

Appendix C: Existing Studies-Additional Information

Substance	Highest Level Allowed (EPA's <u>MCL</u> *)	Highest Level Detected	Ideal Goals (EPA's <u>MCLG</u> 's*)	Sources of Contamination
Microbiological Contaminants				
Turbidity	<u>Treatment Technique</u> *	.30 turbidity units ₁	None	Soil runoff
Radioactive Contaminants				
Alpha emitters ₂	15 <u>pCi/l</u> *	0.4 ±1.3 pCi/l	0	Erosion of natural deposits
Inorganic Contaminants				
Barium	2 <u>ppm</u> *	0.017 ppm	2 ppm	Erosion of natural deposits
Chromium	100 <u>ppb</u> *	1.2 ppb	100 ppb	Erosion of natural deposits
Copper ₇	1.3 ppm (<u>Action Level</u>)*	0.021 ppm (<u>90th Percentile</u>)*	1.3 ppm	Corrosion of household plumbing systems
Fluoride	4 ppm	1.21 ppm ₃	4 ppm	Water additive which promotes strong teeth
Nitrate	10 ppm	0.44 ppm	10 ppm	Erosion of natural deposits
Lead ₇	15 ppb (<u>Action Level</u>)*	4.4 ppb (<u>90th Percentile</u>)*	0	Corrosion of household plumbing systems
Volatile Organic Contaminants				
Total Trihalomethanes	100 ppb	41.1 ppb average ₄	0	By-product of drinking water chlorination
Haloacetic Acids (HAA5)	60 ppb	33.6 ppb average ₆	0	By-product of drinking water chlorination
Synthetic Organic Contaminants				
Atrazine	3 ppb	0.32 ppb	0	Runoff from herbicide used on row crops
Unregulated Contaminants				
Beta emitters _{2,5}	50 pCi/l	1.3 ±2.1 pCi/l	0	Decay of natural and man-made deposits
Chlorine, Free Residual	Not Regulated	1.6 ppm	Not Regulated	Disinfection process
Chlorine, Total Residual	5.0 ppm	2.6 ppm	None	Disinfection process
Haloacetic Acids (HAA5)	60 ppb (proposed)	52.2 ppb average ₆	Not Regulated	By-product of drinking water chlorination
Heterotrophic Plate Count	500 <u>CFU/ml</u> *	> 200 CFU/ml*	None	Natural lake bacteria, wildlife, septic systems
Sodium	Not Regulated	4.8 ppm	Not Regulated	Erosion of natural deposits

Figure 1: Water Quality Table for the City of Bloomington in 2004 – “Listed above are 16 contaminants detected in Bloomington’s drinking water during 2003. All are below allowed levels. Not listed are the almost 90 contaminants for which we tested that were not detected.”¹

¹ 2004 Water Quality Report. City of Bloomington Utilities. Available at: <<http://bloomington.in.gov/utilities/planning.php>>.

City of Bloomington/Monroe County-StudiesCommonwealth Biomonitoring Inc.

This study includes results for one sampling site for the East Fork Jackson Creek Subwatershed, located at Rhorer Road. Chemical data were collected for dissolved oxygen, pH, conductivity, temperature, and total suspended solids.

	D.O. (mg/l)	pH (SU)	Cond. (uS)	Temp. (°C)	TSS (mg/l)	Time	Date
1996							
EFJC1	13.5	8.1	250	5.0	1	14:20	12/6
1997							
EFJC1	12.0	7.9	100	12	10	10:50	5/22

Figure 2: Chemical Data from EFJC sampling sites.²

	EFJC1
E. Coli	< 20 colonies per 100 mL
Fall 1996	
Habitat Score	69
1996 Biotic Index Score	28-slightly impaired
Spring 1997	
1997 Biotic Index Score	12-moderately impaired

Figure 3: Biotic and Habitat Indices for EFJC sampling sites.³

Additionally, the study found:

- “The primary source of impairment ... was sedimentation.”
- “There was considerable evidence of smothering of aquatic habitat from recent sedimentation into the stream.”
- “Much of the increased sedimentation can be alleviated by better compliance with sedimentation regulation from construction sites in the watershed.”

Water Body Status for East Fork Jackson Creek

The East Fork of Jackson Creek is one of the 13 impaired water bodies in Monroe County (see Figure 4). According to the 303(d) Impaired Water Bodies list, this status is due to “impaired biotic communities.”

² Bloomington/Monroe County Urban Non-point Source Water Pollution Assessment Project. September 1997. Commonwealth Biomonitoring, Inc. Vol. 1.

³ Bloomington/Monroe County Urban Non-point Source Water Pollution Assessment Project. September 1997. Commonwealth Biomonitoring, Inc. Vol. 1.

<u>WATER BODY</u>	<u>PARAMETERS OF CONCERN</u>
Beanblossom Creek*	E. Coli
Clear Creek	E. Coli
	Impaired Biotic Communities
	FCA for PCBs
East Fork Jackson Creek	Impaired Biotic Communities
Griffy Reservoir	FCA for Mercury
Jacks Defeat Creek	E. Coli
	Impaired Biotic Communities
Jackson Creek	Impaired Biotic Communities
Monroe Reservoir (Upper)*	Taste & Odor; Algae FCA for Mercury
Monroe Reservoir (Lower)	FCA for Mercury Taste & Odor; Algae
Richland Creek*	Impaired Biotic Communities
	FCA for PCBs
	FCA for Mercury
Unnamed Tributary of Jackson Creek	Impaired Biotic Communities
White River*	FCA for PCBs
	FCA for Mercury
	Impaired Biotic Communities
Stout Creek	FCA for PCBs
	FCA for Mercury
South Fork Griffy Creek	Impaired Biotic Communities

*not in Unincorp. Monroe Co. MS4 Area

FCA - Fish Consumption Advisory

PCBs - Carcinogen

Mercury - Poison

E. Coli - Bacteria indicating that fecal matter is present in streams, therefore it is possible for pathogens associated with fecal matter to be present

13 Water Bodies Total:
 3 cited for E. Coli
 8 cited for Impaired Biotic Communities
 6 cited for Mercury
 4 cited for PCBs

Figure 4: 2004 303(d) List of Impaired Water Bodies for Monroe County.⁴

⁴ 2004 List of Monroe County Urbanized Area's Impaired Water Bodies. June 2005. Storm Water Education, Highway Department, Monroe County Government. Available at: <<http://www.co.monroe.in.us/stormwaterquality/sweducation.html>>.

Hoosier Riverwatch Data

Chemical Data

Because the Hoosier Riverwatch chemical data collection methodology was the main guide for the current study, the format and compliment of data are very similar. 897 does not exactly coincide with EFJC3, which is just north, but is the closest sampling location to those used in this analysis.

Site ID	Watershed Name	River Name	Description	Time	Date	Current Weather	Past Weather	DO (ppm)	DO (% Saturation)	pH	Temp Change (C)	Temp Celsius (C)	Orthophosphate (mg/l)	Nitrate NO3 (mg/l)	Turbidity (NTU)
897	Lower East-Fork White 05120208	Jackson Creek - East Fork	East of Sare Road, across form Mill Stone Way.	0.5	6/14/2005	Clear/Sunny	Stormy	6	110	7.7	NA	6	0	1.5	15.01
897	Lower East-Fork White 05120208	Jackson Creek - East Fork	East of Sare Road, across form Mill Stone Way.	0.5	2/23/2005	Overcast	Overcast	14	80	7	NA	24	0	2.2	15.01

Figure 5: Chemical data for EFJC from the Hoosier Riverwatch Database, as of 5/22/06.⁵

⁵ Hoosier Riverwatch Volunteer Stream Monitoring Internet Database. Indiana Department of Natural Resources, Division of Fish and Wildlife. Available at: www.hoosieriverwatch.com.