP sludge from belt filter press

LibLk - Liberty Lake STP sludge from aerobic digester

Post Falls - Post Falls STP sludge from belt filter press

- detected analyte



Table 3 - 1995 Spokane River PCB Follow-Up - Phase 1 Results - November, 1995.  
Liberty Lake Sludge Samples

Station:	Sludge-1	Sludge-2	Digester
Date:	11/01	11/01	11/01
Time:	1045	1100	1030
Lab Log#:	448080	448081	448082
PCB-1016 (ug/Kg-dry)	140 U	120 U	1050 U
PCB-1221 (ug/Kg-dry)	140 U	120 U	1050 U
PCB-1232 (ug/Kg-dry)	140 U	120 U	1050 U
PCB-1242 (ug/Kg-dry)	140 U	120 U	1050 U
PCB-1248 (ug/Kg-dry)	300	220	1050 U
PCB-1254 (ug/Kg-dry)	140 U	120 U	1050 U
PCB-1260 (ug/Kg-dry)	140 U	120 U	1050 U
% solids	31.4	33.6	2.30
% volatile solids	21.3	23.0	1.70
TOC	180,000	190,000	290,000

Sludge-1 - Grab-composite sample of sludge from drying beds 11, 12, 13. Sludge age ranged from fall 1994 to spring 1995.

Sludge-2 - Grab-composite sample of sludge from drying beds 5-9. Sludge age ranged from 1 1/2 to 3 years old.

Digester - Grab-composite sample from the two aerobic digesters. Both digesters were operating.

- detected analyte

Table 4 - Comparison of 1994 Spokane River PCB Results with 1995 Results.

	1994		1995	
<u>Liberty Lake</u> Digester Sludge Drying Bed Sludge	PCB-1248 (ug/Kg-dry)	PCB-1260 (ug/Kg-dry)	PCB-1248 (ug/Kg-dry)	PCB-1260 (ug/Kg-dry)
	4,400	--	<1,050	--
	--	--	300; 220	--
<u>Kaiser (Trentwood)</u> 001 Outfall	PCB-1248 (ug/L)	PCB-1260 (ug/L)	PCB-1248 (ug/L)	PCB-1260 (ug/L)
	0.021	--	0.029; 0.034; 0.025; 0.029	--
	--	0.034	--	<0.032; <0.033; <0.033; <0.031
<u>Spokane Industrial Park</u> Wastewater discharge	<0.009; <0.031	--	0.055; 0.043	--
	Only PCB congeners detected are shown.			

Table 5 - 1995 Spokane River PCB Follow-Up, Kaiser Trentwood 001 - Effluent Sample Results, December 1995.

Location:	K-001A	KD-001A	K-001B	KD-001B	TRN001A	TRN001B
Type:	grab	grab	grab	grab	grab	grab
Date:	12/5/95	12/5/95	12/6/95	12/6/95	12/5/95	12/06/95
Time:	0945	0945	0935	0935	0945	0935
Lab Log:	488155	488156	488160	488161	488165	488168
PCB - 1016 (ug/L)	0.016U	0.025U	0.016U	0.016U	0.034U	0.032U
PCB - 1221 (ug/L)	0.016U	0.025U	0.016U	0.016U	0.034U	0.032U
PCB - 1232 (ug/L)	0.016U	0.025U	0.016U	0.016U	0.034U	0.032U
PCB - 1242 (ug/L)	0.016U	0.025U	0.016U	0.016U	0.034U	0.032U
PCB - 1248 (ug/L)	0.029	0.034	0.025	0.029	0.034U	0.032U
PCB - 1254 (ug/L)	0.016U	0.025U	0.016U	0.016U	0.034U	0.032U
PCB - 1260 (ug/L)	0.016U	0.025U	0.016U	0.016U	0.034U	0.032U

TOC (mg/L)

2.1

2.5

2.1

2.1

TSS (mg/L)

1J

1UJ

1J

1UJ

Oil &amp; Grease (mg/L)

2

2

1

1

001 flow reported by Kaiser as 17.9 MGD 12/5/95; 18.1 MGD 12/6/95

001 - Kaiser Trentwood 001 effluent sample

K - Kaiser Trentwood

D - Duplicate sample

TRN - transfer blank of distilled water collected before effluent samples were collected.

A - sample A

B - sample B

U - The analyte was not detected at or above the reported value.

J - The numerical result is an estimate.

UJ - The analyte was not detected at or above the reported estimated value.

 - analyte detected

Table 6 - 1995 Spokane River PCB Follow-Up, Kaiser Trentwood 002 - Effluent Sample Results, December 1995.

Location:	K-002A	KD-002A	K-002B	KD-002B	TRN002A	TRN002B
Type:	grab	grab	grab	grab	grab	grab
Date:	12/5/95	12/5/95	12/6/95	12/6/95	12/5/95	12/06/95
Time:	1030	1030	1010	1010	1030	1010
Lab Log:	488157	488158	488162	488163	488166	488169
PCB - 1016 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U
PCB - 1221 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U
PCB - 1232 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U
PCB - 1242 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U
PCB - 1248 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U
PCB - 1254 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U
PCB - 1260 (ug/L)	0.032U	0.033UJ	0.033U	0.031U	0.032U	0.033U

TOC (mg/L)	251J	253J	255J	258J
TSS (mg/L)	5J	4J	2J	6J
Oil & Grease (mg/L)	15	16	43	28

002 flow reported by Kaiser as 0.112 MGD 12/5/95; 0.109 MGD 12/6/95

#### 002 - Kaiser Trentwood 002 effluent sample

K - Kaiser Trentwood

TRN - transfer blank of distilled water collected before effluent samples were collected.

A - sample A

B - sample B

U - The analyte was not detected at or above the reported value.

J - The numerical result is an estimate.

UJ - The analyte was not detected at or above the reported estimated value.

Table 7 - 1995 Spokane River PCB Follow-Up, Spokane Industrial Park - Wastewater Sample Results - December 1995.

Location:		SIPA	SIPB	TRNSIPA
Type:	grab	grab	grab	grab
Date:	12/5/95	12/6/95	12/5/95	12/5/95
Time:	1150	1100	1150	1150
Lab Log:	488159	488164	488167	488167
PCB - 1016 (ug/L)	0.024U	0.031U	0.032UJ	
PCB - 1221 (ug/L)	0.024U	0.031U	0.032UJ	
PCB - 1232 (ug/L)	0.024U	0.031U	0.032UJ	
PCB - 1242 (ug/L)	0.024U	0.031U	0.032UJ	
PCB - 1248 (ug/L)	0.055	0.043	0.032UJ	
PCB - 1254 (ug/L)	0.032U	0.031U	0.032UJ	
PCB - 1260 (ug/L)	0.024U	0.031U	0.032UJ	
TOC (mg/L)	32.7	24.0		
TSS(mg/L)	195J	66J		

Flows were not measured. A study conducted for SIP from Dec. 19, 1995 - Jan. 18, 1996 was reported to have found average daily flow of 254,831 gpd; 381,344 gpd max; 104,794 gpd min.

SIP - Spokane Industrial Park effluent sample

TRN - transfer blank of distilled water collected before effluent samples were collected.

A - sample A

B - sample B

U - The analyte was not detected at or above the reported value.

J - The numerical result is an estimate.

UJ - The analyte was not detected at or above the reported estimated value.

- detected analyte

Table 8 - Comparison of 1994 and 1995 Concentrations and Loadings of PCB Aroclors Detected

	1994	1995
<u>Kaiser Trentwood</u>		
001 Outfall		
PCB-1248 Concentrations (ug/L)	0.021	0.025 - 0.034
Flow (MGD)	28.8	18.0
PCB-1248 Loading (g/day)	2.3	1.7 - 2.3
002 Outfall		
PCB-1260 Concentrations (ug/L)	0.034	<0.031
Flow (MGD)	0.145	0.110
PCB-1260 Loading (g/day)	0.019	<0.013
<u>Spokane Industrial Park</u>		
PCB-1248 Concentrations (ug/L)	<0.009	0.055;0.043
Flow (MGD)	unknown	0.255 est.
PCB-1248 Loading (g/day)	--	0.042 - 0.053



## **Appendices**





Appendix A - Sampling Station Descriptions and Sampling Procedures  
- Spokane River PCB Follow-Up Study, 1995.

**Phase 1**

Liberty Lake WWTP

Digester sludge sample (Digester)

The sample was a composite from the aerobic digesters, both of which were in operation. A teflon cup mounted on a pole was dipped into the digesters to obtain samples and the samples were combined into a composite sample. The sludge in the digesters was 60 to 120 days old.

Drying bed sample #1 (Sludge-1)

The sample was a composite of sludge from drying beds 11, 12, and 13. These were the drying beds from which Liberty Lake had analysed a composite sample taken in May 1995. The age of the sludge ranged from the fall of 1994 to the spring of 1995. Sludge from each drying bed was scooped directly into an 8-ounce organics-free jar and the contents of the three jars were composited.

Drying bed sample #2 (Sludge-2)

The sample was a composite of sludge from drying beds 5, 6, 7, 8, and 9. The sludge age ranged from 1 1/2 to 3 years old. Dried sludge was collected in 8-ounce organics-free jars and composited.

**Phase 2**

Kaiser (Trentwood)

Outfall 001 (K001A, KD001A, K001B, KD001B)

The samples were obtained from the overflow structure by dipping a priority-pollutant cleaned stainless steel beaker mounted on a pole into the effluent. The beaker was dedicated to sampling from outfall 001 and it was rinsed four times before sampling. The oil and grease sample jars were dipped directly in effluent.

Outfall 002 (K002A, KD002A, K002B, KD002B)

The samples were obtained from the effluent box by dipping a priority-pollutant cleaned stainless steel beaker mounted on a pole into the effluent. The beaker was dedicated to sampling from outfall 002 and it was rinsed four times before sampling. The oil and grease sample jars were dipped directly in effluent.

Spokane Industrial Park (SIP)

Wastewater to City of Spokane collection system (SIPA, SIPB)

The SIP wastewater was obtained from a manhole on the median of Sullivan Road north of the bridge over the Spokane River, south of the park and ride lot adjacent to

Sullivan Road. The samples were obtained by dipping a priority-pollutant cleaned stainless steel beaker mounted on a pole into the wastewater stream. The beaker was dedicated to sampling SIP wastewater and was rinsed four times before sampling.

## Appendix B - Ecology Analytical Methods - Spokane River PCB Follow-Up, 1995.

Laboratory Analysis	Method Used for Ecology Analysis	Laboratory Performing Analysis
TSS	EPA, Revised 1983: 160.2	Ecology Manchester Laboratory
TOC (water)	EPA, Revised 1983: 415.1	Ecology Manchester Laboratory
Oil and Grease (water)	EPA, Revised 1983: 413.1	Ecology Manchester Laboratory
PCB	EPA,, 1986: 8080	Ecology Manchester Laboratory

Appendix C - Quality Assurance/Quality Control (QA/QC) - Spokane River PCB Follow-Up, 1995.

## **SAMPLING QA/QC**

Ecology quality assurance procedures for sampling included cleaning for priority pollutants of the sampling equipment prior to the sampling to prevent sample contamination (Appendix C). Chain-of-custody procedures were followed to assure the security of the samples (Ecology, 1994).

## **LABORATORY QA/QC**

### **Phase 1: Liberty Lake**

#### General Chemistry Analyses

Method blanks show that the TOC samples are free from contamination. All TOC check standards recoveries were within +/- 20% of expected values. The Relative Standard Deviation (RSD) of a triplicate TOC sample was within 5%.

#### PCB Analyses

The samples were extracted and analyzed within the method holding times. No analytes of interest were detected in the method blanks. Initial calibration was within acceptable limits for all target analytes. Continuing calibration was within acceptable limits. Surrogate recoveries were within acceptable ranges.

### **Phase 2: Kaiser (Trentwood) and SIP**

#### General Chemistry Analyses

Analysis of all parameters was performed within all applicable EPA holding times except for total suspended solids. Five samples were analyzed one day over holding time and five were analyzed two days over holding time. Four of the TOC samples were qualified with a "J" qualifier due to the particulate matter of these samples.

Where applicable, instrument calibration was performed before each analytical run and checked by initial calibration verification standards. All initial and continuing calibration verification standards were within the relevant control limits of +/- 10%. The procedural blanks associated with all parameters showed no analytically significant levels of analytes.

The Relative Percent Differences (RPD) for all duplicate analysis parameters were within their acceptance windows. Laboratory control sample (LCS) analyses were within their acceptance windows.

#### PCB Analyses

The samples were extracted and analyzed within the method holding times. No analytes of interest were detected in the method blanks. Initial calibration was within acceptable limits for all target analytes. Continuing calibration was within acceptable limits. Surrogate recoveries were within the recommended range of 50% to 150% with two exceptions. The recoveries for KD-002A and TRNSIPA were 48% and 47% respectively. No compounds of interest were detected in these two samples. Results for these two samples have been qualified with "UJ". Recoveries and precision data are reasonable and acceptable.

Appendix D - Priority Pollutant Cleaning Procedures - Spokane River PCB Follow-Up, 1995.

**PRIORITY POLLUTANT SAMPLING EQUIPMENT CLEANING PROCEDURES**

1. Wash with laboratory detergent
2. Rinse several times with tap water
3. Rinse with 10% HNO<sub>3</sub> solution
4. Rinse three (3) times with distilled/deionized water
5. Rinse with high purity acetone
6. Rinse with high purity hexane
7. Allow to dry and seal with aluminum foil