St. Joseph County Health Department

"Promoting physical and mental health and facilitating the prevention of disease, injury, and disability for all St. Joseph County residents"

Evaluation of Blood-Lead Testing Statistics for St. Joseph County, 2003-2007

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1. Purpose and Process

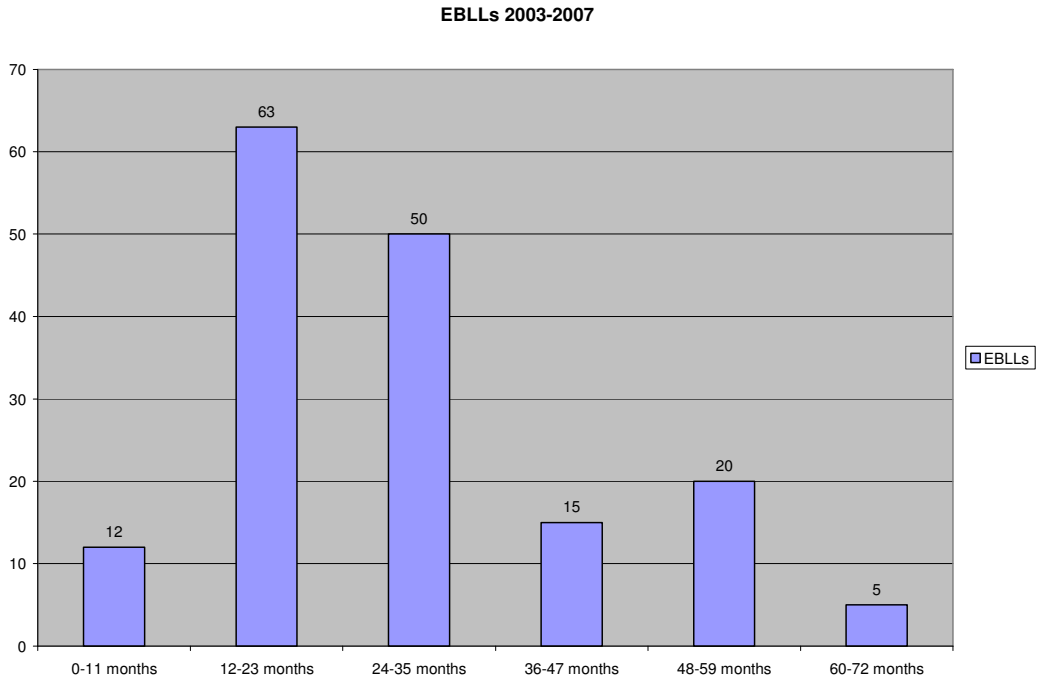
An in-depth look at blood-lead testing statistics for St. Joseph County has never been completed for St. Joseph County. The purpose of this evaluation was to assess the county's blood-lead tests, both for children with elevated blood-lead levels (EBLLs) and those without, to determine who is getting tested, and blood-lead testing rates for the county. This assessment will be used to help shape a policy for the Health Department to issue to St. Joseph County health-care providers for performing blood-lead testing.

Data from St. Joseph County's STELLAR (Systematic Tracking of Elevated Lead Levels And Remediation) database were utilized in compiling these statistics. We looked at age, race, ethnicity and location for lead-poisoned children as well as frequency of testing by ZIP code.

2. Age of Child

Lead-poisoned children. From 2003 to 2007, 165 children had confirmed EBLLs. Almost 70 percent of these were in the 12-35 month (1-2 year) age range. Twenty-one percent were in the 36-59 month (3-4 year) age range.

Figure 1. Age Ranges of EBLLs from 2003-2007.



The following table shows a yearly breakdown of these EBLLs by age.

Table 1. Elevated Blood-Lead Levels by Age, 2003-2007.

	2003	2004	2005	2006	2007	Total	Percent
0-11 months	3	1	2	4	2	12	7.3
12-23 months	23	5	8	9	18	63	38.2
24-35 months	15	14	6	7	8	50	30.3
36-47 months	4	4	2	1	4	15	9.1
48-59 months	10	4	1	4	1	20	12.1
60-72 months	2	0	1	1	1	5	3.0

Ages of all children receiving blood-lead tests. Between 2003 and 2007, the percent of children under 12 months being tested in St. Joseph County decreased, while those children older than 72 months (6 years) have seen an increase in testing rates. This increase may be due to the Health Department promoting testing of children 7 and younger rather than 6 and younger. In general testing rates in the 12-35 month age group have increased and the 36-72 month age group remained about the same. On average these two age groups received the most blood-lead testing between 2003 and 2007. The following table contains information about age breakdown of all blood-lead tests.

Table 2. Age for All Blood-Lead Tests by Percentage, 2003-2007.

	2003	2004	2005	2006	2007	Average
0-11 Months	22.6	35.2	27.2	14.7	11.6	22.3
12-35 Months	45.9	38.7	41.9	48.2	51.9	45.3
36-72 Months	28.7	22.2	25.9	31.0	26.6	26.9
> 72 Months	2.9	3.9	5.0	6.2	9.9	5.6

3. Race and Ethnicity of Child

Race and ethnicity of lead-poisoned children. According to Census information, the population for St. Joseph County is approximately 80.7 percent white, 11.8 percent black, and 1.7 percent Asian, with approximately 5.9 percent of the population being Hispanic. Statewide, according to the Indiana State Department of Health, the percentage of white children under the age of 6 is 82 percent, black children is 10.6 percent, and Asian children is 1 percent, with Hispanic children at 6.1 percent. While the percentage of black children with EBLLs has been on the decline in St. Joseph County, in 2007 it was 38.2 percent. The percentage of Hispanic children with EBLLs in St. Joseph County in 2007 was 23.5 percent.

The following table and figures contain information on race and ethnicity of lead-poisoned children from 2003 to 2007:

Table 3. Race and Ethnicity of EBLLs, 2003-2007.

	2003	2004	2005	2006	2007	Total, 2003-2007
Race						
Black	32	13	12	9	13	79
% of total	54.2	46.4	60	34.6	38.2	47.9
White	24	14	8	15	19	80
% of total	40.7	50.0	40	57.7	55.9	48.5
Asian	0	1	0	1	0	2
% of total	0.0	3.6	0	3.8	0.0	1.2
Unknown	1	0	0	1	2	4
% of total	1.7	0.0	0	3.8	5.9	2.4
Ethnicity						
Hispanic	11	4	3	11	8	37
% of total	18.6	14.3	15	42.3	23.5	22.4
Non-Hispanic	41	24	17	15	24	121
% of total	69.5	85.7	85	57.7	70.6	73.3
Unknown	5	0	0	0	2	7
% of total	8.5	0.0	0	0.0	5.9	4.2

Figure 2. Race of EBLL children, 2003-2007.

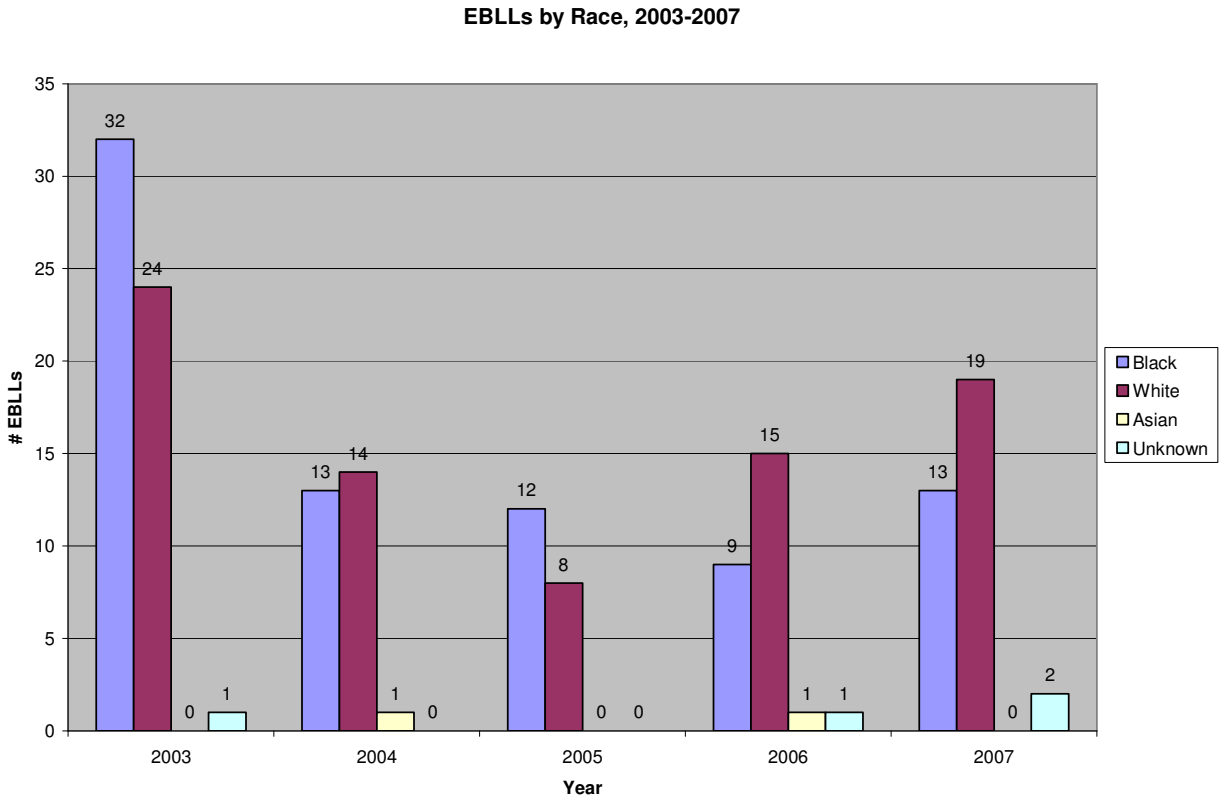
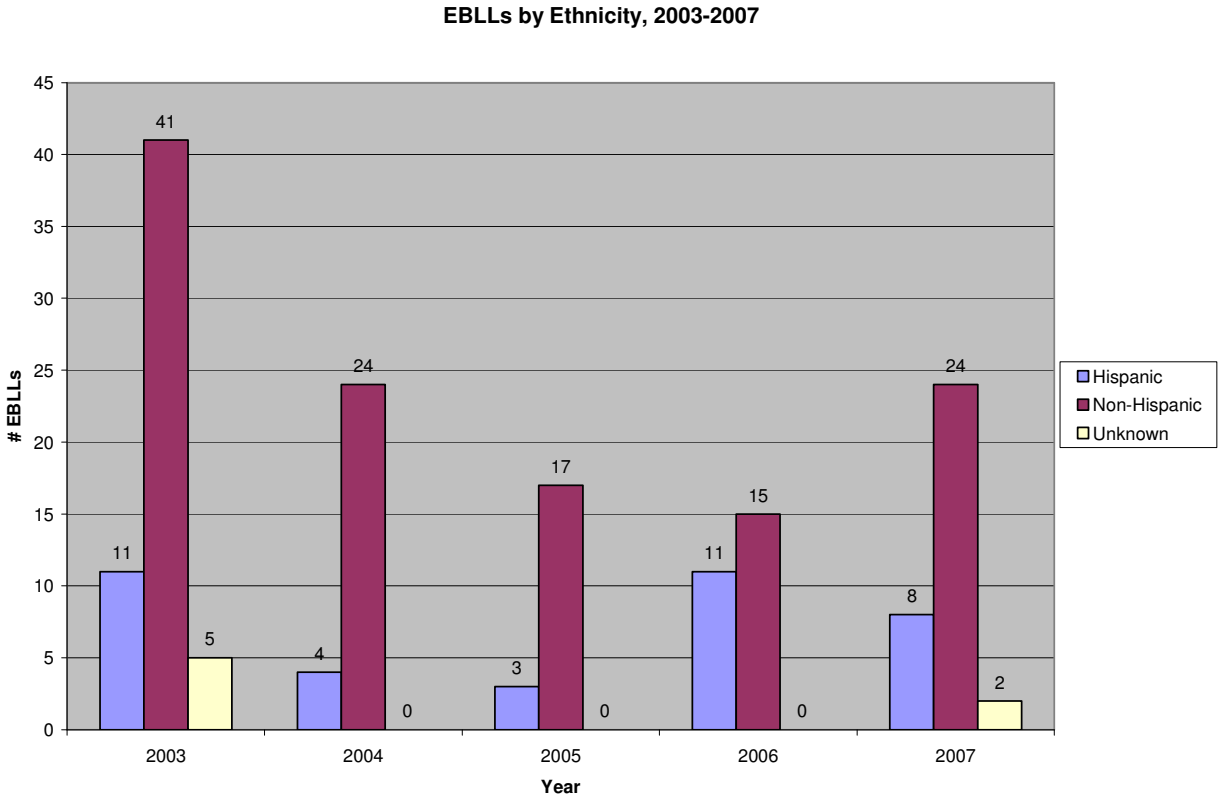


Figure 3. Ethnicity of EBLL children, 2003-2007.



Race and ethnicity of all children receiving blood-lead tests. It is extremely hard to determine racial and ethnic rates in non-elevated blood-lead testing because often those data are not transmitted with the child when imported into STELLAR. For example, in 2007, 33.6 percent of the blood tests had an unknown race and 41.5 percent had an unknown ethnicity. This happens either because the data were not collected, or an error in processing the import led to it being dropped. The following table shows the approximate percentages of each racial/ethnic group tested from 2003 to 2007. On average at least 19.7 percent of the children tested were black and at least 16.5 percent were Hispanic.

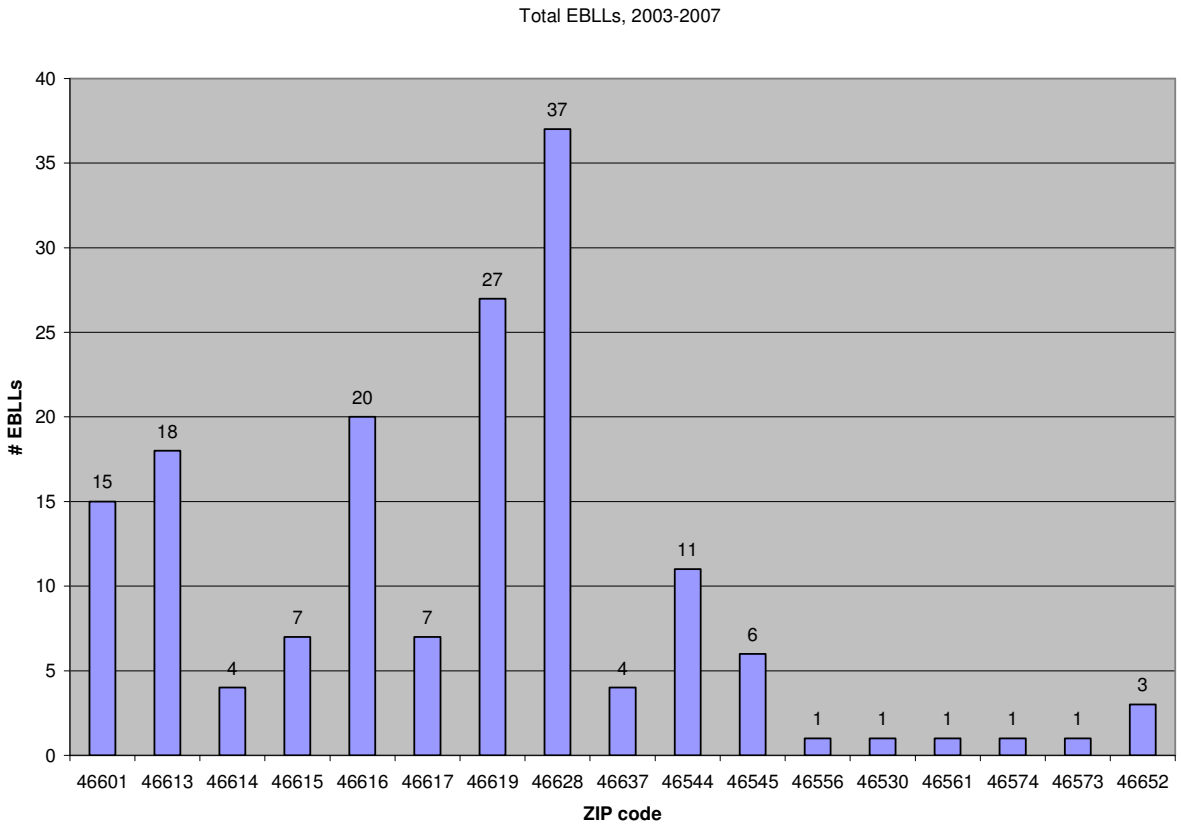
Table 4. Race and Ethnicity of All Blood-Lead Tests by Percentage, 2003-2007.

	2003	2004	2005	2006	2007	Average
Race						
White	24.4	24.3	42.7	52.1	44.6	37.6
Black	19.6	15.9	19.4	23.6	19.9	19.7
Asian	0.4	0.6	0.3	1.0	1.0	0.7
Am. Indian/Alaskan Native	0.3	0.4	0.3	0.4	0.6	0.4
Multiracial	0.1	0.1	0.1	0.1	0.2	0.1
Race Unknown	55.2	58.7	37.2	22.9	33.6	41.5
Ethnicity						
Hispanic	12.8	13.3	16.8	21.2	18.6	16.5
Non-Hispanic	29.8	24.2	42.7	43.9	39.9	36.1
Eth. Unknown	57.4	62.4	40.5	34.9	41.5	47.3

4. ZIP code of child

ZIP code of lead-poisoned children. The majority of South Bend's EBLLs have occurred to the northwest, west and south of downtown, in the 46628, 46619, 46616, 46613, and 46601 ZIP codes. The following figure shows a breakdown of EBLLs by ZIP code between 2003 and 2007. (Please note that only 164 of the 165 EBLLs are represented; one child with an EBLL in 2003 had no address listed.)

Figure 4. ZIP Codes of EBLL Children, 2003-2007.

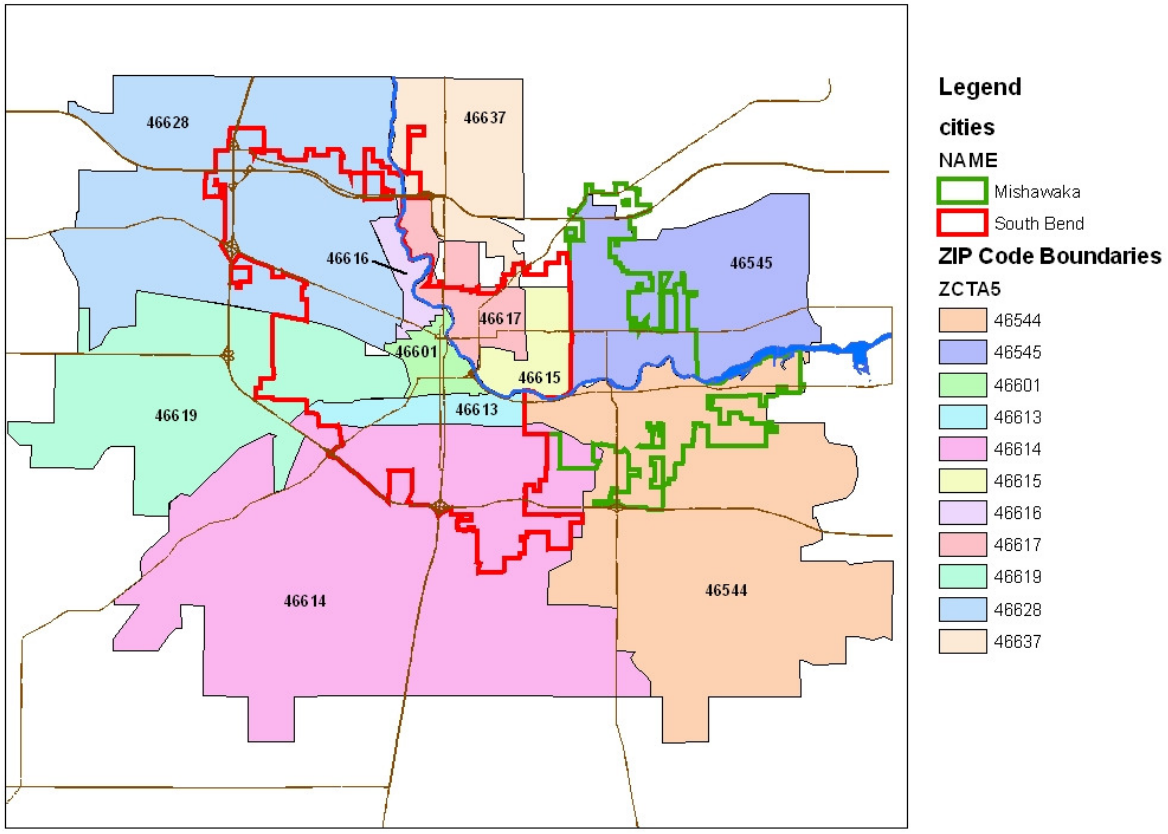


ZIP Code of all children receiving blood-lead tests. When looking at blood-lead tests by ZIP code, most areas have seen an increase in blood-lead testing from 2003 to 2007. In South Bend, the only ZIP code to show a decrease is 46601. This is problematic because of the potential for old housing to be located in this ZIP code (downtown South Bend). The only other county ZIP codes to show a decrease were those that represent Notre Dame (46556) and Wyatt (46595). From 2003 to 2007, the five ZIP codes with the most blood-lead testing were: 46619 (2,237 tests); 46628 (1,682 tests); 46601 (1,262 tests); 46544 (1,126 tests); and 46613 (1,111 tests). It is important to note that while ZIP code 46616 had the third-highest number of lead-poisoned children, it was ninth in terms of total blood-lead tests. This indicates undertesting of children in an area with potentially high exposure to lead-based paint. Please see the following table for information about blood-lead tests by ZIP code and an accompanying map of ZIP code locations in South Bend and Mishawaka.

Table 5. All Blood Tests by ZIP Code, 2003-2007.

ZIP Code	2003	2004	2005	2006	2007	Total, 03-07	Location
46506	0	0	1	5	2	8	Bremen
46530	39	28	109	94	99	369	Granger
46536	3	8	25	12	25	73	Lakeville
46544	219	134	221	265	287	1126	Mishawaka
46545	165	122	157	245	213	902	Mishawaka
46552	11	9	26	17	27	90	New Carlisle
46554	22	17	22	33	25	119	North Liberty
46556	21	17	17	16	10	81	Notre Dame
46561	33	30	57	70	88	278	Osceola
46601	286	308	352	156	160	1262	South Bend
46613	245	180	191	248	247	1111	South Bend
46614	108	99	182	203	258	850	South Bend
46615	152	121	174	194	193	834	South Bend
46616	111	100	106	111	169	597	South Bend
46617	101	68	98	112	112	491	South Bend
46619	441	343	412	528	513	2237	South Bend
46628	357	254	293	402	376	1682	South Bend
46635	21	8	26	29	59	143	South Bend
46637	62	37	66	81	83	329	South Bend
46573	0	0	0	4	2	6	Wakarusa
46574	25	15	13	34	33	120	Walkerton
46595	2	1	0	0	2	5	Wyatt

Figure 5. ZIP Code Boundaries for South Bend and Mishawaka



5. Overall Conclusions

The following conclusions can be made based on the data above:

- Age: Children in the 12-35 month age range are a priority; while they make up 45 percent of those tested, they represent 68.5 percent of EBLLs. Children age 36-59 months make up 21 percent of St. Joseph County's lead poisoning cases and should not be dismissed.
- Race and Ethnicity: Black and Hispanic children are disproportionately represented in lead poisoning cases. While our local population is 11.8 percent black and 5.9 percent Hispanic, from 2003 to 2007 the average percentage of lead-poisoned black children was 47.9 percent, and the average percentage for Hispanic children was 22.4 percent.
- ZIP Code: The most lead-poisoned children found in the county have been in the 46628 and 46619 ZIP codes. The 46616 ZIP code had an alarmingly high number of lead-poisoned children considering eight other ZIP codes had higher testing rates.

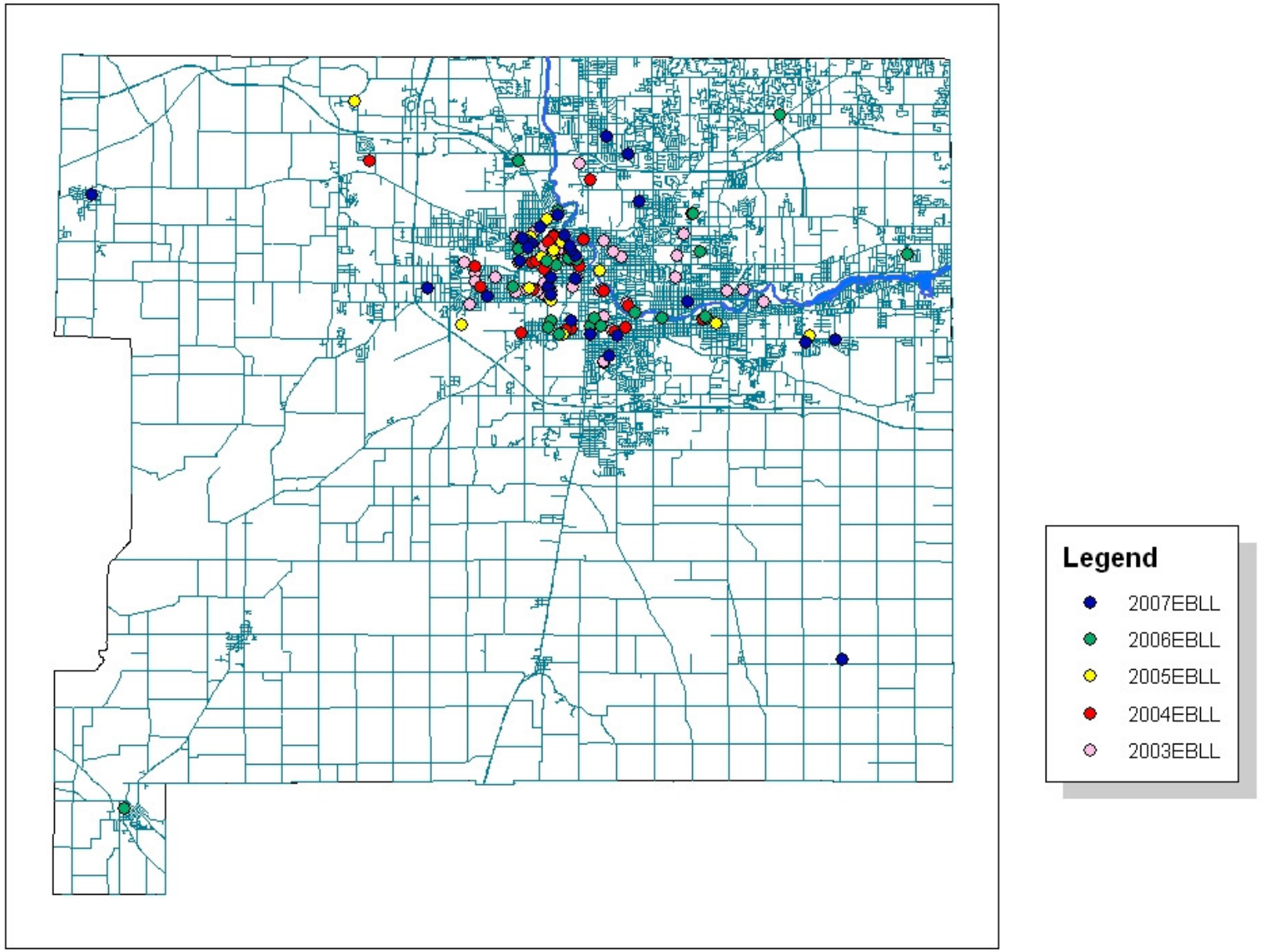
Based on these conclusions and the above data, the following actions should be taken:

- Blood-lead testing should be focused on children ages 12-59 months (1-4 years).
- Providers should be reminded of the importance of collecting racial and ethnicity data, and that black and Hispanic children are at higher risk in our county.
- Providers should be warned about high-risk ZIP codes and urged to test all children under age 7 who live within them.
- The Health Department should do targeted blood-lead testing in the 46616 ZIP code.
- Overall blood-lead testing rates need to be increased; low rates make it difficult to ascertain true lead poisoning rates in the county.

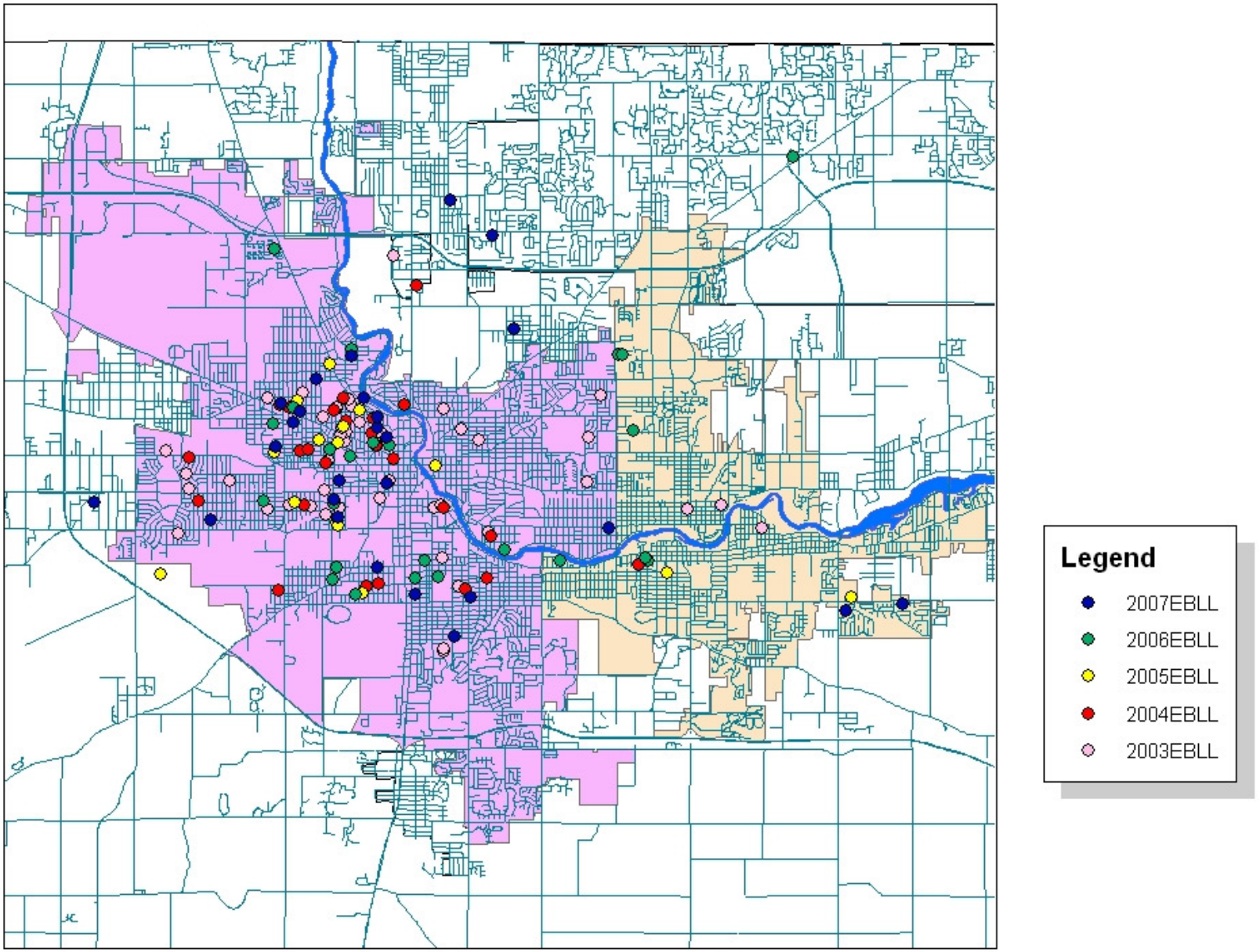
APPENDIX

The following pages show maps of all EBLLs in St. Joseph County from 2003 to 2007, as well as breakdowns by ZIP code.

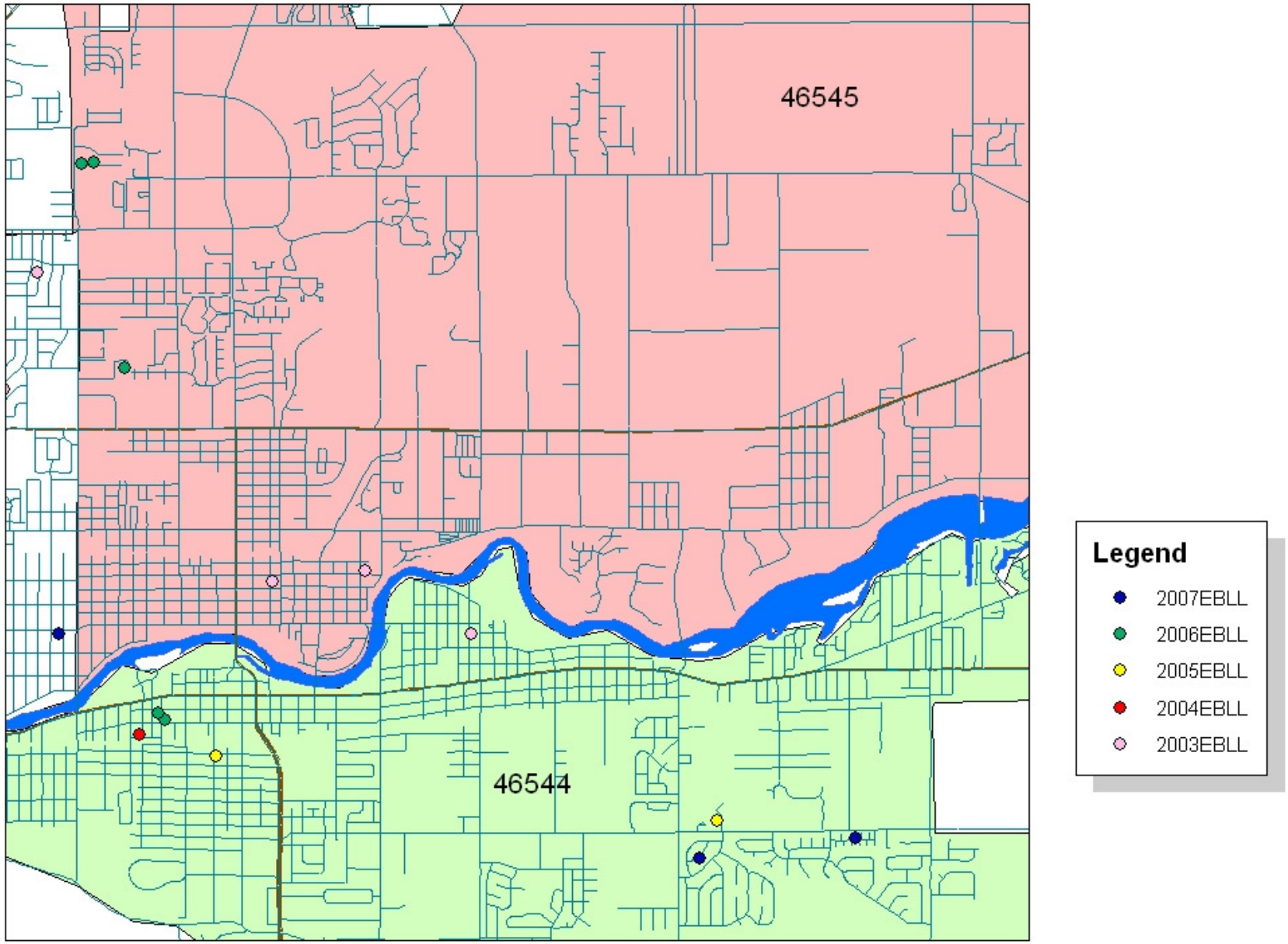
Elevated Blood-Lead Levels in St. Joseph County, 2003-2007



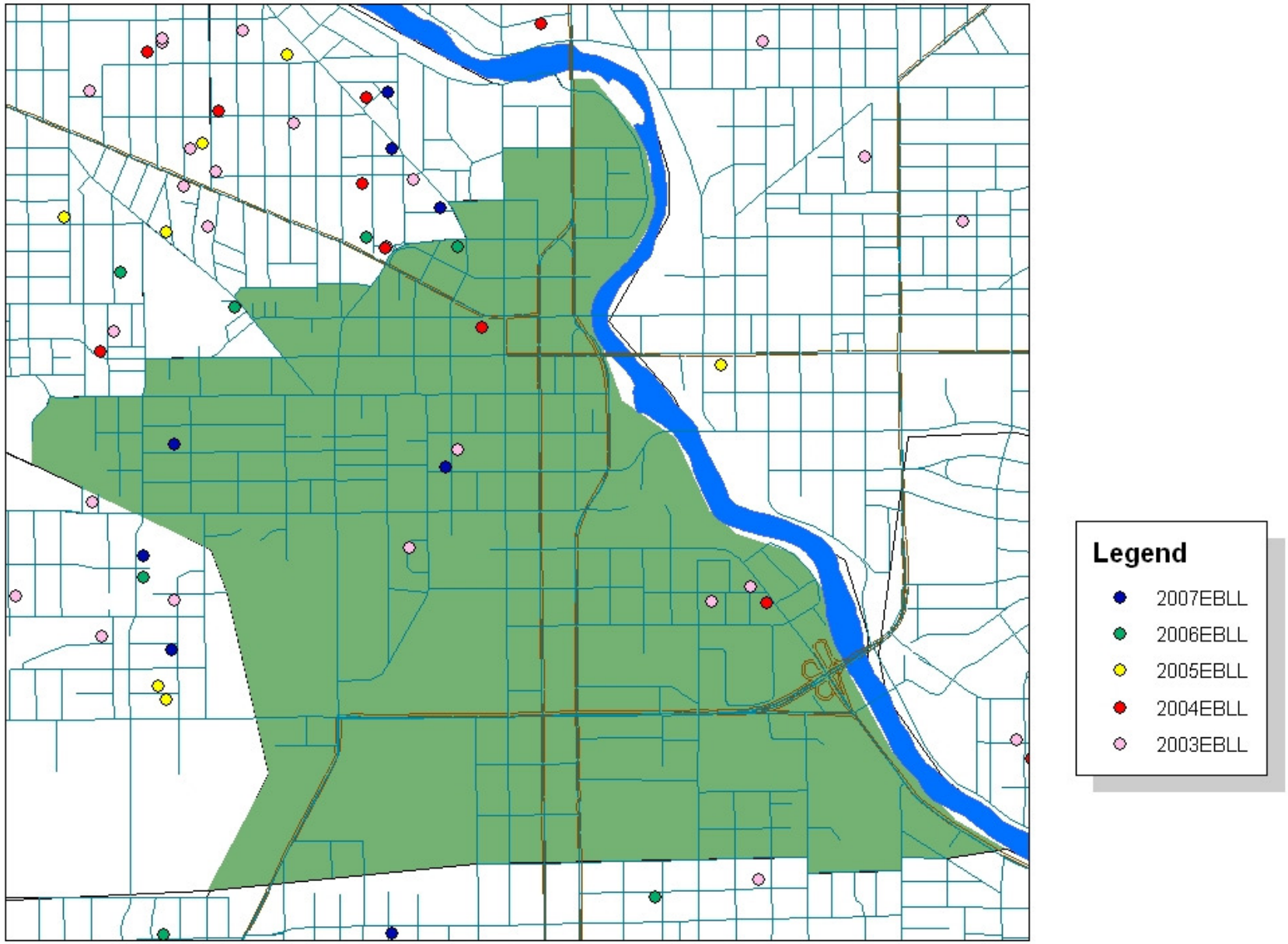
Elevated Blood-Lead Levels in South Bend and Mishawaka, 2003-2007



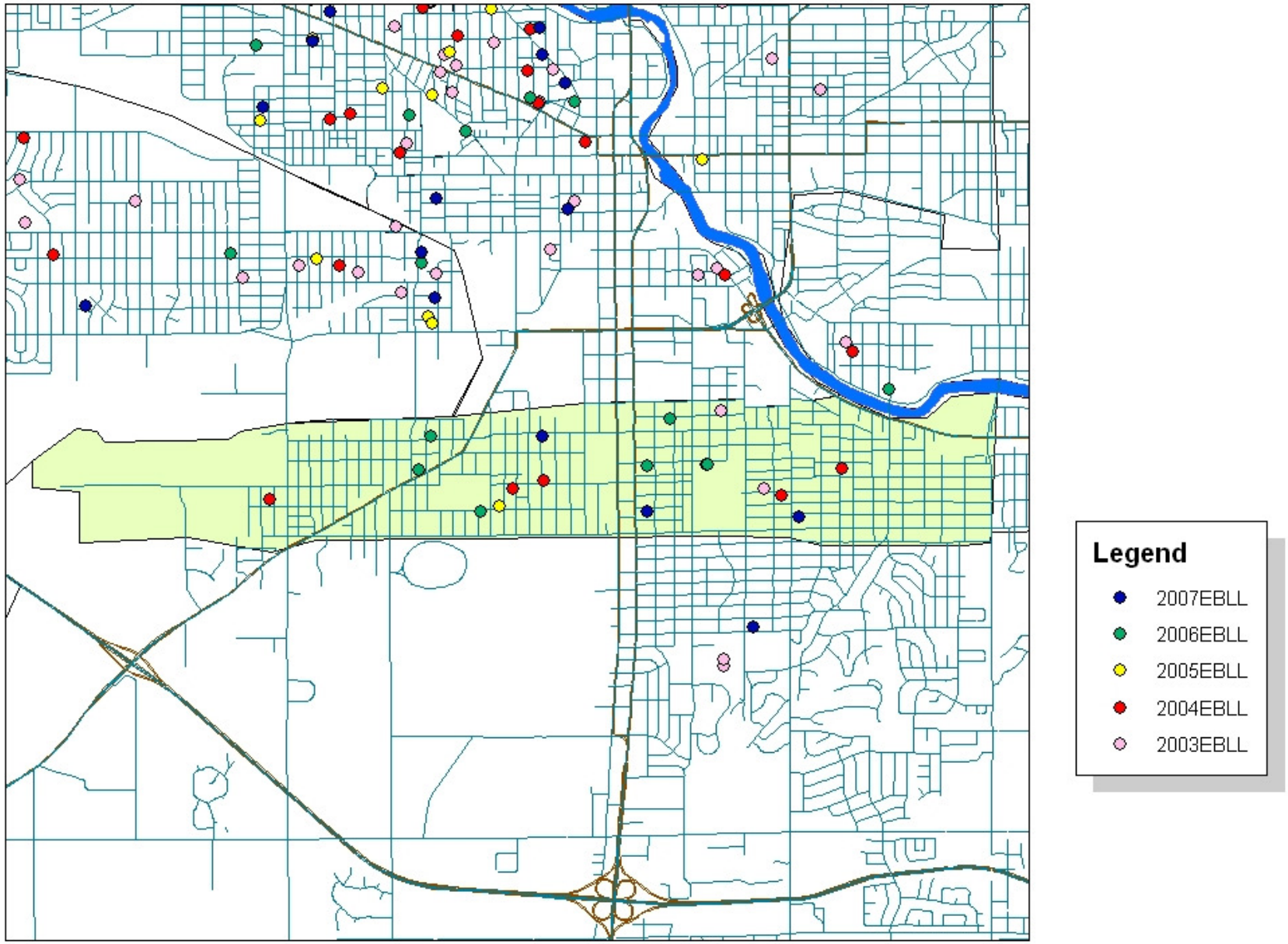
Elevated Blood-Lead Levels in Mishawaka ZIP codes, 2003-2007



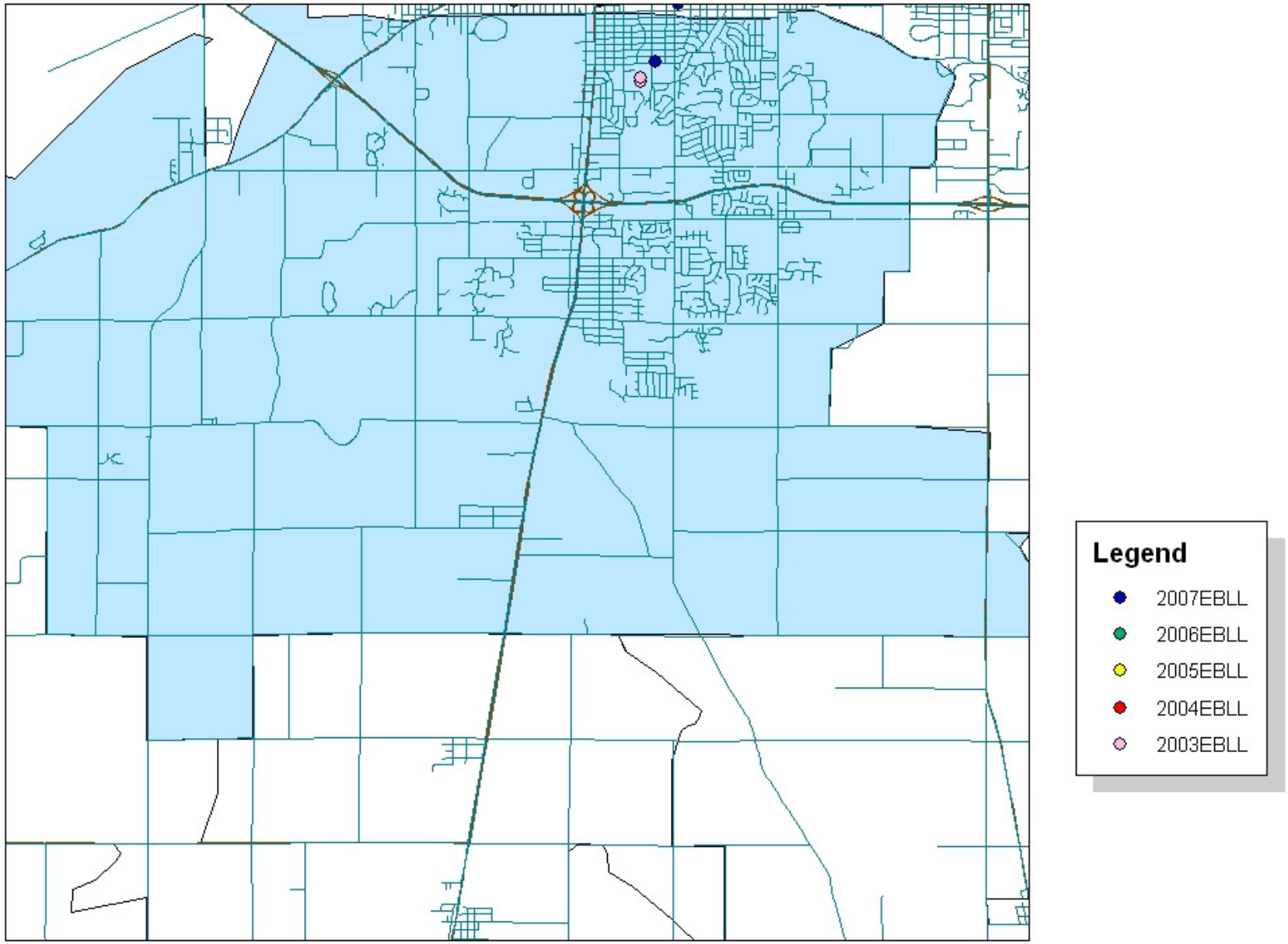
Elevated Blood-Lead Levels in 46601 ZIP code, 2003-2007



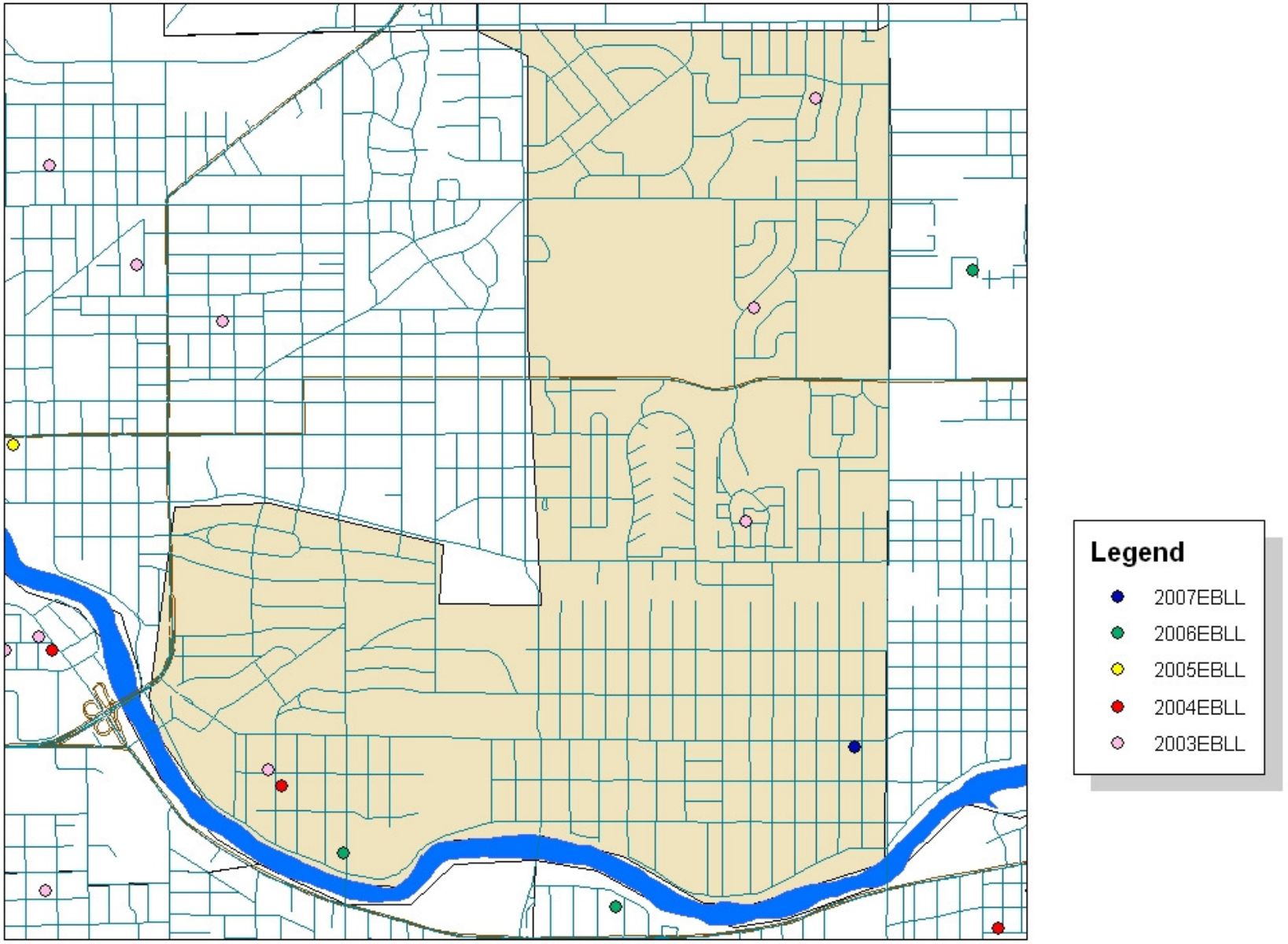
Elevated Blood-Lead Levels in 46613 ZIP code, 2003-2007



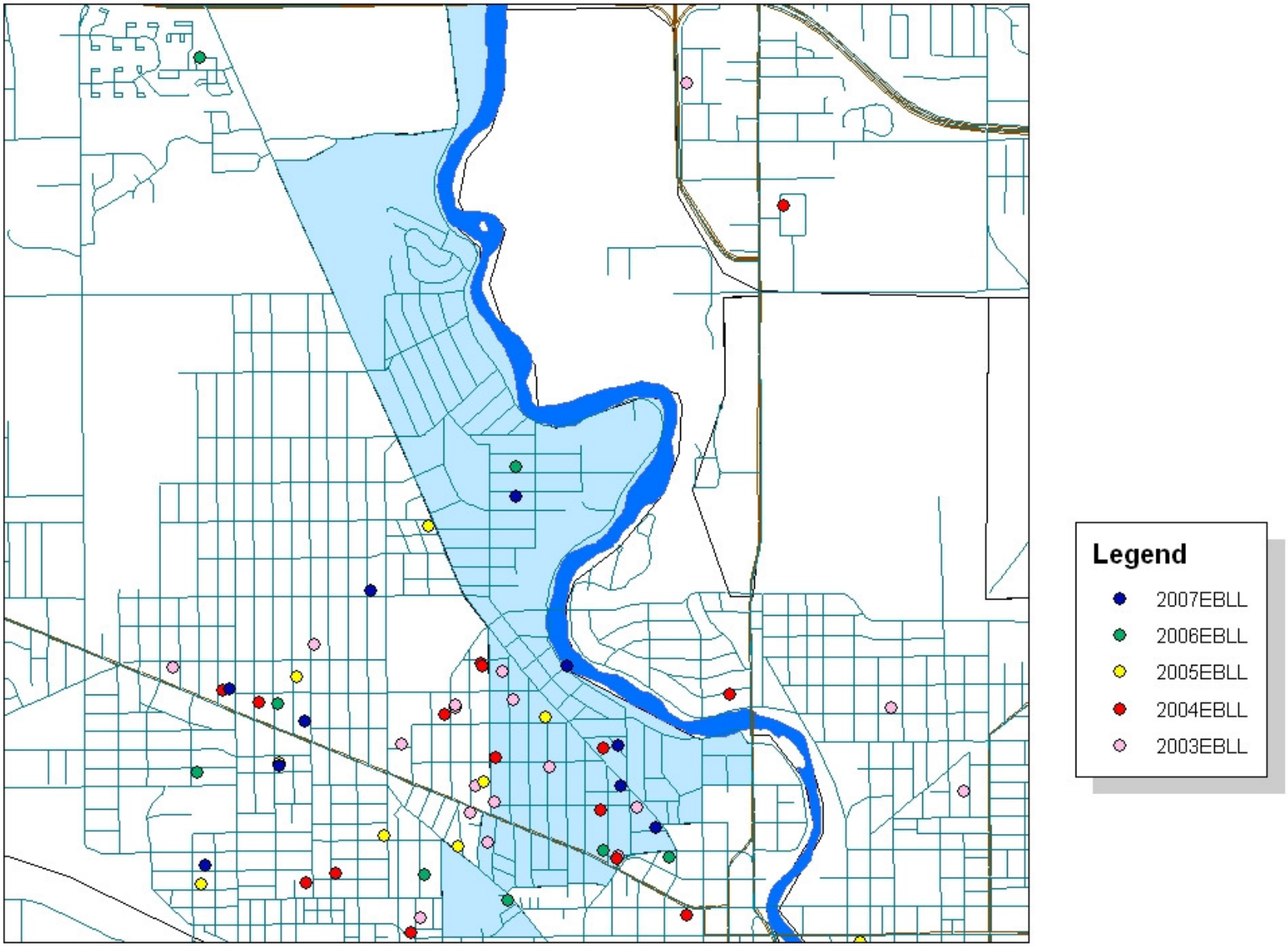
Elevated Blood-Lead Levels in 46614 ZIP code, 2003-2007



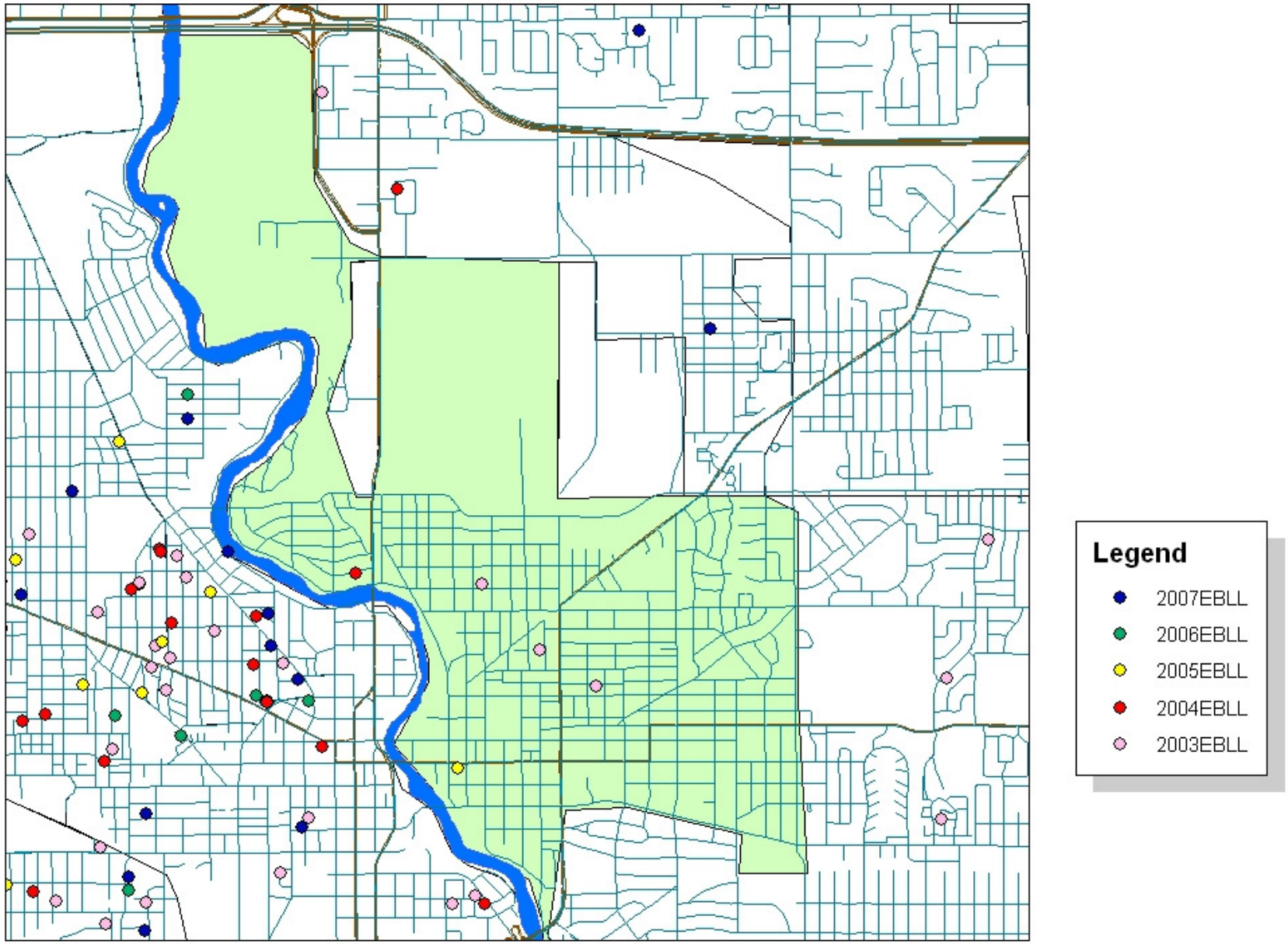
Elevated Blood-Lead Levels in 46615 ZIP code, 2003-2007



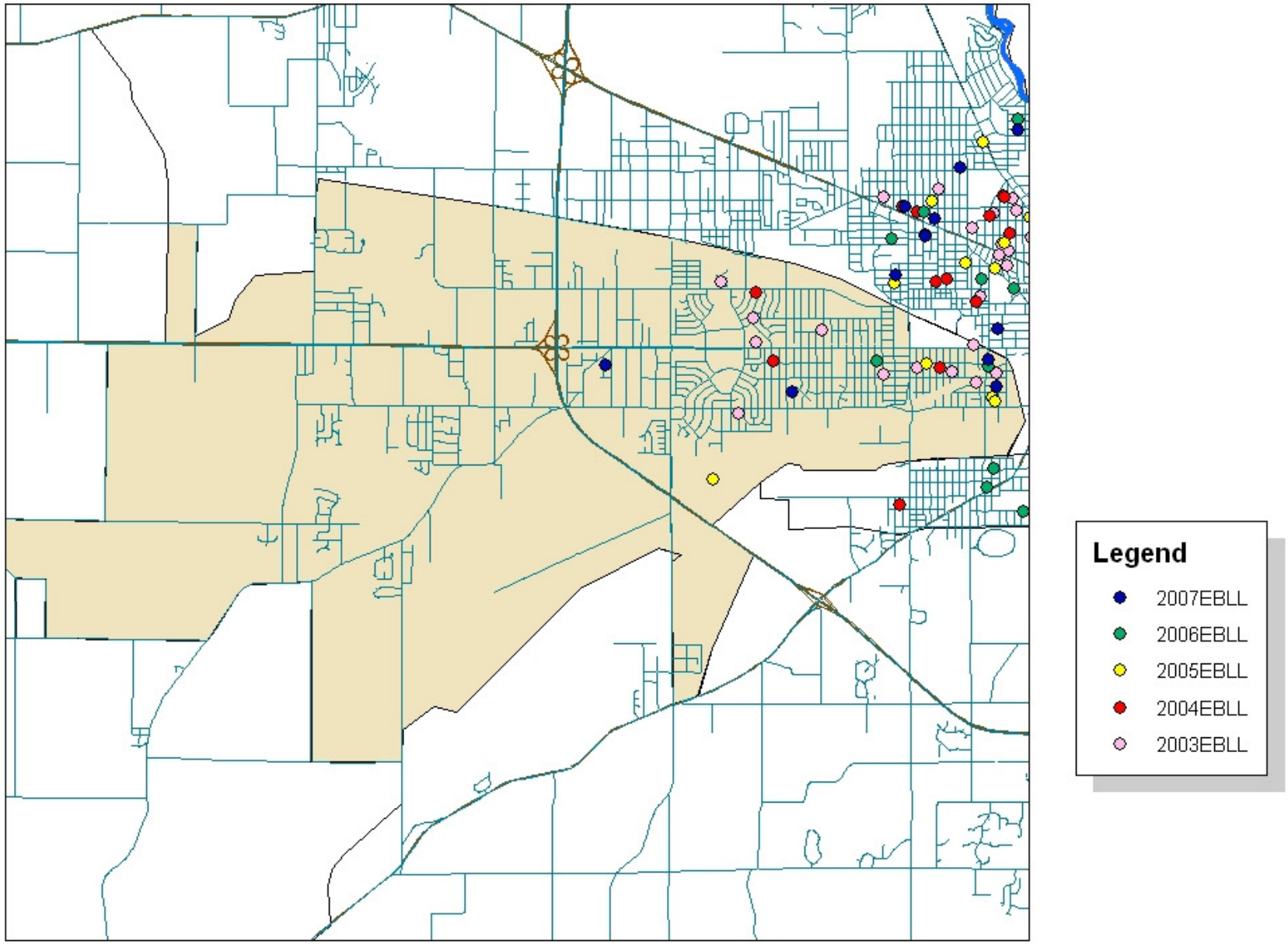
Elevated Blood-Lead Levels in 46616 ZIP code, 2003-2007



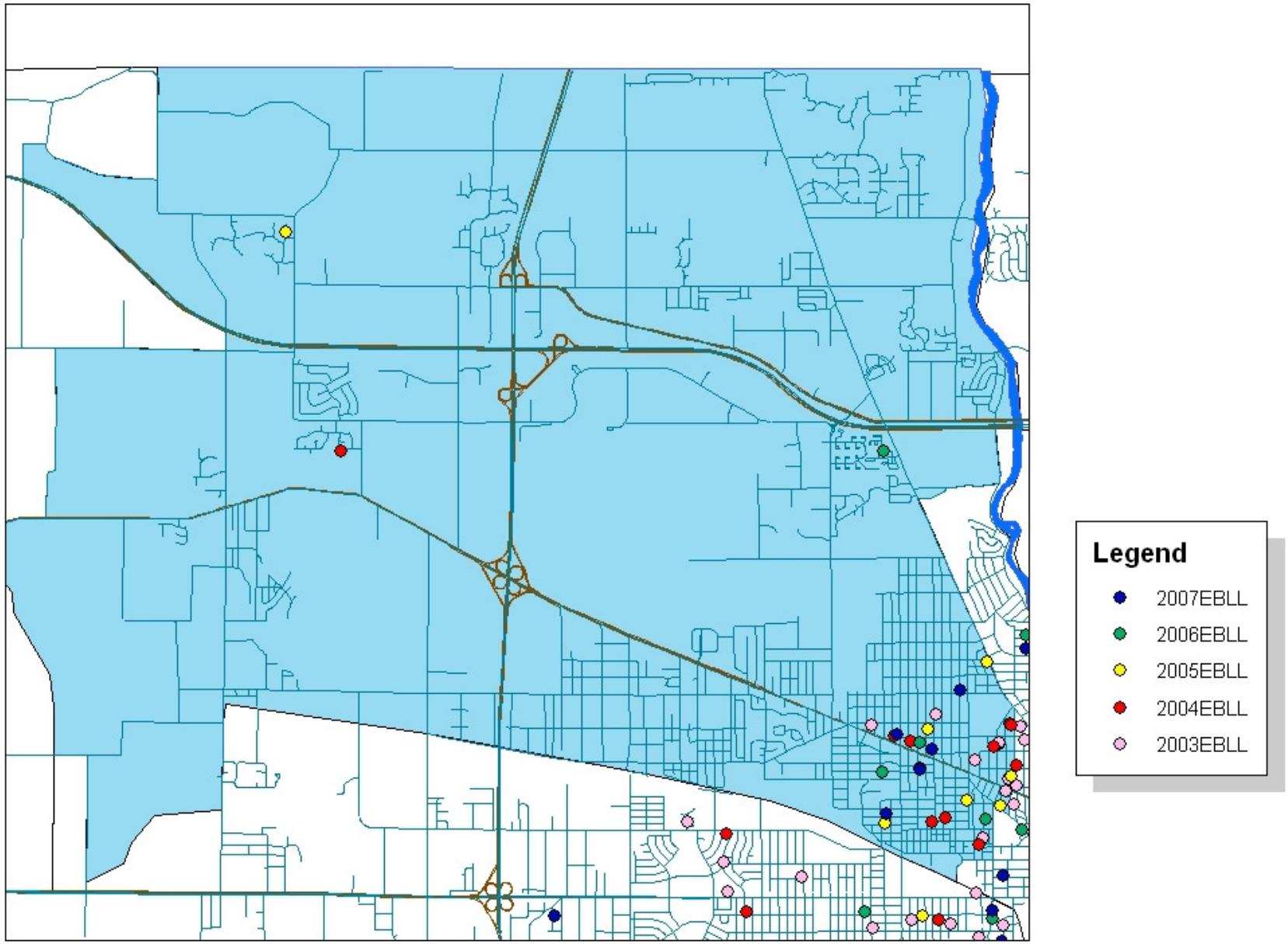
Elevated Blood-Lead Levels in 46617 ZIP code, 2003-2007



Elevated Blood-Lead Levels in 46619 ZIP code, 2003-2007



Elevated Blood-Lead Levels in 46628 ZIP code, 2003-2007



Elevated Blood-Lead Levels in 46637 ZIP code, 2003-2007