

Crosby Lake Management Plan

2010-2011 Work Plan

Project Sponsor:

Capitol Region Watershed District

In Partnership With:

City of Saint Paul

Other Contributing Sponsors:

Ramsey County Public Works

Ramsey Conservation District

National Park Service

Friends of Mississippi River

Friends of Saint Paul Parks

Highland Park District Council

Funded with:

MN Clean Water Legacy Grant from MN Pollution Control Agency

May 2010

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CROSBY LAKE MANAGEMENT PLAN AND GRANT SUMMARY

Project Title: Development of Crosby Lake Management Plan

Organization: Capitol Region Watershed District

Project Start Date: February 2010

Project End Date: March 2011

Work Plan Submittal Date: May 2010

Grantee Contact Name/Title: Anna Eleria, Water Resource Specialist

Address: 1410 Energy Park Drive, Suite 4
Saint Paul, MN 55108

Phone Number: (651) 644-8888

Fax Number: (651) 644-8894

Email: anna@capitolregionwd.org

Watershed, Lake or Waterbody: Crosby Lake

Latitude/Longitude for Project Area: 44.90470666/-93.14966156

County: Ramsey

Project Funding Type: CWP Diagnostic

Grant Amount: \$50,000

Proposed Cash Match Funds: \$8,000 **Proposed In-Kind Match Funds:** \$42,000

Total Project Costs: \$100,000

Local Units of Government in the Project Area

Counties:	Ramsey County		
Cities:	Saint Paul		
Agencies:	Capitol Region Watershed District	National Park Service	
Organizations:	Friends of Mississippi River	Highland District Council	Friends of the Parks and Trails in Saint Paul and Ramsey County
Other:			
State Senate Districts: 64			
State House Districts: 64B			

I. EXISTING CONDITIONS AND PROBLEMS

Capitol Region Watershed District (CRWD) received a grant in late 2009 from the MN Clean Water Partnership Program for the development of a management plan for Crosby Lake, which is one of four lakes located in CRWD. CRWD is a 41-square mile watershed in Saint Paul, Roseville, Maplewood, Falcon Heights and Lauderdale that drains to the Mississippi River. Situated in the floodplain of the Mississippi River in Saint Paul, Crosby Lake is divided into two separate waterbodies by a bog trail, forming Crosby Lake and Little (or Upper) Crosby Lake (Figure 1). Crosby Lake is 48 acres in size and has a maximum depth of 19 feet. It receives 1,521 acres of stormwater runoff from three major outfalls and overland flow. The lake and surrounding area flood periodically because of direct stormwater runoff and the Mississippi River during high flow events.

Water quality of Crosby Lake is generally fair especially considering its location in a highly urbanized environment. Since 1999, Ramsey County has monitored water quality of Crosby Lake each growing season from May through September. Recent analysis of water quality data indicates that Crosby Lake is not impaired and is meeting the State shallow lake standards for the North Central Hardwood Forest ecoregion for chlorophyll-*a* (20 micrograms/Liter), total phosphorus (0.06 milligrams/Liter), and Secchi depth for clarity (1 meter). However, since 2005, it has been noted that clarity has declined and chlorophyll-*a* has increased (Figure 2). This water quality trend corroborates the observations from the lake qualitative surveys conducted by CRWD over the past several years. These surveys have identified large mats of algae in the late summer months that impede recreation in the lake. Invasive, non-native plants threaten the diversity and habitat value of Crosby Lake. Another threat to Crosby Lake is the accelerated bluff erosion north of the lake which is a significant source of sediment (Ramsey Conservation District, 2005).

The land surrounding Crosby Lake, collectively known as the Crosby Farm Regional Park, is a City of Saint Paul park and a part of the National Park Service's Mississippi National River and Recreation Area. The Park provides opportunities for fishing, canoeing, walking, hiking, and cross country skiing. This area was farmland until the 1960s when the Saint Paul Port Authority purchased the land and transferred ownership of two-thirds of the property to the City of Saint Paul.

The 736-acre park consists of a large area of floodplain and valley side slopes (bluffs). The area contains a complex system of diverse wetland and forest habitats that offer refuge for a broad diversity of native wildlife species. The highlights of a 2004 vegetation survey by Great River Greening include areas of intact sedge meadow, black ash seepage swamps, areas of diverse spring ephemeral wildflowers, a colony of Kentucky coffee trees and large tracts of intact floodplain forest. Over 300 plant species have been identified in the Park (Great River Greening, 2005).

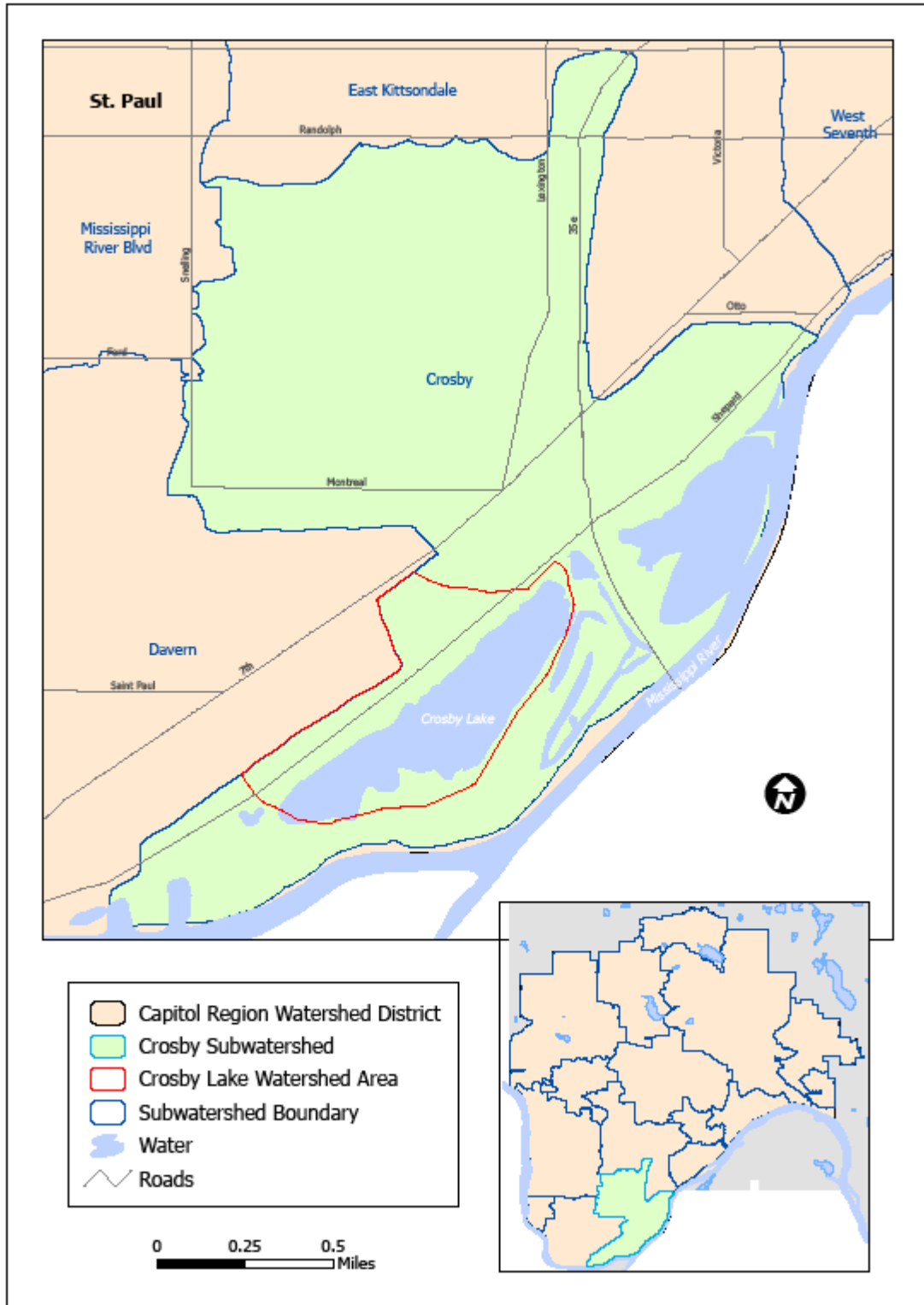


Figure 1. Crosby Lake Watershed.

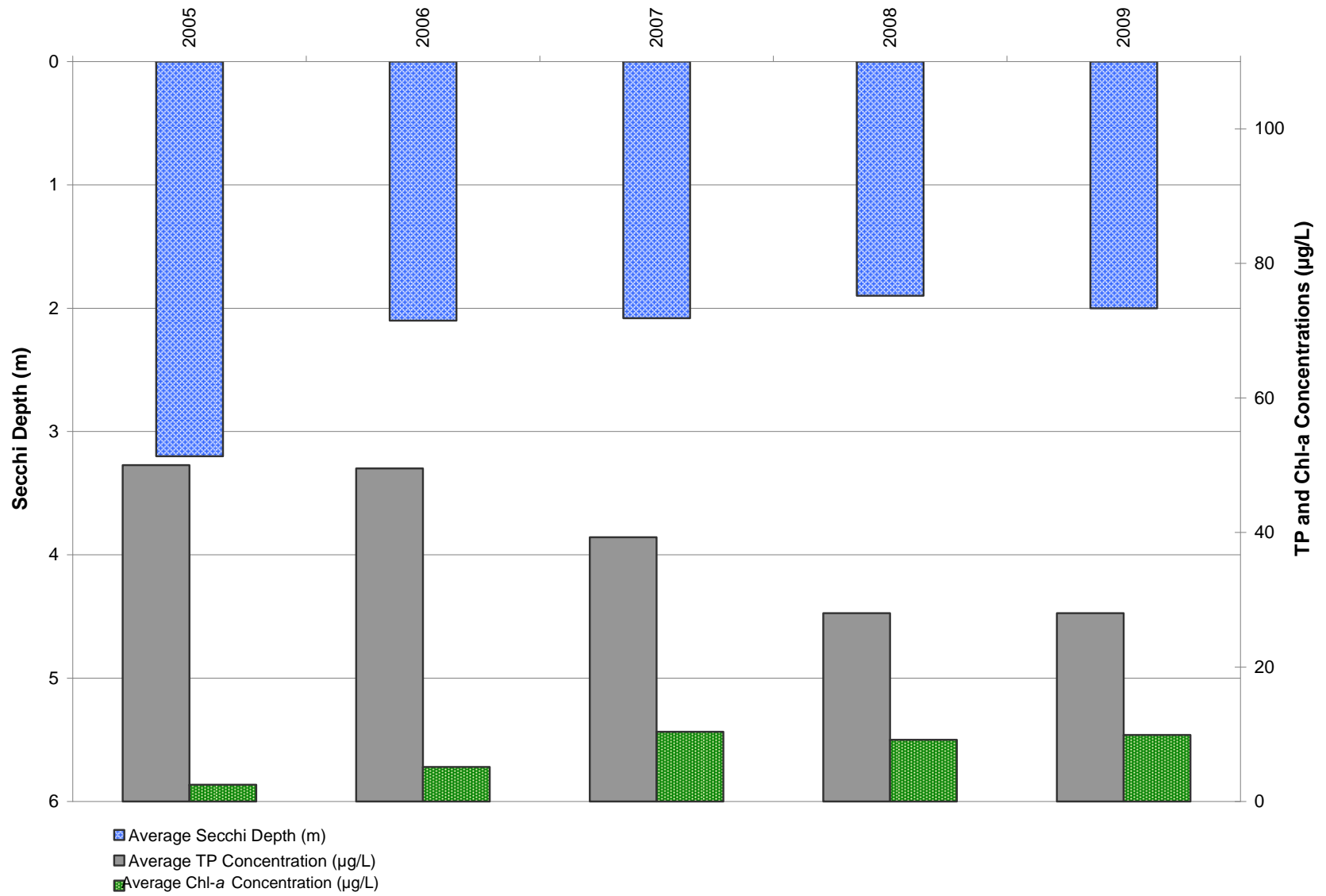


Figure 2. Crosby Lake Water Quality 2005 - 2009

Land use beyond the immediate parkland area surrounding Crosby Lake is highly mixed with industrial, commercial and single-family residential uses (Figure 3). The majority of industrial land uses are concentrated between Shepard Road and W. Seventh Street. North of W. Seventh Street, land is predominately residential and commercial with pockets of open space.

Crosby Lake is a vital economic resource to the City of Saint Paul and the State as it provides various recreational opportunities including a respite from built, urban environment and essential environmental functions including flood control for the Mississippi River and aquatic and wildlife habitat.

II. Project Goals and Objectives

Identified as an implementation project in CRWD's 2000 Watershed Management Plan, CRWD, along with the City of Saint Paul and other partners, will develop a management plan for Crosby Lake. Although the lake currently meets water quality standards, it has not been immune to the effects of urbanization, as water quality has declined since 2005, which warrants the need for developing a framework for the protection and improvement of Crosby Lake.

The goal of the plan is to protect the water quality and natural hydrologic regime of Crosby Lake by applying sound, science-based lake management implementation activities. The objectives of the plan are:

- to assess the current conditions of the lake;
- to identify the issues of concern and the priority watershed areas for management;
- to develop management goals and objectives; and
- to determine the implementation opportunities and activities for protecting and improving the ecological, aesthetic and recreational benefits of the lake.

III. Project Organization

The lead or project sponsor for the Crosby Lake Management Plan is the Capitol Region Watershed District. This project will be conducted in partnership with the City of Saint Paul. Additional support for the project will be provided by the following contributing sponsors: Ramsey Conservation District, National Park Service, Highland Park District Council, Friends of Mississippi River, and Friends of the Parks and Trails of Saint Paul and Ramsey County. The roles and responsibilities of each project partner are listed below and an organizational chart with partner contacts is provided in Figure 4. A complete staff directory can be found in Table 1. The financial contributions from each partner are shown in Table 2.

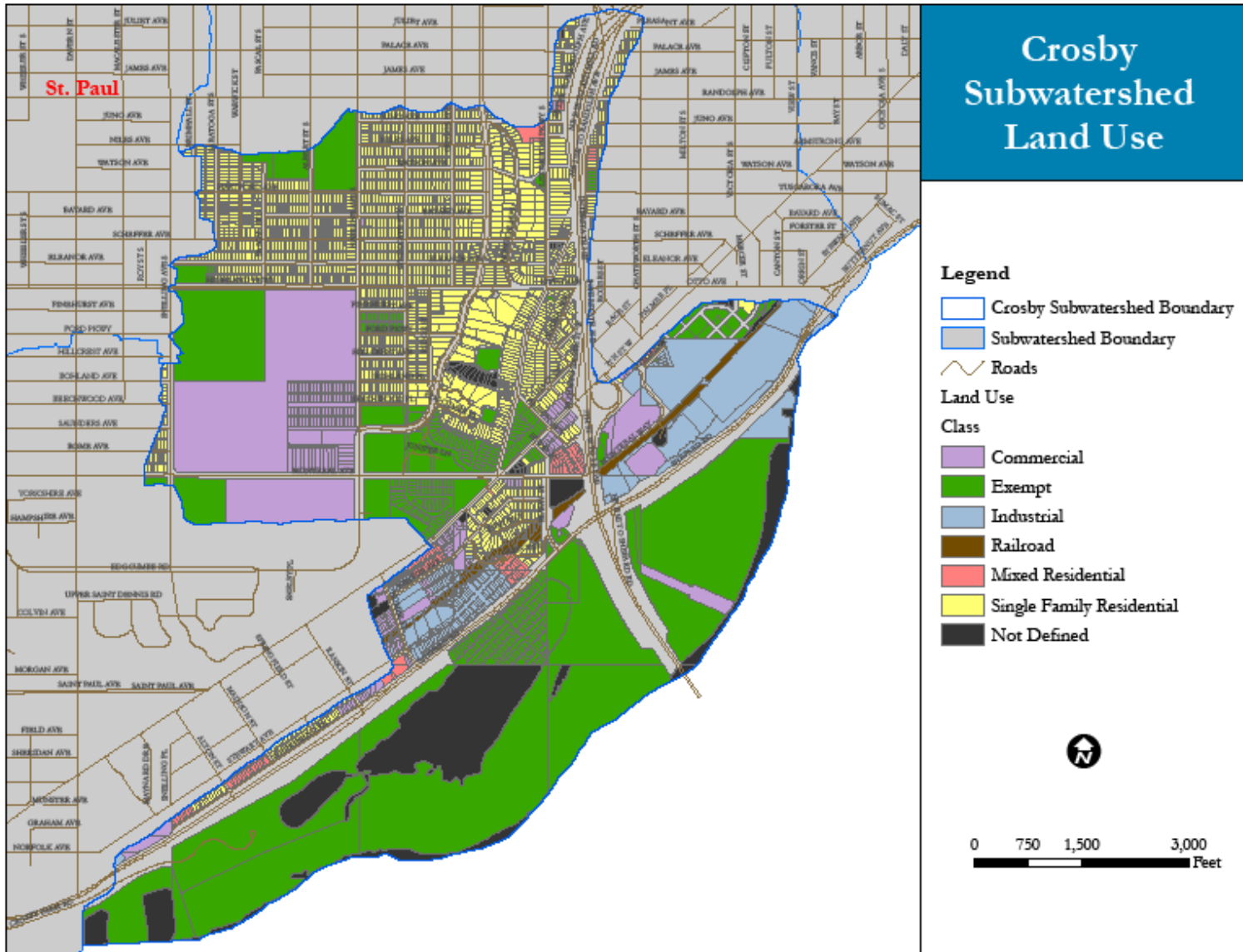


Figure 3. Crosby Lake Watershed Land Use

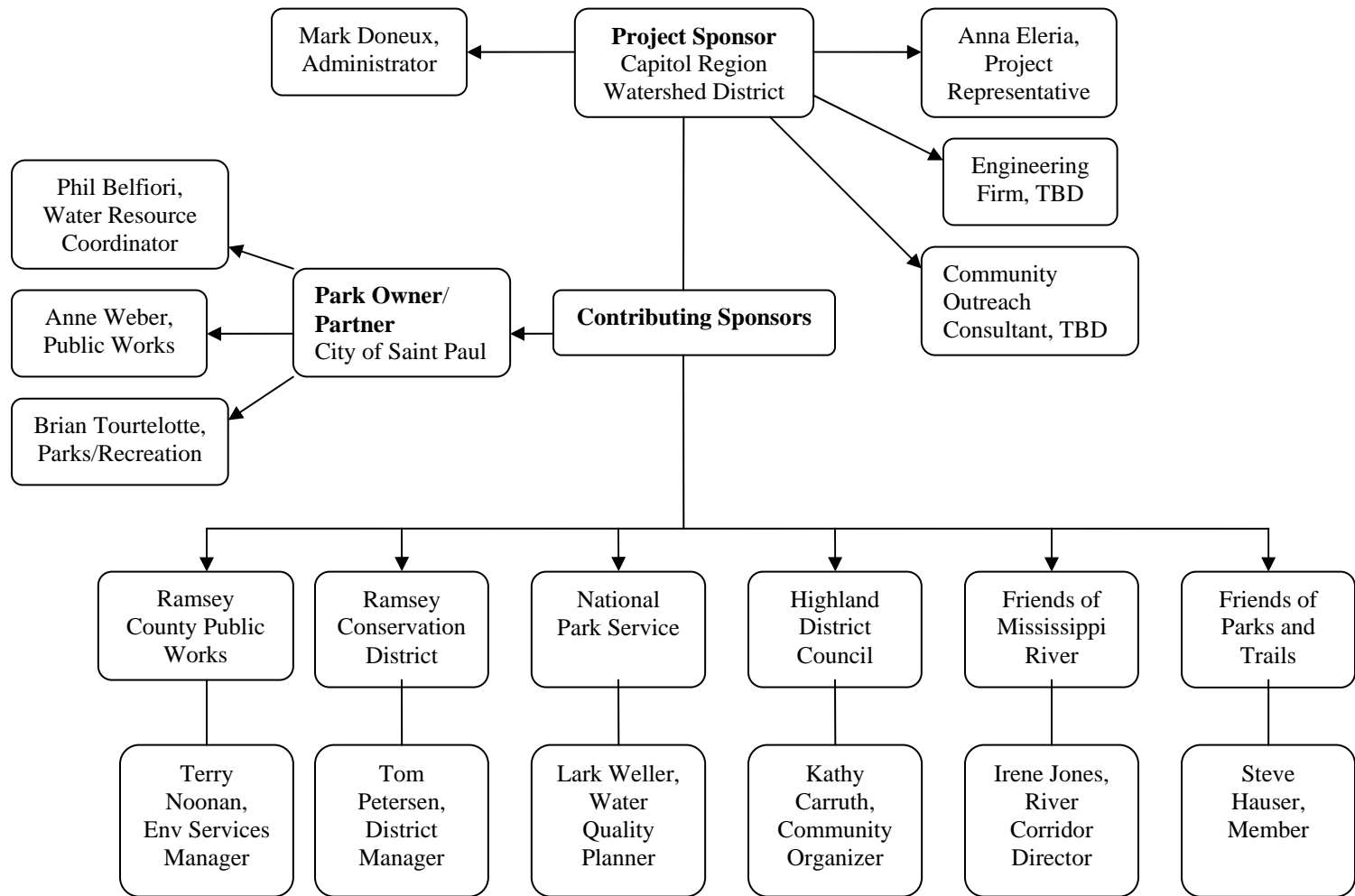


Figure 4. Crosby Lake Management Plan Organization

Name	Organization	Title	Street Address	City	State	Zip Code	Phone Number	Email Address
Mark Doneux	Capitol Region Watershed District	Administrator	1410 Energy Park Drive, Suite 4	Saint Paul	MN	55108	(651)644-8888	mark@capitolregionwd.org
Anna Eleria	Capitol Region Watershed District	Water Resource Specialist	1410 Energy Park Drive, Suite 4	Saint Paul	MN	55108	(651)644-8888	anna@capitolregionwd.org
Phil Belfiori	City of Saint Paul	Water Resource Coordinator	375 Jackson Street, Suite 220	Saint Paul	MN	55101-1806	(651) 266-9112	Phil.Belfiori@ci.stpaul.mn.us
Anne Weber	City of Saint Paul Public Works Department	Engineer	25 W. Fourth St., 700 CHA	Saint Paul	MN	55102	(651) 266-6245	Anne.Weber@ci.stpaul.mn.us
Brian Tourtelotte	City of Saint Paul Parks and Recreation Department	Landscape Architect	25 W. Fourth St., 300 CHA	Saint Paul	MN	55102	(651) 266-6414	Brian.Tourtelotte@ci.stpaul.mn.us
Terry Noonan	Ramsey County Public Works	Environmental Services Manager	1425 Paul Kirkwold Drive	Arden Hills	MN	55112		terry.noonan@co.ramsey.mn.us
Tom Petersen	Ramsey Conservation District	Manager	1425 Paul Kirkwold Drive	Arden Hills	MN	55112	(651)266-7272	tom.petersen@co.ramsey.mn.us
Lark Weller	MNRRRA National Park Service	Water Quality Planner	111 E. Kellogg Blvd., Suite 105	Saint Paul	MN	55101	651-290-3030 x304	lark_weller@nps.gov
Kathy Carruth	Highland District Council	Community Organizer	1978 Ford Pkwy	Saint Paul	MN	55106	651-695-4005	hdc@visi.com
Irene Jones	Friends of Mississippi River	River Corridor Program Director	360 North Robert Street, Suite 400	Saint Paul	MN	55101	651-222-2193 x11	ijones@fmr.org
Steve Hauser	The Friends of the Parks and Trails of St. Paul and Ramsey County	Community Member	2075 Village Lane #4	Saint Paul	MN	55116		hause011@tc.umn.edu

Table 1. Crosby Lake Management Plan Sponsor/Partner Staff Directory

Table 2. Crosby Lake Management Plan Sponsor/Partner Contributions

Sponsors	Cash Contribution	In-kind Contribution	Total Project Support
<i>Project Sponsor</i>			
CRWD	\$ 8,000	\$ 24,000	\$ 32,000
<i>Local Contributing Sponsors</i>			
Saint Paul	\$ -	\$ 8,100	\$ 8,100
Ramsey County Public Works		\$ 2,100	\$ 2,100
Friends of Mississippi River	\$ -	\$ 2,220	\$ 2,220
Friends of Parks and Trails of Saint Paul and Ramsey County	\$ -	\$ 800	\$ 800
Highland Park District Council	\$ -	\$ 800	\$ 800
Ramsey Conservation District	\$ -	\$ 2,000	\$ 2,000
<i>State/federal contributing sponsors</i>			
National Park Service	\$ -	\$ 2,000	\$ 2,000
TOTAL	\$ 8,000	\$ 42,020	\$ 50,020
GRANT AWARD	\$ 50,000	\$ -	\$ 50,000
GRAND TOTAL	\$ 58,000	\$ 42,020	\$ 100,020

Capitol Region Watershed District - CRWD is the project sponsor and will lead the development of the Crosby Lake Management Plan. CRWD will be responsible for administering this grant-funded project and coordinating the two advisory groups, technical and citizen, for the project. In addition, CRWD will contract with a qualified, engineering consultant to assist with the technical and writing components of the project (i.e., data analysis, modeling, mapping, etc.). CRWD will also contract with a qualified, community outreach consultant to assist with the citizen advisory group. Upon completion of the plan, CRWD will assume responsibility for the administration, coordination and oversight of the management plan in partnership with the City of Saint Paul.

Engineering Firm – CRWD will contract with a qualified engineering firm to conduct the technical work and prepare the management plan. Their work tasks include existing data compilation and evaluation, additional data collection, data synthesis and analysis, and preparation of the management plan.

Community Outreach Consultant – CRWD will contract with a qualified community outreach consultant to assist with engaging the public in the development of the management plan. The consultant will conduct the outreach to convene a citizen advisory group. The citizen advisory committee will develop their own set of goals and project ideas for the management plan, which will be considered by CRWD and where appropriate incorporated into the final management plan.

City of Saint Paul – The City of Saint Paul is a partner with CRWD and a local contributing sponsor for this project. The Crosby Farm Regional Park is owned by the City and the Saint Paul Port Authority. The entire watershed of Crosby Lake is located within city boundaries. Representatives from at least two City departments, Public Works and Parks and Recreation, will serve on the Crosby Lake Management Plan Advisory Group. These City representatives will play instrumental roles in developing the plan, promoting it to their colleagues and constituents and implementing the management activities to achieve the shared goals. The City will also provide existing data and information about Crosby Lake and its watershed, such as storm sewer data, past and proposed capital improvement projects in and near Crosby Lake, and park management plan. Implementation projects identified in the management plan that are located in City right-of-way, on City-owned property, affecting City programs or involving City operation and maintenance are required to go through the City's water resource management interagency collaboration process.

Ramsey County Public Works - The Ramsey County Public Works Department (RCPW) is a local contributing sponsor for this project who will provide in-kind labor. An RCPW representative will serve on the Crosby Lake Management Plan Advisory Group and will play an instrumental role in the development of the plan, promotion of it to their colleagues and constituents and implementation of the management activities to achieve the shared goals. RCPW monitors the water quality of Crosby Lake and will provide existing data and information about Crosby Lake.

Ramsey Conservation District - The Ramsey Conservation District (RCD) is a local contributing sponsor for this project who will provide in-kind labor. An RCD representative will serve on the Crosby Lake Management Plan Advisory Group and will play an instrumental role in the development of the plan, promotion of it to their colleagues and constituents and implementation of the management activities to achieve the shared goals. RCD will provide existing data and information about Crosby Lake and its watershed including their inventory and assessment of bluff erosion near Crosby Lake.

National Park Service - The National Park Service (NPS) is a contributing sponsor for this project who will provide in-kind labor. An NPS representative will serve on the Crosby Lake Management Plan Advisory Group playing an instrumental role in developing the plan, promoting it to their colleagues and constituents and implementing the management activities to achieve the shared goals.

Highland District Council - The Highland District Council (HDC) is a local contributing sponsor for this project who will provide in-kind labor. An HDC representative will serve on the Crosby Lake Management Plan Advisory Group playing an instrumental role in developing the plan, promoting it to their colleagues and constituents and implementing the management activities to achieve the shared goals.

Friends of Mississippi River - The Friends of Mississippi River (FMR) is a local contributing sponsor for this project who will provide in-kind labor. An FMR representative will serve on the Crosby Lake Management Plan Advisory Group playing an instrumental role in developing the plan, promoting it to their colleagues and constituents and implementing the management activities to achieve the shared goals.

Friends of Parks and Trails in Saint Paul and Ramsey County – The Friends of Parks and Trails in Saint Paul and Ramsey County (FPT) is a local contributing sponsor for this project who will provide in-kind labor. An FPT representative will serve on the Crosby Lake Management Plan Advisory Group playing an instrumental role in developing the plan, promoting it to their colleagues and constituents and implementing the management activities to achieve the shared goals.

IV. Program Elements

The Crosby Lake Management Plan is intended to assess the current conditions of the lake and identify opportunities for protecting and improving the ecological, aesthetic and recreational opportunities of the lake and ensuring that water quality standards continue to be met. The elements for the project are:

1. Project Management and Administration
2. Work Plan Development;
3. Advisory Group Coordination/Participation;
4. Data and Information Collection;
5. Watershed Data Analysis and Assessment;

6. Management Plan Development; and
7. Education and Outreach.

Element 1 – Project Management and Administration. CRWD will manage all aspects of this project to develop a management plan for Crosby Lake. This element involves project administration, fiscal management, and hiring and managing an engineering consulting firm for the technical portion of the project. CRWD will solicit proposals for an engineering consulting firm. CRWD will review submitted proposals and select the most qualified, cost-effective firm. CRWD will submit the subcontract to MPCA for review. CRWD will also maintain regular communication with MPCA, contributing sponsor organizations, and others as necessary to keep project partners informed and respond to project-related inquiries. Also as part of this element, CRWD staff will present regular project updates to CRWD's Board of Managers. The MPCA reporting requirements will be fulfilled under this element, which include semi-annual, annual and final reports.

Element 2 – Work Plan Development. CRWD will develop a work plan for this project as required by PCA for the Clean Water Partnership Grant. The plan will be a comprehensive document that specifies goals and objectives of the project, how and when the work will be done and who is responsible for doing it, what the cost of the work will be, and how the resulting data will be managed so that the goals of the project are met. The contributing sponsors will review and comment on the draft work plan. This work plan with input from the contributing sponsors will be submitted to PCA for review and final approval.

Element 3 - Advisory Groups Coordination/Participation. CRWD will convene two advisory groups for developing the Crosby Lake Management Plan. The first group will comprise staff from MPCA, City of Saint Paul and the other contributing sponsors. Additional agencies and organizations to invite to participate in this first group include the Saint Paul Port Authority, MN Department of Transportation, Metropolitan Council, MN Board of Water and Soil Resources, MN Department of Natural Resources and any other interested parties with technical and/or policy expertise. The first advisory group will provide assistance in determining and prioritizing the issues of most concern in Crosby Lake and developing management goals and actions to address the issues. It is anticipated that the first advisory group will meet a minimum of three times. The first meeting will kick-off the project to present background information about CRWD and Crosby Lake and the goals, objectives, elements and timeline for developing the management plan. A second meeting will be held to discuss available data and information on Crosby Lake and its watershed, additional data needs and preliminary management goals and objectives. A third meeting will be held to present the draft management plan and receive comments.

A second advisory group will consist of private citizens interested in protecting and improving Crosby Lake. This citizen advisory group may be members of CRWD Citizen Advisory Committee, CRWD residents, frequent visitors to the park and other interested citizens. CRWD will seek the assistance of a community outreach consultant to

convene this group and facilitate a minimum of three meetings. The first meeting will be focused on “getting to know CRWD” and the management plan development process. CRWD staff will present information on the watershed district and Crosby Lake and then the process for developing the management plan. The second meeting will focus on the vision the group desires for Crosby Lake including lake management goals and objectives and the activities and projects to accomplish these goals and objectives. At the third meeting, CRWD will present the draft management plan and highlight how the public’s ideas were incorporated.

All advisory group meetings are open to the general public and members of one advisory group are welcome to attend the other advisory group’s meetings.

Element 4 – Data and Information Collection and Evaluation. CRWD will subcontract an engineering consulting firm to review and evaluate available data and studies from CRWD, Ramsey County, Saint Paul, DNR, Great River Greening and others and determine gaps in data. The engineering firm will then obtain/collect additional data as needed to complete the plan. The types of data and information expected to be available or collected include water quality and quantity data, aquatic vegetation surveys, fish surveys, bathymetry, current and projected watershed land use, storm sewer information, erosion inventory and assessment, aerial photographs, groundwater information and park ecological inventory.

Element 5 – Watershed Data Assessment. The engineer will synthesize and analyze all available data on Crosby Lake and its watershed. The data will be compared to standards and benchmarks for MN lakes and determine the current health of the lake. The engineer will develop a water budget model for Crosby Lake as well as a lake response model to analyze current and future conditions of the lake and watershed to help identify implementation activities.

Element 6 – Management Plan Development. The engineer with guidance from CRWD will determine the issues of most concern in Crosby Lake and identify areas of high priority for management; identify the management goals and objectives; develop implementation activities to address the high priority issues of Crosby Lake; and prepare the Crosby Lake Management Plan. The Crosby Lake Management Plan will be consistent with CRWD’s 2010 Watershed Management Plan, the City of Saint Paul’s Water Chapter of the 2010 Comprehensive Plan, the City of Saint Paul’s Local Surface Water Plan, and shall consider other factors, such as construction and operation and maintenance costs. CRWD will solicit comments on the draft plan from the advisory group and interested watershed residents.

Element 7 – Public Education and Outreach. CRWD will inform its residents, regular visitors to Crosby Lake and the general public about the development of the management plan through CRWD’s website, newsletter, mailings, and meetings. CRWD will invite members of the community to be members of the management plan advisory group. CRWD will work closely with the contributing sponsors to help promote this project. A public meeting will be held to present the draft management plan and

solicit comment and set the stage for the upcoming management activities over the next 10 years.

V. Milestone Schedule

CRWD anticipates that it will take slightly over one-year to complete the elements for developing the Crosby Lake Management Plan. See Table 3 for the project milestone schedule. Implementation of the management activities will be planned over 10 years.

VI. Monitoring

Ramsey County Public Works (RCPW) monitors the water quality of lakes in the Capitol Region Watershed District including Crosby Lake. Since 1999, Crosby Lake has been monitored on a monthly or bi-weekly basis during the growing season, May through September. RCPW measures temperature, dissolved oxygen, pH, conductivity, transparency and turbidity. Samples are collected from discrete depths within the mixed water layer. If thermal stratification was present, additional water samples were collected from the thermocline and the hypolimnion. Samples are analyzed for chlorophyll-*a*, phaeophytin-*a*, total phosphorus, soluble reactive phosphorus, total Kjeldahl nitrogen, nitrate, chloride and ammonia. RCPW follows an approved monitoring plan. CRWD obtains and analyzes RCPW lakes data and summarizes the results in its annual monitoring report (CRWD, 2009).

The Bell Museum of Natural History at the University of Minnesota in partnership with the National Park Service and others conducted a bio-blitz in Crosby Farm Regional Park in the summer 2009. The goal of the survey was to identify and catalog as many species of life as possible within a 24-hour period. At least 240 species of plants were found, including 13 new species previously unreported in Ramsey County. Numerous animal species were identified including peregrine falcons, bald eagles, mussels, snakes, and insects.

The Minnesota Department of Natural Resources (DNR) conducts fish surveys throughout the State including in Crosby Lake. The last fish survey in Crosby Lake occurred in 2004. Plant surveys in and around Crosby Lake include Great River Greening's terrestrial vegetation survey in 2004 and CRWD's qualitative windshield aquatic plant surveys.

CRWD and the engineer will gather and review all available monitoring data on Crosby Lake. CRWD does not anticipate supplementing water quality monitoring efforts by RCPW or fish surveys by DNR for this project.

VII. Watershed Area Assessment

An assessment of the Crosby Lake watershed characteristics including hydrologic, physical, geographic, and land use characteristics will be conducted to evaluate the water quality conditions of Crosby Lake. The estimated water quality conditions

Element	Party	2010											2011		
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
<i>1-Project Management and Administration</i>															
Project and Grant Administration	CRWD	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Subcontractor Solicitation	CRWD				x	x									
Reporting	CRWD						x	x					x	x	x
Meetings (Board meetings, consultant meetings)	CRWD		x	x		x			x			x			
<i>2-Work Plan Development</i>															
Prepare Draft Work Plan	CRWD	x	x	x	x										
Local Contributing Sponsor Review and Comment	Sponsors	x	x												
Prepare and Submit Final Work Plan	CRWD		x	x	x										
<i>3-Advisory Group Coordination/Participation</i>															
Group Coordination/Correspondence	CRWD		x	x	x	x	x	x	x	x	x	x	x	x	x
Meetings	Adv. Group					x				x			x		
<i>4-Data and Information Collection and Evaluation</i>															
Collect and Review Existing data	Contractor						x	x	x						
Collect Additional Data	Contractor							x	x	x					
<i>5-Watershed Assessment</i>															
Data Synthesis and Analysis	Contractor							x	x	x					
Hydrologic and Water Quality Modeling	Contractor							x	x	x					
<i>6-Management Plan Development</i>															
Prepare Draft Management Plan	Contractor									x	x	x	x		
Advisory Group and General Public Review	Adv. Group												x	x	
Finalize Management Plan	Contractor													x	x
<i>7-Education and Outreach</i>															
CRWD Education and Outreach	CRWD						x	x	x	x	x	x	x	x	x
Contributing Sponsors Education and Outreach	Sponsors						x	x	x	x	x	x	x	x	x

Table 3. Project Milestone Schedule

(pollutant loadings) can then be compared to the lake's watershed characteristics to prioritize areas of concern. The engineer will obtain watershed data and information through Project Element 4. A physical description of the project area will be provided and shall include project area maps such as public waters inventory, soils, drainage area, historical and current land use, and hydrologic regimes. Both historical and current aerial photographs will also be obtained and reviewed. The monitoring data and information described in Section VI will be reviewed, synthesized and analyzed under this project element.

The pollutant sources to Crosby Lake will also be determined and quantified using water quality models. The City of Saint Paul storm sewers discharging into or near Crosby Lake will be identified and their pollutant loadings estimated. RCD has conducted an inventory and evaluation of the bluff erosion to Crosby Lake and its park. This information will also be used to identify and quantify sediment pollutant loads.

The engineer will develop a water budget for Crosby Lake to determine the inputs and outputs of water through the lake and their relationship. The water budget will be based upon measured or estimated lake levels, precipitation, evaporation rates and runoff volumes. In addition, a lake response model will be developed for Crosby Lake focusing on the pollutant(s) of most concern and their sources. Estimates of watershed load, atmospheric load, internal load, and river load will be made. Possible modeling tools include EXCEL, P8 water quality model, SWMM and BATHTUB lake response model. These tools will enable CRWD and the advisory group to analyze and understand current and future conditions of the lake and watershed. This will then help identify priority management areas and the implementation activities to address the water quality issues.

VIII. Quality Assurance\Quality Control

Because CRWD does not anticipate conducting water quality monitoring as part of this project, a quality assurance project plan will not be developed. As described earlier in Section VI, RCPW conducts water quality monitoring in Crosby Lake and follows strict quality assurance\quality control measures that are outlined in their quality assurance project plan.

IX. Project Budgets

CRWD has prepared two budgets for the Crosby Lake Management Plan, the detailed project expenditure budget and the project support budget summary. See Tables 4 and 2.

X. References

Capitol Region Watershed District, 2009. CRWD 2008 Monitoring Report. Saint Paul, MN.

Emmons and Olivier Resources, Inc., 2007. Crosby Farm Park: Bluff Stabilization/Restoration Feasibility Study. Prepared for Ramsey Conservation District. Saint Paul, MN.

Great River Greening, 2005. Crosby Farm Regional Park Ecological Inventory and Restoration Management Plan. Prepared for the City of Saint Paul Division of Parks and Recreation. Saint Paul, MN.

**TABLE 4. CROSBY LAKE MANAGEMENT PLAN
ITEMIZED PROJECT BUDGET AND EXPENDITURES**

Element No./Name	Cost Category	Unit Cost	Rate	Quantity	II.A. Grant	II.B. Cash Match	II.C. In-Kind Match	II.E. Budget Total
ELEMENT 1 - PROJECT MANAGEMENT								
Project Lead	CRWD	75.00	/hr.	40			\$ 3,000	\$ 3,000
Contributing Sponsors	Saint Paul	75.00	/hr.	0			\$ -	\$ -
	NPS	50.00	/hr.	0			\$ -	\$ -
	RCPW	50.00	/hr.	0			\$ -	\$ -
	RCD	50.00	/hr.	0			\$ -	\$ -
	FMR	70.00	/hr.	0			\$ -	\$ -
	FPT	25.00	/hr.	0			\$ -	\$ -
	HDC	25.00	/hr.	0			\$ -	\$ -
Subcontractor	Engineering Firm	100.00	/hr.	0				\$ -
Expenses						\$ 500		\$ 500
ELEMENT 1 - TOTAL					\$ -	\$ 500	\$ 3,000	\$ 3,500
ELEMENT 2 - WORK PLAN DEVELOPMENT								
Project Lead	CRWD	75.00	/hr.	60			\$ 4,500	\$ 4,500
Contributing Sponsors	Saint Paul	75.00	/hr.	20			\$ 1,500	\$ 1,500
	NPS	50.00	/hr.	2			\$ 100	\$ 100
	RCPW	50.00	/hr.	2			\$ 100	\$ 100
	RCD	50.00	/hr.	0			\$ -	\$ -
	FMR	70.00	/hr.	2			\$ 140	\$ 140
	FPT	25.00	/hr.	0			\$ -	\$ -
	HDC	25.00	/hr.	0			\$ -	\$ -
Subcontractor	Engineering Firm	100.00	/hr.	0				\$ -
Expenses						\$ 100		\$ 100
ELEMENT 2 - TOTAL					\$ -	\$ 100	\$ 6,340	\$ 6,440
ELEMENT 3 - ADVISORY GROUP COORDINATION/PARTICIPATION								
Project Lead	CRWD	75.00	/hr.	80			\$ 6,000	\$ 6,000
Contributing Sponsors	Saint Paul	75.00	/hr.	32			\$ 2,400	\$ 2,400
	NPS	50.00	/hr.	16			\$ 800	\$ 800
	RCPW	50.00	/hr.	16			\$ 800	\$ 800
	RCD	50.00	/hr.	16			\$ 800	\$ 800
	FMR	70.00	/hr.	16			\$ 1,120	\$ 1,120

	FPT	25.00	/hr.	16			\$ 400	\$ 400	
	HDC	25.00	/hr.	16			\$ 400	\$ 400	
Subcontractor	Com. Out. Consult.	70.00	/hr.	71	\$ 5,000		\$ -	\$ 5,000	
Expenses						\$ 1,400		\$ 1,400	
ELEMENT 3 - TOTAL					\$ 5,000	\$ 1,400	\$ 12,720	\$ 19,120	
ELEMENT 4 - DATA AND INFORMATION COLLECTION AND REVIEW									
Project Lead	CRWD	75.00	/hr.	40			\$ 3,000	\$ 3,000	
Contributing Sponsors	Saint Paul	75.00	/hr.	12			\$ 900	\$ 900	
	NPS	50.00	/hr.	6			\$ 300	\$ 300	
	RCPW	50.00	/hr.	8			\$ 400	\$ 400	
	RCD	50.00	/hr.	8			\$ 400	\$ 400	
	FMR	70.00	/hr.	0			\$ -	\$ -	
	FPT	25.00	/hr.	0			\$ -	\$ -	
	HDC	25.00	/hr.	0			\$ -	\$ -	
Subcontractor	Engineering firm	100.00	/hr.	50	\$ 7,000			\$ 7,000	
Expenses								\$ -	
ELEMENT 4 - TOTAL					\$ 7,000	\$ -	\$ 5,000	\$ 12,000	
ELEMENT 5 - WATERSHED ASSESSMENT									
Project Lead	CRWD	75.00	/hr.	20			\$ 1,500	\$ 1,500	
Contributing Sponsors	Saint Paul	75.00	/hr.	8			\$ 600	\$ 600	
	NPS	50.00	/hr.	0			\$ -	\$ -	
	RCPW	50.00	/hr.	0			\$ -	\$ -	
	RCD	50.00	/hr.	0			\$ -	\$ -	
	FMR	70.00	/hr.	0			\$ -	\$ -	
	FPT	25.00	/hr.	0			\$ -	\$ -	
	HDC	25.00	/hr.	0			\$ -	\$ -	
Subcontractor	Engineering Firm	100.00	/hr.	170	\$ 18,000			\$ 18,000	
Expenses								\$ -	
ELEMENT 5 - TOTAL					\$ 18,000	\$ -	\$ 2,100	\$ 20,100	
ELEMENT 6 - MANAGEMENT PLAN DEVELOPMENT									
Project Lead	CRWD	75.00	/hr.	40			\$ 3,000	\$ 3,000	
Contributing Sponsors	Saint Paul	75.00	/hr.	20			\$ 1,500	\$ 1,500	
	NPS	50.00	/hr.	8			\$ 400	\$ 400	
	RCPW	50.00	/hr.	8			\$ 400	\$ 400	
	RCD	50.00	/hr.	8			\$ 400	\$ 400	
	FMR	70.00	/hr.	8			\$ 560	\$ 560	

	FPT	25.00	/hr.	8			\$ 200	\$ 200	
	HDC	25.00	/hr.	8			\$ 200	\$ 200	
Subcontractor	Engineering Firm	100.00	/hr.	180	\$ 20,000			\$ 18,000	
Expenses						\$ 4,000		\$ 4,000	
ELEMENT 6 - TOTAL					\$ 20,000	\$ 4,000	\$ 6,660	\$ 30,660	
ELEMENT 7 - EDUCATION AND OUTREACH									
Project Lead	CRWD	75.00	/hr.	40			\$ 3,000	\$ 3,000	
Contributing Sponsors	Saint Paul	75.00	/hr.	16			\$ 1,200	\$ 1,200	
	NPS	50.00	/hr.	8			\$ 400	\$ 400	
	RCPW	50.00	/hr.	8			\$ 400	\$ 400	
	RCD	50.00	/hr.	8			\$ 400	\$ 400	
	FMR	50.00	/hr.	8			\$ 400	\$ 400	
	FPT	25.00	/hr.	8			\$ 200	\$ 200	
	HDC	25.00	/hr.	8			\$ 200	\$ 200	
Subcontractor	Engineering Firm	100.00	/hr.	0				\$ -	
Expenses						\$ 2,000		\$ 2,000	
ELEMENT 7 - TOTAL					\$ -	\$ 2,000	\$ 6,200	\$ 8,200	
	TOTAL			1169	\$ 50,000	\$ 8,000	\$42,020	\$100,020	