DATE: 2/23/2016

TO: Pat Keenan, Student Life Operations – Director
    Lisa Hanson, Student Life Operations (Parking Services) – Assistant Director

FROM: Erik Larson, Facilities Management - Sr. Engineer

SUBJECT: Summary of 2015 Inspection of Parking Services Structural Storm Water Devices
         (UMD SWPPP 6b-2 / 6b-5)

I completed the annual inspections of the Parking Services' structural storm water devices last fall
per the MPCA’s MS4’s storm water permit MN R580000. While generally your devices appear to
be operating appropriately, there are a few items that should be addressed. A prioritized summary
with recommendations follows. My recommendation is that those described as high priority be
addressed this summer, medium priority should be addressed if funding allows, and low priority
items maybe deferred and reviewed again this fall to see if they continue to be a problem.

HIGH PRIORITY

ST1346 LAIH External Sump (shared w/ Housing)
The sediment build up in this sump basin exceeds the depth where it is required to be
cleaned. The design requires the sump to be cleaned when the sediment is 2.5’ from the
outlet. I recommend cleaning this sump.

ST1366 LAIH External Sump (shared w/ Housing)
The sediment build up in this sump basin exceeds the depth where it is required to be
cleaned. The design requires the sump to be cleaned when the sediment is 2.5’ from the
outlet. I recommend cleaning this sump.

ST1486 Lot L-1 Stormceptor
There was 11” of sediment in this stormceptor. Required cleaning depth is 8”. This
Stormceptor was last cleaned in 2011, it was scheduled for cleaning in 2015, but was not
completed because of FM contract / scheduling issues. This stormceptor still needs to
be cleaned.

ST2913 Chester Park Swale (from Lot R-3)
There was excessive sediment the swale, by the outlet ST2975 from Lot R-3, upstream of
the rain garden area. I recommend the first 30’+/- of this swale be excavated to it’s
original grade and sodded.

ST3593 Lot L-3 Sand Filter
The inlet to the sand filter has become obstructed with sediment and during hard rains
allows water to bypass the filter and run down the unprotected hillside onto the sidewalk
below. I recommend redesigning the inlet for better water control and sediment
pretreatment (possibly something like what is available at raingaurdian.biz). At a
minimum the inlet needs to be excavated and sodded to direct the flow into the sand
filter.
MEDIUM PRIORITY

ST1338 LAIH External Sump (shared w/ Housing)
   The sediment build up in this sump basin is near the depth where it is required to be cleaned. The design requires the sump to be cleaned when the sediment is 2.5’ from the outlet. I recommend cleaning this sump since we need to clean the adjacent sumps.

ST6193 Lot B Rain Garden (shared w/ FM)
   Part of the Lot B side retaining wall has been slightly damaged. I recommend repairing the wall.

The rest of your structural storm water devices appear to be functioning as intended with the exception of the Lot W Stormceptor which the City of Duluth has been asked to clean until it makes changes to Brainerd Ave. I have included a copy of all your inspection reports for your review.

Update on last year's issues:
High Priority
ST1486 Lot L-1 Stormceptor – Not Completed do to Contract/Scheduling Issues – Still on List
ST4623 Lot E Sand Filter – Completed July 2015
ST5146 Lot M Stormceptor – Cleaned July 2015
ST1713 Lot Q-3 Swale – Cleaned July 2015

Medium Priority
ST4591 Lot G Tank Overflow – Completed August 2015

Low Priority
ST1630 Lot W Stormceptor – City Cleans this Periodically

If you have any questions regarding these inspections please contact me at (218) 726-6915 or elarson@d.umn.edu.

Please let me know how you would intend to respond to these inspection findings as I need to report our maintenance activities in our annual storm water report to the MPCA this spring. If you would like me to oversee the repair of any of these issues, please submit a work order(s) describing which issues you would like addressed.

Thanks.

Enclosures:
   Inspection Reports:
   ST1338 LAIH/Lot Q-4 Sump Manhole (South) (shared w/ Housing)
   ST1346 LAIH/Lot Q-4 Sump Manhole (Middle) (shared w/ Housing)
   ST1366 LAIH/Lot Q-4 Sump Manhole (North) (shared w/ Housing)
   ST1486 Lot L-1 Stormceptor
   ST1630 Lot W Stormceptor
   ST2913 Lot R/ChPk Swales and Filtration Pond (shared w/ FM)
   ST2923 Lot R/ChPk Underground Tank (shared w/ FM)
   ST3583 Lot L-3 (lower) Sand Filter
   ST3593 Lot L-3 (upper) Sand Filter
   ST3982 Lot T-2 Filtration Bed
   ST4591 Lot G Tank and Outlet Structure
   ST4596 Lot G Stormceptor
   ST4623 Lot E Sand Filter
   ST5146 Lot M Stormceptor (shared w/ FM)
   ST6193 Lot B Rain Garden (shared w/ FM)

C: UMD Storm Water Steering Committee
   John Rashid, UMD Facilities Management – Director
**UNIVERSITY OF MINNESOTA DULUTH**

**STORM WATER INSPECTION FORM**

<table>
<thead>
<tr>
<th>Outfall #</th>
<th>Photograph Name</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>11/3/2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pond Name</th>
<th>Photograph Name</th>
<th>Date of last inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8/26/2014</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Mechanical Structure #</th>
<th>Type</th>
<th>Date of last inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST1338</td>
<td>Manhole Sump</td>
<td>8/26/2014</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Inspector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot Q-4 Drive - South</td>
<td>Erik Larson</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weather</th>
<th>Date of Last Rain</th>
<th>Sunny</th>
<th>Cloudy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Temperature: 55</td>
<td>11/1/2015</td>
<td></td>
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<table>
<thead>
<tr>
<th>Describe drainage area</th>
<th>Shared Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot Q-4 / LAIH / Niagara Ct. Turn Around</td>
<td>Y N</td>
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<table>
<thead>
<tr>
<th>Physical Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition of Device: Good</td>
</tr>
<tr>
<td>Any Materials Within Structure: Deteriorating: Y N Describe:</td>
</tr>
<tr>
<td>Releasing Pollution: Y N Describe:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity of Pipe</th>
<th>Source of Water</th>
<th>Has Source of Flow Been Determined: Y N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of pipe:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth of Water:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has Source of Flow Been Determined: Y N</td>
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<table>
<thead>
<tr>
<th>Flow</th>
<th>Work Needed: Y N Describe:</th>
</tr>
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<tbody>
<tr>
<td>Perform</td>
<td>Properly</td>
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<table>
<thead>
<tr>
<th>Odor</th>
<th>Color</th>
<th>Turbidity</th>
<th>Water Temperature</th>
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<tbody>
<tr>
<td>None</td>
<td>Normal</td>
<td>None</td>
<td>F Not Available</td>
</tr>
<tr>
<td>Sewage</td>
<td>Dark Brown</td>
<td>Cloudy</td>
<td></td>
</tr>
<tr>
<td>Sulfide</td>
<td>Light Brown</td>
<td>Suspended Particles</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancid-Sour</td>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td>Other:</td>
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<table>
<thead>
<tr>
<th>Accumulated Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floatables: None</td>
</tr>
<tr>
<td>Oil in Oil Port: Y N</td>
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<table>
<thead>
<tr>
<th>Deposits: None</th>
<th>Sediment</th>
<th>Oily</th>
<th>Describe:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth of Sediment: N/A</td>
<td>Measurement:</td>
<td>Remaining Capacity</td>
<td>.25&quot;</td>
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</table>

<table>
<thead>
<tr>
<th>Stains</th>
<th>Work Needed: Y N Describe:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y N</td>
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<table>
<thead>
<tr>
<th>Vegetation Conditions: Normal</th>
<th>Excessive Growth</th>
<th>Inhibited Growth</th>
<th>Describe:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe Work Needed: N/A</td>
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<table>
<thead>
<tr>
<th>Erosion</th>
<th>Work Needed: Y N Describe:</th>
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</thead>
<tbody>
<tr>
<td>None</td>
<td>Minor Erosion</td>
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</table>

<table>
<thead>
<tr>
<th>Immediate Work Needed: Y N Describe:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next Anticipated Work Date: Summer 2016</td>
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</tbody>
</table>

**Inspection Comments / Recommendations**

<table>
<thead>
<tr>
<th>Comments / Recommendations</th>
<th>Completed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove Sediment when it is within 2.5' of outlet per page 9 project SWPPP</td>
<td>Y N</td>
<td></td>
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</table>

**Sump Design:**

<table>
<thead>
<tr>
<th>Rim: 541.0</th>
<th>Inv: 535.77</th>
<th>Sump: 531.77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean at 533.27</td>
<td>Depth to sediment less than 92.75&quot;</td>
<td></td>
</tr>
</tbody>
</table>

*Printed - 2/18/2016*
STORM WATER INSPECTION FORM

Outfall #: ___________________ Photograph Name: ___________________ Inspection Date: 11/3/2015

Pond Name: ___________________ Mechanical Structure #: ST1346 Type: Manhole Sump

Date of last inspection: 8/26/2014

Location: Lot Q-4 - Middle MH

Inspector: Erik Larson

Weather: Air Temperature: 55° Rain: Y N Date of Last Rain: 11/1/2015 Sunny Cloudy

Describe drainage area: Lot Q-4 / LAIH / Niagara Ct. Turn Around

Shared Use: Y N Describe: Lot Q-4 / LAIH / Niagara Ct. Turn Around

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Describe Work Needed: N/A

Any Materials Within Structure: Deteriorating: Y N Describe:

Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: _______ Depth of Water: _______ Has Source of Flow Been Determined: Y N

Source of Water: N/A

Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: Unknown

Flow: Performing Properly Full Overloaded Clogged Other:

Work Needed: Y N Describe:

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other:

Color: Normal Dark Brown Light Brown Other:

Turbidity: None Cloudy Suspended Particles Other:

Water Temperature: _______ F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other Sample Collected: Y N

Oil in Oil Port: Y N N/A Measurement: Calcutated:

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: Sample Collected: Y N

Depth of Sediment: N/A Measurement: Remaining Capacity 0

Describe Work Needed: N/A Needs to be Cleaned

Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe:

Describe Work Needed: N/A

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe:

Next Anticipated Work Date: Summer 2016

Inspection Comments / Recommendations

Comments / Recommendations Completed Date

Remove Sediment when it is within 2.5' of outlet per page 9 project SWPPP

60° from casting to water

82° from casting to sediment - Needs to be Cleaned

N 46 49.072 W 92 05.330

Sump Design: Rim:540.5

Inv: 535.94

Sump:531.93

Clean at 533.44 Depth to sediment less than 84.75°
University of Minnesota Duluth

STORM WATER INSPECTION FORM

Outfall #: __________________________ Photograph Name: __________________________ Inspection Date: 11/3/2015

Pond Name: __________________________ Date of last inspection: 8/26/2014

Mechanical Structure #: ST1366 Type: Manhole Sump

Location: Lot Q-4 - North East Corner

Inspector: Erik Larson

Weather: Air Temperature: 55 Rain: Y N Date of Last Rain: 11/1/2015 Sunny Cloudy

Describe drainage area: Lot Q-4 / Niagara Ct. Turn Around

Shared Use: Y N Describe: Lot Q-4 / Niagara Ct. Turn Around

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Describe Work Needed: N/A

Any Materials Within Structure: Deteriorating: Y N Describe:

Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: _______ Depth of Water: _______ Has Source of Flow Been Determined: Y N

Source of Water: N/A

Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: Unknown

Flow: Performing Properly Full Overloaded Clogged Other:

Work Needed: Y N Describe:

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other:

Color: Normal Dark Brown Light Brown Other:

Turbidity: None Cloudy Suspended Particles Other:

Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Leaves Sample Collected: Y N

Oil in Oil Port: Y N N/A Measurement: Calculated:

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: Sample Collected: Y N

Depth of Sediment: N/A Measurement: 22" (Calculated) Remaining Capacity 0

Describe Work Needed: N/A Clean Sump

Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe:

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe:

Next Anticipated Work Date: Summer 2016

Inspection Comments / Recommendations

Comments / Recommendations

Remove Sediment when it is within 2.5' of outlet per page 9 project SWPPP

Depth to water 50

Depth to sediment 74" - Needs to be Cleaned

Depth to sediment less than 78"

Sump Design: Rim:540.5
Inv: 536.48
Sump:532.48
Clean at 534.00

N 46 49.080
W 92 05.309

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STORM WATER INSPECTION FORM

Outfall #: ___________________________ Photograph Name: ___________________________ Inspection Date: 11/3/2015

Pond Name: ___________________________ Date of last inspection: ___________________________

Mechanical Structure #: ST1486 Type: Stormceptor

Location: Corner Niagara Crt. And Village Lane

Inspector: Erik J. Larson


Describe drainage area: Parking Lot L-1

Shared Use: Y N Describe: ___________________________

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Any Materials Within Structure: Deteriorating: Y N Describe: ___________________________

Releasing Pollution: Y N Describe: ___________________________

Capacity of Pipe: Size of pipe: N/A Depth of Water: N/A Has Source of Flow Been Determined: Y N

Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: __________

Flow: Performing Properly Full Overloaded Clogged Other: ___________________________

Work Needed: Y N Describe: ___________________________

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other: ___________________________

Color: Normal Dark Brown Light Brown Other: ___________________________

Turbidity: None Cloudy Suspended Particles Other: ___________________________

Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: ___________________________

Oil in Oil Port: Y N N/A Measurement: ___________________________

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: ___________________________

Depth of Sediment: N/A Measurement: 11" Remaining Capacity 0

Describe Work Needed: N/A Needs to be Cleaned

Stains: Y N Work Needed: Y N Describe: ___________________________

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe: ___________________________

Describe Work Needed: N/A

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe: ___________________________

Next Anticipated Work Date: Summer 2016

Inspection Comments / Recommendations

Comments / Recommendations

Completed Date

Needs to Be cleaned_________________________ Y N __________________

_________________________ Y N __________________

_________________________ Y N __________________

_________________________ Y N __________________

_________________________ Y N __________________

_________________________ Y N __________________

_________________________ Y N __________________

N 46 49.122

W 92 05.351

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# STORM WATER INSPECTION FORM

**Outfall #:**  
**Photograph Name:**  
**Inspection Date:** 11/03/15

**Pond Name:**  
**Date of last inspection:** 10/16/2014

**Mechanical Structure #:** ST1630  
**Type:** Stormcepter 900

**Location:** Stormcepter on the north side of Lot W

**Inspector:** Erik J. Larson

**Weather:**  
- **Air Temperature:** 55°F  
- **Rain:** Y  
- **Date of Last Rain:** 11/1/2015  
- **Sunny / Cloudy:** Sunny

**Describe drainage area:** Lot W/ Lot Q1/ Neighborhood above Brainerd Ave

**Shared Use:** Y  
**Describe:** City SW flowing over hill side flows into inlet above Lot Q-1 and into Stormcepter

## Physical Observations

**Condition of Device:** Good  
**Work Needed:** Y

**Any Materials Within Structure:** Deteriorating: Y  
**Describe:**

**Capacity of Pipe:** Size of pipe: N/A  
**Depth of Water:** N/A  
**Has Source of Flow Been Determined:** Y

**Describe Storage Capacity:** Minimal  
**Amount Remaining:**

**Flow:** Performing Properly  
**Work Needed:** Y

**Odor:** None  
**Color:** Normal  
**Turbidity:** None  
**Water Temperature:** F

## Accumulated Materials

**Floatables:** None  
**Oil in Oil Port:** Y  
**Measurement:** N/A  
**Sample Collected:** Y

**Deposits:** None  
**Depth of Sediment:** N/A  
**Measurement:** 5"  
**Remaining Capacity:** 0

**Stains:** Y  
**Work Needed:** Y

**Vegetation Conditions:** Normal

**Erosion:** None  
**Work Needed:** N/A

**Immediate Work Needed:** Y  
**Contact city (Todd Carlson):**

**Next Anticipated Work Date:**

## Inspection Comments / Recommendations

**Comments / Recommendations**

<table>
<thead>
<tr>
<th>Completed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td></td>
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<tr>
<td>Y</td>
<td></td>
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<tr>
<td>Y</td>
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<tr>
<td>Y</td>
<td></td>
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</tbody>
</table>

N 46 49.021  
W 92 05.446
University of Minnesota Duluth

STORM WATER INSPECTION FORM

Outfall #: Photograph Name: 15-ST2913 Inspection Date: 11/4/2015

Pond Name: Date of last inspection: 10/21/2014

Mechanical Structure #: ST2913 Type: Filtration Basin / Grass Swales

Location: Chester Park

Inspector: Erik J. Larson

Weather: Air Temperature: 40 Rain: Y N Date of Last Rain: 11/1/2015 Sunny Cloudy

Describe drainage area: Lot R1, R2, R3, Chester Park, and Chester Park Driveway

Shared Use: Y N Describe: Parking/Chester Park/Chester Park Driveway

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Describe Work Needed: N/A

Any Materials Within Structure: Deteriorating: Y N Describe:

Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: Depth of Water: 0 Has Source of Flow Been Determined: Y N

Source of Water: N/A Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: _____________

Flow: Performing Properly Full Overloaded Clogged Other:

Work Needed: Y N Describe: Clean swale below Lot R-3

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other:

Color: Normal Dark Brown Light Brown Other:

Turbidity: None Cloudy Suspended Particles Other:

Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Sample Collected: Y N

Oil in Oil Port: Y N N/A Measurement: Calculated: _____________

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: Minor, sandy Sample Collected: Y N

Depth of Sediment: N/A Measurement: Remaining Capacity _____________

Describe Work Needed: N/A Clean swale below Lot R-3

Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe:

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe:

Next Anticipated Work Date: Summer 2016

Inspection Comments / Recommendations

Comments / Recommendations Completed Date

Installed November 2008 / Planted 2009

Includes swales for R1, R2, R3

Filtration basin extended in 2012 w/ demolition of 823

Standing water at inlet, tank is still draining

Clean swale below Lot R-3

30” of ST2975 Needs to be cleaned

N 46 48.905
W 92 04.725
### University of Minnesota Duluth

**STORM WATER INSPECTION FORM**

<table>
<thead>
<tr>
<th>Outfall #</th>
<th>Photograph Name</th>
<th>Inspection Date</th>
<th>15-ST2923</th>
<th>11/4/2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pond Name</td>
<td>ST2923</td>
<td>Date of last inspection</td>
<td>Underground Tank</td>
<td>10/21/2014</td>
</tr>
<tr>
<td>Mechanical Structure #</td>
<td>Chester Park School</td>
<td>Date of Last Rain</td>
<td>11/1/2015</td>
<td>Sunny Cloudy</td>
</tr>
<tr>
<td>Location</td>
<td>Erik J. Larson</td>
<td>Weather</td>
<td>Air Temperature: 40</td>
<td>N</td>
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<tr>
<td>Inspector</td>
<td>Describe drainage area: R1, R2, old Chester Pk. Roof, driveway</td>
<td>Date of last Rain</td>
<td>11/1/2015</td>
<td>Sunny Cloudy</td>
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<tr>
<td>Weather</td>
<td>Describe:</td>
<td>Date of Last Rain</td>
<td>11/1/2015</td>
<td>Sunny Cloudy</td>
</tr>
<tr>
<td>Describe:</td>
<td></td>
<td>Describe:</td>
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<td></td>
</tr>
</tbody>
</table>

#### Physical Observations

**Condition of Device:**
- Good
- Average
- Poor

**Work Needed:**
- Y
- N

**Any Materials Within Structure:**
- Deteriorating: Y N

**Releasing Pollution:**
- Y
- N

**Capacity of Pipe:**
- Size of pipe: 42"
- Depth of Water: 18"

**Source of Water:**
- N/A

**Flow:**
- Performing Properly
- Full
- Overloaded
- Clogged
- Other:

**Work Needed:**
- Y
- N

**Odor:**
- None
- Sewage
- Sulfide
- Oil
- Gas
- Rancid-Sour
- Other:

**Color:**
- Normal
- Dark Brown
- Light Brown
- Other:

**Turbidity:**
- None
- Cloudy
- Suspended Particles
- Other:

**Water Temperature:**
- F
- Not Available

#### Accumulated Materials

**Floatables:**
- None
- Sheen
- Foam
- Sewage
- Litter
- Other leaves

**Sample Collected:**
- Y
- N

**Oil in Oil Port:**
- Y
- N
- N/A

**Measurement:**
- Calculated:

**Deposits:**
- None
- Sediment
- Oily
- Describe:

**Sample Collected:**
- Y
- N

**Depth of Sediment:**
- N/A

**Measurement:**
- Minor 2.5"

**Remaining Capacity:**

**Describe Work Needed:**

**Stains:**
- Y
- N

**Work Needed:**
- Y
- N

**Vegetation Conditions:**
- Normal
- Excessive Growth
- Inhibited Growth

**Describe:**

**Erosion:**
- None
- Minor Erosion
- Major Erosion
- Erosion Protected

**Describe Work Needed:**

**Immediate Work Needed:**
- Y
- N

**Next Anticipated Work Date:**

**Inspection Comments / Recommendations**

**Comments / Recommendations**

<table>
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<th>Date</th>
</tr>
</thead>
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<td>N</td>
</tr>
<tr>
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</tbody>
</table>

- There is evidence of it having been completely filled
- 2.5" of sediment at bottom of tank
- 1.3" of water at bottom

- N 46 48.904
- W 92 04.737

- Depth of water from casting 64"
- Depth to sediment from casting 82"

---

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STORM WATER INSPECTION FORM

Outfall #: ___________________________ Photograph Name: 15-ST3583 Inspection Date: 10/12/2015

Pond Name: ___________________________ Date of last inspection _____________

Mechanical Structure #: ST3583 Type: Sand filter

Location: Below Lot L-3 (Lower filter)

Inspector: Erik J. Larson

Weather: Air Temperature: 55 Rain: Y N Date of Last Rain: 10/12/2015 Sunny Cloudy

Describe drainage area: Lot L-3

Shared Use: Y N

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Describe Work Needed: N/A

Any Materials Within Structure: Deteriorating: Y N Describe:

Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: N/A Depth of Water: N/A Has Source of Flow Been Determined: Y N

Source of Water: N/A

Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: _________

Flow: Performing Properly Full Overloaded Clogged Other: _______

Work Needed: Y N Describe:

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other: _______________________

Color: Normal Dark Brown Light Brown Other: _______________________

Turbidity: None Cloudy Suspended Particles Other: _______________________

Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Sample Collected: Y N

Oil in Oil Port: Y N N/A Measurement: Calculated: _________

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: Sample Collected: Y N

Depth of Sediment: N/A Measurement: _________ Remaining Capacity _________

Describe Work Needed: N/A

Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe:

Describe Work Needed: N/A

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe:

Next Anticipated Work Date: _______________________

Inspection Comments / Recommendations

Comments / Recommendations

Overflow/ outlet structure - fine

Anticipate 2-5 year removal of top layers and replace sand

Completed Date

N 46 49.256
W 92 05.240

Printed - 2/23/2016
# STORM WATER INSPECTION FORM

Outfall #: 

Photograph Name: 15-ST3593

Inspection Date: 10/12/2015

Pond Name:

Date of last inspection 11/4/2014

Mechanical Structure #: ST3593

Type: Sand filter

Location: Below Lot L-3 (upper filter)

Inspector: Erik J. Larson

Weather: Air Temperature: 55

Rain: Y

Date of Last Rain: 10/12/2015

Date of Last Inspection: Sunny

Cloudy

Describe drainage area: L-3

Shared Use: Y

Describe:

## Physical Observations

### Condition of Device:
- Good
- Average
- Poor

Work Needed: Y

Describe Work Needed: Clean Swale Into Filter

### Any Materials Within Structure:
- Deteriorating: Y

Describe: Swale into Filter Overflows

Releasing Pollution: Y

Describe:

### Capacity of Pipe:
- Size of pipe: N/A

Depth of Water: N/A

Has Source of Flow Been Determined: Y

Source of Water: N/A

Describe Storage Capacity:
- Minimal
- Less Than Half
- Greater Than Half
- Full

Amount Remaining: [Not Available]

### Flow:
- Performing Properly
- Full Overloaded
- Clogged

Work Needed: Y

Describe: Swale to filter is full of sediment and allowing heavy rains to bypass

### Odor:
- None
- Sewage
- Sulfide
- Oil
- Gas
- Rancid-Sour

Other:

### Color:
- Normal
- Dark Brown
- Light Brown

Other:

### Turbidity:
- None
- Cloudy
- Suspended Particles

Other:

### Water Temperature:
- [Not Available]

### Accumulated Materials

Floatables:
- None
- Sheen
- Foam
- Sewage
- Litter

Other:

Sample Collected: Y

Oil in Oil Port: Y

N/A

Measurement: Calculated:

Describe Work Needed: N/A

Deposits:
- None
- Sediment

Oily

Describe: Silt

Sample Collected: Y

Depth of Sediment: N/A

Measurement: Remaining Capacity

Describe Work Needed: N/A

Clean Swale Into Filter

Stains:
- Y

Work Needed: Y

Describe:

Vegetation Conditions:
- Normal
- Excessive Growth
- Inhibited Growth

Describe:

Describe Work Needed: N/A

Erosion:
- None
- Minor Erosion
- Major Erosion
- Erosion Protected

Y

Describe Work Needed: N/A

Immediate Work Needed: Y

Describe:

Next Anticipated Work Date: Summer 2016

## Inspection Comments / Recommendations

Comments / Recommendations

Top inlet needs to be excavated to basin and resodded

Discuss putting in forbay

N 46 49.248

W 92 05.259

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University of Minnesota Duluth

STORM WATER INSPECTION FORM

Outfall #: ___________________________ Photograph Name: 15-ST3982 Inspection Date: 10/12/2015

Pond Name: ___________________________ Date of last inspection 11/6/2014

Mechanical Structure #: ST3982 Type: Filtration Basin

Location: Lot T-2

Inspector: Erik J. Larson

Weather: Air Temperature: 55 Rain: Y N Date of Last Rain: 10/12/2015 Sunny Cloudy

Describe drainage area: T-2 Shared Use: Y N Describe: Parking and Materials Storage Area above parking lot

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Describe Work Needed: N/A

Any Materials Within Structure: Deteriorating: Y N Describe:

Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: N/A Depth of Water: N/A Has Source of Flow Been Determined: Y N

Source of Water: N/A Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: ________

Flow: Performing Properly Full Overloaded Clogged Other: __________ Work Needed: Y N Describe:

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other: __________

Color: Normal Dark Brown Light Brown Other: __________

Turbidity: None Cloudy Suspended Particles Other: __________

Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Significant Organics Sample Collected: Y N Oil in Oil Port: Y N N/A Measurement: Minor Calculated: __________ Describe Work Needed: N/A

Deposits: None Sediment Oily Grass Describe: __________ Sample Collected: Y N Depth of Sediment: N/A Measurement: Minor Remaining Capacity __________ Describe Work Needed: N/A

Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe: __________

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N Describe Work Needed: N/A

Immediate Work Needed: Y N Describe: __________

Next Anticipated Work Date: __________

Inspection Comments / Recommendations

Comments / Recommendations Completed Date
Reconstruction 2011 Y N ______

Completed Date
constructed 1994 Y N ______

Minor sediment, both inlets, watch next year Y

Printed - 2/23/2016
STORM WATER INSPECTION FORM

Outfall #: __________________________ Photograph Name: 15-ST4591 Inspection Date: 11/3/2015

Pond Name: ___________________________ Date of last inspection: ________________

Mechanical Structure #: ST4591 Type: Overflow structure/tank

Location: East Lot G

Inspector: Erik J. Larson

Weather: Air Temperature: 45 Rain: Y N Date of Last Rain: 11/1/2015 Sunny Cloudy

Describe drainage area: Parking Lot G

Shared Use: Y N Describe: __________________________

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Describe Work Needed: N/A

Any Materials Within Structure: Deteriorating: Y N Describe: __________________________

Releasing Pollution: Y N Describe: __________________________

Capacity of Pipe: Size of pipe: 6’ Depth of Water: 3.5’ Has Source of Flow Been Determined: Y N

Source of Water: N/A

Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: __________________________

Flow: Performing Properly Full Overloaded Clogged Other: __________________________

Work Needed: Y N Describe: __________________________

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other: __________________________

Color: Normal Dark Brown Light Brown Other: __________________________

Turbidity: None Cloudy Suspended Particles Other: __________________________

Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Sample Collected: Y N

Oil in Oil Port: Y N N/A Description: __________________________

Measurement: __________________________ Calculated: __________________________

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: minor Sample Collected: Y N

Depth of Sediment: N/A Measurement: 2” Remaining Capacity __________________________

Describe Work Needed: N/A

Stains: Y N Work Needed: Y N Describe: __________________________

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe: __________________________

Describe Work Needed: N/A

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe: __________________________

Next Anticipated Work Date: __________________________

Inspection Comments / Recommendations

Comments / Recommendations Completed Date

Concrete rings eroding Y N __________________________

Middle manhole done ’14 Y N __________________________

Upper manhole done ’12 Y N __________________________

Lower Manhole done ’13 Y N __________________________

N 46 49.260 W 92 04.899 __________________________
University of Minnesota Duluth

STORM WATER INSPECTION FORM

Outfall #: ____________________ Photograph Name: ____________________ Inspection Date: 11/3/2015

Pond Name: ____________________ Date of last inspection: 10/16/2014

Mechanical Structure #: ST4596 Type: Stormceptor900

Location: Lot G

Inspector: Erik J. Larson

Weather: Air Temperature: 45 Rain: Y N Date of Last Rain: 11/1/2015 Sunny Cloudy

Describe drainage area: North half of Lot G

Shared Use: Y N Describe:

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N

Any Materials Within Structure: Deteriorating: Y N Describe: Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: N/A Depth of Water: 4'9" Has Source of Flow Been Determined: Y N

Source of Water: N/A Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining: ________

Flow: Performing Properly Full Overloaded Clogged Other: ________ Describe:

Work Needed: Y N Describe:

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other: __________ Describe:

Color: Normal Dark Brown Light Brown Other: ________ Describe:

Turbidity: None Cloudy Suspended Particles Other: __________ Describe:

Water Temperature: ________ F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Sample Collected: Y N

Oil in Oil Port: Y N N/A Measurement: Sample Collected: Y N

Describe Work Needed: N/A

Deposits: None Sediment Oily Describe: Minor Sample Collected: Y N Depth of Sediment: N/A Measurement: 4" Remaining Capacity ________ Describe Work Needed: N/A

Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe:

Describe Work Needed: N/A

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N

Describe Work Needed: N/A

Immediate Work Needed: Y N Describe:

Next Anticipated Work Date:

Inspection Comments / Recommendations

Comments / Recommendations

Completed Date

Y N

Y N

Y N

Y N

N 46 49.258
W 92 04.895
<table>
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<tr>
<th><strong>Outfall #</strong></th>
<th>Photograph Name</th>
<th>Inspection Date</th>
<th><strong>Pond Name</strong></th>
<th>Date of last inspection</th>
</tr>
</thead>
</table>

**Mechanical Structure #**: ST4623  
**Type**: Sand Filter

**Location**: Lot E  
**Inspector**: Erik J. Larson

**Weather**:  
- **Air Temperature**: 41  
- **Rain**: Y  
- **Date of Last Rain**: 11/1/2015  
- **Sunny**  
- **Cloudy**

**Describe drainage area**: Lot E  
**Shared Use**: Y  
**Describe**: 

### Physical Observations

**Condition of Device**:  
- **Good**  
- **Average**  
- **Poor**  
- **Work Needed**: Y  
- **Describe Work Needed**: N/A  

**Any Materials Within Structure**:  
- **Deteriorating**: Y  
- **Describe**:  

**Releasing Pollution**: Y  
**Describe**: 

**Capacity of Pipe**  
- **Size of pipe**: N/A  
- **Depth of Water**: 0.5"  
- **Has Source of Flow Been Determined**: Y  

**Source of Water**: Lot E

**Describe Storage Capacity**:  
- **Minimal**  
- **Less Than Half**  
- **Greater Than Half**  
- **Full**  
- **Amount Remaining**: 100%  

**Flow**:  
- **Performing Properly**  
- **Full**  
- **Overloaded**  
- **Clogged**  
- **Other**:  
- **Work Needed**: Y  
- **Describe**: 

**Odor**:  
- **None**  
- **Sewage**  
- **Sulfide**  
- **Oil**  
- **Gas**  
- **Rancid-Sour**  
- **Other**:  

**Color**:  
- **Normal**  
- **Dark Brown**  
- **Light Brown**  
- **Other**: N/A

**Turbidity**:  
- **None**  
- **Cloudy**  
- **Suspended Particles**  
- **Other**: N/A

**Water Temperature**: F  
**Not Available**

### Accumulated Materials

**Floatables**:  
- **None**  
- **Sheen**  
- **Foam**  
- **Sewage**  
- **Litter**  
- **Other Leaves**:  
- **Sample Collected**: Y  
- **Oil in Oil Port**: Y  
- **Measurement**: Sheen  
- **Calculates**:  
- **Describe Work Needed**: N/A  

**Deposits**:  
- **None**  
- **Sediment**  
- **Oily**  
- **Describe**:  
- **Sample Collected**: Y  
- **Depth of Sediment**: 1/2"  
- **Measurement**: Remaining Capacity  
- **Describe Work Needed**: N/A  
- **Inlet needs to be cleaned of sediment plume and rocks**

**Stains**: Y  
**Work Needed**: Y  
**Describe**: 

**Vegetation Conditions**:  
- **Normal**  
- **Excessive Growth**  
- **Inhibited Growth**  
- **Describe**:  
- **Describe Work Needed**: N/A  

**Erosion**:  
- **None**  
- **Minor Erosion**  
- **Major Erosion**  
- **Erosion Protected**: Y  
- **Describe Work Needed**: N/A  

**Immediate Work Needed**: Y  
**Describe**: 

### Inspection Comments / Recommendations

**Comments / Recommendations**

- Large rocks should be moved, 10’ area below of pipe cleaned  
- Watch filtration on lower side

**Completed**  
**Date**

---

N 46 49.294  
W 92 04.939

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**STORM WATER INSPECTION FORM**

<table>
<thead>
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<th>Outfall #</th>
<th>Photograph Name</th>
<th>Inspection Date</th>
<th>Pond Name</th>
<th>Date of last inspection</th>
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<th>Inspector</th>
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<th>Cloudy</th>
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<td>Stormceptor</td>
<td>Lot M/ RWBFGM Stormceptor</td>
<td>Erik J. Larson</td>
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<td>11/1/2015</td>
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<th>Describe drainage area</th>
<th>Shared Use</th>
<th>Describe</th>
</tr>
</thead>
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<tr>
<td>Lot M/FGM</td>
<td>Y N</td>
<td>Lot M-1 Parking and Fleet Grounds Maintenance Area</td>
</tr>
</tbody>
</table>

#### Physical Observations

**Condition of Device:**
- Good
- Average
- Poor
- Work Needed: Y N

**Capacity of Pipe:**
- Size of pipe: N/A
- Depth of Water: N/A
- Has Source of Flow Been Determined: Y N

**Flow:**
- Performing Properly
- Full
- Overloaded
- Clogged
- Other:

**Odor:**
- None
- Sewage
- Sulfide
- Oil
- Gas
- Rancid-Sour
- Other:

**Color:**
- Normal
- Dark Brown
- Light Brown
- Other:

**Turbidity:**
- None
- Cloudy
- Suspended Particles
- Other:

**Water Temperature:**
- F
- Not Available

#### Accumulated Materials

**Floatables:**
- None
- Sheen
- Foam
- Sewage
- Litter
- Other:

**Deposits:**
- None
- Sediment
- Oily
- Describe:

**Stains:**
- Y N
- Work Needed: Y N

**Vegetation Conditions:**
- Normal
- Excessive Growth
- Inhibited Growth

**Erosion:**
- None
- Minor Erosion
- Major Erosion
- Erosion Protected

**Immediate Work Needed:**
- Y N

#### Inspection Comments / Recommendations

**Outlet pipe has 1/2" water**

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<th>Date</th>
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</table>
University of Minnesota Duluth

STORM WATER INSPECTION FORM

Outfall #: ____________________ Photograph Name: ____________________ Inspection Date: 10/12/15
Pond Name: ____________________ Date of last inspection: 10/25/14
Mechanical Structure #: ST6193 Type: Rain Garden
Location: Behind Lund building & Lot B
Inspector: Erik J. Larson
Weather: Air Temperature: 55 Rain: Y N Date of Last Rain: 10/12/2015 Sunny Cloudy
Describe drainage area: South 1/2 of Lot B
Shared Use: Y N Describe:

Physical Observations

Condition of Device: Good Average Poor Work Needed: Y N
Describe Work Needed: N/A
Any Materials Within Structure: Deteriorating: Y N Describe:
Releasing Pollution: Y N Describe:

Capacity of Pipe: Size of pipe: N/A Depth of Water: N/A Has Source of Flow Been Determined: Y N
Source of Water: N/A
Describe Storage Capacity: Minimal Less Than Half Greater Than Half Full Amount Remaining:
Flow: Performing Properly Full Overloaded Clogged Other:
Work Needed: Y N Describe:

Odor: None Sewage Sulfide Oil Gas Rancid-Sour Other:
Color: Normal Dark Brown Light Brown Other:
Turbidity: None Cloudy Suspended Particles Other:
Water Temperature: F Not Available

Accumulated Materials

Floatables: None Sheen Foam Sewage Litter Other: Sample Collected: Y N
Oil in Oil Port: Y N N/A Measurement: Calculated: __________
Describe Work Needed: N/A
Deposits: None Sediment Oily Describe: Minor in garden Sample Collected: Y N
Depth of Sediment: N/A Measurement: Remaining Capacity
Describe Work Needed: N/A
Stains: Y N Work Needed: Y N Describe:

Vegetation Conditions: Normal Excessive Growth Inhibited Growth Describe Weeds-Thistles
Describe Work Needed: N/A

Erosion: None Minor Erosion Major Erosion Erosion Protected Y N
Describe Work Needed: N/A
Previously, minor erosion along lot B; unknown because it was buried in snow

Immediate Work Needed: Y N Describe:
Next Anticipated Work Date:

Inspection Comments / Recommendations

Completed Date
Basin needs cleaning Grounds cleans periodically
Weeds and trees growing along edges Grounds checks periodically
Broken retaining wall needs to be fixed

N 46 48.916
W 92 05.037

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