

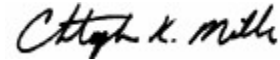
ROSEVILLE
REQUEST FOR COUNCIL ACTION

Date: 5/11/09
Item No.: 10.b

Department Approval



Acting City Manager Approval



Item Description: 2008 Storm Water Report

BACKGROUND

The City's Comprehensive Surface Water Management Plan, requires staff to provide a brief annual report to summarize development changes, capital improvements, and other surface water management related issues that have occurred over the past year. The report contains an in-depth discussion of the storm water issues that staff has worked through during the course of the year. This allows the City to better plan for future storm water needs.

Attached is the 2008 Storm Water Report describing the storm water related changes that occurred throughout the City last year. These changes include problem areas updates, City projects in addition to redevelopment and development projects.

Staff would also like to add one additional action item to the City's 2009 work plan. Last week, staff finalized a quote from Norseman Plastics to purchase 130 Rain Barrels for \$55 each. Staff proposes to market and sell these rain barrels to interested residents for \$55 plus tax. This initiative is consistent with the City Council's IR2025 short term priorities.

POLICY OBJECTIVE

These improvements recommended for inclusion in the 2009 storm water work plan are in keeping with the City of Roseville's commitment to help the environment. These projects would retrofit storm water problem areas with BMPs that would reduce the volume of runoff, while treating pollutants at the source.

FINANCIAL IMPACTS

The City annually budgets for storm water system improvements in the Storm Water Utility. It is anticipated that 2009 storm water work plan items be funded using Storm Water Utility funds.

STAFF RECOMMENDATION

Discuss the 2008 Storm Water Report and provide staff with feedback on proposed 2009 action items presented as a part of the 2008 Storm Water Report.

REQUESTED COUNCIL ACTION

Discuss 2008 Storm Water Report and approve the 2009 Staff storm water action items.

Prepared by: Debra Bloom, City Engineer

Attachments: A: 2008 Storm Water Report

B: Location Map

C: Rain Barrel information



**Public Works
Department of Engineering**

**2008
Storm Water
Annual Report**

Prepared by: Debra Bloom
Assistant Public Works Director
City of Roseville

1 **I. Introduction**

2 One part of the City’s Comprehensive Surface Water Management Plan (CSWMP), is for
3 staff to provide a brief annual report to summarize development changes, capital
4 improvements, and other water management related issues that have occurred over the
5 past year. In the past, this has been completed as a part of the SWPPP Annual Report. In
6 the interest of providing a more in depth discussion of the storm water issues that staff
7 has worked through during the course of the year, we are providing this as a separate
8 document. This will allow us to include more information and enable us to better plan
9 for future storm water needs.

10 City staff keeps track of the majority of the rainfalls that occur within the City. This is
11 accomplished through a gauge at the Maintenance Building. We have included this
12 information at the end of this report.

13 The report includes the following sections; CSWMP Problem Area Updates, 2008 New
14 Problem Areas, 2008 City Projects, 2008 Redevelopment Projects, and Other Drainage
15 Concerns.

16 **II. CSWMP Problem Area Updates**

17 Five problem areas were identified as a part of the 2003 CSWMP. Over the past 4 years
18 we have been able to address some of these areas through additional study or construction
19 projects. Some of the issues that were identified have been resolved while others have
20 developed new concerns. We now have nine problem areas. What follows is a summary
21 of the status of these problem areas.

22 **A. Area 1- Avon- Brenner.**

23 Over the years, the City has made a number of improvements in this area to address street
24 flooding and increase the pollutant removal efficiency within the Charlie Pond
25 subwatershed of Lake Owasso. Changes in subwatershed boundaries, the addition of the
26 Valley Park ponds, new outlets, and larger pipes have all played a role in improving the
27 drainage for the area.

28 As recently as 6 years ago there were 13 vacant lots in this neighborhood. In the last 6
29 years, 7 of these lots have been developed as single family homes. 6 of these lots are
30 located along the south side of Brenner Avenue west of Millwood Avenue. As these lots
31 continue to be developed, renewed neighborhood concern has been expressed about the
32 need for additional storm water improvements for this subwatershed. One of these vacant
33 lots is between 812 and 800 Brenner Avenue and has a low area that drains into the
34 City’s system. To determine the role that this lot plays in the updated overall storm water
35 system, a new XP-SWMM model was created by URS in 2006.

36 *Action to date:*

37 This analysis allowed us to evaluate the performance of the system during intense storm
38 events and determine how incremental improvements would impact the elevation of
39 flooding within rear yards, low areas, and intersections in this neighborhood. As a result
40 of this analysis, the following improvements were constructed in 2007:

41 Brenner Street

- 42 • Runoff from the wetland on the vacant lot west of 800 Brenner was redirected to
43 storm sewer which flows directly to Lake Owasso, allowing for additional capacity in

the Charlie Pond pipe.

Millwood Avenue

- Yard catch basins at 815 Millwood were disconnected from the storm sewer that flows to Charlie Pond pipe and connected to the storm sewer that flows to Lake Owasso, allowing for additional capacity in the Charlie Pond pipe.
- A new connection was made between the manhole in the boulevard at 820 Millwood and the manhole in the boulevard of 819 Millwood. This new pipe serves as a relief for high flow conditions, allowing for the low point to drain faster.

Avon Street

- The existing catch basins at 3075 and 3074 Avon were replaced with larger grates and an additional catch basin was constructed at 3081 Avon to increase inlet capacity.

Recommended 2009 action:

The final recommendation from the drainage study was to purchase the vacant lot at 806 Brenner Avenue. City Council authorized staff to start negotiations on July 17, 2007. We are continuing to work with the Reiling trust on the acquisition of this lot.

B. Area 2- St. Rose of Lima Area

The intersection of Dellwood and Skillman Avenue, located near St. Rose of Lima Church, experiences street flooding during periods of intense precipitation. Runoff from approximately 14.5 acres of residential land use is tributary to this intersection either directly or via the storm sewer along Dellwood and Skillman Avenues. In addition, runoff from a portion of the St. Rose of Lima property is tributary via the Dellwood Avenue storm sewer, adding about 5.7 acres of mostly impervious surface.

An analysis of the existing trunk system indicated it can handle a 2 year rain event. As a result, during intense rainfall events, the trunk system experiences surcharge, thereby causing the intersection to flood to a 1.9 foot depth.

The CSWMP recommended a two tier solution for this street flooding problem.

Option 1: Construct a pond in the storm water retention on the St. Rose of Lima site. The site is approximately 28% of the total tributary area, and contributes 39% of the total runoff volume. Just implementing this option reduces the intersection flooding to 1.6 feet. Estimated cost: \$148,159.

Option 2: Expand the pond in Mayflower Park and construct a parallel storm sewer to direct runoff from the intersection to the expanded pond. This would effectively turn this neighborhood park into a storm sewer retention pond. Just implementing this option reduces the intersection flooding to 1.0 foot. Estimated cost: \$549,678.

Options 1 & 2: implementing both options would eliminate the intersection flooding. Estimated cost: \$697,837.

Action to date:

We have not done any additional work in this problem area. Staff feels that due to impacts to the neighborhood park, any proposed solution would involve extensive public participation.

84 **C. Area 3: South Owasso Blvd (Ladyslipper Park)**

85 As a part of the 2006 S. Owasso Blvd Reconstruction project, the City completed the
86 improvements to the storm water runoff being discharged into Ladyslipper Park.

87 Between Rice Street and Western Avenue, approximately 160 acres of single family
88 residential property drain into Lake Owasso through a drainage ditch that cuts through
89 Ladyslipper Park in a north south direction. This ditch was constructed in 1971 as a
90 canoe access to Lake Owasso. In the 1991 Lake Owasso Survey report, it was
91 determined that the removal efficiency of this system is very limited. Only 30 to 50% of
92 suspended solids and 9% of the total phosphorus were removed before being discharged
93 into Lake Owasso.

94 *Action to date:*

95 In 2005, the City constructed a two cell pond system north of the road as well as 3
96 wetland/ biofiltration basins south of the road. These basins increased the TSS removal
97 to 81% and Phosphorus removal to 52%. This is a significant improvement to this
98 subwatershed area. Staff had committed to the DNR and property owners surrounding
99 Ladyslipper Park that additional wetland plantings would occur in and around these
100 basins; however, we wanted to be assured that they functioned according to design prior
101 to completing the installation.

102 *Recommended 2009 action:*

103 The 3 wetland/ biofiltration basins south of the road were monitored in 2006, 2007, and
104 2008 to establish water levels. Staff is satisfied that they are performing as designed.
105 However after an inventory of existing vegetation last summer it was determined that a
106 more extensive planting plan does not need to be implemented. Staff will continue to
107 monitor these basins.

108 **D. Area 4: Gluek Lane Pond and Fairview Avenue at the TH 36 Overpass.**

109 During intense storm events, street flooding occurs in the residential area near the Gluek
110 Lane Pond, and on Fairview Avenue beneath the TH 36 overpass. Both areas are
111 tributary to the same storm sewer trunk system that drains north to the pond at the SE
112 corner of Fairview and County Road C (OP-1B). This trunk system serves 308 acres of
113 predominantly commercial/industrial land use.

114 An analysis of the existing trunk system indicated that during a 100- yr rainfall event (6-
115 inch/ 24-hr), Gluek Lane experiences some street flooding and the TH 36 underpass is
116 flooded to a 4.6 foot depth. This is the result of the trunk storm sewer line located in
117 Fairview Avenue being undersized, causing backflow and surcharging in these areas.

118 The CSWMP evaluated 4 options in an effort to resolve the problems identified above.

119 Option 1: Expansion of Pond OP-1A: this option would increase the holding capacity of
120 the basin located in the backyards of the homes on Gluek Lane. This option would
121 eliminate the street flooding on Gluek Lane, and reduce the flooding at the
122 Fairview/TH36 underpass to 4.2 feet. Estimated cost: \$631,318.

123 Option 2: Ponding upstream of Point A. This option would create 4.8 acre-feet of
124 storage in a pond at the SE corner of Fairview and TH 36, increasing capacity for this

subwatershed. Flooding at Fairview would be reduced to 3.3 feet. Estimated cost: \$156,000.

Option 3: Provide aggressive rate control for the Rosedale Mall site.

This option assumes a 40% reduction in peak flow from the Rosedale Mall site. It also assumes that options 1 & 2 are implemented. Estimated Cost = \$787,318 + costs for Rosedale improvements.

Option 4: Construct a new storm sewer trunk line along Fairview Avenue. This option includes the construction and reconfiguration of the Fairview trunk storm sewer. It eliminates flooding under TH 36 and on Gluek Lane; however, it pushes the water downstream to the pond in the SE corner of Fairview and C, increasing the high water elevation by 1.3 feet. Estimated cost: \$1,935,000.

Action to date:

The only option discussed in the CSWMP that addressed the street flooding issues completely was Option 4; however, due to potential impacts to the homes located around the pond in the SE corner of Fairview and County Road C, staff does not feel that this option is feasible. After a 6-inch rainfall event that occurred 10/4/2005, we experienced localized flooding in a number of different areas around the City. The home at 1779 Rose Place was flooded during this extreme rain event.

Due to the cost, limited benefit, and potential impacts to the properties located around the pond at Fairview and County Road C, staff does not recommend proceeding with any of the options as described in the CSWMP.

Recommended 2009 action:

In an effort to address some of the flooding concerns in this problem area, staff will continue to require redevelopment projects to reduce the volume of water that is sent to this system. This is similar to the action described in Option 3. A reduction in the peak flow from the commercial properties located in the subwatershed will alleviate the demand on the Fairview trunk sewer.

On December 27, 2007 the City purchased the home at 1779 Rose Place as way to eliminate the potential of future property damage during extreme storm events. This house was demolished in 2008. In 2008, Rice Creek Watershed District completed the "Southwest Urban Lakes Study"; a roadmap by the Watershed District for future management activities and water quality improvement projects. This site was identified in the Little Lake Johanna Management Action Plan for a potential surface feature to treat local street runoff from Rose Place. The City will work with Rice Creek on the implementation of this plan.

E. Area 5: Arona Pond and surrounding area.

Arona pond is located within the Applewood Pointe redevelopment area. Prior to development, this pond was a landlocked basin. For years, the normal water level of the pond was governed by infiltration. As the surrounding area developed, the basin became a part of the storm water system. An outlet was installed around 1979 that enabled the basin to pass runoff from extreme events. Approximately 112 acres contribute runoff to Arona Pond. Over the years, the sandy bottom of this pond became sealed with sediment,

eliminating the infiltration capacity of the basin. This resulted in localized flooding of the surrounding properties. As a part of the Applewood Pointe redevelopment project in 2003, the City reconstructed this pond. The reconstruction project nearly doubled the capacity of the basin. Years of sediment accumulation was excavated, restoring the infiltration capacity that had been sealed. In addition, a lift station was constructed to provide a secondary outlet for extreme events. The new pond serves as a regional storm water treatment facility for the subwatershed.

Recommended 2009 action:

This area has been removed from the CSWMP problem areas.

F. Area 6: 35W corridor

Historically the City has observed flooding within the 35W corridor ponds after extreme rain events. These ponds include the basins on both sides of the 35W just to the north of County Road C and around the highway ramps. The primary concern for these subwatersheds is the downstream pipe located within the Mn/DOT right-of-way. This pipe is 21 inches in diameter. Simply increasing the size of the pipe would push the problem down stream causing flooding in another location. Also, this corridor is located within Rice Creek Watershed and their new volume reduction standards would not support an increase to the runoff discharged to Long Lake. As a part of the County Road C project, additional storage was constructed to address the runoff from County Road C through ponding and rain gardens.

Action to Date:

This subwatershed was added as a problem area in 2006.

Recommended 2009 action:

In an effort to address some of the flooding concerns in this problem area, staff will continue to require redevelopment projects to reduce the volume of water that is sent to this system. A reduction in the peak flow from the commercial properties located in the subwatershed will alleviate the demand on the 35W trunk sewer.

G. Area 7: Como Sub 7- Gottfried Pit

In 2003, the City of Roseville cooperated with Capitol Region Watershed District (CRWD), Falcon Heights, the City of St. Paul, and Ramsey County on a study of downstream flooding and water quality issues for the northwestern watershed area to Como Lake. All of these entities contribute storm water flow to Como Lake. This study identified improvements that would be made to mitigate the ongoing storm water issues in this area. The study also assigned proportional cost shares to each entity based on contributory flow with CRWD agreeing to contribute funding for a portion of the improvements. They served as the lead agency on this study and for the subsequent improvements to occur on the Como Golf Course and additional storage at Arlington and Hamline Avenues.

Roseville drains 315 acres into Como Lake via Gottfried Pit near Fernwood Street and Larpenteur Avenue. The work completed as a part of the agreement does not completely address the drainage concerns detailed in the report.

Action to Date:

This subwatershed was added as a problem area in 2006. In an effort to address some of the flooding concerns in this problem area, staff will continue to require redevelopment projects to reduce the volume of water that is sent to this system. A reduction in the peak flow from the commercial properties located in the subwatershed will alleviate the demand on the Gottfried Pit.

Recommended 2009 action:

In an effort to address some of the flooding concerns in this problem area, staff will continue to require redevelopment projects to reduce the volume of water that is sent to this system.

H. Area 8: Center Street

For years we have been working on finding a resolution for street flooding at the intersection of Center Street and Rice Street. This is the result of the sediment that has accumulated in the ditch located on the east side of Rice Street in the City of Maplewood. Center Street drains under Rice Street via a culvert, the sediment in the receiving ditch causes Roseville's side of Rice Street to flood. As a result, any solution for this street flooding requires cooperation from Maplewood. Since it is a cross jurisdictional issue that involves the Trout Brook Interceptor, CRWD needs to be involved. The three jurisdictions have agreed that CRWD will study the problem and recommend a solution.

Action to Date:

This subwatershed was added as a problem area in 2007.

Recommended 2009 action:

To date we have not come to an agreement about a solution for this drainage concern. Staff feels that since all the issues surrounding this subwatershed have not been addressed, this subwatershed should be added as a problem area within the CSWMP.

I. Area 9: Walsh Lake Subwatershed

On March 24, 2008, the City Council authorized a study of the storm water hydrology of the Walsh Lake subwatershed located in the neighborhood southeast of Midland Hills Golf Course ("Rosewood Neighborhood") due to neighborhood concerns about localized street flooding and damage to property. This area includes the following streets: Midland Hills Road, Draper Avenue, Rosedale Drive, Westwood Circle, Hythe Street, Skillman Avenue, North Rosewood Lane, and South Rosewood Lane.

An XP-SWMM model was created for this area. The XP-SWMM analysis allows us to evaluate the performance of the system during intense rain events. The model predicts the elevation of flooding within wetlands, low areas and intersections in this neighborhood. A separate model was executed for the 2, 5, 10 and 100-year storm events. The storm events are 2.8", 3.6", 4.2", and 6" of rain in a 24-hour period, and have annual return probabilities of 50%, 20%, 10%, and 1%, respectively.

The existing storm sewer system in the Rosewood neighborhood consists of a network of pipes that lead to a manhole at Draper Avenue and Midland Hills Road. From this manhole, the storm water runoff flows through a dual pipe system west to Walsh Lake. Our current design standard for storm sewer is a 10-year event. The existing storm sewer system was built in the 1970s. Additional build-out of the neighborhood, which included

the filling of wetlands, resulted in an under-sized storm sewer system for today's conditions.

The following areas of concern were identified in the analysis:

- The intersection of Draper Avenue and Midland Hills Road
- The wetland located between 2235 and 2211 Rosewood Lane North ("Rosewood Pond").
- The side yard at 2241 Rosewood Lane South

This pipe configuration at Draper Avenue and Midland Hills Road creates a bottleneck on the system, which causes localized street flooding in 100, 10, and 5-year events. Rosewood Pond and the side yard at 2241 Rosewood Lane South were identified as flood prone in the 100- and 10- year events. The following table shows the results of the modeling for the flood prone areas.

	2241 Rosewood	Rosewood Pond
Low building elevation	937.60	940.30
100-Year High Water Elevation	939.57	941.42
10- Year High Water Elevation	937.48	940.35
Approximate additional storage needed to accommodate 100-Year event	0.75 ac-ft	1.1 ac-ft

The streets in this neighborhood are in good condition; upsizing the entire storm sewer system would not be a cost-effective manner in which to improve the drainage conditions, as it would require significant pavement removal and excavation. In addition to costs, upsizing the pipe would increase flow rates into Walsh Lake. Since the outlet of Walsh Lake is controlled by a lift station, increased flow to Walsh Lake could cause significant problems downstream.

Creating additional storage possibilities throughout the existing storm sewer system, such as wetland enhancement/pond excavation and rain garden construction, can alleviate the stress on the existing system; reduce the threat of flooding, while also improving water quality. By creating additional storage to reduce the risk of flooding, it is anticipated that the street flooding will also be reduced. Creating upstream storage will reduce the amount of water that reaches the dual pipe, and the timing of the water reaching the dual pipe will also be more staggered, alleviating street flooding even further.

Action to Date:

This subwatershed was added as a problem area in 2007.

Recommended 2009 action:

In order to create the additional storage recommended in the report, a final project needs to be designed. We have hired WSB and Associates to complete the following work:

- Additional study. The pond that was constructed as a part of the Midland Hills Condominium development, which may have additional capacity than is currently being used. Analysis would be completed to determine how much storm water could be redirected to the pond and what improvements would be needed to do so.

- Final design. Rain garden and other storm water Best Management Practice (BMP) locations will be finalized, and designs prepared for each site. Final design will also include the expansion of Rosewood Pond and improvements to the Midland Hills Condominium Pond, as determined by the additional study. Since Rosewood Pond is a delineated wetland, approval will be required from the Rice Creek Watershed District and the DNR for any improvements or enhancements. WSB will work through the required permitting process with all agencies involved.
- Public participation. Neighborhood meetings and individual meetings will be held with rain garden recipients during the design process to discuss the appropriate design for each site.

III. 2008 New Problem Areas

One of the goals from the City's CSWMP is to provide flood protection for all residents and structures as well as protect the integrity of conveyance channels and storm water detention areas. Many different policies were identified in the plan to accomplish this. For the purposes of this report, we want to discuss one in particular.

Policy 1.9 – Developer responsibility for addressing existing storm water problems

For development and redevelopment projects affecting storm water problem areas identified in this CSWMP, the City requires the developer to incorporate such practices as are necessary to resolve a proportionate share of the problem.

We did not identify any new problem areas in 2008.

IV. 2008 City Projects

A. City Project No. 07-02: Neighborhood 10 Reconstruction

To meet Rice Creek Watershed District (RCWD) requirements, the City constructed 5 rain gardens as a part of this project.

B. City Project No. 08-04: PMP Mill and Overlay Project

To meet Rice Creek Watershed District (RCWD) requirements, the City constructed 16 rain gardens as a part of this project.

V. 2008 Redevelopment Projects:

Each year the City reviews a redevelopment and development plans to ensure that they meet all of the policies outlined in the CSWMP. What follows are descriptions of the redevelopment projects that were completed in 2008 that required storm water improvements.

A. Gold Eagle, 1233 Larpenteur Avenue

This was the construction of an addition and reconstruction of the parking lot for this business. To meet storm water requirements, the owner constructed an underground storm water retention system to meet the City's storm water requirements. Since this site is located in Problem Area 7: Como Sub 7- Gottfried Pit, we required that the runoff from the site be reduced to resolve a proportionate share of the problem, consistent with the City's CSWMP.

B. Northwestern College, 3003 Snelling Avenue

For the first phase of their Campus Master Plan, Northwestern College reconfigured the private roads and constructed a parking ramp on their campus. They installed underground retention areas and rain gardens to meet the City's storm water requirements.

C. Rainbow Foods, 1201 Larpenteur Avenue

This project was the demolition of the buildings on the northeast corner of Fernwood and Larpenteur Avenue to construct a new Rainbow Store. The property owner, Roundy's installed underground retention areas to meet the City's storm water requirements. Since this site is located in Problem Area 7: Como Sub 7- Gottfried Pit, we required that the runoff from the site be reduced to resolve a proportionate share of the problem, consistent with the City's CSWMP.

D. Chianti Grill, 2050 Snelling Avenue

Last year, the Backyard Bar and Grill restaurant site, located at the Snelling Avenue access to HarMar was redeveloped. The developer constructed an extensive underground storm water retention system and rain gardens to meet the City's storm water requirements.

E. Har Mar Outlot, 1490 County Road B

This new commercial property was constructed on the northeast corner the HarMar Shopping Center. The developer installed underground retention areas and rain gardens to meet the City's storm water requirements.

F. Midland Grove Condos, 2220 Midland Grove Road

To address runoff issues in their courtyard, the Midland Grove Condominium Association constructed a large rain garden in their courtyard.

G. TCF Bank, 1445 County Road B

The developer has installed an infiltration/ retention area to meet the City's storm water requirements.

VI. Other Drainage Items

A. Rain Garden Workshop

On Thursday, May 8th, City Staff along with Ramsey Conservation District (RCD) sponsored a free Rain Garden Workshop. Information was provided to residents on the following:

1. How and why rainwater gardens can improve and protect the quality of our lakes, streams, and wetlands.
2. How to assess your yard for locating a rainwater garden
3. How to properly design a rainwater garden
4. How to install a rainwater garden
5. Available financial assistance from different government agencies

Staff was very pleased with the turnout at this workshop, 25 participants representing 18 properties attended this workshop.

Recommended 2009 action:

We have scheduled another workshop for April 29, 2009.

B. Bennett Lake Shoreline Improvement Project

In 2008, the City of Roseville completed an exciting partnership project with Prince of Peace Lutheran Church and the Ramsey Conservation District (RCD) to protect the water quality of Bennett Lake. Runoff from the parking lot and slope adjacent to Prince of Peace Church had been washing down the hill into Central Park, over the years this developed into an erosion issue that washed sediment into Bennett Lake. The shoreline of Bennett Lake has also experienced significant sloughing, causing damage to the lower path.

The first phase was done on the church property. The RCD worked with Prince of Peace to make changes to the way their runoff was handled. The improvements included construction of two rain gardens and filling the erosion gully that has formed between the upper and lower pathways. Volunteers from the Church made the improvements in late summer and will maintain these new features.

The second phase was a shoreline restoration project for the portion of Bennett Lake located adjacent to the Prince of Peace improvements. The plan was developed by RCD and City staff coordinated its implementation. The work was completed by Scout members, family, and friends and the Minnesota Conservations Corps, a non-profit organization.

In the spring, Dwayne Stenlund, PWETC commissioner, asked if we had any projects that an Eagle Scout candidate could help us out with. He recommended that we use Josh Chamberland to lead this first part of this project. Josh put together a work plan to complete the project, organizing tools, food, water, and breaks. He spent hours working through the logistics for the project, visiting the site, looking over the plans, and working out how we would accomplish the work. During the two Saturdays that the work was completed, he coordinated the volunteers and provided supervision. His volunteers completed the first part of the project; removal of buckthorn on the slope between the upper and lower pathways west of the waterfall and the construction of a wave wall to protect the shoreline.

This work was completed in August on two separate Saturdays. On the first day, 30 volunteers worked for almost 8 hours removing the buckthorn on the slope between the two pathways. The buckthorn was laid out and allowed to dry for three weeks. On the second Saturday, the volunteers worked for 5 hours, constructing a wave wall along the shoreline out of buckthorn to protect the shoreline to be restored. Throughout the project Josh provided leadership to the workers, ensuring that the work was completed as laid out in the plan.

During September, members of the Minnesota Conservation Corps completed the work that Josh started, restoring the shoreline and stabilizing the erosion gully between the upper and lower paths. It is anticipated that additional vegetation will be planted along the shoreline in spring 2009. The wave wall will remain in place until the vegetation on this shoreline is established.

Recommended 2009 action:
Install vegetation along the stabilized shoreline.

C. Impervious Coverage Deviations

Currently our City Code allows up to 30% impervious on R-1 or R-2 zoned lots. Staff receives a number of impervious coverage deviation requests from homeowners requesting more impervious than what is allowed by code. Our regional treatment system is designed assuming that all residential lots are 30% impervious. As a result of the property owner needs to address the hard surface increase on their site through rain gardens or other storm water best management practices to hold the rate of runoff at the 30% impervious rate or they need to convert a portion of their hard surface to pervious pavement/ pavers etc. resulting in no increase in hard surface. The deviation requests are addressed in City Code 1014.05:

1014.05 B 3. Impervious Coverage Deviation: An impervious coverage deviation is an increase in the amount of impervious surface area allowed in either R-1 or R-2 districts.

- a. An impervious coverage deviation shall not allow impervious coverage on any property to exceed code allowances by more than 20%.
- b. An application for impervious coverage deviation shall be supported by a preliminary storm water runoff mitigation plan; the preliminary mitigation plan shall propose measures of reducing storm water runoff from the property to the level that is consistent with the maximum impervious coverage allowed by the code.

(1) Any necessary building or driveway permit(s) shall not be issued until a storm water runoff mitigation plan has been approved by the City Engineer.

(2) Implementation of the storm water runoff mitigation plan shall be completed as a necessary condition for passing the final building or driveway inspection.

These requests are reviewed by the Development Review Committee. The following factors are considered prior to recommending approval or denial of an impervious coverage deviation:

- a. The proximity of the proposed impervious coverage to sensitive natural features;
- b. The potential for the excess impervious coverage to cause storm water problems on adjacent properties; and
- c. The use of landscaping and/or fencing to screen the proposed project from adjacent properties.

Action to date:

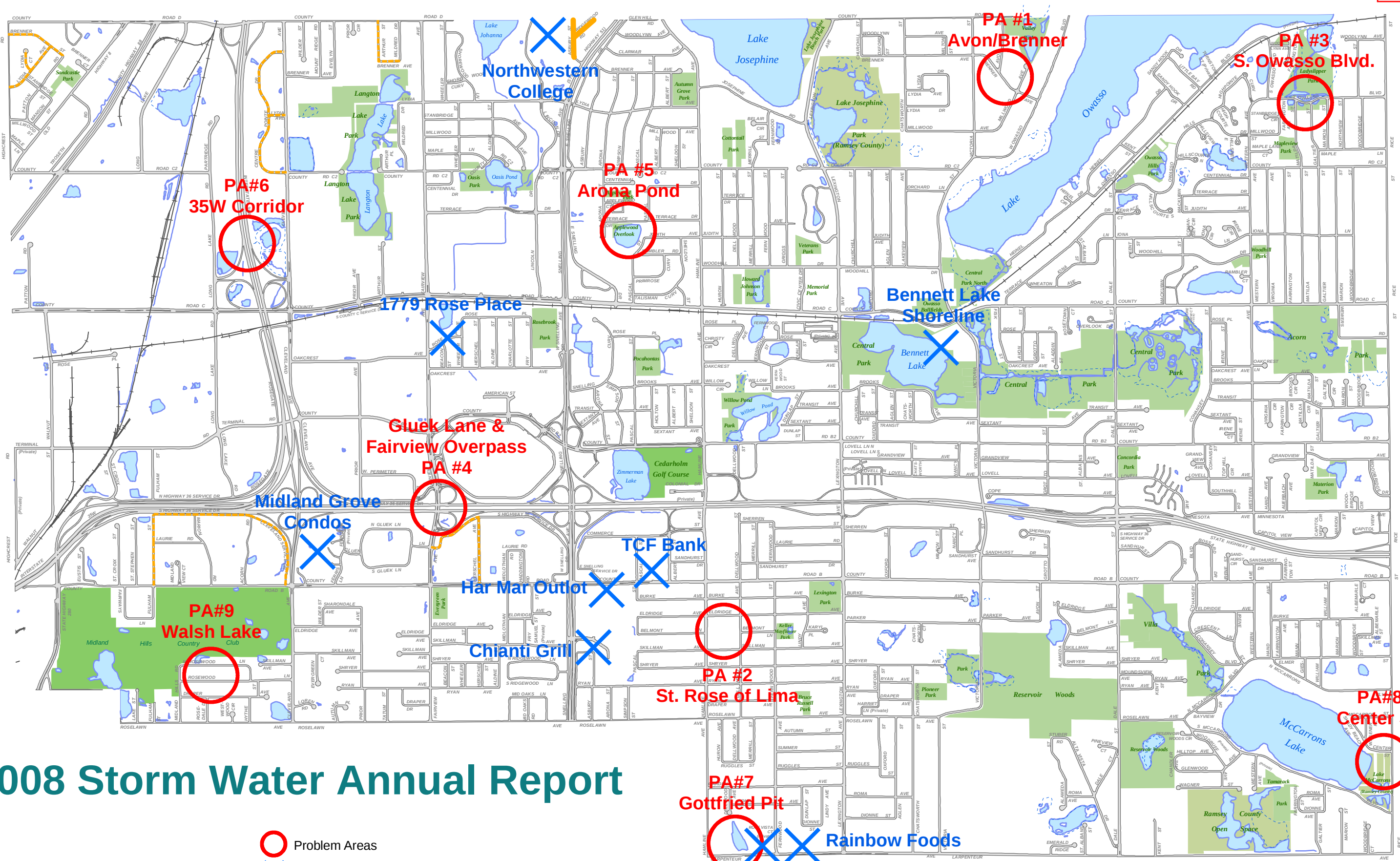
The following are the homes that were granted lot coverage deviations in 2008. Each of these sites was required to direct the additional hard surface runoff into a rain garden or subsurface trench to manage the additional volume from their site.

Address
358 McCarrons
2730 St. Albans

2008 RAINFALL SUMMARY

Date	Rainfall	Comments
4/7/08	.56	
4/11-4/12/08	1.36	Rain to snow to rain
4/18/08	.38	
4/21/08	.59	
4/24/08	1.00	
4/25/08	.44	
5/2/08	1.90	
5/6/08	.21	
5/10/08	.55	
5/13/08	.5	
5/19/08	.12	
5/24/08	.17	
5/30/08	.36	
5/31/08	.11	
6/2/08	.14	
6/3/08	.03	
6/5/08	.82	
6/8/08	.37	
6/11/08	.37	
6/11/08	.82	
6/14-6/15/08	.25	
6/20/08	.05	
6/28/08	.09	
7/10/08	.07	
7/11/08	.29	
7/17/08	.19	
7/19/08	.77	
7/25-7/27/08	.06	
7/31/08	.08	
8/3/08	.18	
8/9/08	.05	
8/11-8/12/08	1.07	
8/16/08	.05	
8/27/08	1.05	
9/2/08	.21	

Date	Rainfall	Comments
9/7/08	.36	
9/11/08	.17	Midnight to 7am
9/11/08	.27	7am-7pm
9/13-9/14/08	.57	
9/23/08	.75	
9/29/08	.08	
10/5/08	.32	
10/7/08	1.24	
10/10/08	.06	
10/13/08	.53	
10/20/08	.05	
10/21/08	.06	
10/22/08	.24	
10/26/08	.16	
11/11-11/13/08	1.30	Sleet, rain, snow



2008 Storm Water Annual Report



Prepared by:
Engineering Department
May 6, 2009

- Problem Areas
- Sites
- Roadway Reconstruction
- Roadway Mill & Overlay

Data Sources and Contacts:
* Ramsey County GIS Base Map (3/30/09)
* City of Roseville Engineering Department
For further information regarding the contents of this map contact:
City of Roseville, Engineering Department,
2660 Civic Center Drive, Roseville MN

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0 500 1000 1500 2000 Feet
mapdoc: 2006StormWaterAnnualReport.mxd
map: 2006StormWaterAnnualReport.pdf



WHAT DOES GREEN MEAN TO YOU?

Attachment C

For over 15 years, Norseman Plastics has been working with municipalities to reduce costs with innovative waste diversion programs. The result - programs that save the environment and reduce cost. Green to us means not only waste diversion and water conservation products, but programs to help any community be successful.

THE EARTH MACHINE™

Home composting using the Earth Machine™, combined with recycling and yard waste programs, can reduce resident waste at the curb by up to 80%. Get your residents composting.

Contact us today for details on our customized backyard composting program.



NEW! SYSTEM RAIN BARREL

SYSTEM Rain Barrel use lowers municipal water demands, saves energy at water treatment facilities while reducing water pollution and storm water runoff. In the United States alone, where outdoor water use can make up between 25% to 58% of the overall domestic water demand, rainwater harvesting can drastically reduce this demand preserving municipal water supply for potable drinking water. Contact us for details on our exclusive SYSTEM Rain Barrel distribution program.



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