

Division of Water

CITY OF LOCKPORT SEWER SYSTEM

PCB TRACKDOWN PROJECT

1998 - 2000

DRAFT SUMMARY REPORT

October 2001

New York State Department of Environmental Conservation

**City of Lockport Sewer System PCB Trackdown  
Project 1998 - 2000 Draft Summary Report October  
2001**

**Overview**

The goal of the City of Lockport sewer system PCB trackdown was to determine if there are active sources of PCBs discharging to either Eighteenmile Creek or the Barge Canal through the sewer system. This undertaking was a commitment incorporated in the Eighteenmile Creek Remedial Action Plan. Sediment sampling in the creek and the canal at the time of the development of the Remedial Action Plan indicated the presence of PCBs. Remediation of PCB contaminated sediments would require the control of ongoing active sources of PCBs.

The City of Lockport sewer system consists of two major interceptors which convey wastewater to the treatment plant. The Gulf Interceptor serves the Northwest section of the City and conveys wastewater to the plant along the Gulf. The remainder of the city is served by the Main Interceptor, which runs along the NY Barge Canal and Eighteenmile Creek. The Main Interceptor receives flow from a number of interceptor trunk sewers, which serve various sections of the city.

**Methods**

A systematic Passive In-Situ Chemical Extraction Sampler (PISCES) sampling approach was undertaken to identify potential source areas of PCBs within the sewer system. Sampling was conducted at the major inflow points to the Main Interceptor plus the Main Interceptor and the Gulf Interceptor. Follow-up confirmatory sampling was undertaken in selected areas of the system utilizing both PISCES and whole water samples. PISCES samplers are efficient for track-down sampling but provide only semi-quantitative data. For this reason the PISCES sampling was complimented with whole water samples. PISCES samplers were placed in the sewer system for a period of about two weeks. The whole water samples were grab samples of the wastewater flow. The analytical method for both the PISCES samples and the whole water samples was USEPA Method 1668.

The sampling was conducted in three rounds from 1998 to 2000. The sampling plan for each successive round was developed based on the results of the preceding sampling. The initial sampling consisted of PISCES samples at 23 sites which were located throughout the collection system. The second round consisted of nine whole water samples. The third round employed PISCES samplers at 17 sites.

## **Results**

The results of the sampling from Rounds One, Two and Three in 1998, 1999, and 2000, respectively, are summarized in Tables One, Two and Three. Sample locations are presented in Figures 1A and 1B. Additionally, charts of the homolog distributions (which illustrate the makeup of the PCBs detected in the samples) for various sites are contained in Figures 2 through 8.

Sites where elevated PCBs were indicated during the initial sampling in 1998 were Prospect Street at Stevens Street (98-2), Ohio Street (98-4), Main Interceptor at Water Street (98-18) and North Transit North of Eighteenmile Creek (98-20). These sites are discussed as follows.

### **Prospect Street at Stevens Street**

This sampling site is located on Prospect Street at its intersection with Stevens Street. The PISCES sample (98-2) collected in Round One in 1998 indicated a PCB concentration of 1.5 ug/l. The sample included flow from the Prospect Street sewer and the Stevens Street North sewer which serve residential, commercial and industrial users. This flow discharges into the Main Interceptor at the Prospect Street juncture along with flow from the Stevens Street South sewer and the Southwest Interceptor (Figure 1B). The Prospect Street sewer receives residential flow from Prospect Street and side streets and flow from Reid Petroleum, a petroleum distribution facility. The Stevens Street sewer receives residential flow from Stevens Street and side streets as well as flow from a sewer which services the industrial and commercial area in the Ohio Street area.

The Stevens Street North sample (98-3) indicated a PCB concentration of 0.0045 ug/l with a homolog distribution that was somewhat similar to that of the Prospect Street at Stevens Street sample (Figure 2).

Round Two (1999) included two whole water follow-up sample sites in the Prospect Street and Stevens Street area. These samples were taken at Prospect Street and Reid Petroleum (99-1) and at the next manhole upstream at Prospect Street and Windsor Street (99-2). The PCB concentration at site 99-1 was 0.019 ug/l in Sample A and 0.023 ug/l in Sample B. Samples A and B are separate samples taken at the same location. The PCB concentration at site 99-2 was 0.020 ug/l in Sample A and 0.012 ug/l in Sample B. Homolog distributions are shown in Figure 2.

During Round Three (2000) PISCES samples were collected at Prospect Street and Stevens Street (00-4) as well as Stevens Street North (00-2) and Prospect Street at Reid Petroleum (00-5). The results are indicated in Table 4. Homolog distributions are presented in Figure 2.



Table 2 Summary of Results from City of Lockport Sewer PCB Sampling (Whole

Site #	Sample Site Name	Water 99)		Congener Class											
		Total PCB Concentration	(ug/l) Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Deca			
99-1 A	Prospect St at Reid Petroleum	0.0190	2%	16%	18%	33%	19%	5%	6%	16%	20%	0%	0%	1%	1%
99-1 B	Prospect St at Reid Petroleum (Dup)	0.0230	2%	32%	18%	4%	15%	14%	14%	29%	18%	0%	0%	2%	1%
99-2 A	Prospect St at Windsor St	0.0200	1%	6%								2%	1%	0%	0%
99-2 B	Prospect St at Windsor St	0.0120	2%	12%	17%	15%	28%	17%	6%			3%	0%	0%	2%
99-3 A	Main Interceptor at Minard St	0.0150	0%	4%	10%	18%	33%	22%	10%	7%	20%	0%	0%	2%	0%
99-4 A	Main Interceptor at W. High St	0.0750	1%	23%	25%	15%	6%	8%	23%	28%	20%	0%	2%	0%	0%
99-5 A	Main Interceptor at Water St	0.0520	1%	10%	6%							0%	0%	0%	1%
99-6 A	Main Interceptor North of William St	0.0220	1%	11%	20%	28%	21%	12%	5%	7%	36%	0%	0%	0%	3%
99-7 A	N. Transit N. of Eighteenmile Creek	0.0077	0%	34%	11%	7%	3%	4%	35%	37%	10%	0%			
99-8 A	N. Transit S. of Mill St	0.0480	0%	8%	4%	4%	10%	15%	31%	26%	10%	0%			
99-9 A	Ohio 8t	0.0027	1%												

Table 3  
 Summary of Results from City of Lockport Sewer PCB Sampling (PISCES 2000)

Site #	Sample Site Name	Aqueous PCB Concentration (ug/l)	Congener Class									
			Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Dec
00-1	A Ohio St	0.0910	0%	1%	5%	19%	31%	29%	9%	4%	1%	0%
00-2	A Stevens St N011h	0.0150	3%	24%	35%	28%	- 6%	2%	1%	0%	0%	0%
00-3	A Southwest Interceptor	0.0064	1%	7%	30%	30%	19%	11%	3%	0%	0%	0%
00-4	A Prospect St at Stevens St	0.0250	3%	21%	33%	28%	9%	4%	1%	0%	0%	0%
00-5	A Prospect St at Reid Petroleum	0.0022	'	3%	10%	34%	16%	15%	16%	6%	1%	0%
00-6	A Stevens St South	0.0015	5%	11%	35%	16%	14%	14%	5%	0%	0%	0%
00-7	A Main Interceptor at Nicholls St	0.0040	1%	9%	33%	15%	20%	16%	5%	1%	0%	0%
00-8	A Main Interceptor at W. High St	0.1300	1%	9%	29%	36%	17%	5%	2%	1%	0%	0%
00-9	A Transit at Genesee St	0.0018	3%	7%	23%	14%	24%	20%	8%	1%	0%	0%
00-10	A Main St North Side	NA - Insufficient Sample										
00-11	A Main Interceptor at Church St	NA - Insufficient Sample										
00-12	A Richmond St at Niagara St	0.0330	3%	18%	26%	30%	14%	7%	1%	0%	0%	0%
00-13	A Main Interceptor at Water St	0.0047	11%	10%	20%	17%	24%	15%	3%	1%	0%	0%
00-14	A Mill St at Porter St	0.0017	2%	9%	32%	16%	15%	19%	7%	1%	0%	0%
00-15	A N. Transit N. of Eighteenmile Creek	0.0013	1%	0%	44%	33%	9%	9%	3%	0%	0%	0%
00-15	B N. Transit N. of Eighteenmile Creek	0.0021	2%	12%	40%	32%	6%	7%	3%	0%	0%	0%
00-16	A Mill St at N. Transit	0.0021	2%	23%	41%	17%	11%	6%	1%	0%	0%	0%
00-17	A N. Transit S. of Mill St	0.0054	1%	14%	41%	37%	5%	2%	1%	0%	0%	0%

Table 4  
ISCES Sampling for PCBs  
Prospect Street Area Round  
Three (2000)

<u>Site</u>	Site Name	PCBs ( <u>urdn</u> )
00-4	Prospect Street at Stevens Street	0.0250
00-2	Stevens Street North	0.0150
00-5	Prospect Street at Reid Petroleum'	0.0022

None of the samples showed PCB concentrations near the 1.5 ug/l at Prospect Street and Stevens Street in Round One (1998).

### **Ohio Street**

The Ohio Street area is served by the Southwest Interceptor and the Stevens Street sewers (Figure 1B). The Ohio Street PISCES sample (98-4) collected in Round One (1998) indicated a PCB concentration of 0.0004 ug/l in Sample A and 0.0640 ug/l in Sample B. A whole water sample taken in Round Two at the same location (99-9) indicated a PCB concentration of 0.0027 ug/l. A PISCES sample in Round Three at the same location (00-1) showed a PCB concentration of 0.091 ug/l. The homolog distribution of the two Round One samples (98-4A) and (98-4B) were substantially different (Figure 3). The two follow-up samples (99-9) and (00-1) also had different homolog distributions from the Round One samples but were similar to each other. In the two follow-up samples (99-9 and 00-1) pentachlorinated PCBs were the most prevalent.

A PISCES sample was collected in Round One East of Ohio Street (98-5). Sample A indicated a PCB concentration of 0.026 ug/l and Sample B indicated a concentration of 0.033 ug/l. The homolog distribution in both samples indicate tetrachlorinated PCBs were predominant which was also characteristic of the Prospect Street and Stevens Street sample (98-2) collected in Round One with a PCB concentration of 1.5 ug/l (Figure 3).

### **Main Interceptor**

PISCES sampling undertaken in the Main Interceptor during Round One at the Willow Price Interceptor (98-6), upstream of the Prospect Street juncture with the Main Interceptor indicated a PCB concentration of 0.026 ug/l in Sample A and 0.0081 ug/l in Sample B. The Round One sample from the Main Interceptor at West High Street (98-8), downstream of the Prospect Street juncture, indicated a PCB concentration of 0.0052 ug/l. The Main Interceptor at Water Street (98-18), Figure 1A, indicated a PCB concentration of 0.062 ug/l. Intermediate tributary sewer sampling, (while limited due to insufficient samples being collected by the PISCES units), did not indicate elevated PCB concentrations. The Round One homolog distributions at these locations are shown in Figure 4.

In Round Two, whole water samples in the Main Interceptor from above and below its intersection at Prospect Street showed an increase in PCB concentration from 0.015 ug/l at Minard Street (99-3) to 0.075 ug/l at West High Street (99-4). PCB concentrations decreased in the Main Interceptor at the downstream locations at Water Street (99-5) to 0.0520 ug/l and North of William Street (99-6) to 0.0220 ug/l. There was a difference in the homolog distribution above and below the Prospect Street juncture with the Main Interceptor, however, the homolog distributions were generally similar downstream (Figure 5).

PISCES sampling was undertaken in Round Three (2000) in the Main Interceptor. The PCB concentration above the Prospect Street juncture with the Main Interceptor at Nicholls Street

(00-7) was 0.0040 ug/l. Downstream of the Prospect Street juncture with the Main Interceptor at West High Street (00-8) the PCB concentration was 0.1300 ug/l. The PCB concentration decreased in the Main Interceptor at Water Street (00-13) to 0.0047 ug/l. The homolog distributions along the Main Interceptor varied (Figure 6).

The Prospect Street juncture with the Main Interceptor includes flow from the Prospect Street sewer, the Stevens Street South sewer and the Southwest Interceptor. PISCES sampling conducted in Round Three (2000) included the collection of data at the following locations which did not indicate elevated PCB levels entering the Main Interceptor at Prospect Street.

Table 5 PISCES Sampling for PCBs Sites Tributary to Prospect Street Juncture with the Main Interceptor Round Three (2000)

<u>Site</u>	Site Name	PCBs (ug/l)
00-3	Southwest Interceptor Prospect	0.0064
00-4	Street at Stevens Street Stevens	0.0250
00-6	Street South	0.0015

Homolog distributions at the above locations are presented in Figure 7. Tetrachlorinated PCBs were more prevalent in the Main Interceptor at West High Street than in the above three sewers tributary to the Prospect Street juncture with the Main Interceptor.

#### North Transit North of Eighteenmile Creek

The North Transit North of Eighteenmile Creek sample (98-20), Figure 1A, in Round One indicated 0.58 ug/l of PCBs. This sewer receives flow from Van DeMark Chemicals, Twin Lake Chemicals and Milward Alloys along with residential and commercial flow.



Follow-up whole water sampling was undertaken in Round Two at this site (99-7) and at a second site upstream on this sewer at North Transit South of Mill Street (99-8). These samples indicated PCBs of 0.0077 ug/l and 0.048 ug/l, respectively.

Additional PISCES sampling was undertaken in this area in Round Three. PISCES samplers were placed at North Transit North of Eighteenmile Creek (00-15), North Transit South of Mill Street (00-17) and at North Transit and Mill Street (00-16). These samplers indicated PCB concentrations of 0.0013 ug/l, 0.0054 ug/l and 0.0021 ug/l, respectively.

All of the samples had similar homolog distributions (Figure 8) with the exception that the North Transit and Mill St. (00-16) sample from Round Three (2000) had a somewhat greater portion of dichlorinated PCBs and a somewhat lesser proportion of tetrachlorinated PCBs. The Round One (1998) sample at North Transit North of Eighteenmile Creek (98-20) had a somewhat similar homolog makeup to the follow-up samples but contained more trichlorinated congeners than others.

## **Conclusions and Recommendations**

While the initial PISCES sample detection of 1.5 ug/l of PCBs at Prospect Street and Stevens Street (98-2) in Round One suggests the presence of a possible active source of PCBs, follow-up sampling in the Prospect Street and Stevens Street area in Rounds Two and Three, as discussed above, did not indicate elevated levels of PCBs as discussed above.

PISCES samples collected at Ohio Street (98-4) in Round One were conflicting with Sample A indicating a PCB concentration of 0.0004 ug/l and Sample B indicating 0.064 ug/l. A whole water sample collected in Round Two (99-9) indicated a low level of PCBs at 0.0027 ug/l. A PISCES sample in Round Three (00-1) indicated a PCB concentration of 0.091 ug/l. The flow from the Ohio Street area is tributary to the Prospect Street juncture with the Main Interceptor.

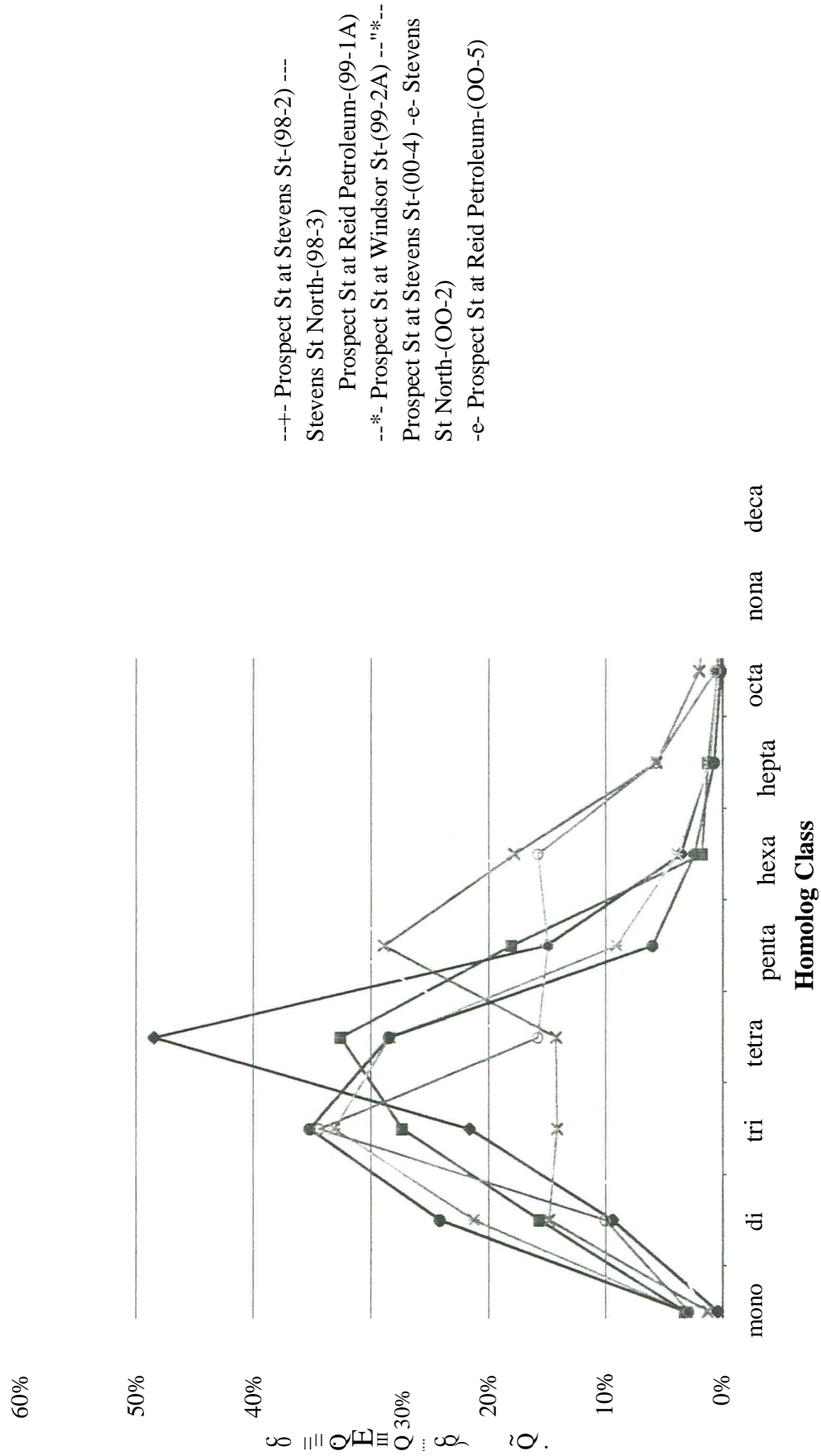
PISCES sampling in the Main Interceptor above Prospect Street in Round One at the Willow-Price Interceptor (98-6) indicated a PCB concentration of 0.026 ug/l in Sample A and 0.0081 ug/l in Sample B. PISCES sampling in the Main Interceptor below the Prospect Street juncture at W. High Street (98-8) indicated a PCB concentration of 0.0052 ug/l.

Whole water samples in Round Two in the Main Interceptor above and below the Prospect Street juncture indicated an increase in PCB concentration from 0.015 ug/l at Minard Street (99-3) to 0.075 ug/l at West High Street (99-4).

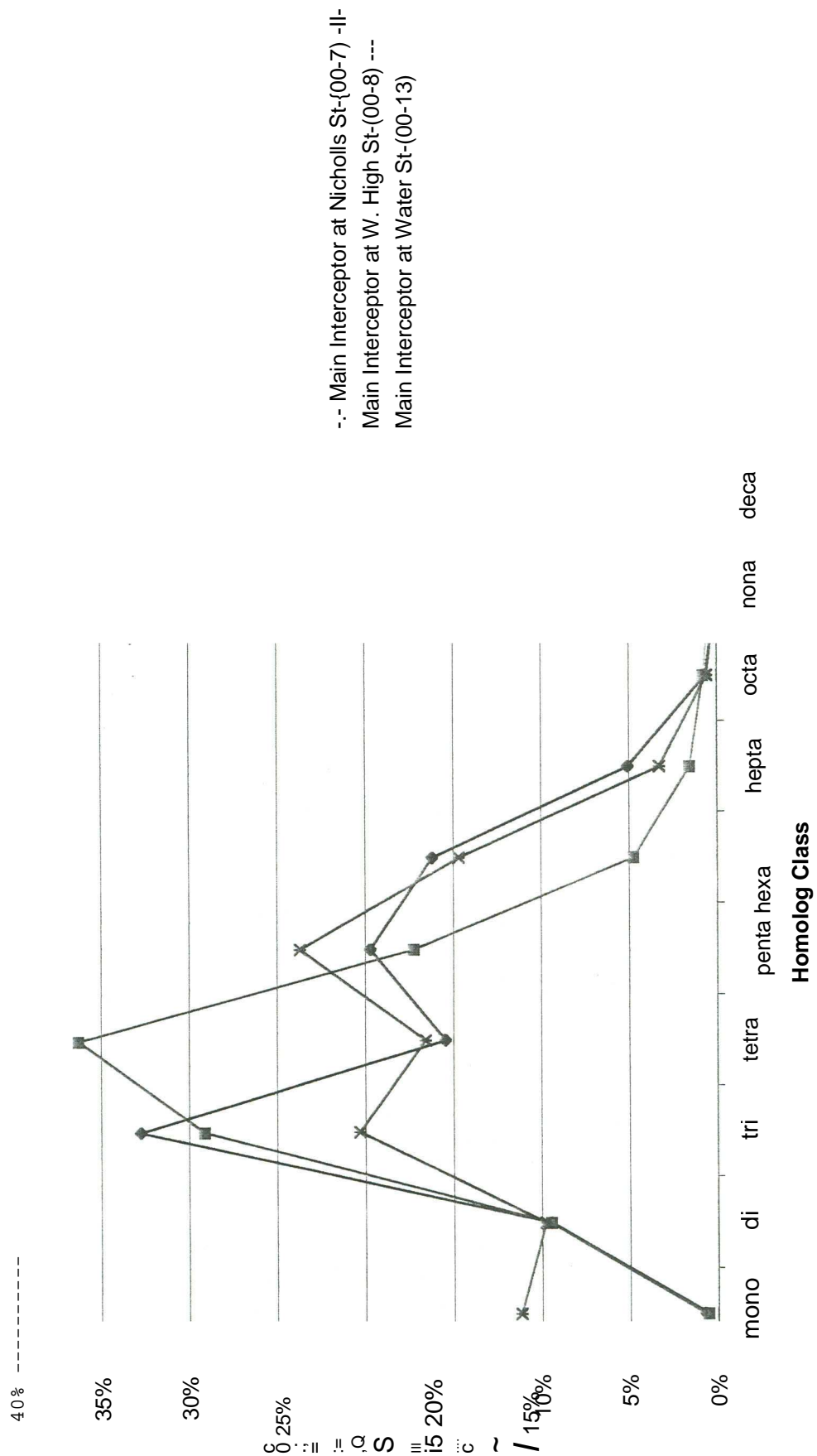
PICES sampling in Round Three in the Main Interceptor above and below the Prospect Street juncture indicated an increase in PCB concentration from 0.0040 ug/l at Nicholls Street (00-7) to 0.1300 ug/l at West High Street (00-8).

It is recommended that the City of Lockport in its ongoing assessment of combined sewer overflows monitor PCB concentrations at its overflow monitoring sites along the Main Interceptor including the Prospect Street overflow and undertake in-system trackdown monitoring for PCBs in the Ohio Street area.

**Figure 2 Prospect St and Stevens St Area PCB Homolog Distributions PISCES and Whole Water Sampling (1998-2000)**



**Figure 6 Main Interceptor Samples PCB Homolog Distributions PISCES Sampling (2000)**



**Figure 8 N. Transit St Area PCB Homolog Distributions PISCES and Whole Water Sampling (1998-2000)**

