resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Bassett Creek Watershed Management Commission (BCWMC)
From: Barr Engineering Co.
Subject: Item 5B – Review Additional Linear Projects Data and Consider Further Evaluation of Project Specific Information
BCWMC October 15, 2020 Meeting Agenda
Date: October 8, 2020

5B Review Additional Linear Projects Data and Consider Further Evaluation of Linear Project Information

Recommendations:

1. Review and discuss additional water quality data and possible site constraints
2. Do not move forward with further evaluation of linear project information

Background

At their May 18, 2017 meeting, the Commission approved revisions to the BCWMC's Requirements for Improvements and Development Proposals (Requirements document) that revised the BCWMC's water quality performance standards for linear projects. After the approved revisions, the Commission requested a periodic analysis comparing the revised linear project standards vs. the previous (MIDS) standards on linear projects reviewed by the BCWMC after the standards were revised. The Commission Engineer completed the first analysis for review by the Commission at their September 2018 meeting and a second analysis for review by the Commission at their September 17, 2020 meeting. At their September 2020 meeting, the Commission requested additional data for project specific pollutant loading, water quality treatment, and site constraints.

Additional Water Quality Data for Linear Projects

Water quality data, including existing (pre-project) total phosphorus (TP) loading, proposed (post-project) TP loading, and the difference between pre-project and post-project TP loading, has been added to Table 1. TP removals along with footnotes for project specific data (where available) is also listed in Table 1. The total difference in TP loading between pre-project and post-project conditions is a net increase of 6.18 pounds TP per year. Project specific TP removal information was submitted for three projects and the footnotes provide additional information on these projects and the stormwater best management practices (BMPs). A number of linear projects provided sump manholes, but these features are generally not credited for water quality treatment as they are considered pretreatment devices.

Included in the net 6.18 pounds per year of increased TP loading was the loading from the Theodore Wirth Golf Course Cart Path project. However, this project included only impervious surface that is

disconnected from storm sewers and downstream resources, meaning the runoff flows over pervious areas, like grass and vegetation, before flowing into a waterbody or storm sewer. Therefore, the 2.67 pounds per year of TP loading from this project may not reach the downstream waterbody or storm sewer. Further, the 3.12 pounds per year of TP loading from the county state aid highway 9 (CSAH 9) and I-494 Interchange project will be treated with existing stormwater BMPs that had capacity for additional treatment.

Total phosphorus loading from the two projects described above totals 5.79 pounds per year, but may not reach downstream waterbodies due to the disconnected nature of the cart paths and existing stormwater BMPs. The 5.79 pounds per year of TP loading represents 94% of the calculated net new TP loading (6.18 pounds per year) from all linear projects analyzed.

Potential Site Constraints

As shown in Table 1, site constraints for linear projects that may prohibit or limit feasibility of stormwater BMPs include: poor soils, high groundwater, space constraints, infiltration and inflow concerns, drinking water supply management areas (DWSMAs), karst, contaminated soils, or shallow bedrock. To better understand whether any site constraints were present for each specific project, more discussion and coordination is needed with project applicants, however Figures 1-6 show publicly available data for the Bassett Creek watershed where select constraints may generally affect projects within the watershed.

Figure 1 – Bedrock:

Requirement: A minimum of 3 feet of soil depth (10 feet or more is preferred) from the bottom of a stormwater BMP to bedrock. Figure 1 shows that within the Bassett Creek watershed, bedrock is within 50 feet of the surface along the east side of the watershed in portions of the cities of Minneapolis and Golden Valley.

Figure 2 – Groundwater:

Requirement: A minimum of 3 feet of soil depth (10 feet or more is preferred) from the bottom of a stormwater BMP to groundwater. Figure 2 shows that groundwater is within 10 feet of the surface throughout much of the Bassett Creek watershed.

Figure 3 – Drinking Water Supply Management Areas (DWSMAs):

Requirement: Where sites are located within a Drinking Water Supply Management Area (DWSMA), a wellhead protection area, or within 200 feet of a drinking wall, infiltration is only allowed if a local unit of government can provide a higher level of engineering review to ensure a functioning system that prevents adverse impacts to groundwater. Figure 3 shows DWSMAs covering significant areas within the Bassett Creek watershed. Wellhead protection areas and drinking well locations were not found within publically available data.

Figure 4 – Karst:

Requirement: Where sites are located within 1,000 feet up-gradient or 100 feet down-gradient of active karst areas, infiltration is only allowed if a local unit of government can provide a higher level of

engineering review to ensure a functioning system that prevents adverse impacts to groundwater. Figure 4 shows surface karst features along the east side of the watershed in portions of the cities of Minneapolis and Robbinsdale.

Figure 5 – Soil Types and Infiltration Capacity:

Requirement: Where there are very low infiltration soils (<0.2 inches per hour) or very high infiltrating soils (>8 inches per hour), infiltration may not be feasible or may not be allowed for a stormwater BMP. Figure 5 shows hydrologic soil groups within the Bassett Creek Watershed. Significant portions of the watershed have no data available and significant portions of the watershed have soils with poor infiltration (i.e., Hydrologic Soil Group C and D soils).

Figure 6 – Contaminated Soils:

Requirement: Where contaminated soils, contaminated groundwater or hotspot runoff is present, and hotspot or contamination cannot be isolated or remediated to mitigate risk of increased contamination, no infiltration practices are allowed. Figure 6 shows point data from the Minnesota Pollution Control Agency's "What's in My Neighborhood" tool for locations of feedlots, hazardous waste, investigation and cleanup, solid waste, tanks and leaks, and water quality within the Bassett Creek watershed.

Further Evaluation of Project Specific Information

Project-specific Site Constraints

As previously noted, to better understand whether any site constraints were present for each specific project, more discussion and coordination is needed with project applicants. The level of effort could vary quite a bit. For the lowest level of Commission Engineer effort, the applicants would need to compile, review, and provide all of the site constraint information; then, the Commission Engineer would only need to summarize the information. Examples of this information may include: geotechnical reports, soil borings, or infiltration tests for infiltration, groundwater, bedrock or karst; city specific requirements for infiltration and inflow; nearby well locations or wellhead protection areas; Phase I or Phase II Environmental Site Assessments and/or extent of contamination and remediation alternatives considered for contamination or hotspot runoff; or project plans for space (right of way) constraints. For the highest level of Commission Engineer effort, the applicants may provide some site constraint information, but the Commission Engineer would need to compile any additionally available information, review all of the project information to determine the site constraints for each project, and then summarize the information. A significant limitation of this effort is that not all project-specific site constraint information may be available. Since project applicants were not required to implement infiltration practices or other stormwater BMPs, the applicants may not have assessed the feasibility of implementing infiltration or stormwater BMPs as part of the projects. For the 25 projects reviewed, we estimate the cost of this work to range from around $4,000 (lowest level of effort) to $10,000-$15,000 (highest level of effort), recognizing that the final results may still provide incomplete data.

The additional project-specific site constraint information would tell us whether applicants could have implemented infiltration practices (and resultant volume retention) and other stormwater BMPs at the linear project sites reviewed since the 2017 revisions to the Requirements document. These results could also identify "missed opportunities" or locations where infiltration practices or stormwater BMPs were feasible but were not incorporated into projects. Based on the projects reviewed prior to the 2017 revision, it is likely that this additional information will show that most projects would have constraints preventing implementation of infiltration and possibly other stormwater BMPs.

Based on the level of effort to obtain information and the likelihood that the information may still be incomplete, the Commission Engineer does not recommend this additional analysis.

Project-specific BMPs and TP Removals

Some of the reviewed linear projects included stormwater BMPs that may provide TP removals, but the applicants did not submit information to determine the level of TP removal. Discussion and coordination would be needed with these applicants to quantify TP removals from these projects. Similar to above, the level of effort could vary quite a bit. For the lowest level of Commission Engineer effort, the applicants would need to calculate and provide all of the stormwater BMP and TP removal information; then, the Commission Engineer would only need to summarize the information. For the highest level of Commission Engineer effort, the applicants may provide some information; but the Commission Engineer would need to compile and review, or analyze, or calculate the TP removal based on the available project data; and then summarize the information. For the 25 projects reviewed, we estimate the cost of this work to range from around $2,500 (lowest level of effort) to $8,000-$10,000 (highest level of effort).

This additional project-specific information would tell us the resultant TP removals achieved by these stormwater BMPs. However, the total additional TP loading for all linear projects reviewed since the 2017 revisions to the Requirements document is already relatively small in relation to the entire watershed. Based on the level of effort to obtain the additional TP removal information, and given the additional information would show a lower additional TP loading to downstream water bodies, the Commission Engineer does not recommend this additional analysis.

Table 1. Comparison of previous (2015) and current BCWMC triggers and water quality performance standards for linear projects

BCWMC Reviews of Linear Projects			2017-33 Metro Transit C Line BRT	2018-02 Hwy 55 Frontage Road Reconstruction	2018-04 Golden Valley 2018 PMP	2018-05 Luce Line Regional Trail Reconstruction	2018-07 Toledo-Scott Avenue Reconstruction	2018-08 Kilmer Park Street Reconstruction	2018-09 CenterPoint Energy 2018 MBLC GV West	2018-11 CenterPoint Energy Boone Avenue N Mill	2018-15 Trunk Highway 55 (TH 55) West Improvements	2018-18 CenterPoint Energy 2018 MBLC GV Central	2018-21 MCES Golden Valley Interceptor	^ Previously reviewed by the BCWMC at their September 2018 meeting. ^	2018-22 Plymouth Sanitary and Storm Sewer Rehab	2018-30 Winpark Drive Infrastructure Impr.	2018-31 CSAH 9 (Rockford Road) and I-494 Interchange	2019-02 Golden Valley 2019 PMP	2019-04 CenterPoint MBLSW Winnetka Avenue	2019-05 Candlelight Terrace Street Reconstruction	2019-10 Ridgedale Drive Improvements	2019-12 Theodore Wirth Golf Course Cart Paths	2019-28 Plymouth 2020 Street Construction	2020-01 Golden Valley 2020 PMP	2020-04 CenterPoint Energy 2020 MBLNW Winnetka	2020-07 Crystal 2020 Utility Reconstruction	2020-12 New Hope 2020 Infrastructure Improvements	2020-13 West Broadway Ave (CSAH81) Bridges Recon.	**TOTAL (OR SUM)**
BCWMC Project Review Data	Project Disturbance (acres)		5.50	1.50	8.37	1.92	3.40	7.70	1.80	0.90	2.66	1.77	4.42		0.67	3.90	19.17	11.03	2.50	1.61	14.24	7.00	20.70	7.90	4.50	4.09	14.08	7.4	**158.73**
	Existing Impervious (acres)		5.40	1.15	5.27	0.76	2.89	4.58	1.80	0.00	0.92	1.77	0.86		0.16	2.64	5.91	5.89	2.50	0.95	8.94	2.35	12.81	4.56	4.50	1.95	6.08	3.64	**88.28**
	Proposed Impervious (acres)		5.00	1.17	5.07	0.73	3.00	4.96	1.80	0.00	1.58	1.77	0.86		0.16	2.43	7.66	5.64	2.50	0.92	8.84	3.85	13.76	4.32	4.50	1.74	6.08	3.41	**91.75**
	Change in Impervious (acres)		-0.40	0.02	-0.20	-0.03	0.11	0.38	0.00	0.00	0.66	0.00	0.00		0.00	-0.21	1.75	-0.25	0.00	-0.03	-0.10	1.50	0.95	-0.24	0.00	-0.21	0.00	-0.23	**3.47**
	New Impervious (acres)		0.00	0.02	0.00	0.00	0.11	0.38	0.00	0.00	0.66	0.00	0.00		0.00	0.00	1.76	0.00	0.00	0.00	0.00	1.50	0.96	0.00	0.00	0.00	0	0	**5.39**
	Reconstructed Impervious (acres)		5.00	1.15	5.07	0.73	2.89	4.58	1.80	0.00	0.92	1.77	0.86		0.16	2.43	5.91	5.64	2.50	0.92	8.84	2.35	12.81	4.32	4.50	1.74	6.08	2.56	**85.53**
	Total New and Reconstructed Impervious (acres)		5.00	1.17	5.07	0.73	3.00	4.96	1.80	0.00	1.58	1.77	0.86		0.16	2.43	7.66	5.64	2.50	0.92	8.84	3.85	13.76	4.32	4.50	1.74	6.08	2.56	**90.90**
Previous (2015) BCWMC Requirement:	Trigger MIDS at 1 acre of new/fully reconstructed impervious	MIDS Treatment: Capture & retain larger of 1.1 inches off the net increase in impervious – or – 0.55 inches off the new/fully reconstructed impervious (acre-feet). Follow flexible treatment options if volume reduction is not feasible or not allowed.	0.23	0.05	0.23	0 [1]	0.14	0.23	0.08	0	0.07	0.08	0		0 [1]	0.11	0.35	0.26	0.11	0	0.41	0 [1]	0.63	0.2	0.21	0.08	0.28	0.12	**3.87**
Current BCWMC Requirement:	Trigger treatment at 1 acre of net new impervious	Capture & retain 1.1 inches off the net new impervious area (acre-feet). Follow flexible treatment options if volume reduction is not feasible or not allowed.	0	0	0	0 [1]	0	0	0	0	0	0	0		0 [1]	0	0.16	0	0	0	0	0 [1]	0	0	0	0	0	0	**0.16**
Capture and Retain Volume Provided (acre-feet) [2]			0 [4]	- [3]	0 [5]	0 [1]	- [3]	0	0	0	0	0	0		0 [1]	- [3]	- [6]	0	0	- [3]	- [7]	0 [1]	0	0	0	0	0	0	**0.00**
Site Constraints	1 = Poor Soils 3 = Space (Right of Way) Constraints 5 = Drinking Water Management Areas 7 = Contaminated Soils 9 = Other	2 = High Groundwater 4 = Infiltration & Inflow Concerns 6 = Karst Areas 8 = Shallow Bedrock	More discussion and coordination needed with applicants to evaluate and determine whether any site constraints were present for each specific project.												More discussion and coordination needed with applicants to evaluate and determine whether any site constraints were present for each specific project.													
Water Quality	TP Loading from Existing (Pre-Project) Impervious (lb/year)		9.61	2.05	9.38	1.35	5.14	8.15	3.20	0	1.64	3.15	1.53		0.28	4.70	10.52	10.48	4.45	1.69	15.91	4.18	22.80	8.12	8.01	3.47	10.82	6.48	**157.14**
	TP Loading from Proposed (Post-Project) Impervious (lb/year)		8.90	2.08	9.02	1.30	5.34	8.83	3.20	0	2.81	3.15	1.53		0.28	4.33	13.63	10.04	4.45	1.64	15.74	6.85	24.49	7.69	8.01	3.10	10.82	6.07	**163.32**
	Difference in TP Loading from Existing (Pre-Project) to Proposed (Post-Project) (lb/year)		-0.71	0.04	-0.36	-0.05	0.20	0.68	0	0	1.17	0	0		0	-0.37	3.12	-0.45	0	-0.05	-0.18	2.67	1.69	-0.43	0	-0.37	0	-0.41	**6.18**
	TP Removal (lb/year)		0 [4]	- [3]	6.34 [5]	- [1]	- [3]	- [3]	0	0	0	0	0		- [1]	- [3]	17.0 [6]	- [3]	0	- [3]	9.85 [7]	- [1]	- [3]	- [3]	0	0	- [3]	- [3]	
	TP Removal (%)		0% [4]	- [3]	64% [5]	- [1]	- [3]	- [3]	0%	0%	0%	0%	0%		- [1]	- [3]	550% [6]	- [3]	0%	- [3]	55% [7]	- [1]	- [3]	- [3]	0%	0%	- [3]	- [3]	

[1] Trails and sidewalks and other miscellaneous disconnected impervious surfaces are exempt from BCWMC water quality performance goals. Adjacent pervious areas may provide some pretreatment or water quality treatment.

[2] Projects with site restrictions may not be required to "capture & retain" the water quality volume. These projects must follows BCWMC Flexible Treatment Options (FTOs).

[3] Water quality treatment/pretreatment provided by project but documentation not submitted or not reviewed.

2018-02: Project included 5 new sump maholes for pretreatment. Drainage routed to existing ditches and wetlands along linear project which may also provide some water quality treatment and/or infiltration.
2018-07: Project included 18,905 cubic-foot Stormtech underground detention and infiltration system.
2018-08: Project included 4 new sump manholes for pretreatment.
2018-30: Project included 1 new sump manhole for pretreatment and an underground filtration trench to provide water quality treatment and/or infiltration.
2019-02: Project included 2 new sump manholes with SAFL baffles for pretreatment.
2019-05: Project included 4 new sump manholes for pretretment. Drainage routed to existing stormwater ponds, which were improved as part of this project and provide water quality treatment.
2019-28: Project included 23 new sump manholes with SAFL baffles for pretreatment.
2020-01: Project included 1 new sump manhole for pretreatment.
2020-12: Project included 1 new sump manhole for pretreatment.
2020-13: Project was designed to maximized the amount of runoff that is routed to ditches and infield ponding areas in order to maximize pretreatment and water quality treatment.

[4] Draft 90% designs for the project included 6 new sump manholes for pretreatment. However, the city asked that these be removed from the final design due to access and maintenance concerns, minimal effectiveness, and future stormwater improvement plans for the area.

[5] No volume retained specifically as part of project, but a filtration basin proposed as mitigation for 2016 PMP project and 2017 PMP project.

[6] Project included existing regional stormwater ponds, filtration basins, and swales within the construction limits that were utilized to demonstrate compliance to BCWMC requirements.

[7] Water quality treatment provided as part of BCWMC Capital Improvement Program (CIP) Project CL-3 in conjunction with this project.

Brooklyn Center
Turtle Lake
New Hope
Lost Lake
Northwood Lake
Robbinsdale
Medina
Crystal
Plymouth
Bassett Creek Park Pond
North Rice Pond
Grimes Pond
South Rice Pond
Medicine Lake
Minneapolis
Parkers Lake
Hidden Lake
Sweeney Lake
Twin Lake
Orono
Golden Valley
Schaper Pond
Cavanaugh Lake
Wirth Lake
Cortlawn Pond
Ring Ponds
Wayzata
Westwood Lake
Crane Lake
Minnetonka
Saint Louis Park

Source: Minnesota Geological Survey, 2006

- Linear Project Footprint
- Theodore Wirth Golf Course
- BCWMC Jurisdictional Boundary
- Municipal Boundary
- Lake
- Creeks

Depth to Bedrock

- 0' - 50'
- 51' - 100'
- 101' - 150'
- 151' - 200'
- 201' - 250'
- 251' - 300'
- 301' - 350'
- 351' - 400'

Depth to bedrock created from well data in the County Well Index (CWI) database with verified locations that intersect the bedrock surface.

N

Feet
4,000 0 4,000

Figure 1

DEPTH TO BEDROCK
Bassett Creek Watershed
Management Commission

Bassett Creek Watershed Management Commission

Brooklyn Center
Turtle Lake
New Hope
Lost Lake
Northwood Lake
Robbinsdale
Medina
Crystal
Plymouth
Bassett Creek Park Pond
North Rice Pond
Grimes Pond
South Rice Pond
Medicine Lake
Minneapolis
Parkers Lake
Hidden Lake
Sweeney Lake
Twin Lake
Orono
Golden Valley
Schaper Pond
Cavanaugh Lake
Wirth Lake
Cortlawn Pond
Ring Ponds
Wayzata
Westwood Lake
Crane Lake
Minnetonka
Saint Louis Park

Source: MnDNR

- Linear Project Footprint
- Theodore Wirth Golf Course
- BCWMC Jurisdictional Boundary
- Municipal Boundary
- Lake
- Creeks

Depth to Groundwater

- 0-10'
- 10-20'
- 20-30'
- 30-40'
- 40-50'
- 50'+
- Water

This dataset estimates the water table elevation from three primary sources: depth to water table in saturated soils from Natural Resources Conservation Service data (which are converted to elevation), elevation of surface water bodies, and the static water elevation in water table wells with verified locations. With the use of a 30-meter DEM derived using LiDAR data, depth to water table is derived from the water-table elevation.

N

Feet
4,000 0 4,000

Figure 2

DEPTH TO GROUNDWATER
Bassett Creek Watershed
Management Commission

Bassett Creek Watershed Management Commission

Source: MDH

- Linear Project Footprint
- Theodore Wirth Golf Course
- BCWMC Jurisdictional Boundary
- Municipal Boundary
- Lake
- Creeks

DWSMA Boundary

- Edina
- Hopkins
- Minnetonka
- Plymouth
- Robbinsdale
- Saint Louis Park

- Sun Valley Mobile Home Park

Drinking water supply management area (DWSMA) is the Minnesota Department of Health (MDH) approved surface and subsurface area surrounding a public water supply well that completely contains the scientifically calculated wellhead protection area and is managed by the entity identified in a wellhead protection plan. The boundaries of the drinking water supply management area are delineated by identifiable physical features, landmarks or political and administrative boundaries.

Feet

4,000 0 4,000

Figure 3

DRINKING WATER SUPPLY MANAGEMENT AREAS (DWSMA)
Bassett Creek Watershed Management Commission

Bassett Creek Watershed Management Commission

Brooklyn Center
Turtle Lake
New Hope
Lost Lake
Northwood Lake
Robbinsdale
Medina
Crystal
Plymouth
Bassett Creek Park Pond
North Rice Pond
Grimes Pond
South Rice Pond
Medicine Lake
Minneapolis
Parkers Lake
Hidden Lake
Sweeney Lake
Twin Lake
Orono
Golden Valley
Schaper Pond
Wirth Lake
Cavanaugh Lake
Cortlawn Pond
Ring Ponds
Wayzata
Westwood Lake
Crane Lake
Minnetonka
Saint Louis Park

Source: MnDNR

Linear Project Footprint
Theodore Wirth Golf Course
BCWMC Jurisdictional Boundary
Municipal Boundary
Lake
Creeks

Surface Karst

Platteville Formation and Glenwood Formation (Carbonate Only)
St. Peter Sandstone (Carbonate Sandstone)

In Minnesota, surface karst features (including but not restricted to sinkholes, caves, stream sinks, and karst springs) are observed to primarily occur where 50 feet or less of unconsolidated material overlie Paleozoic carbonate bedrock and St. Peter Sandstone, or the Mesoproterozoic Hinckley Sandstone.
Bedrock geology maps and depth to bedrock models were obtained from the MGS. Bedrock units that were previously determined to be karst susceptible by MGS, DNR, and University of Minnesota staff were singled out in areas where the depth to bedrock was less than 50 feet from the land surface.

N

Feet
4,000 0 4,000

Figure 4

SURFACE KARST
Bassett Creek Watershed Management Commission

Bassett Creek Watershed Management Commission

Medina
Turtle Lake
Plymouth
Lost Lake
Medicine Lake
New Hope
Northwood Lake
Brooklyn Center
Robbinsdale
Crystal
Bassett Creek Park Pond
North Rice Pond
Grimes Pond
South Rice Pond
Minneapolis
Parkers Lake
Hidden Lake
Sweeney Lake
Twin Lake
Golden Valley
Schaper Pond
Wirth Lake
Orono
Cavanaugh Lake
Cortlawn Pond
Ring Ponds
Wayzata
Westwood Lake
Crane Lake
Minnetonka
Saint Louis Park

Source: NRCS

- Linear Project Footprint
- Theodore Wirth Golf Course
- BCWMC Jurisdictional Boundary
- Municipal Boundary
- Lake
- Creeks

Hydrologic Soil Group

- A, B — Anticipated Good Infiltration
- C, D — Poor Infiltration
- No Data (Urban Soils)

The NRCS has established four general hydrologic soil groups based on infiltration rate. Soil composition, slope, and land management practices determine the impact of soils on water resource issues. Infiltration capacities of soils affect the amount of direct runoff resulting from rainfall. Higher infiltration rates result in lower potential for runoff from the land, as more precipitation is able to enter the soil.

N

Feet
4,000 0 4,000

Figure 5

SOIL INFILTRATION POTENTIAL
Bassett Creek Watershed
Management Commission

Bassett Creek Watershed Management Commission

Barr Footer: ArcGIS 10.7.1 2020-10-06 08:24 File: I:\Client\BassettCreek\Work Orders\2020\Development Reviews\Maps\Basemaps\Figure 6 - What's In My Neighborhood.mxd User: EMA

- Linear Project Footprint
- Theodore Wirth Golf Course
- BCWMC Jurisdictional Boundary
- Municipal Boundary
- Lake
- Creeks

What's in my Neighborhood (MPCA)

- Feedlot
- Hazardous Waste
- Investigation and Cleanup
- Solid Waste
- Tanks and Leaks
- Water Quality
- Multiple Activities

The data set was created as part of the Minnesota Pollution Control Agency's What's in My Neighborhood web application, which allows for public access to sites with environmental cleanup, pollution prevention, permitted, registered, or licensed activities. Methods for creating site locations have different levels of precision. The most accurate locations use coordinates from GPS (global positioning system). Coordinates are also derived using the site's street address, zip code or public land survey information. Some MPCA sites are not mapped. These are generally activities that are mobile, like ships with ballast water permits.

N

Feet

4,000 0 4,000

Figure 6

WHAT'S IN MY NEIGHBORHOOD
Bassett Creek Watershed Management Commission

Bassett Creek Watershed Management Commission