

Minnehaha Creek Watershed District

REQUEST FOR BOARD ACTION

MEETING DATE: December 15, 2016

ITEM TYPE: Action Consent Discussion

TITLE: Authorization of Cost Share Funding – 2016 Fall Non-Homeowner Projects

RESOLUTION NUMBER: 16-083A

PREPARED BY: Telly Mamayek

E-MAIL: tmamayek@minnehahacreek.org

TELEPHONE: (952) 641-4508

REVIEWED BY: Administrator Counsel Program Mgr: Telly Mamayek
 Board Committee Engineer Other

WORKSHOP ACTION:

<input checked="" type="checkbox"/> Advance to Board mtg. Consent Agenda	<input type="checkbox"/> Advance to Board mtg. Consent Agenda with changes
<input type="checkbox"/> Advance to Board mtg. for more discussion	<input type="checkbox"/> Refer to a future workshop (date): _____
<input type="checkbox"/> Return to staff for additional work	<input type="checkbox"/> Refer to taskforce or committee (date): _____
<input type="checkbox"/> No further action requested.	<input type="checkbox"/> Advance to CAC mtg. for recommendation

PURPOSE or ACTION REQUESTED:

- 1) After the required public hearing and in consideration of any comments received, order cost-share project funding for projects in Edina and Mound;
- 2) Authorize the administrator to execute and sign a cost-share funding and maintenance agreement for each of the five projects listed in the attached document, not to exceed \$1591,566, contingent on staff approval of a project design that is mutually agreed upon by the grant recipients and District staff and signage requirements.

PROJECT/PROGRAM LOCATION:

District Wide

PROJECT TIMELINE:

Spring/Summer 2017

PROJECT/PROGRAM COST:

Fund name and number:	Cost Share Grant Program (4005)
Current grant budget:	\$436,597.59
Amount approved in 2016 to date:	\$163,402.41
Requested amount of funding:	Funding of the approved portion of documented costs of each of the five projects listed in the attached document, not to exceed a total of \$1591,566.

SUMMARY:

The new cost share grant application schedule the Board approved in January provides a spring and a fall deadline for non-homeowner projects and a June deadline for homeowner projects. This allows us to compare like-projects to each other, and prioritize funding on the projects that have the greatest value. By the fall non-homeowner deadline on September 26, 2016, staff received 7 cost share applications. One of the applicants withdrew his application, leaving three community engagement projects and three green infrastructure projects at a total project cost of \$353,534.

The six applications underwent a thorough review process before advancing to the CAC. They were reviewed by Education-Communications staff, an inter-departmental team including planning, project and land management, permitting and education staff, the District engineer and a CAC subcommittee. On November 9, 2016, the CAC recommended funding for six of the projects as presented, and changed the recommendation on 24 community engagement projects and 1 green infrastructure project. On December 8, 2016, the Board of Managers advanced five of the projects to the December 15, 2016 consent agenda, but asked staff to come back at a future meeting with additional information on the sixth, Standish Ericsson Alley Retrofit which was recommended for \$40,000 in District funding.

In the attached memo, you will find a summary of each of the proposals and their respective funding recommendations. An evaluation scoresheet and plan for each project are also attached.

Two projects were applied for by cities within the watershed. In accordance with state law and adopted Board policy (Resolution 13-023), a public hearing is required for certain cost share projects involving capital construction. The Edina and Mound projects described in the memo involve the construction elements of a project that require each municipality to undertake long term maintenance responsibilities, which triggers the public hearing requirement. The funding recommendation for the Mound project exceeds \$50,000, which also triggers the public hearing requirement. Prior to the consideration of funding these two projects (along with the other four), there will be a public hearing and presentation for the two city projects, per the Board adopted public hearing procedure and Minnesota Statutes section 103B.251.

EDUCATION VALUE:

Staff sees the installation of stormwater best management practices as a powerful avenue to provide citizen engagement and advocacy opportunities where cities and/or its citizens become participants in and advocates for stormwater management and clean water. Staff also sees them as a way to educate the public on actions that can be taken on an individual citizen scale to improve stormwater management, enhance natural resources and green infrastructure, expand the knowledge base of water resources management, and provide educational opportunities through demonstrative projects within the watershed. Through partnering on these projects, we are gaining stormwater management and investment from public and private property owners on land that we otherwise would not be able to implement projects on alone.

The following is a summary of each project's education and outreach plans.

City of Edina:

- The vegetated swale will be a visible demonstration of stormwater management
- Local residents participated in the process of selecting the plants
- Residents will be empowered to keep their own runoff on their property and infiltrate it through stormwater BMP's

City of Mound:

- A path providing access to the BMP and restored shoreline
- Educational signage next to the BMP and shoreline
- Educational materials at city hall

Big Island Inc:

- High visibility area with a lot of boat traffic
- Signage will be installed that's visible to passing boats
- Presentations on a nearby dock
- Presentations to local civic and government groups
- Media coverage by local newspapers and TV stations will be sought

Greensboro Condos:

- Two Master Water Stewards are leading the project as their capstone and are spearheading the outreach
- A local school has developed curriculum to educate students on stormwater runoff (funded by a Cynthia Krieg grant)
- Media will be invited to a planting day where the school students will participate
- An article will be placed in the DNR Spotlight newsletter
- Social media campaign, YouTube videos, Master Water Steward website updates
- Educational signage will be installed on the property
- BMP will be a visible demonstration in a high traffic area

~~Standish Ericsson Alley Retrofit:~~

- ~~— Educational signage~~
- ~~— Local school groups will be monitoring the progress of the pavers and learning about stormwater management~~
- ~~— A dedicated page on the Metro Blooms website will track the project's progress~~
- ~~— Results will be shared on social media and in newsletters~~
- ~~— Results will be reported to the City of Minneapolis in an effort to encourage policy change~~

Uptown Housing Cooperative:

- Two open houses with neighborhood association
- Joint event with First Universalist Church
- Class at Shir Tikvah Synagogue
- Outreach to other multi-housing associations
- Two Master Water Stewards who live in the building will do outreach
- The two raingardens by the front entrance and the corner facing the street will be visible demonstrations of stormwater management
- Signage

For all projects, permanent educational signage would be installed near the project sites on the grantee's property indicating the contribution of funds from the District and also directing people to the MCWD website. District staff will utilize the projects in outreach to highlight the work the District is helping fund in the community.

WATER QUALITY IMPROVEMENT:

The District Engineer has analyzed all of the proposed projects to identify the water quality improvement of each of these projects.

The following table shows the pollutant reductions we can see from each of the projects:

Total number of projects approved: 56
 Total number of BMPs and shorelines installed: up to 940
 Total cost for construction of these BMPs: ~~\$353,434~~255,384
 Total MCWD cost share funding contribution: \$1591,566
 Annual Volume reduction: 46,940815 cf
 Annual Total Suspended Solids reduction: 2,1751,784 lbs
 Annual Phosphorus reduction: 9.38.4 lbs

	Volume (cf)	TSS (lbs)	P(lbs)	Project cost	Recommendation
City of Edina	NC	135	0.4	\$31,838	\$15,919.00
City of Mound	NC	1,326	6.1	\$115,560	\$80,235.00
Big Island Inc	0	NC	NC	\$46,092	\$23,900.00
Greensboro Condominiums	NC	55	0.2	\$33,224	\$24,918.00
Uptown Housing Cooperative	815	268	1.7	\$28,670	\$6,594.00
Totals:	815	1,784	8.4	\$255,384.00	\$151,566.00

*NC = No calculations were provided

STAFF RECOMMENDATION

The individual applicants listed in the attached document have applied for funding for their projects from the Cost Share grant fund, contingent on a signed grant and maintenance agreement that includes a landscape design plan that is mutually agreed upon by the Cost Share recipients and District staff and provision for signage.

Staff recommends funding the projects listed in the attached document at the above amount.

ATTACHMENTS:

1. Memo-12-~~125~~-16-Cost Share Fall 2016
2. Project Plans and Evaluations-Cost Share Fall 2016

RESOLUTION

RESOLUTION NUMBER: 16-083A

TITLE: Authorization of Cost Share Funding – 2016 Fall Non-Homeowner Projects

WHEREAS, the Cost Share Program was established by the MCWD to provide funding to property owners to design and install best management practices that will provide educational value as well as reduce the volume and increase the quality of stormwater flowing offsite; and

WHEREAS, each of the fall 2016 applicants has submitted a proposal for cost-share funding for the construction of stormwater best management practices,

WHEREAS, the MCWD 2016 budget includes funds for the Cost Share Program which has \$436,597.59 currently available; and

WHEREAS, the proposals were reviewed by the Citizens Advisory Committee (CAC) on November 9, 2016, and the CAC has recommended approving the proposals and funding in the amounts requested; and

WHEREAS, in accordance with Minnesota Statutes section 103B.251 and MCWD Board Resolution 13-023, the District must conduct a public hearing for cost-share projects with construction elements that require a municipality to undertake long term maintenance and the City of Edina and City of Mound must undertake long-term maintenance for their respective projects as described in the materials attached to the resolution; and

WHEREAS, in accordance with Minnesota Statutes section 103B.251 and MCWD Board Resolution 13-023, the District must conduct a public hearing for cost-share projects that exceed \$50,000 in funding and the City of Mound's funding recommendation is \$80,235; and

WHEREAS, in accordance with Minnesota Statutes §103B.251, subdivision 3, the MCWD held a noticed public hearing on approval of funding for the Edina and Mound projects on December 8, 2016, at which time all interested parties had the opportunity to speak for and against the Project; and

WHEREAS, no comments from the public were offered;

WHEREAS, the Board of Managers finds that each of the Edina and Mound projects will be conducive to public health and promote the general welfare, and is in compliance with Minnesota Statutes §§103B.205 to 103B.255 and the MCWD's Comprehensive Water Resources Management Plan adopted pursuant to §103B.231;

WHEREAS, a summary of approved 2016 Fall Non-Homeowner Cost Share projects and funding amounts was included in the December 8, 2016 Board of Managers meeting packet information; and

WHEREAS, MCWD staff has reviewed the proposals and the CAC's comments and recommendations, and finds the proposals to be consistent with the goals of the Cost Share Program and recommends

**DRAFT for discussion purposes only and subject to Board action and the availability of funds.
Resolutions are not final until approved by the Board and signed by the Board Secretary.**

funding the approved portion of the documented costs of each of the ~~five-six~~ projects listed in the attached document, not to exceed \$1~~5~~91,566, contingent on a signed grant and maintenance agreement that includes a project design plan that is mutually agreed upon by the applicant and District staff in each case and signage requirements, and

NOW, THEREFORE, BE IT RESOLVED that the Minnehaha Creek Watershed District Board of Managers that pursuant to Minnesota Statutes section 103B.251 and the MCWD plan, the MCWD Board of Managers orders the Edina cost-share project with a total estimated cost-share contribution from MCWD of \$15,919 and the Mound cost-share project with a total estimated cost-share contribution from the MCWD of \$80,235, and;

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the MCWD Board of Managers authorizes the administrator to sign, on advice and consent of counsel, a cost-share funding and maintenance agreement with each applicant for documented costs not exceed in each case as follows:

City of Edina	\$15,919
City of Mound	\$80,235
Big Island Inc.	\$23,900
Greensboro Condominiums	\$24,918
Standish Ericsson Alley Retrofit	\$40,000
Uptown Housing Cooperative	\$ 6,594

contingent on staff approval of a final project design and signage.

Resolution Number 16-083A was moved by Manager _____, seconded by Manager _____.
Motion to adopt the resolution ___ ayes, ___ nays, ___ abstentions. Date: _____.

Secretary Date: _____



MEMORANDUM

DATE: December 12, 2016

TO: MCWD Board of Managers

FROM: Telly Mamayek, Director of Communications and Education

RE: RBA 16-083A Authorization of Cost Share Funding – 2016 Fall Non-Homeowner Projects

The MCWD administers a Cost Share program to provide incentive for interested parties to construct projects that will improve water quality. Part of the process in approving projects to receive funding is to have the applications reviewed by the Citizens Advisory Committee (CAC).

BUDGET UPDATE

Cost Share 2016 Budget:	\$600,000
Amount Approved to date in 2016:	\$163,402.41
December Cost Share Requested Amount:	\$151,566

COST SHARE APPLICATIONS

The new cost share grant application schedule the Board approved in January provides a spring and a fall deadline for non-homeowner projects and a June deadline for homeowner projects. This allows us to compare like-projects to each other, and prioritize funding on the projects that have the greatest value. We received 7 cost share applications by the fall deadline, however, 1 applicant withdrew his application leaving 3 community engagement projects and 3 green infrastructure projects requesting a total of \$261,824 in funding.

The newly adopted program schedule includes a thorough review process. That process was amended, somewhat, for the fall funding round by the departure of the Cost Share Grant Administrator in September. The review process for the fall round included an evaluation of each project by staff and the District engineer and by a CAC/staff subcommittee (made of planning, project and land management, permitting and education/communications staff) that provided recommendations to the CAC. The CAC reviewed and recommended funding 6 projects, changing the staff recommendation on three of them (Big Island, Inc., Greensboro Condominiums, Standish Ericsson Alley Retrofit).

At its December 8, 2016 meeting, the MCWD Board of Managers advanced five of the projects to the December 15 consent agenda but asked staff for additional information about the sixth – Standish Ericsson Alley Retrofit.

We collaborate with public and private partners to protect and improve land and water for current and future generations.

In this memo, you will find a summary of each of the five proposals received to be considered for Board funding approval, and the current funding recommendation. You will also find attached the packet materials with each project evaluation scoresheet and the main project plans.

Green Infrastructure Projects

Project #1 – West 54th Street reconstruction – City of Edina

The City of Edina proposes to pave a gravel road and filter street runoff into Minnehaha Creek with a vegetated swale that serves as a demonstration to residents. The project proposes to treat approximately 14,375 sf of impervious surface through a new filtration swale measuring 8 feet wide by 260 feet long, removing 0.4 pounds of phosphorus per year. The filtration swale will treat runoff from nearby houses and the newly paved road and will help with drainage and flooding concerns. The project will also consist of converting gravel roads to paved roads in hopes to reduce TSS and sediment deposits to the adjacent section of Minnehaha Creek.

The project location complements an Arden Park project location where the District has been actively partnering with the City on stormwater management. The swale will provide protection to a high value resource (Minnehaha Creek) and is located downstream of the Minnehaha Creek focal geography.

No specific outreach is planned with this project. The applicant states that the project serves as a demonstration of an attractive BMP that can beautify the landscape. It is adjacent to Minnehaha Creek and is visible from the walking/bike paths across the creek from the project.

The total project cost is \$31,838. CAC endorses Staff and CAC subcommittee 50% funding recommendation, not to exceed \$15,919.

Project #2 – Carlson Park – City of Mound

The City of Mound is proposing a large stormwater diversion project at Carlson Park. The project proposes to treat approximately 141,600 sf of impervious surface from an 11.6-acre drainage area and remove 6.1 lbs of phosphorus per year. The project will take an existing outfall and re-route it to a series of bio-retention areas and an iron-enhanced sand filter before discharging the treated runoff to Seton Lake in Lake Minnetonka. The project will also include tree and shrub planting with approximately 185ft of shoreline restoration. This project provides treatment for a high value resource – Lake Minnetonka – and serves as a demonstration of a restored shoreline to lakeshore property owners.

The project proposes mostly passive outreach consisting of signage and a trail to provide access in a high visibility area in a park with public boat slips. The City also plans to have brochures and information at its City Hall.

The total project cost minus the contingency is \$106,980. CAC endorses Staff and CAC Subcommittee 75% funding recommendation of the total project cost (\$115,560) minus the contingency (\$8,580), not to exceed \$80,235.

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Project #3 – Big Island, Inc. – 520 Big Island, Orono

The 302A business corporation, Big Island, Inc., is proposing to continue adjacent Big Island restoration efforts completed by MCWD. The latest project proposes 140ft of shoreline stabilization. The stabilization will consist of boulder toe, Class III Riprap, herbaceous plug plantings, shrubs, and tree plantings. The stabilization will reduce erosion and will benefit water quality by reducing TSS and phosphorus loads to Lake Minnetonka. This project complements other MCWD projects on Big Island, and is a demonstration of a high value BMP that protects a high value resource – Lake Minnetonka. This project is in a high visibility area with a lot of boat traffic; they plan to install signage and seek media coverage. Presentations on a nearby dock are also planned in addition to presentations to local civic and government groups.

The total project cost is \$46,092. The Staff and CAC Subcommittee recommended 50% funding of the non-riprap portion of the project, not to exceed \$10,546. The CAC recommends 50 % funding of the total project not to exceed \$23,900.

Community Engagement Projects

Project #4 – Greensboro Condominiums – Louisiana & Franklin Ave., St. Louis Park

The non-profit, condo association of Greensboro Condominiums in St. Louis Park is proposing the construction of a cistern and a raingarden to treat approximately 8,500 square feet of roof and sidewalk runoff. The raingarden will capture runoff from the sidewalk and bus stop at the intersection of Louisiana and Franklin, while the cistern will collect runoff from the building roofs for re-use in irrigation. The project will remove about 0.2 lbs of phosphorus per year.

Two Master Water Stewards, who are using this project as their capstone project, have designed the stormwater BMPs to be located on a highly visible corner to expand the project’s outreach. Partnerships have been identified, and a 5th grade class has already visited the site, and will continue through the construction process to learn from this demonstration to implement something similar at their school. There is educational signage proposed at the most visible corner of the site, near the bus stop and walking path. Other outreach techniques are outlined in the materials, including a direct partnership with the DNR. Additionally, the site drains to Minnehaha Creek, which is a high value resource which is an impaired water body.

The total project cost is \$33,224. The Staff and CAC Subcommittee recommended 50% funding, not to exceed \$16,336.56. The CAC recommends 75% funding, not to exceed \$24,918.

Project #5 – Uptown Housing Cooperative – 3540 James Ave. S., Minneapolis

The non-profit, condo association of the Uptown Housing Cooperative in Minneapolis is proposing the construction of six raingardens to treat approximately 17,200 square feet of roof runoff. The project location is directly uphill from Lake Calhoun and in the same neighborhood as St. Mary’s Greek Orthodox Church, where another District-funded BMPs are located.

We collaborate with public and private partners to protect and improve land and water for current and future generations.



For education and outreach, the association is planning two open houses with the neighborhood association, a joint event with First Universalist church, a class at Shir Tikvah Synagogue, outreach to other multi-housing associations, and signage. Two Master Water Stewards will assist with the outreach.

The total project cost is \$28,670. The CAC endorses the Staff and CAC subcommittee 50% funding recommendation for 3 of the 6 raingardens. Recommended funding is roughly 23% of the total project cost, not to exceed \$6,594.

OVERVIEW

The following table is an overview of the projects, the requested funding, and the staff suggested funding.

Project Name	Score (_/100)	Project Cost	Recommended Funding	Suggested Funding	Project Type
1. City of Edina	74	\$ 31,838	\$ 15,919	50%	Green Infrastructure
2. City of Mound	81	\$ 115,560	\$ 80,235	75% (69%)	
3. Big Island Inc.	78	\$ 46,092	\$ 23,900	50%	
4. Greensboro Condos	82	\$ 33,224	\$ 24,918	75%	Community Engagement
5. Uptown Housing Coop	71	\$ 28,670	\$ 6,594	50% (23%)	
<i>Totals</i>		\$ 255,384	\$151,566	53%	

*Amounts in parentheses are the portion of total project cost

We collaborate with public and private partners to protect and improve land and water for current and future generations.

Cost Share Grant Evaluation Form
Green Infrastructure Grant

Name of Reviewer: Telly Mamayek and Erik Megow (Wenck)
 Date Reviewed: 10-24-16
 CAC-Staff Subcommittee Review: 11-1-16

Applicant: City of Edina

Project: West 54th Street reconstruction, Edina

Total Project Budget: \$31,838.48

Requested Funding: 50%

Green Infrastructure Grant: project must result in greater water quality/natural resource improvements.

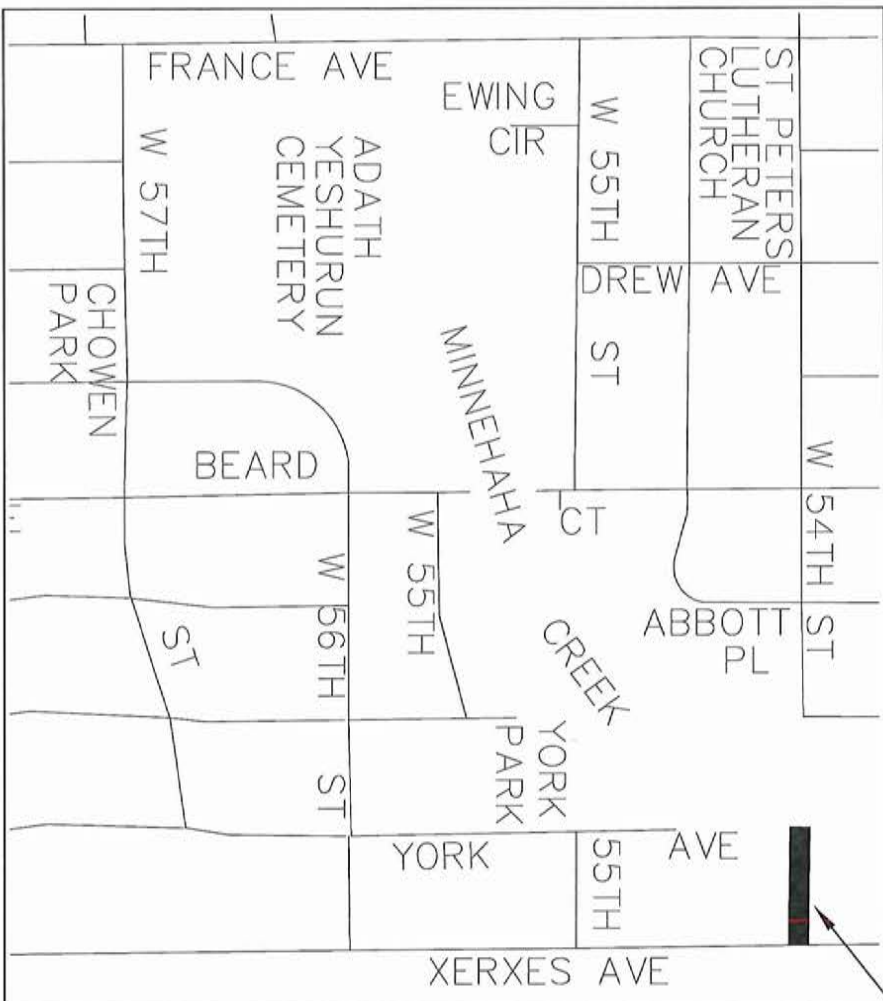
Organization Type: Local government unit		
Are the Goals of Project Clearly Outlined? Yes. To pave a gravel road and filter street runoff into Minnehaha Creek with a vegetated swale that serves as a demonstration to residents.		
Past History: Has the applicant applied before? Yes, but not for this specific project. Received District cost-share funding in the spring of 2016 for an unrelated projects.		
<i>Project Design (70pts)</i>		
Notes: This project proposes to treat approximately 14,375 sf of impervious surface through a new filtration swale measuring 8 feet wide by 260 feet long. The filtration swale will treat houses and newly paved road and will help with drainage and flooding concerns. The project will also consist of converting gravel roads to paved roads in hopes to reduce TSS and sediment deposits to the adjacent section of Minnehaha Creek.	33/45	Water Resource Improvement to MCWD
	3/5	Innovative Design
	5/5	Budget Detail
	13/15	Maintenance Plan
Project Design Total:		54/70
<i>Education & Outreach (15 pts)</i>		
Notes: No specific outreach is planned with this project. It simply serves as a demonstration of an attractive BMP that can beautify the landscape. It is adjacent to Minnehaha Creek and is visible from the walking/bike paths across the creek from the project.	0/10	Outreach Techniques
	5/5	Visibility of Demonstration
Education and Outreach Total:		5/15
<i>Water Resource Prioritization (15 pts)</i>		
Notes: Complements Arden Park project where the District has been actively partnering with the city on stormwater management, protects a high value resource (Minnehaha Creek) by capturing and filtering street runoff, is downstream of the Minnehaha Creek focal geography.	15/15	Alignment with District Priorities
Water Resource Prioritization Total:		15 /15
Total:		74/100



CITY OF EDINA, MINNESOTA

CHOWEN PARK D NEIGHBORHOOD ROADWAY IMPROVEMENTS

CONSTRUCTION PLAN FOR: ROADWAY AND UTILITY RECONSTRUCTION
LOCATED ON: WEST 54TH STREET



PROJECT
LOCATION

GOVERNING SPECIFICATIONS

THE DATE EDINA OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE CITY OF EDINA SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MANUTCD) AND PART VI, CHAPTER 16.02, FOR TRAFFIC CONTROL ZONE LAYOUTS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS QUALITY LEVEL D, ACCORDING TO THE GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.



PROJECT LOCATION
COUNTY: HENNEPIN



Know what's below,
Call before you dig.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	EXISTING CONDITIONS
3	PROPOSED IMPROVEMENTS
4	DRAINAGE AREAS

THIS PLAN CONTAINS 4 SHEETS

LOCAL AGENCY SIGNATURES

DESIGN ENGINEER, I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

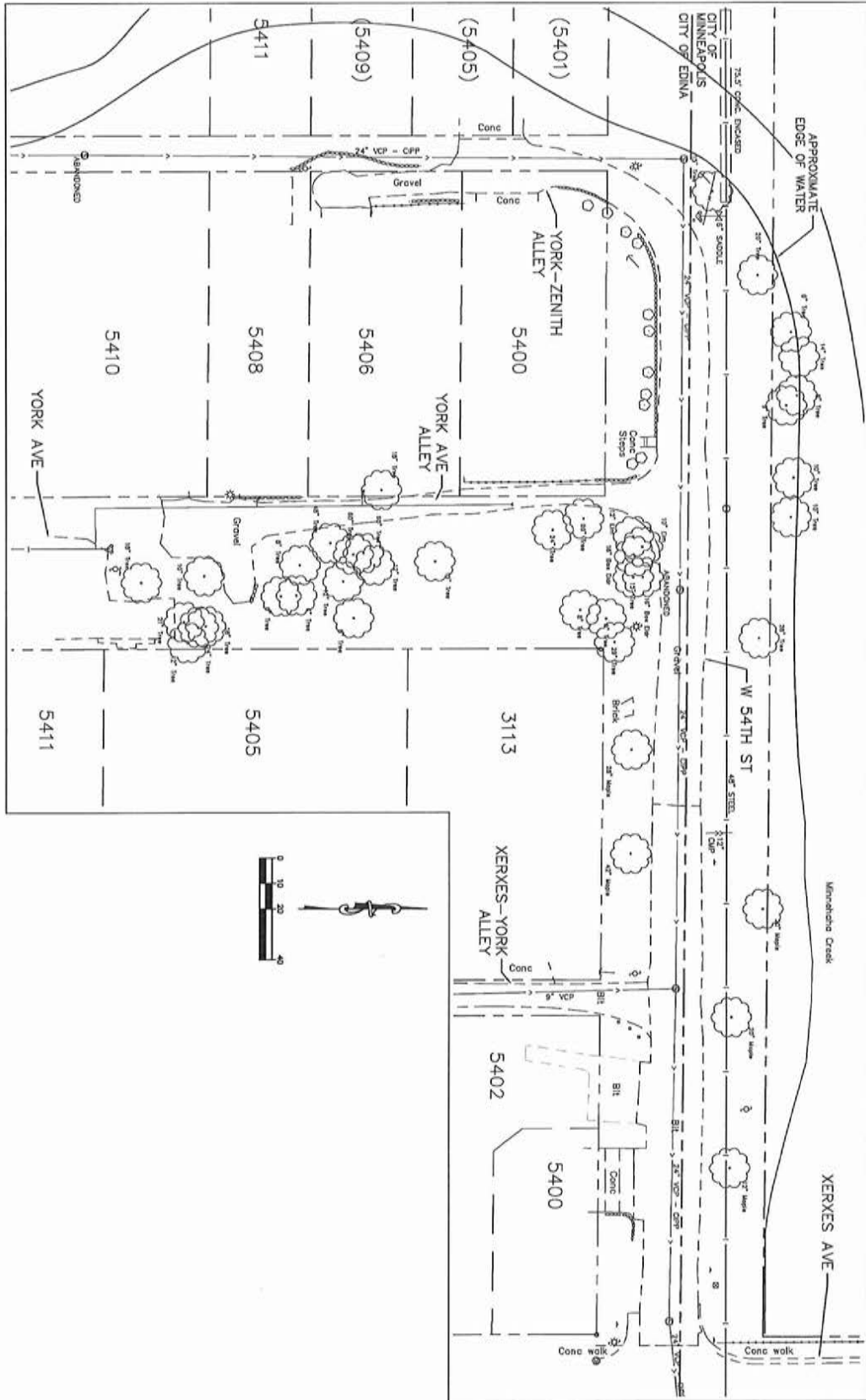
DATE: _____ LICENSE NO. _____

SIGNATURE: _____ PRINTED NAME: _____

APPROVED: CITY ENGINEER DATE: _____

EDINA IMP. NO. BA-439

EDINA CONTRACT NO. ENG 16-XX



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

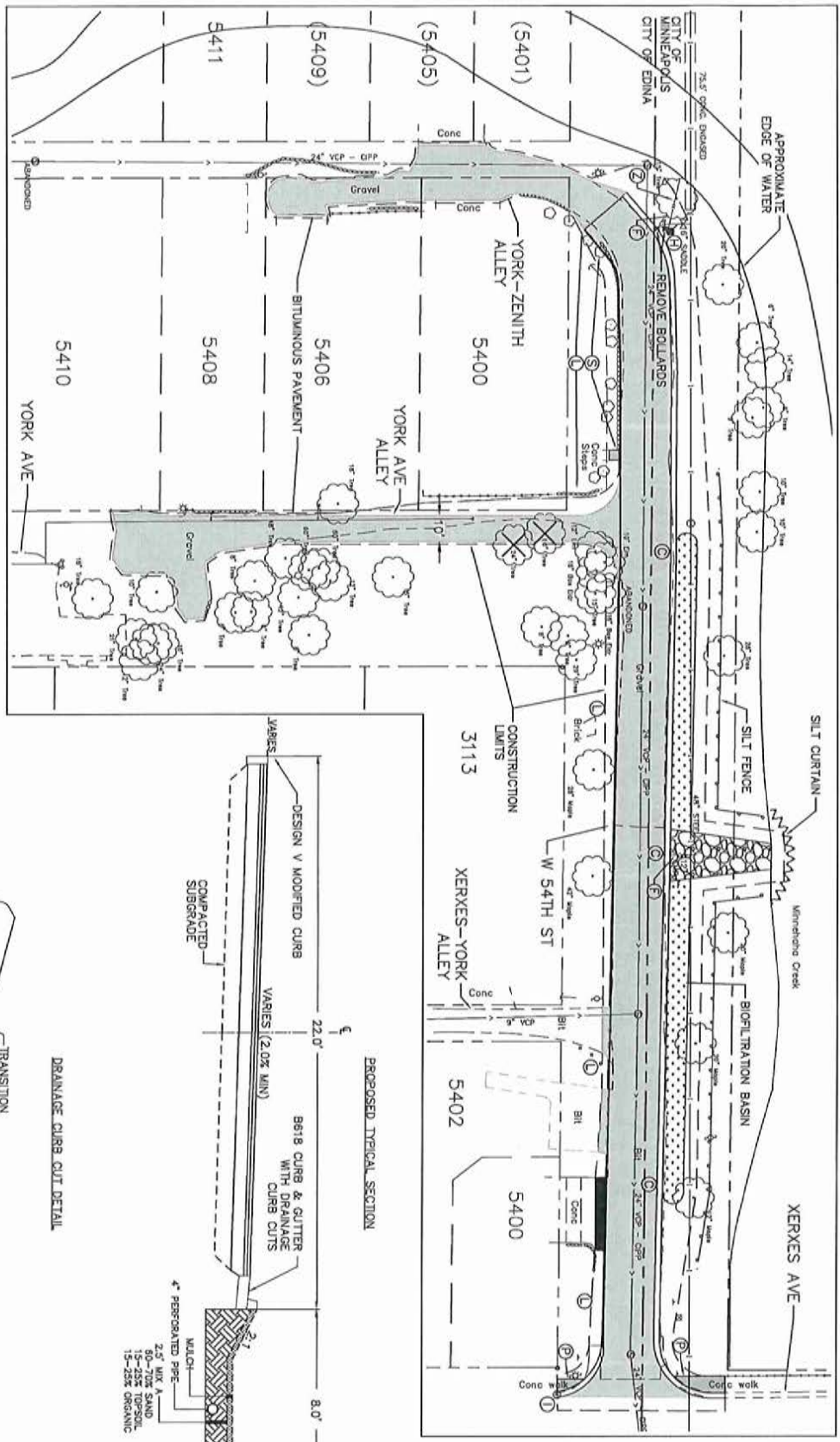
DATE: 10/14/16
 CONTRACT NO. 17-100
 SHEET 2 OF 4

CHOWEN PARK D NEIGHBORHOOD ROADWAY IMPROVEMENTS

CITY OF EDINA
 7450 METRO BOULEVARD
 EDINA, MN 55439-3037
 Ph: 952-826-0371
 Fax: 952-826-0392

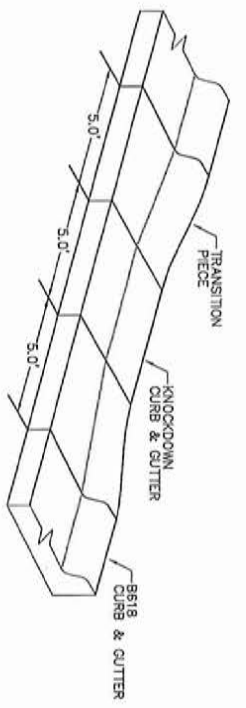
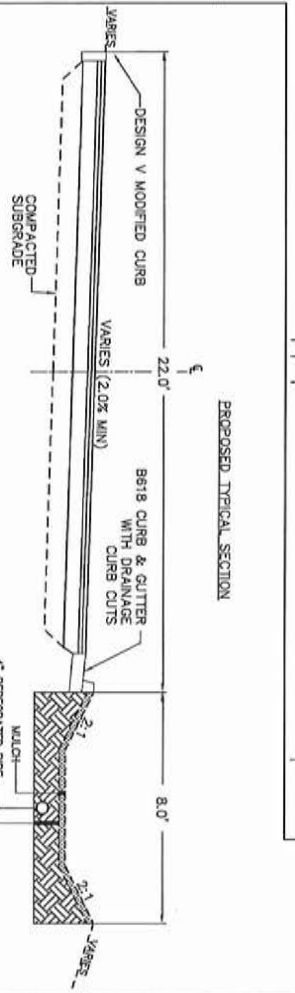
WEST 54TH STREET EXISTING CONDITIONS

NO.	DATE	BY	REMARKS



- ① DRAINAGE CURB CUT
- ② REMOVE STORM SEWER PIPE
- ③ RELOCATE HYDRANT (BY OTHERS)
- ④ INLET PROTECTION
- ⑤ LANDSCAPE MATERIALS (SPECIAL)
- ⑥ PEDESTRIAN CURB RAMP WITH TRUNCATED DOWES
- ⑦ SALVAGE AND INSTALL STONE RETAINING WALL
- ⑧ ABANDON STORM SEWER PIPE

LIMITS OF CONSTRUCTION SHALL BE DETERMINED AND MARKED IN THE FIELD BY THE ENGINEER.
 REMOVE/RECONSTRUCT DRIVEWAYS, WALKS, AND STEPS NECESSARY TO MATCH PROPOSED CONSTRUCTION, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

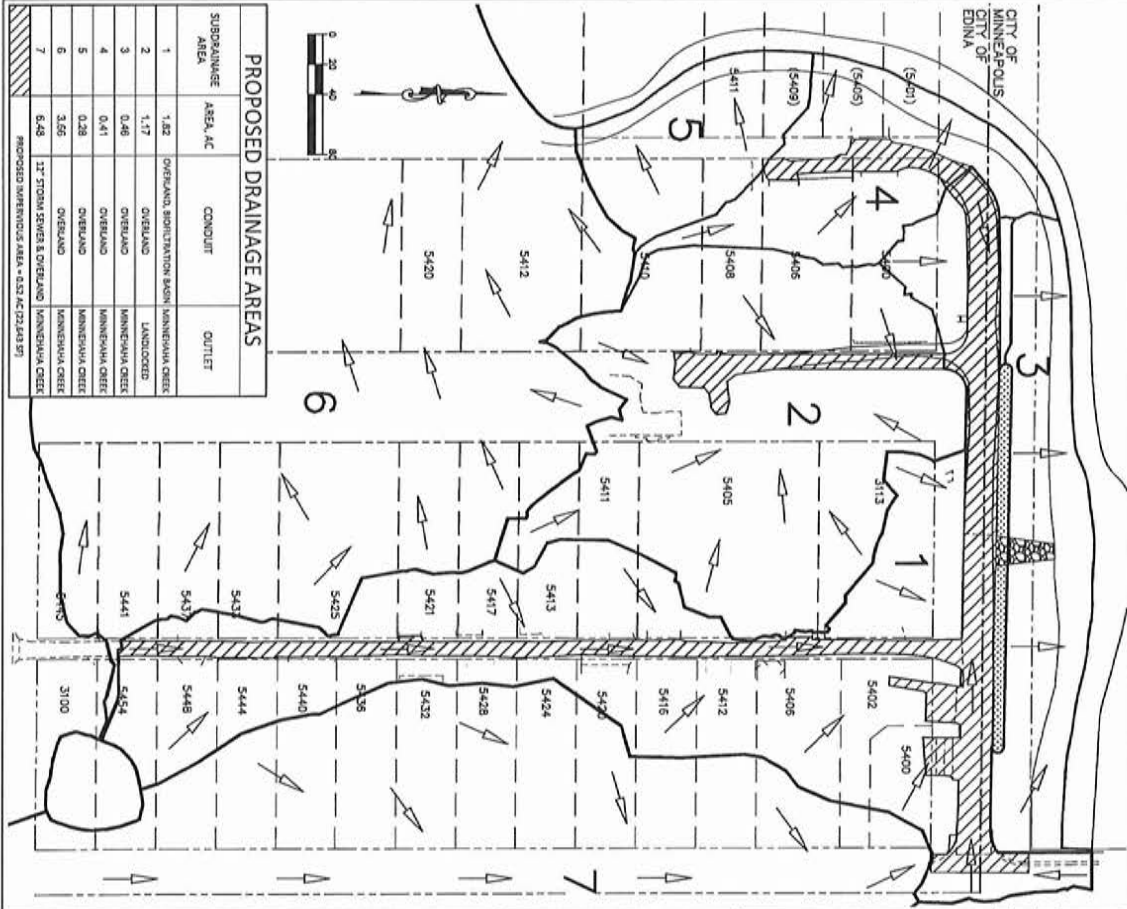
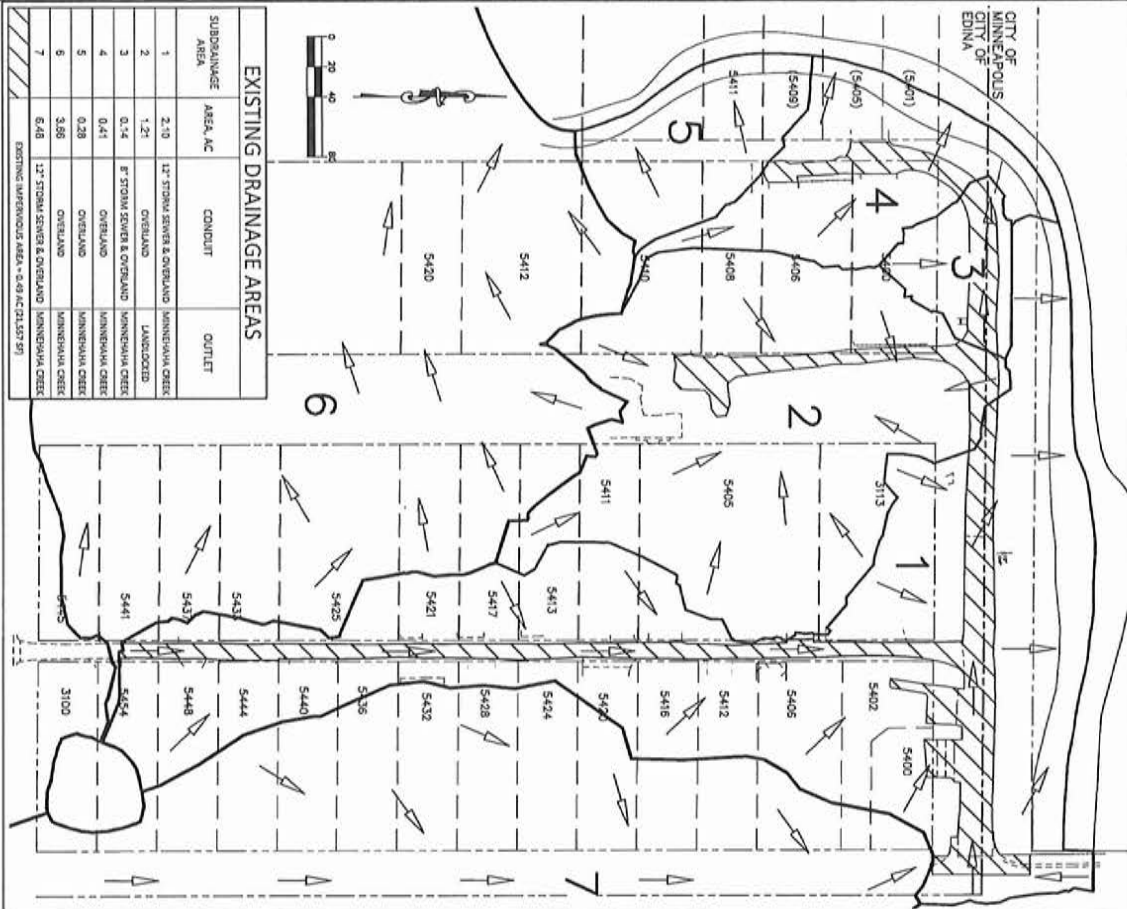
DATE: 10/14/16
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 SCALE: 3/4"

CHOWEN PARK D NEIGHBORHOOD ROADWAY IMPROVEMENTS

CITY OF EDINA
 7450 METRO BOULEVARD
 EDINA, MN 55439-3037
 PH: 952-828-0311
 FAX: 952-826-0292

WEST 54TH STREET PROPOSED IMPROVEMENTS

NO.	DATE	BY	REVISIONS



EXISTING DRAINAGE AREAS

SUBDRAINAGE AREA	AREA, AC	CONDUIT	OUTLET
1	2.10	12" STORM SEWER & OVERLAND	MINNESOTA CREEK
2	1.21	OVERLAND	LANDLOCKED
3	0.14	8" STORM SEWER & OVERLAND	MINNESOTA CREEK
4	0.41	OVERLAND	MINNESOTA CREEK
5	0.28	OVERLAND	MINNESOTA CREEK
6	3.88	OVERLAND	MINNESOTA CREEK
7	6.48	12" STORM SEWER & OVERLAND	MINNESOTA CREEK

EXISTING IMPROVEMENTS AREA = 0.49 AC (21,257 SF)

PROPOSED DRAINAGE AREAS

SUBDRAINAGE AREA	AREA, AC	CONDUIT	OUTLET
1	1.82	OVERLAND, BOUTEVATION BASIN	MINNESOTA CREEK
2	1.17	OVERLAND	MINNESOTA CREEK
3	0.46	OVERLAND	LANDLOCKED
4	0.41	OVERLAND	MINNESOTA CREEK
5	0.28	OVERLAND	MINNESOTA CREEK
6	3.85	OVERLAND	MINNESOTA CREEK
7	6.48	12" STORM SEWER & OVERLAND	MINNESOTA CREEK

PROPOSED IMPROVEMENTS AREA = 0.52 AC (22,444 SF)

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

DATE: 10/14/16
 CENTER PERS: 77-22
 SHEET: 4 OF 4

CHOWEN PARK D NEIGHBORHOOD ROADWAY IMPROVEMENTS

DATE: _____ LIC. NO. _____

CITY OF EDINA
 7450 METRO BOULEVARD
 EDINA, MN 55439-3037
 PH: 952-826-8371
 FAX: 952-826-0392

WEST 54TH STREET DRAINAGE AREAS

NO.	DATE	BY	REMARKS / REVISIONS

Cost Share Grant Evaluation Form
Green Infrastructure Grant

Name of Reviewer: Telly Mamayek and Erik Megow (Wenck)
 Date Reviewed: 10-24-16
 CAC-Staff Subcommittee Review: 11-1-16

Applicant: City of Mound

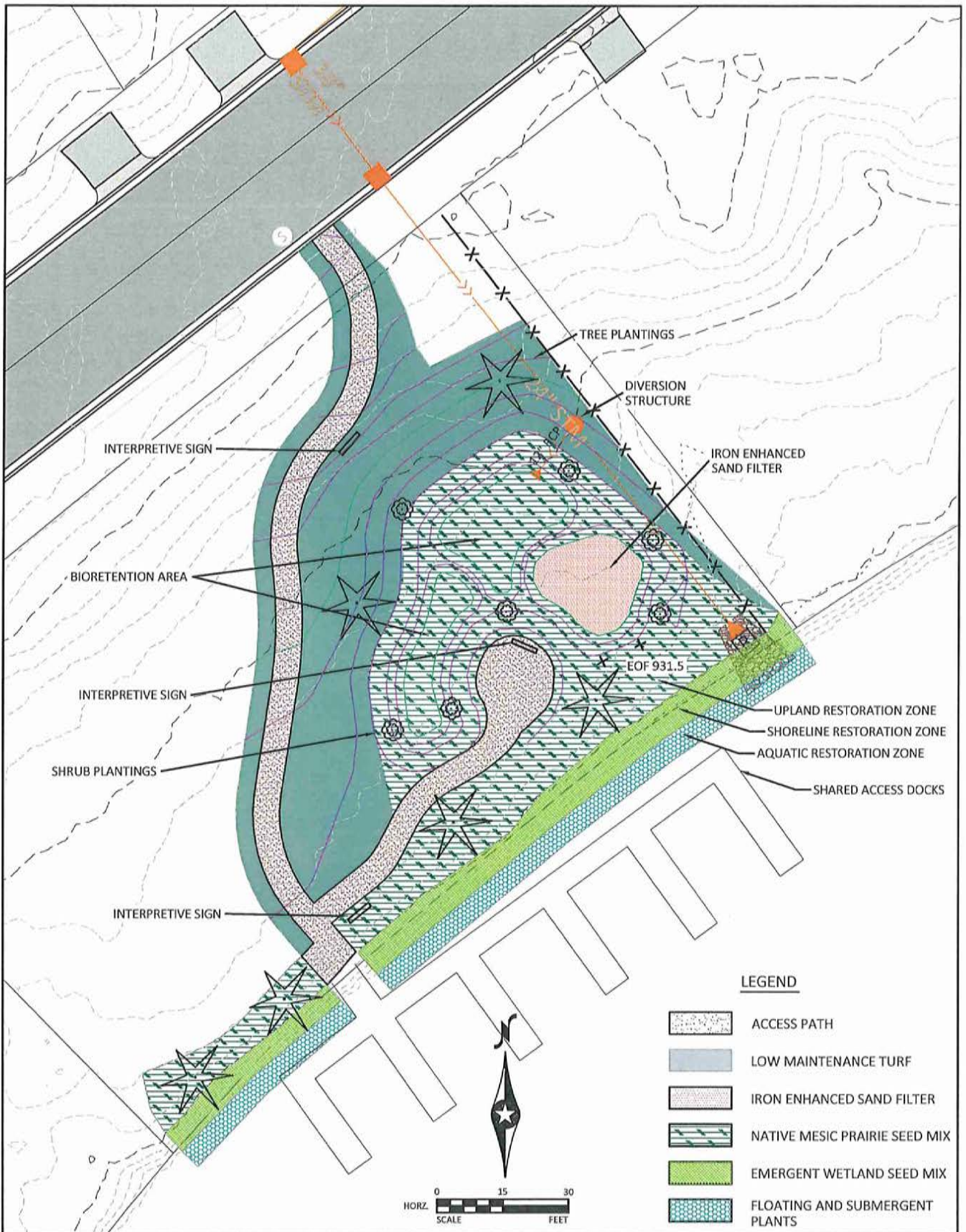
Project: Carlson Park

Total Project Budget: \$115,560

Requested Funding: \$86,670 (leveraged by city match of \$28,890)

Green Infrastructure Grant: project must result in greater water quality/natural resource improvements.

Organization Type: Local government unit		
Are the Goals of Project Clearly Outlined? Yes. Install structure to divert street runoff to a bioretention basin with iron-enhanced filter. Restore shoreline, install paths to provide access and signage to educate visitors.		
Past History: Has the applicant applied before? Yes. The city applied for another project in the spring of 2016, but held off to apply for this project in the fall.		
<i>Project Design (70pts)</i>		
Notes: The project proposes to treat approximately 141,600 sf of impervious surface from an 11.61 acre drainage area. The project will take an existing outfall and re-route it to a series of bioretention areas and iron-enhanced sand filter to Lake Minnetonka includes installing a bioretention basin and iron enhanced sand. The project will also include tree and shrub planting with approximately 185ft of shoreline restoration. The project is expected to remove 6.1 lbs of phosphorus per year.	42/45	Water Resource Improvement to MCWD
	4/5	Innovative Design
	5/5	Budget Detail
	15/15	Maintenance Plan
Project Design Total:		66 /70
<i>Education & Outreach (15 pts)</i>		
Notes: Mostly passive outreach consisting of signage and trails to provide access, but in a high visibility area in a park with a public boat slips. Also plans to have brochures in city hall.	5/10	Outreach Techniques
	5/5	Visibility of Demonstration
Education and Outreach Total:		10/15
<i>Water Resource Prioritization (15 pts)</i>		
Notes: This project filters water that drains to a high value resource – Seton Lake in Lake Minnetonka – and serves as a demonstration of a restored shoreline to lakeshore property owners.	15/15	Alignment with District Priorities
Water Resource Prioritization Total:		15/15
Total:		81/100



2638 SHADOW LANE, SUITE 200
 CHASKA, MINNESOTA 55318
 Phone: (952) 448-8838
 Email: Chaska@bolton-menk.com
 www.bolton-menk.com

CITY OF MOUND, MINNESOTA
STORMWATER QUALITY AND SHORELINE RESTORATION
CARLSON PARK PRELIMINARY LAYOUT

**Cost Share Grant Evaluation Form
Green Infrastructure Grant**

Name of Reviewer: Telly Mamayek and Erik Megow (Wenck)
Date Reviewed: 10-24-16
CAC-Staff Subcommittee Review: 11-1-16

Applicant: Big Island, Inc.

Project: 520 Big Island, Orono

Total Project Budget: \$21,092 for plantings, installation and design; \$25,000 for rip rap and other material installation

Requested Funding: 50%

Green Infrastructure Grant: project must result in greater water quality/natural resource improvements.

Organization Type: 302A Business Corporation		
Are the Goals of Project Clearly Outlined? Yes. Continue shoreline restoration completed by District on other parts of the island to reduce erosion and serve as a demonstration in an area that's highly visible to boaters.		
Past History: Has the applicant applied before? No		
<i>Project Design (70pts)</i>		
Notes: This project proposes 140ft of shoreline stabilization along Big Island in Lake Minnetonka. The stabilization will consist of boulder toe, Class III rip rap, herbaceous plug plantings, shrubs, and tree plantings. The stabilization will reduce erosion and will benefit water quality by reducing TSS and phosphorus loads to Lake Minnetonka.	30/45	Water Resource Improvement to MCWD
	3/5	Innovative Design
	5/5	Budget Detail
	15/15	Maintenance Plan
Project Design Total:		53 /70
<i>Education & Outreach (15 pts)</i>		
Notes: This project is in a high visibility area with a lot of boat traffic; they plan to install signage and seek media coverage. Presentations on a nearby dock are also planned, in addition to presentations to local civic and government groups.	5/10	Outreach Techniques
	5/5	Visibility of Demonstration
Education and Outreach Total:		10 /15
<i>Water Resource Prioritization (15 pts)</i>		
Notes: This project complements other MCWD projects on Big Island, is a demonstration of a high value BMP that protects a high value resource – Lake Minnetonka.	15/15	Alignment with District Priorities
Water Resource Prioritization Total:		15/15
Total:		78/100

BIG ISLAND SHORELINE STABILIZATION

LAKE MINNETONKA ORONO, MN

ENGINEER:
BARR ENGINEERING CO.
4300 UNIVERSITY DRIVE
MINNETONKA, MN 55345
TEL: 763-832-2277
FAX: 763-832-2801
CONTACT: JEFF LEE, SENIOR ECOLOGICAL PLANNER
JEFF.LEE@BARR.COM, CIVIL ENGINEER
DATE:
BY: CHUNG INC.



GOPHER STATE ONE CALL
CALL BEFORE YOU DIG
1-800-252-1199



SHEET INDEX	
NO.	SHEET NAME
G-01	COVER SHEET AND SHEET INDEX
C-01	PROPOSED CONDITIONS PLAN VIEW
C-02	PROPOSED CONDITIONS GROSS SECTIONS
C-03	BANK STABILIZATION DETAILS AND SPECIFICATIONS
C-04	PLANTING DETAILS AND SEED MIXES

NO.	REV. NO.	DATE	REVISION DESCRIPTION	BY	CHECKED

PROJECT NO.	23271464.00
CLIENT PROJECT NO.	
DATE	7/17/2018
BY	CMB
CHECKED	JMB
PROJECT NO.	
CLIENT PROJECT NO.	
DATE	
BY	
CHECKED	

BIG ISLAND INC.
ORONO, MINNESOTA

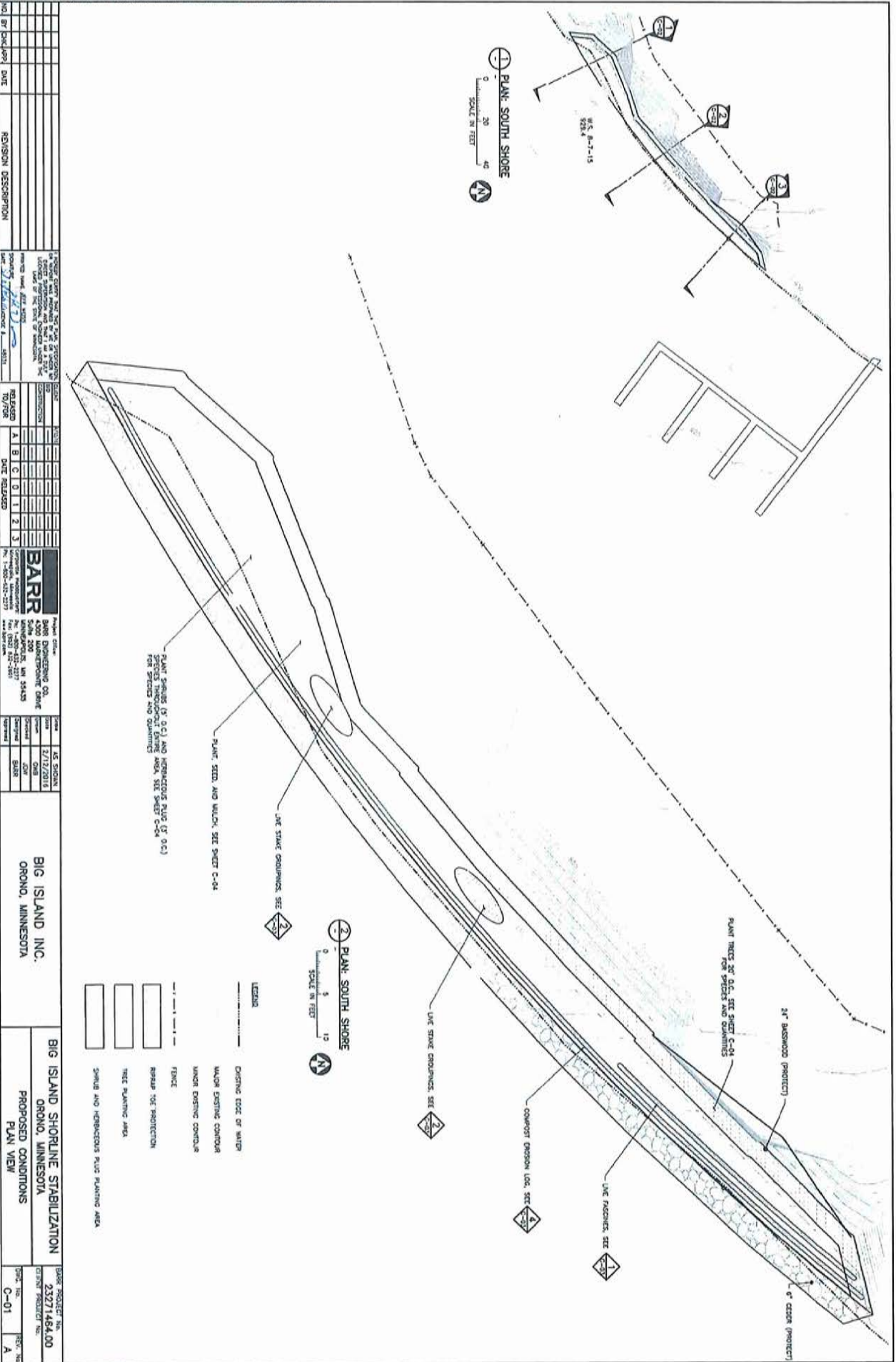
BIG ISLAND SHORELINE STABILIZATION
ORONO, MINNESOTA

COVER SHEET AND SHEET INDEX

DATE: 7/17/2018

BY: CMB

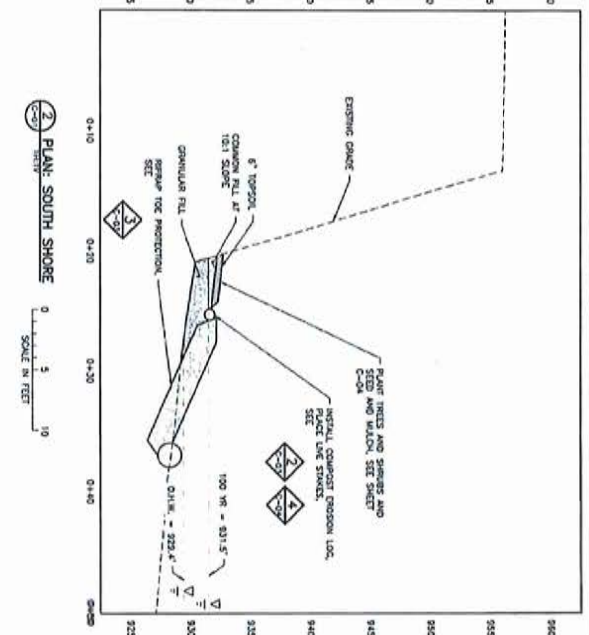
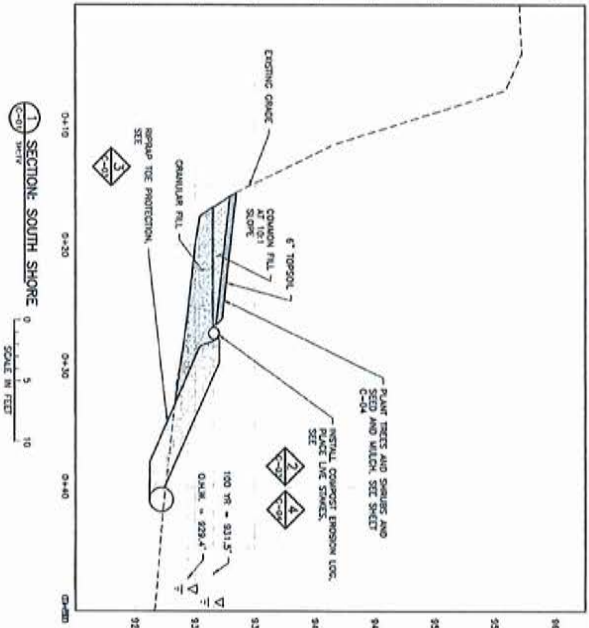
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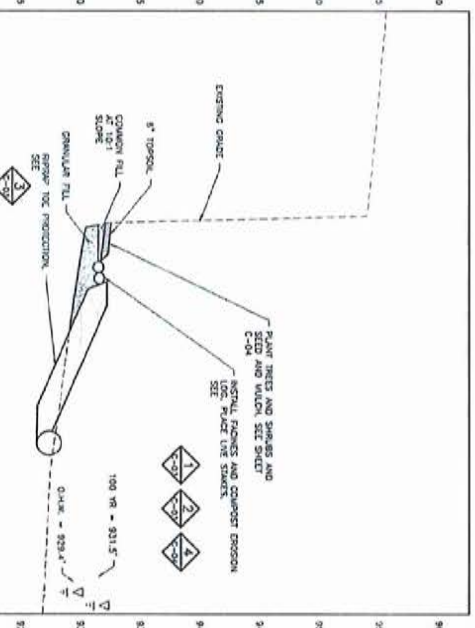
NO.	BY	CHK'D BY	DATE	REVISION DESCRIPTION

PROJECT NO.	23271484.00
PROJECT NAME	BIG ISLAND SHORELINE STABILIZATION
CITY/STATE	ORONO, MINNESOTA
CLIENT	BIG ISLAND INC.
DATE	5/22/2016
SCALE	AS SHOWN
DESIGNER	BARR
CHECKED	
APPROVED	
DATE	

PROJECT NO.	23271484.00
PROJECT NAME	BIG ISLAND SHORELINE STABILIZATION
CITY/STATE	ORONO, MINNESOTA
CLIENT	BIG ISLAND INC.
DATE	5/22/2016
SCALE	AS SHOWN
DESIGNER	BARR
CHECKED	
APPROVED	
DATE	



NOTE:
 1. THE LOCATION LIMITS OF ALL WORK CONSTRUCTION SHALL BE COORDINATED WITH THE CONTRACTOR.
 2. ALL FILL, TOPSOIL, AND COMPOST MUST BE 60% WET.
 3. SEED AND MULCH AT 1:1.5 SLOPE AFTER PLANTING ARE COMPLETE.



NO.	BY	DATE	REVISION DESCRIPTION

DATE	BY	DESCRIPTION

PROJECT NAME: SHORE DISINTEGRATING DO
 2500 SHORE DRIVE
 MINNEAPOLIS, MN 55435
 PHONE: (612) 221-5377
 FAX: (612) 221-5377
 WWW: www.barr.com

OWNER: BIG ISLAND INC.
 13500 UNIVERSITY AVENUE
 MINNEAPOLIS, MN 55425
 PHONE: (612) 221-5377
 FAX: (612) 221-5377
 WWW: www.bigisland.com

DATE: 3/17/2016
 DRAWN: CMB
 CHECKED: EMB
 PROJECT: SHORE

PROJECT: BIG ISLAND SHORELINE STABILIZATION
 LOCATION: ORONO, MINNESOTA
 SECTION: PROPOSED CONDITIONS SECTION VIEWS

DWG PROJECT NO.: 23271484.00
 CLIENT PROJECT NO.:
 DWG NO.: C-02
 REV. NO.: A

**Cost Share Grant Evaluation Form
Community Engagement Grant**

Name of Reviewer: Darren Lochner/Brett Eidem & Erik Megow (Wenck)
Date Reviewed: 10-24-16
CAC/Staff Subcommittee reviewed: 11-1-16
CAC Review 11-9-16

Applicant: Greensboro Condominiums

Project: Louisiana Ave and Franklin Ave, St Louis Park

Total Project Budget: \$33,224

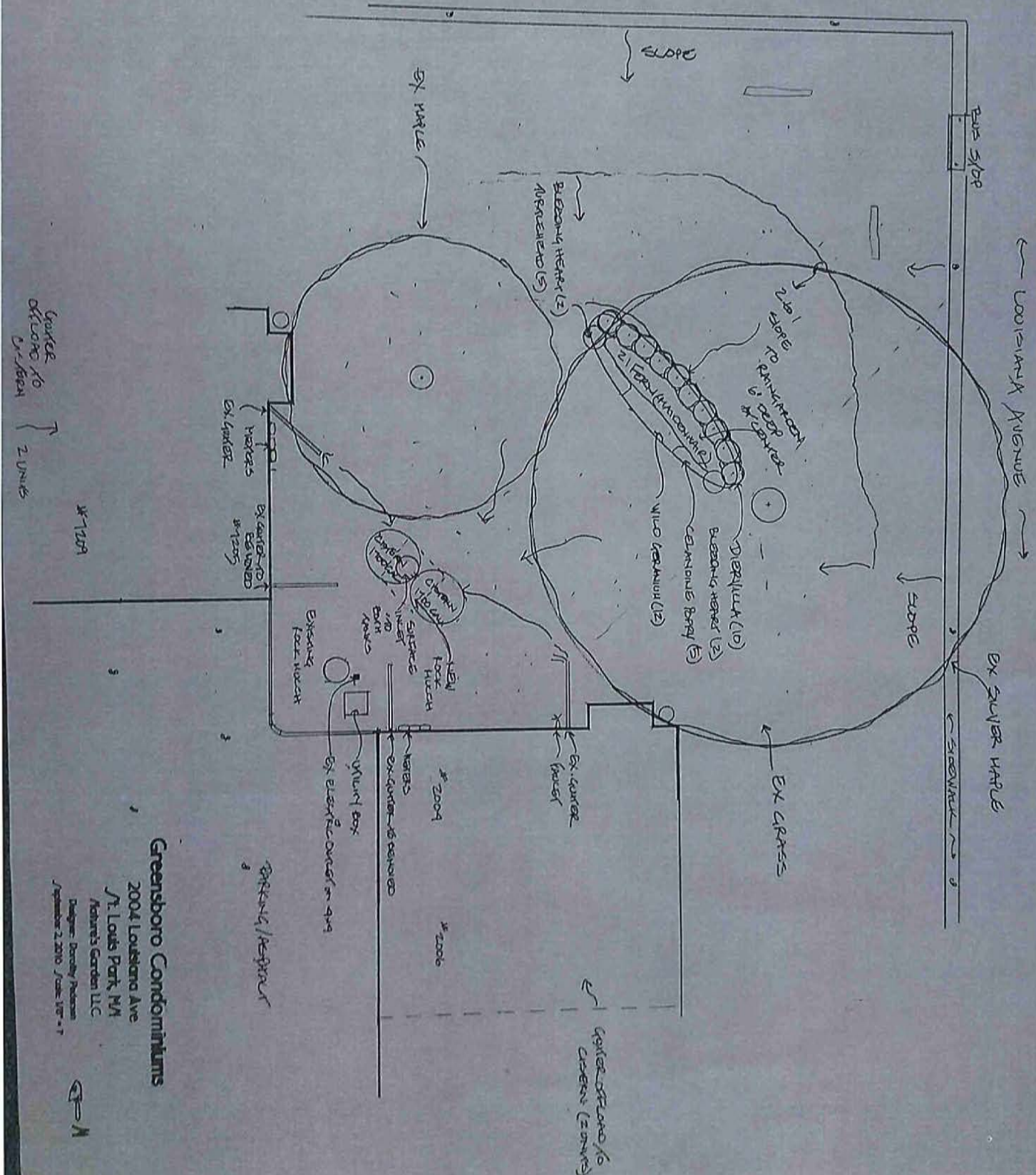
Requested Funding: 50% cost share \$16,333.56 (leveraged by applicant contribution of \$16,333.56 and MWS grant of \$656.88)

Community Engagement Grant: must be designed to produce greater public awareness of ways to improve water quality. These projects use a stormwater BMP as a demonstration to educate the public to build community capacity to grow knowledge and support of stormwater management in the community.

Organization Type: Condo Association, non-profit		
Are the Goals of Project Clearly Outlined? Yes, capture and re-use stormwater from the building roof to irrigate the landscape with RG overflow		
Past History: Has the applicant applied before? No		
<i>Project Design (30pts)</i>		
Notes: This project proposes the construction of a cistern and a raingarden to treat approximately 8,500 sf of roof and sidewalk runoff, removing about .2 lbs of phosphorus per year. The raingarden will capture runoff from the sidewalk and property, while the cistern will collect runoff from the building roofs for re-use in irrigation. This project will be constructed on a highly visible corner and will consist of many different, innovative BMPs including, native plants, a cistern, and native pollinator plantings.	5/10	Water Resource Improvement to MCWD
	5/5	Innovative Design
	5/5	Budget Detail
	7/10	Maintenance Plan
Project Design Total:		22 /30
<i>Education & Outreach (60 pts)</i>		
Notes: This is the capstone project for two Master Water Stewards. Partnerships have been identified, and a 5 th grade class has already visited the site, and will continue through the construction process to learn from this demonstration to implement something similar at their school. There is educational signage proposed at the most visible corner of the site, near the bus stop and walking path. Other outreach techniques outlined in material, including direct partnership with DNR. Also, direct involvement by Greensboro residents, including install.	20/20	Influence within Community
	20/25	Outreach Techniques
	10/10	Visibility of Demonstration
	05/5	Leveraging Other Grant Funds
Education and Outreach Total:		50/60
<i>Water Resource Prioritization (10 pts)</i>		
Notes: This project site drains to Minnehaha Creek, which is a high value resource.	5/10	Alignment with District Priorities
Water Resource Prioritization Total:		5/10
Total:		7782/100

Comments and Notes:

FRANKLIN AVE WEST



Garage
OFFICERS 10
2 UNITS

#1229

Greensboro Condominiums

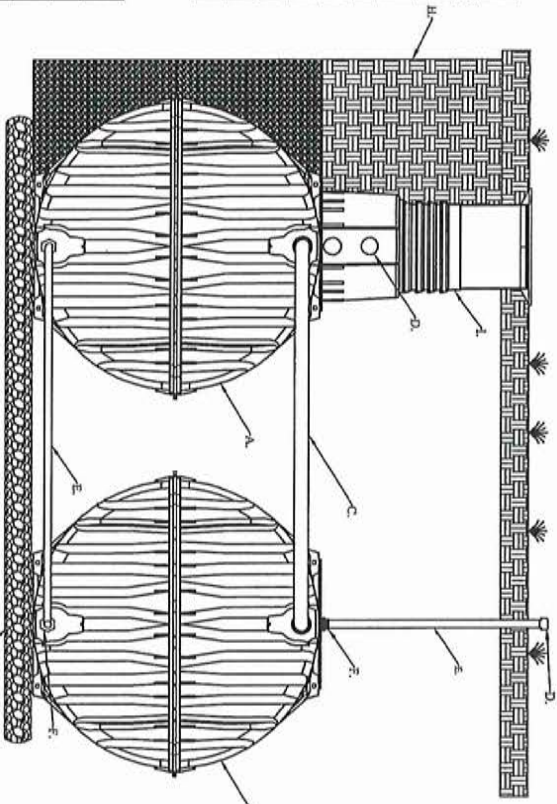
2004 Louisiana Ave
N. Louis Park, MN

Adrian's Garden LLC

Designer: Dorothy Robinson
September 2, 2010 / Scale: 1/8" = 1'



Legend A	
A.	GRAF Caret S 1700 Gallon Underground Tank (1)
B.	GRAF Caret S 1700 Gallon Underground Extension Tank (1)
C.	Optional Upper Tank Connection
D.	2" Screened Tank Vent (2)
E.	2" Lower Balancing Lines
F.	2" Banjo Bulkhead Fittings
G.	Gravel Base (#57) and Backfill (#89 or Pea)
H.	Native Soil Backfill (Above Tank)
1.	12" Riser Extension for Tank Access (Optional)

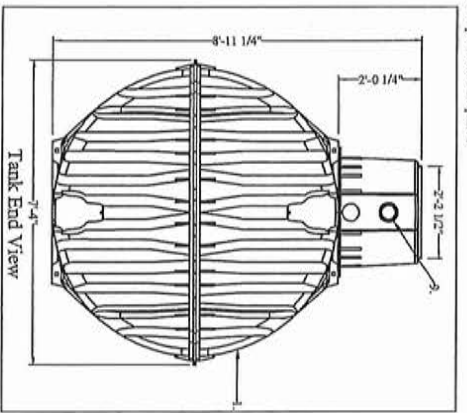


Tank End View

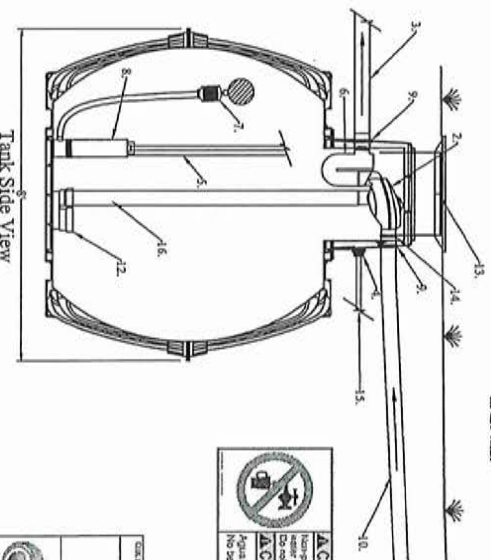
3400 Gallon System

- GRAF Caret S 1700 Gallon Tank Specifications:**
- Variable burial depth: 30" to 42" (59" Max. with optional dome extension and "Meat" telescopic riser)
 - Unique in the world - unique manufacturing process produces the highest stability due to latest techniques
 - Unique fit accuracy of the components thanks to new production process
 - Consistent quality due to TÜV safety testing and production monitoring
 - Vehicle-bearing (with telescopic cast iron manway kit)
 - Groundwater stable up to the middle of the tank due to extremely rigid construction
 - Secure investment with market leading 1.5-year warranty
 - Made from high quality Duracore, easy to recycle
 - Can be expanded as required

Legend B	
1.	GRAF Caret S 1700 Gallon Underground Tank
2.	GRAF Optimax Pro Internal High efficiency, self-cleaning, In Tank filtration system.
3.	4" overflow drain to storm drain or other. Typically 4" PVC Sewer and Drain.
4.	1 1/4" Bulkhead Fitting for plumbing thru tank or riser assembly
5.	115v Power supply
6.	Overflow spigot with mosquito and float stop
7.	GRAF 1-1/4" Floating Pump Extensor with 1200 Micron Coarse Screen
8.	RainFio 1.25 HP Submersible Pump, Continuous duty with stainless steel base and a 1-1/4" threaded intake for use with a floating filter.
9.	Grat 4" Pipe Gasket
10.	4" Leader from Roof Gutters and Downspouts
11.	1 1/4" Schedule 40 PVC Pump output to Use
12.	Chaining inlet to prevent the disturbance of the fine sediment layer at bottom of tank
13.	Adjustable Riser and Childproof Lid
14.	4" Flexible Pipe Coupler
15.	Pump Output Line to Irrigation or other source
16.	4" PVC Pipe from Optimax Filter Affixed to Chaining Inlet



Tank End View



Tank Side View

USER'S Responsibility
 Unvented Rainwater is NON-Portable water. Warning do not drink water supplied from RainHarvest Systems rainwater systems and related equipment. We will be happy to offer suggestions on the use of our various products either by way of printed material or through direct contact with RainHarvest Systems team members. However, users have no control over the use of the product. **WARANTY WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE** is made beyond the receipt, replacement, or refund of purchase price at the sole discretion of RainHarvest Systems. Users shall determine the suitability of the product for the intended application before using, and the users assume all risk and liability whatsoever in connection therewith, regardless of any item mentions suggestions or statements as to the suitability of the product. In no event shall our liability extend to the maximum of the purchase price. Consult local building codes for the system use.

- GRAF Optimax High efficiency, self-cleaning, InTank filtration system**
- Filter specially developed for rain water harvesting
 - Low maintenance: self cleaning
 - Only 6.5" height offset between inlet and outlet
 - 0.33mm (.01") mesh filter
 - Transparent cover for easy maintenance
 - Optional Opticlean® Sprayhead
 - Over 95% yield
 - Self-cleaning filter
 - Max. 3.750 sq. ft. with 4" connections
 - Space saving filter technology integrated in the tank



Tank height should be set and plumbing pitched to best utilize existing grade.
 A site assessment should be done prior to installation to determine the optimum levels for filter and plumbing so as to provide positive drainage to tank and stormwater overflows.

NOTE: This drawing is for illustrative purposes only. Actual systems and design vary. Always check with local building codes as to the proper application of this product. RainFLO is a registered trademark of RainFLO, Inc. RainFLO is not liable for any damage or injury caused by the use of this product. RainFLO, Inc. is not liable for any damage or injury caused by the use of this product. Consult local building codes for the system use.

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 RainHarvest Systems, LLC
 6075 Parkway North Drive Suite D
 Quantico, VA 20090
 Tel: 770-889-4553 Fax: 770-889-2977

Cost Share Grant Evaluation Form
Community Engagement Grant

Name of Reviewer: Telly Mamayek, Erik Megow (Wenck)
 Date Reviewed: 10-24-2016
 CAC-Staff Subcommittee Review: 11-1-16

Applicant: Uptown Housing Cooperative

Project: 3450 James Ave. S., Minneapolis

Total Project Budget: \$28,570.40

Requested Funding: 50%

Community Engagement Grant: must be designed to produce greater public awareness of ways to improve water quality. These projects use a stormwater BMP as a demonstration to educate the public to build community capacity to grow knowledge and support of stormwater management in the community.

Organization Type: Condo Association, non-profit		
Are the Goals of Project Clearly Outlined? Yes. Six raingardens to catch roof runoff with emphasis on educating others about the value of these BMP's.		
Past History: Has the applicant applied before? No		
<i>Project Design (30pts)</i>		
Notes: Six raingardens are proposed to treat approximately 17,200 square feet of roof runoff. The six raingardens will be placed all around the building and new downspouts will be provided to direct stormwater to the raingardens.	6/10	Water Resource Improvement to MCWD
	3/5	Innovative Design
	5/5	Budget Detail
	10/10	Maintenance Plan
Project Design Total:		24 /30
<i>Education & Outreach (60 pts)</i>		
Notes: Two open houses with neighborhood association, joint event with First Universalist church, signage, class at Shir Tikvah Synagogue, outreach to other multi-housing associations, work with two Master Water Stewards	20/20	Influence within Community
	15/25	Outreach Techniques
	5/10	Visibility of Demonstration
	0/5	Leveraging Other Grant Funds
Education and Outreach Total:		40/60
<i>Water Resource Prioritization (10 pts)</i>		
Notes: Project uphill from Lake Cahoun, with has a grade of A. In same neighborhood as St. Mary's Greek Orthodox Church, where the District funded BMP's.	6/10	Alignment with District Priorities
Water Resource Prioritization Total:		6 /10
Total:		70/100

3540 James Ave S
 Stormwater Drainage Map



The current stormwater conditions on the roof include both pitched and flat roofs, that drain into gutters that lead underground. The cooperative currently pays the City of Minneapolis a monthly stormwater fee of \$178.13. The roof stormwater run-off currently runs into underground pipes, which are then connected to a storm sewer pipe that runs under 36th St and into Lake Calhoun. Two downspouts empty onto the parking lot, which slopes to the street and runs onto 36th St, and into Lake Calhoun as well.

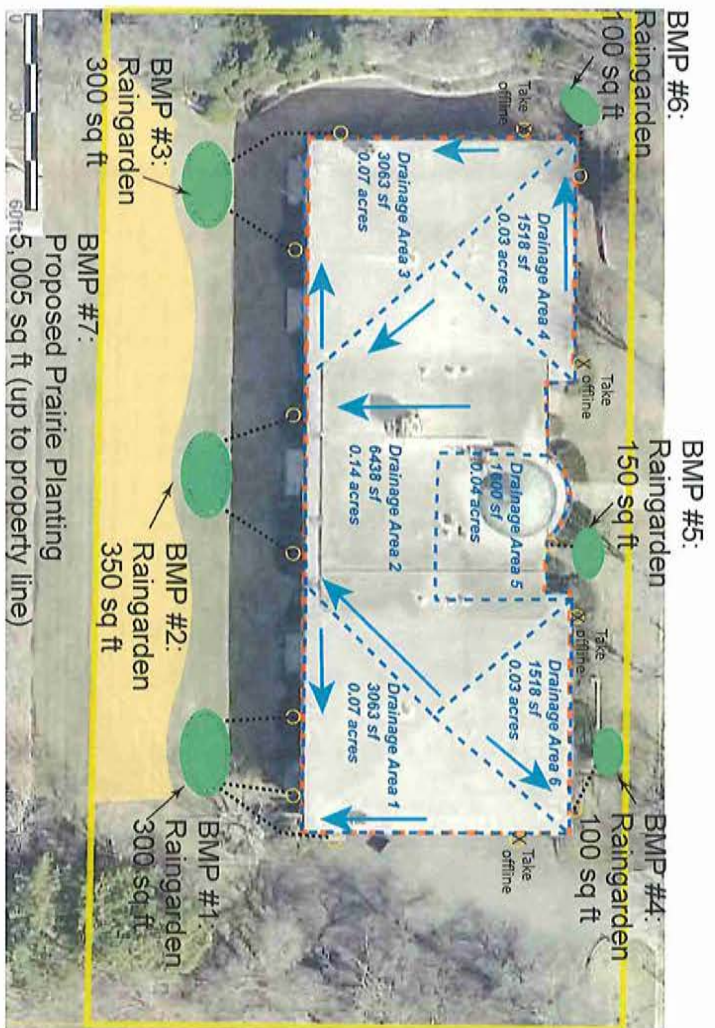
Re-routing of the downspouts will be necessary in order to direct the stormwater run-off coming from the roof most efficiently to the proposed Stormwater Best Management Practices (BMPs) detailed in the following pages. Re-routing of downspouts is something that can qualify for cost-share funds from Minnehaha Creek Watershed District (MCWD).

Total area of property =	1.21 acres
52,989 sq. ft.	
Total Impervious area =	0.53 acres
22,826 sq. ft.	
Building Roof =	0.42 acres
18,137 sq. ft.	
Parking Lot =	0.11 acres
4,642 sq. ft.	
Lawn =	0.56 acres
24,689 sq. ft.	
Non-lawn landscape =	0.20 acres
8,859 sq. ft.	



One of the building's downspouts emptying underground.





BMP #6: Rain garden 100 sq ft

BMP #5: Rain garden 150 sq ft

BMP #4: Rain garden 100 sq ft

BMP #3: Rain garden 300 sq ft

BMP #2: Rain garden 350 sq ft

BMP #1: Rain garden 300 sq ft

Proposed Prairie Planting

5,005 sq ft (up to property line)

BMP #2: Rain garden with Drain Tile

Designed for handling a 1 1/4" rain event

RAINGARDEN - 350 sq ft / .007 acre	% REDUCTION 30" avg yearly rain:
TOTAL IMPERVIOUS:	Volume - 100%
Building - 6,438 sq ft / .14 acre	Phosphorous - 100%
	Total Solids - 100%
TOTAL % IMPERVIOUS TREATED:	AMOUNT of REDUCTION
100% of Drainage area 2	Volume (gallons) - 4,068
	Phosphorous (lbs.) - 1.120
	Solids (lbs.) - 0.007

Costs and Maintenance: Installing a 350 sq ft rain garden with connecting underground drain tile would be approx. \$15-\$20 a sq ft, so this BMP could cost \$5,250-\$7,000. This is an estimate, to get a more accurate cost you would need a bid from a contractor for your specific site. Cost sharing grants would be available for this kind of BMP from MCWD, as well as stormwater credits from the City.

Maintenance would include watering weekly for the first season or two until plants are established, and weeding 1-3 times a season to ensure weeds don't out-compete rain garden plants. This maintenance could be done by the cooperative's current maintenance company, the residents themselves, or an outside company that specializes in maintenance of native plantings and rain gardens.

3540 James Ave S.
Best Management Practices (BMP) Opportunities Map

BMPs #1 and #3: Rain gardens with Drain Tile

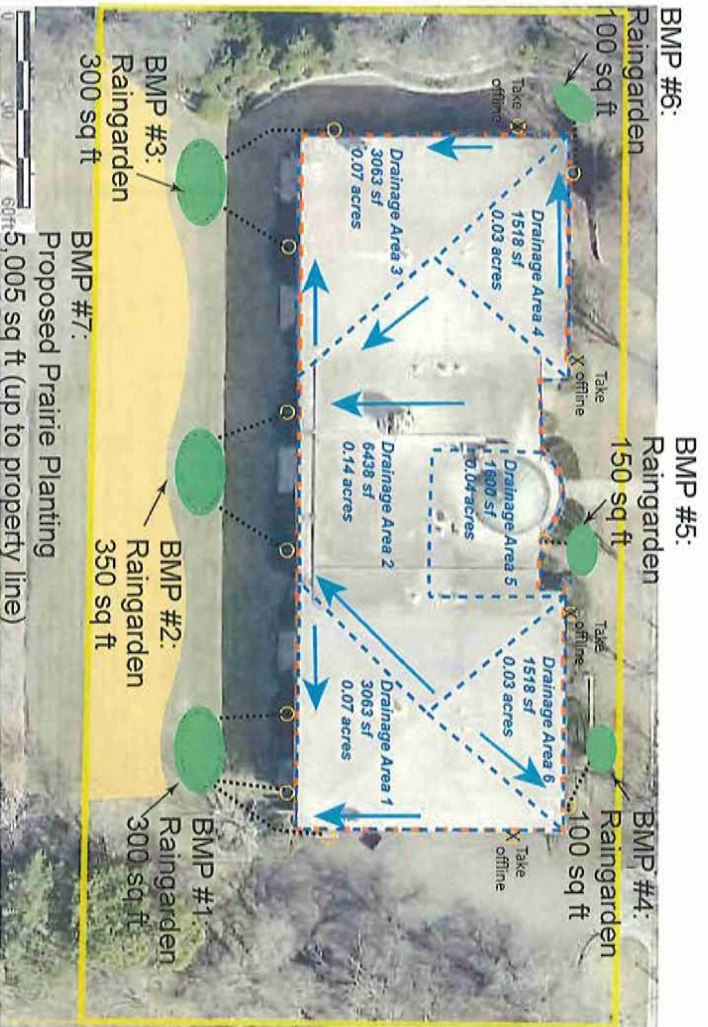
Designed for handling a 1 1/4" rain event

RAINGARDEN - 300 sq ft / .007 acre	% REDUCTION 30" avg yearly rain:
TOTAL IMPERVIOUS:	Volume - 100%
Building - 3,063 sq ft / .07 acre	Phosphorous - 100%
	Total Solids - 100%
TOTAL % IMPERVIOUS TREATED:	AMOUNT of REDUCTION
100% of Drainage area 1	Volume (gallons) - 3,196
	Phosphorous (lbs.) - 0.88
	Solids (lbs.) - 0.006

Costs and Maintenance: Installing a 300 sq ft rain garden with connecting underground drain tile would be approx. \$15-\$20 a sq ft, so this BMP could cost \$4,500-\$6,000. This is an estimate, to get a more accurate cost you would need a bid from a contractor for your specific site. Cost sharing grants would be available for this kind of BMP from MCWD, as well as stormwater credits from the City.

Maintenance would include watering weekly for the first season or two until plants are established, and weeding 1-3 times a season to ensure weeds don't out-compete rain garden plants. This maintenance could be done by the cooperative's current maintenance company, the residents themselves, or an outside company that specializes in maintenance of native plantings and rain gardens.





BMP #6: Raingarden 100 sq ft
 BMP #5: Raingarden 150 sq ft
 BMP #4: Raingarden 100 sq ft

BMP #3: Raingarden 300 sq ft
 BMP #2: Raingarden 350 sq ft
 BMP #1: Raingarden 300 sq ft
 Proposed Prairie Planting 5,005 sq ft (up to property line)

3540 James Ave S.
 Best Management Practices (BMP) Opportunities Map (continued)

BMPs #4 and #6: Raingardens with Drain Tile (front of building)
 Designed for handling a 1 1/4" rain event

RAINGARDEN - 100 sq ft / .002 acre	% REDUCTION 30" avg yearly rain:
TOTAL IMPERVIOUS: building - 1518 sq ft / .03 acre	Volume - 100%
	Phosphorous - 100%
	Total Solids - 100%
TOTAL % IMPERVIOUS TREATED: 100% of Drainage area 5	AMOUNT of REDUCTION
	Volume (gallons) - 872
	Phosphorous (lbs.) - 0.24
	Solids (lbs.) - 0.002

Costs and Maintenance: Installing a 100 sq ft raingarden with connecting underground drain tile would be approx. \$15-\$20 a sq ft, so this BMP could cost \$1,500 - \$2,000. This is an estimate, to get a more accurate cost you would need a bid from a contractor for your specific site. Cost sharing grants would be available for this kind of BMP from MCWD, as well as stormwater credits from the City. Maintenance regime same as other raingardens listed.

BMP #5: Raingarden with Drain Tile (front of building)
 Designed for handling a 1 1/4" rain event

RAINGARDEN - 150 sq ft / .003 acre	% REDUCTION 30" avg yearly rain:
TOTAL IMPERVIOUS: building - 1,600 sq ft / .04 acre	Volume - 100%
	Phosphorous - 100%
	Total Solids - 100%
TOTAL % IMPERVIOUS TREATED: 100% of Drainage area 3	AMOUNT of REDUCTION
	Volume (gallons) - 1,162
	Phosphorous (lbs.) - 0.32
	Solids (lbs.) - 0.002

Costs and Maintenance: Installing a 150 sq ft raingarden with connecting underground drain tile would be approx. \$15-\$20 a sq ft, so this BMP could cost \$2,225 - \$3,000. This is an estimate, to get a more accurate cost you would need a bid from a contractor for your specific site. Cost sharing grants would be available for this kind of BMP from MCWD, as well as stormwater credits from the City. Maintenance regime same as other raingardens listed.

~~BMP #5: Native Prairie Hillside Planting - 5,005 sq ft (0.11 acres)
 The benefits of a hillside native prairie planting would save on lawn maintenance costs (mowing, fertilizer/pesticide use), gaining value pollinator/wildlife habitat (which will benefit Lake Calhoun and the greater area), and aesthetic beauty of a blooming prairie through the seasons.
 The estimated cost of prepping the site and installation would be \$3 a square foot, or \$15,000. This number is quoted from Blazing Star Gardens, a local native plant nursery that specializes in native restoration, landscaping, and design. Cost sharing grants would be available for this kind of BMP from MCWD, for its wildlife value, as well as stormwater value.~~



3540 James Ave S.
Example Photos of Proposed Best Management Practices (BMP)



Photo credit: Hillside Prairie Restoration



Photo credit: Bob Muggart, U of MN



Photo credit: 311waterswackethere.org



photo credit: DrInnagardentox.com



photo credit: 311waterswackethere.org

Example Raingardens

Hillside Prairie Planting

Stormwater Management Plan

3540 James Ave S, Minneapolis MN

Designer: Lacey Doucet Campbell

