1. Call to Order
2. Roll Call
3. Audience Comments on Items Not on the Agenda
   *(please limit audience comments to five minutes)*
4. Consent Agenda
   a. Approval of Agenda
   b. Approval of Minutes from the June 27, 2019, Meeting
   c. Acceptance of Treasurer’s Report
5. Approval of Expenses
6. Business Items
   a. Authorization to Use Cash Reserve or Capital Improvement Project Cost-Share Funds for Balance of Minnesota Zoo Rainwater Harvesting System Project
7. Staff Reports
8. Adjourn

Other Information
Next Meeting Date: **August 22, 2019,** at 1 p.m.
Dakota County Extension and Conservation Center, Room A, Farmington, MN
You will be notified if the meeting is cancelled due to an anticipated lack of quorum.
Meeting Minutes
Vermillion River Watershed Joint Powers Board Meeting
June 27, 2019, 1 p.m.
Dakota County Extension and Conservation Center, Conference Room A, Farmington, MN

Board Members in Attendance
Dakota County Commissioner Mike Slavik, Chair
Dakota County Commissioner Chris Gerlach, Vice Chair
Dakota County Commissioner Tom Wolf, Secretary/Treasurer

Others in Attendance
Mark Zabel, Watershed Administrator
Helen Brosnahan, Assistant County Attorney
Travis Thiel, VRWJPO Watershed Specialist
Paula Liepold, VRWJPO Outreach and Communications
Mark Ryan, VRWJPO Watershed Engineer
Bruce Johnson, Dakota County Soil and Water Conservation District Supervisor

1. **Call to Order**
Meeting was called to order by Commissioner Slavik at 1:03 p.m.

2. **Roll Call**
All Board members were in attendance.

3. **Audience Comments on Items Not on the Agenda**
There were no comments from the audience.

4. **Approval of Consent Agenda**

   *Res. No. VRW 19-24*: Motion by Commissioner Wolf, Second by Commissioner Gerlach, and passed on a unanimous vote to approve the consent agenda.

5. **Approval of Expenses**
Mark Zabel presented the current invoices as shown on item 5.

Commissioner Slavik asked if Metro Watershed Partners was a regular expense. Mark Zabel replied that yes, it is an annual membership.
Res. No. VRW 19-25: Motion by Commissioner Wolf, Second by Commissioner Gerlach, and passed on a 3-0 roll call vote to approve the expenses totaling $42,027.81 incurred between May 16, 2019, and June 14, 2019, as submitted on June 27, 2019.

6. Business Items

6a. Release for Public Comment and Schedule a Public Hearing on the Proposed Amendments to the Vermillion River Watershed Joint Powers Organization Standards

Mark Zabel broadly described the changes to the Standards, which were primarily made to the Erosion and Sediment Control Standard. The Board of Water and Soil Resources (BWSR) indicated that the changes to the Standard require a minor amendment. A minor amendment requires a 30-day public comment period followed by a public hearing.

Commissioner Gerlach asked if most of the changes were technical, policy, and/or language updates. Mark Zabel explained the specific changes related to the Erosion and Sediment Control Standard which raised concerns with several townships and township officials. Staff worked with Township Officials and also received input from the Watershed Planning Commission (WPC) and Technical Advisory Group (TAG).

Commissioner Gerlach asked if Dakota County has a role in the review and approval process. Mark Zabel responded that Dakota County staff can review and comment, but the County Board does not formally approve the changes. If a County Board were to file an objection to the amendments it would become a major amendment and follow that procedure which is the same as plan adoption.

Commissioner Slavik asked if BWSR had any input to date. Mark Zabel replied that BWSR has been more interested in the process, than the content.

Res. No. VRW 19-26: Motion by Commissioner Wolf, Second by Commissioner Gerlach, and passed on a unanimous vote to release for public comment and schedule a public hearing on proposed amendments to the Vermillion River Watershed Joint Powers Organization Standards.

6b. Authorization to Execute a Joint Powers Agreement with the City of Apple Valley for the Erickson Park Stormwater Improvement Project

Travis Thiel explained the Erickson Park Stormwater project to achieve water quality improvements. Commissioner Slavik asked if this would be a 50/50 split with Watershed Based Funding and VRWJPO Funding to City of Apple Valley money to complete this project. Travis replied that it would be.

Res. No. VRW 19-27: Motion by Commissioner Wolf, Second by Commissioner Gerlach, and passed on a unanimous vote to authorize execution of a Joint Powers Agreement with the City of Apple Valley for the Erickson Park Stormwater Improvement Project.

7. Staff Reports

Travis Thiel gave an update on the nitrate treatment project that will be installed that the Castle Rock Town Hall. Mowing maintenance will be discussed at a future meeting.

Mark Ryan gave an update on the MN Zoo project. The project design has been completed to about 60% design level. There has been an increase in material costs over time, but some savings overall. There is however, a funding shortfall of between $80,000 - $140,000. Now is the time to determine how to fill
the gap or return the grant funds. Staff is determining whether there are other funds that can be leveraged for the project. A more formal presentation will occur at next month’s meeting. Commissioner Gerlach asked if this is more of a City interest or a Zoo interest in getting to complete this project. Mark Ryan replied that the Met Council, as the grant funding source, has the greatest interest due to the water reuse/reduction in water usage. Commissioner Slavik asked how much water would be saved. Mark Ryan replied that a large system would save over 750,000 gallons per year of city water. A smaller system would save around 600,000 gallons per year of city water.

Paula Liepold announced the Vermillion River Watershed Tour will take place the afternoon of September 19.

Paula provided a social media update. In the month of May the VRWJPO posted on Facebook 14 times, Twitter 9 times, and Instagram 4 times.

The Vermillion Stewards held their first event at South Creek on Saturday June 22. A floodplain forest planting registered 18 volunteers with 2 to 3 cancellations but everything was planted. There are two upcoming Vermillion Stewards events; Make & Take Rain Barrel Workshop at Bachman’s in Farmington on August 6 from 6-7:30pm and Restore Farmington’s Rambling River Park buckthorn pull on August 15 from 6-8pm. The VRWJPO has logo signs that will be at each Vermillion Steward event helping connect our identity with these events.

The Master Water Stewards Information Sessions are scheduled. Tuesday, August 13 at Dakota County Extension and Conservation Center from 6 -7pm and Tuesday, September 17 at Apple Valley Western Service Center from 6-7pm. Our current class is set to graduate in October. Last year’s class planted 4 new trees along North Creek in Farmington on June 22.

Mark Zabel presented the remaining slides from the strategic planning session.

Mark Zabel noted two new grants from BWSR; a drinking water protection grant and competitive projects and practices which this year will have more funds in it.

Mark Zabel mentioned that next month the Commissioners will be presented with the draft 2020 budget for review and discussion informally as part of staff updates.

Mark Zabel provided information about a landowner on Lake Marion who would like to see the water level lower.

Mark Zabel also discussed the proposal for rezoning a par 3 golf course near Alimagnet Lake.

Commissioner Slavik shared that Dakota County applied for an Environmental Trust Fund grant. Commissioner Slavik was able to present with staff for funding for nitrate reduction help that would apply to parts of the Vermillion River watershed.
Adjourn
Motion by Commissioner Wolf, Second by Commissioner Gerlach, and passed on a unanimous voice vote to adjourn the meeting at 1:40 p.m.

Next Meeting Date: July 25, 2019 – Dakota County Extension and Conservation Center, Room A at 1 p.m.

Respectfully submitted:

Jen Dullum
Vermillion River Watershed Joint Powers Organization

Mark Zabel
Administrator for the Vermillion River Watershed Joint Powers Organization

Attest

_____________________________________________________   ____________
Commissioner Tom Wolf   Secretary/ Treasurer   Date
## 2019 Vermillion River Watershed Joint Powers Organization

### Treasurer's Report

#### July 25, 2019 - Vermillion River Watershed Joint Powers Board Meeting

<table>
<thead>
<tr>
<th>Agenda Item 4c</th>
<th>Budget Amounts</th>
<th>Expenses to Date</th>
<th>Expenses Pending</th>
<th>Account Balance</th>
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<td>X. Capital Improvement Projects (217092-0130)</td>
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<td>($551.00)</td>
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<td><strong>275,584.07</strong></td>
<td><strong>37,154.83</strong></td>
<td><strong>1,970,082.76</strong></td>
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</tbody>
</table>

### Budget Funding Sources

- **Scott County Levy**
  - $35,100.00
- **Dakota County Levy**
  - $912,900.00
- **Expected 2017 Carryover (Fund Balance)**
  - $734,200.00
- **Special Use Permit**
  - $2,500.00
- **2019 CWF Grants (BWSR)**
  - $249,200.00
- **2019 CWF Grant 1W1P (BWSR)**
  - $123,000.00
- **CPL Grant South Creek at Hamburg**
  - $282,000.00
- **Met Council Grant**
  - $230,100.00
- **Expected CIP**
  - $431,225.00
- **Investment Earnings**
  - $20,000.00

**Total**

$3,020,225.00

Meeting Date: 7/25/2019  
Item Type: Consent-Action  
Contact: Mark Zabel  
Telephone: 952-891-7011  
Prepared by: Mark Zabel  
Reviewed by: N/A N/A

PURPOSE/ACTION REQUESTED

- Schedule a public hearing to receive comments on the draft Vermillion River Watershed Joint Powers Organization (VRWJPO) 2020 Budget and Watershed Management Tax District Levy

SUMMARY

Pursuant to the Joint Powers Agreement establishing the VRWJPO, by September 1 of each year the Vermillion River Watershed Joint Powers Board (VRWJPB) must adopt a budget for the following calendar year. VRWJPO staff is preparing a draft 2020 Budget by assessing the needs of the watershed, strategic planning with the VRWJPB, and following the implementation section of the 2016-2025 Vermillion River Watershed Management Plan.

Minn. Stat. § 103B.211, subd. 1(a)(5) provides that a watershed management organization has the authority of a watershed district under Minn. Stat. § 103D.911 to adopt a budget and determine the total amount to be raised from ad valorem tax levies to meet the budget. Minn. Stat. § 103D.911 requires a public hearing on the draft budget prior to its adoption. Notice of the hearing, along with a summary of the draft budget, must be published in one or more newspapers of general circulation in each county (Scott and Dakota) and must be published once each week for two successive weeks before the hearing.

Staff recommends that the VRWJPB schedule a public hearing on August 22, 2019, at 1:00 p.m. in Conference Room A at the Dakota County Extension and Conservation Center in Farmington, for the purpose of receiving comments on the draft VRWJPO 2020 Budget.

EXPLANATION OF FISCAL/FTE IMPACT

There is no fiscal impact from this action. At its August 22, 2019, meeting, the VRWJPB will need to approve a draft VRWJPO 2020 Budget and recommend an appropriate Watershed Management Tax District Levy to Dakota and Scott counties.
RESOLUTION


WHEREAS, the Vermillion River Watershed Joint Powers Board (VRWJPB) is required to adopt a budget for the VRWJPO by September 1 for the following calendar year; and

WHEREAS, the VRWJPB is required, under Minn. Stat. § 103D.911, to hold a public hearing on the draft budget prior to its adoption.

NOW, THEREFORE, BE IT RESOLVED, that the VRWJPB hereby schedules a public hearing for August 22, 2019, at 1:00 p.m. in Conference Room A, Dakota County Extension and Conservation Center in Farmington, for the purpose of receiving comments on the draft VRWJPO 2020 Budget; and

BE IT FURTHER RESOLVED, that VRWJPO staff is hereby directed to publish notice of the public hearing in accordance with Minn. Stat. § 103D.911.
PUBLIC NOTICE of DAKOTA COUNTY


Notice is hereby given that the Vermillion River Watershed Joint Powers Organization (VRWJPO) will hold a public hearing at 1:00 p.m. on Thursday, August 22, 2019, at the Dakota County Extension and Conservation Center, 4100 220th Street West, Farmington, Minnesota, Conference Room A, for the purpose of receiving comments on the draft VRWJPO 2020 Budget and Watershed Management Tax District Levy.

The draft VRWJPO 2020 Budget and Watershed Management Tax District Levy can be viewed online at www.vermillionriverwatershed.org in the “News” category after Thursday, August 1, 2019. Paper copies of the draft VRWJPO 2020 Budget and Watershed Management Tax District Levy, as well as requests for any special accommodations at the public hearing, can be obtained by contacting Jennifer Dullum at 952-891-7086 or by email at jennifer.dullum@co.dakota.mn.us.

Agencies, groups, or persons attending the public hearing will have the opportunity to provide written or oral comments. Prior to the public hearing, written comments may be addressed to the VRWJPO, 4100 220th Street West, Suite 103, Farmington, MN 55024, or emailed to VRWJPO Administrator Mark Zabel at mark.zabel@co.dakota.mn.us.
Expenses from the invoices submitted between May 16, 2019 through June 14, 2019 totalled $42,027.81

The invoices submitted between June 15, 2019 and July 8, 2019 are listed below:

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<thead>
<tr>
<th>Invoice</th>
<th>Vendor</th>
<th>Amount</th>
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<tbody>
<tr>
<td>IN24454</td>
<td>Scott County</td>
<td>$1,016.11</td>
</tr>
<tr>
<td>Mar 2019</td>
<td>March Legal</td>
<td>$3,165.40</td>
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<td>May 2019</td>
<td>May Legal</td>
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<td>43145</td>
<td>Cross Nurseries</td>
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</tr>
<tr>
<td>19-16100-12</td>
<td>144Design</td>
<td>$95.00</td>
</tr>
<tr>
<td>Journal Entry</td>
<td>Thiel Monitoring equip</td>
<td>$10.69</td>
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<tr>
<td>Pcard Weber</td>
<td>Pcard - Temporary Tattoos</td>
<td>$182.00</td>
</tr>
<tr>
<td>Pcard Johnson</td>
<td>Pcard - Turf Workshop</td>
<td>$243.88</td>
</tr>
<tr>
<td>Pcard Weber</td>
<td>Pcard - quickcrete for sign setting</td>
<td>$17.40</td>
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<tr>
<td>June 2019</td>
<td>Dakota County Staff Time</td>
<td>$30,947.85</td>
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Total approved expenses as presented on July 25, 2019 $37,154.83

Action Requested: Approve all above expenses as presented on July 25, 2019
6a. Authorization to Use Cash Reserve or Capital Improvement Project Cost-Share Funds for Balance of Minnesota Zoo Rainwater Harvesting System Project

Meeting Date: 7/25/2019  
Item Type: Regular-Action  
Contact: Mark Ryan  
Telephone: 952-891-7596  
Prepared by: Mark Ryan  
Reviewed by: N/A  

PURPOSE/ACTION REQUESTED

- Authorization to use cash reserve or capital improvement project (CIP) cost-share funds for balance of Minnesota Zoo rainwater harvesting system project

SUMMARY

The Vermillion River Watershed Joint Powers Organization (VRWJPO) received a grant from Metropolitan Council Environmental Services in October 2015 for stormwater improvements at the Minnesota Zoo (Zoo) with a work plan that included a rainwater harvesting and reuse project at the Zoo Tropics building and bioretention practices for stormwater management (Res. No. VRW 15-51). Costs allocated to the various project components in the work plan are shown in the table provided as Attachment A, and that included a total of $200,000 for the Tropics building reuse system.

In 2017, the VRWJPO and Zoo solicited design-build bids for installation of a rainwater harvesting system at the Tropics building based on conceptual designs and preliminary engineering. The team received one proposal at a total cost of $350,000. At nearly 35% above the available funding, the team decided that a different design approach should be taken and that having a complete design of the system prior to bidding could bring costs down. Additionally, Zoo staff members solicited funding from within the Minnesota Zoo organization and from potential donor/partners but were unsuccessful in bringing other funding to the project. In late 2018, IDOM was hired to complete a design of the rainwater harvesting system, including a scaled-down system that could further bring down costs. IDOM completed 60% design and cost estimates for the project in June 2019, with working construction cost estimates of $390,000 for the full system and $329,000 for the scaled-down system, which still exceeds the available funding for the project. A 60% design report with cost estimates and drawings is provided as Attachment B.

An estimate of all project costs, including construction, design, construction administration, and contingency, is provided in Attachment A. Based on the current funds available and the working cost estimates, the project requires $140,000 of additional funding to move to the construction phase. VRWJPO staff members have also contacted the Dakota County Environmental Resources Department about using CIP funding associated with water quality improvement projects, but the Zoo rainwater harvesting system was not a strong match to criteria for funding consideration as a water quality improvement project. Water quality benefits are secondary to the benefits of water conservation and reduced water use costs, and the project will use an estimated 600,000 gallons of rainwater each year instead of municipal water. If $140,000 is not allocated toward the project from the VRWJPO Budget, the VRWJPO is required to return the remaining $230,000 in grant funding to the Metropolitan Council Environmental Services.

EXPLANATION OF FISCAL/FTE IMPACT

Continued pursuit of the Tropics building rainwater harvesting system project requires an additional $140,000 of VRWJPO cash reserve funds or CIP cost-share if the project is to be completed.
RESOLUTION

6a. Authorization to Use Cash Reserve or CIP Cost-Share Funds for Balance of Minnesota Zoo Rainwater Harvesting System Project

WHEREAS, in 2015, the Vermillion River Watershed Joint Powers Organization (VRWJPO) received a grant from the Metropolitan Council to complete stormwater improvements at the Minnesota Zoo (Zoo) facility in Apple Valley, Minnesota; and

WHEREAS, planned stormwater improvements included a rainwater harvesting and reuse project at the Zoo Tropics Building; and

WHEREAS, the funds allocated to the project from all sources were less than the estimated design – build construction costs received in 2017; and

WHEREAS, IDOM, a reputable designer of rainwater harvesting and reuse systems, was hired to complete construction design plans and provide cost estimates for completed systems; and

WHEREAS, the total estimated costs at 60% design, even with a scaled down project, continue to exceed the funds allocated to the project; and

WHEREAS, staff of the VRWJPO have reached out to other various potential funding sources to explore other potential partner involvement and have been unsuccessful in gaining new funding commitments from any other source.

NOW, THEREFORE, BE IT RESOLVED, that the Vermillion River Watershed Joint Powers Board amends its 2019 budget allocating $140,000 from ______________ to the Minnesota Zoo tropics building rainwater harvest and reuse project.
### Table 1 - Cost Allocations to Project Partners

<table>
<thead>
<tr>
<th>Project</th>
<th>Entity</th>
<th>Original Work Plan Cost</th>
<th>July 2019 Working Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1 - Rainwater Harvesting System</td>
<td>MCES</td>
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<td>$230,000</td>
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<tr>
<td></td>
<td>VRWJPO</td>
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<td></td>
<td>SWCD</td>
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<td>$0</td>
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<td></td>
<td>MN Zoo</td>
<td>O&amp;M</td>
<td>O&amp;M</td>
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<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>$200,000</strong></td>
<td><strong>$400,000</strong></td>
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<td>Projects 2 and 3 - Select bioretention practices internal to zoo and treatment of larger impervious areas</td>
<td>MCES</td>
<td>$180,000</td>
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<td>VRWJPO</td>
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<td>SWCD</td>
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<td>MN Zoo</td>
<td>O&amp;M</td>
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<tr>
<td></td>
<td><strong>Subtotal</strong></td>
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<td><strong>$215,000</strong></td>
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<td>Project 4 - Main Lake nutrient/bacteria study</td>
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<td>VRWJPO</td>
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<td></td>
<td>MN Zoo</td>
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<td>$0</td>
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<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>$25,000</strong></td>
<td><strong>$25,000</strong></td>
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</tbody>
</table>

**Notes:**

*Based on July 2019 60% Design Estimates - see table 2 below*

MCES = Metropolitan Council Environmental Services

VRWJPO = Vermillion River Watershed Joint Powers Organization

SWCD = Dakota Soil and Water Conservation District

### Table 2 - 60% Design Cost Estimate Components

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Cost</th>
<th>Source</th>
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<td>Design</td>
<td>$23,500</td>
<td>IDOM Proposal (under contract)</td>
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<tr>
<td>Construction Administration</td>
<td>$15,000</td>
<td>IDOM Proposal (additional scope)</td>
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<td>Construction</td>
<td>$329,000</td>
<td>IDOM Report</td>
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<tr>
<td>Contingency</td>
<td>$32,500</td>
<td>~10% of Construction Costs</td>
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<td><strong>Project Total</strong></td>
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</table>
Minneapolis, 18 June 2019

Dan Haugen
Physical Plant Director

Subject: Budget Cost Estimate for the Rainwater Harvesting System for the Tropics Building
Project: 218525-8492

Dear Mr. Haugen,

The following is a presentation of the budget cost estimate for Options A and B for the Tropics Building rainwater harvesting system.

To provide this budget cost estimate, IDOM created preliminary design drawings for the rainwater harvesting system for Options A and B. A mechanical contractor, Harris Company, was contacted because they had a recent project that they completed in which they installed a rainwater harvesting system. A project description and these drawings were provided to Harris Company to provide the budget cost estimate for the construction of the system. This information is outlined in Tables 1 and 2 below.

Table 1 provides the main items for the two options considered for this project:

<table>
<thead>
<tr>
<th>Item Descriptions</th>
<th>Option A 36,000 gallons</th>
<th>Option B 24,000 gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Rainwater storage tanks (12,000 gallons each)</td>
<td>3 tanks</td>
<td>2 tanks</td>
</tr>
<tr>
<td># of Rainwater Header Supply Tie-ins (15 inch and 10 inch)</td>
<td>2 tie-ins</td>
<td>1 tie-in (15 inch only)</td>
</tr>
<tr>
<td>Rainwater pre filters</td>
<td>3 pre-filters</td>
<td>2 pre-filters</td>
</tr>
<tr>
<td># of Overflow tie-ins to 15 inch Rainwater Header</td>
<td>1 tie-in</td>
<td>1 tie-in</td>
</tr>
<tr>
<td>Water treatment skid</td>
<td>1 skid</td>
<td>1 skid</td>
</tr>
</tbody>
</table>

Table 1 – Important Item Details for Options A and B

Enclosed:
Attachment 1 – Harris Company Budget Cost Proposal (6 pages)
Attachment 2 – Options A and B Descriptions and Informational Drawings (22 pages)
Table 2 provides a breakdown of the associated cost for the two options:

<table>
<thead>
<tr>
<th>Budget Items</th>
<th>Option A – 36,000 gallons</th>
<th>Option B – 24,000 gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>$116,100</td>
<td>$88,900</td>
</tr>
<tr>
<td>Electrical</td>
<td>$29,600</td>
<td>$29,600</td>
</tr>
<tr>
<td>Excavation</td>
<td>$101,700</td>
<td>$91,800</td>
</tr>
<tr>
<td>RMS Equipment</td>
<td>$142,800</td>
<td>$118,100</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td><strong>$390,200</strong></td>
<td><strong>$328,400</strong></td>
</tr>
</tbody>
</table>

*Table 2 – Budget Items and Total Cost for Options A and B*

To aid in your review of the budget cost estimate, I have enclosed two documents that should be helpful:

Attachment 1 - Harris Company Budget Cost Proposal
Attachment 2 - Options A and B Descriptions and Informational Drawings.

After you have reviewed the information provided above and enclosed documents, please let me know if you have any questions or if you would like to set up a phone call to discuss the information provided. I can be contacted at 612-330-0224 or bwalsh@idom.com.

Regards,

Ben Walsh, PE
Professional Mechanical Engineer
June 13, 2019

J.J. Kalscheur, PE  
Business Development Manager  
Idom  
330 Second Ave S – Suite 600  
Minneapolis, MN 55401

Minnesota Zoo Rainwater Harvesting Budget

Dear Mr. Kalscheur,

We are pleased to submit this budget for the construction work on the above referenced project. We have put together a budget that demonstrates our knowledge and understanding of this project based on bid documents sent on May 23, 2019.

**BUDGET PRICING ENCLOSED**

The following pages detail Harris Companies inclusions, exclusions, and assumptions involved with the total budget.

Thank you for the opportunity to present this budget. If you have any questions or require further information, please contact me at 612-834-8767 or rpetersen@harriscompany.com.

Sincerely,

Joe Schadt, MBA  
Industrial Construction Executive

Reece Peterson, PE, CEM  
Business Development & Preconstruction
PROJECT SCOPE

IDOM is currently working on the preliminary design for the Minnesota Zoo Rainwater Harvesting Project. Harris is tasked with providing a preliminary construction budget based on the design documents provided to date. To assist us with the budgeting process Premier Electrical and Nadeau Companies were part of the estimating team.

INCLUSIONS

- **RMS Equipment**
  - See appended RMS equipment breakdown

- **Mechanical**
  - Pipe, fitting, and components PVC schedule 40 & 80
    - Solvent welded, flange connections where called out
    - Piping on drawing M100A & M100B is schedule 40 DWV
    - Piping on RMS drawings D002 & D003 is schedule 80
  - Plan use excavator to set underground components
  - For tank assembly use recommended 60” joint push piece
  - Floating filter piping (internal components to one tank)
  - For the water treatment skid the inlet connection piping is included
  - Outlet connection piping not displayed (not included)

- **Electrical**
  - Pricing is the same for A and B options. No Change Electrically
  - 200’ of 277v Heat Trace, Ambient Air Thermostat and 30a 30MA Breaker included
  - EMT/PVC conduit and Wire from Panel to Heat Trace. Core Drilling Thru Wall Near Panel Location required and included. Assumed PVC can be run in same trench as 2” trench. Restoration and Backfill by others
  - Single Point 30A connection, Breaker and EMT Conduit and wire included for Water Treatment Skid Power
  - EMT/PVC Conduit and wire from Water Treatment Skid for 5 HP Pump, Level Sensor and Float cabling. Core Drilling Thru Wall Near Panel Location required and included. Assume Conduit to be run in 2” trench. Restoration and Backfill by others
  - Assumed RMS will assist with setting and testing of rain sensor and float switch
  - Startup of RMS Skid by Others
  - Heat Trace Cable Entry in Pipe provided by others
  - Assumed RMS Tank will have conduit entry points for Submersible Pump, rain sensor and float switch

- **Excavation**
  - Budget in accordance with excavation drawings (M102A, M102B)
  - Excavation for underground plumbing
  - Export excess soil, compaction of backfill
  - Construct ADS system, 6-inch base material under ADS system
  - Granular back fill 4-inches to top of ADS system
  - Excavation and back fill of pipe associate with system
  - Assuming all trenches based excavation (trench boxes not included)
  - Onsite soils assumed to be acceptable for pipe bedding and backfill
  - Geotextile not included for backfill since subgrade soil is assumed to be suitable for construction
Not included is a licensed survey staking and 3rd party soil testing (soil correction)
Not included is removal of hidden/buried debris, or rock excavation
No included dewatering, demolition of concrete structures, restorations

CLARIFICATIONS
- Pricing is based on labor rates for the period of 05/01/2020 to 04/30/2021 and is valid for 30 days
- Plan to work five (5) days per week and up to eight (8) hours per day
- Onsite break and layout area will be provided by owner
- All work assumed to proceed in a sequence of one phase (one mobilization)
- Harris is not responsible for the operation & performance of the existing process equipment or associated systems
- Installation quality control will be visual inspection by installer and owner

EXCLUSIONS
- Material price increases related to changing Section 232 of the Trade Expansion Act of 1962
- Premium time (weekend, holiday, or overtime)
- Controls work
- Insulation
- Site utility work, dewatering, landscaping
- Engineering, structural analysis, drafting, modeling
- Fire protection, life safety systems, security provisions
- Concrete
- Roofing, painting, cutting, patching
- Startup, commissioning, final cleaning
- Decontamination, handling, or disposal of hazardous materials
- Demolition
- Performance and payment bond
BUDGET PRICING

OPTION-A: $390,200
- Mechanical (prime): $116,100
- Electrical: $29,600
- Excavation: $101,700
- RMS Equipment: $142,800

OPTION-B: $328,400
- Mechanical (prime): $88,900
- Electrical: $29,600
- Excavation: $91,800
- RMS Equipment (material): $118,100
The following is a breakdown of the inclusions RMS will be providing in Option 1 – 36,000 Gallons

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADS SUPPLIED COMPONENTS THROUGH RMS</strong></td>
<td></td>
</tr>
<tr>
<td>Three (3)</td>
<td>ADS 12,000 Gallon HP Tank, 30’ Risers and 2’ Inserta Tees for Vents as Shown on RMS drawings dated 3-6-19</td>
</tr>
<tr>
<td><strong>RMS SUPPLIED TANK FITTINGS FOR FIELD INSTALLATION</strong></td>
<td></td>
</tr>
<tr>
<td>Three (3)</td>
<td>2’ Watertight Bulkhead Fittings for Tank Balancing</td>
</tr>
<tr>
<td>Six (6)</td>
<td>8’ Watertight Bulkhead Schedule 80 Flange Fittings</td>
</tr>
<tr>
<td><strong>PRE-FILTRATION AND IN TANK ACCESSORIES</strong></td>
<td></td>
</tr>
<tr>
<td>Three (3)</td>
<td>WFF300 Vortex Filter with steel lid capacity up to 12 ton (acc. To DIN 1072)  &lt;br&gt;<strong>Note:</strong> The Wiff WFF300 Vortex Filter is rated to filter collected rainwater from up 33,000 square feet of roof area.</td>
</tr>
<tr>
<td>Three (3)</td>
<td>Intermediate Rings to Connect Risers and 48” of Risers for Each Filter</td>
</tr>
<tr>
<td>Three (3)</td>
<td>Blind Insert Optional Accessory Included for Full System Bypass During Construction or For Tank Maintenance</td>
</tr>
<tr>
<td>Three (3)</td>
<td>8’ Blind Inserts</td>
</tr>
<tr>
<td><strong>SUBMERSIBLE PUMP SETUP AND IN TANK ACCESSORIES</strong></td>
<td></td>
</tr>
<tr>
<td>One (1)</td>
<td>5HP Submersible Pump and Motor housed in a pre-fabricated Cooling Jacket with 2” Check Valve on Outlet</td>
</tr>
<tr>
<td>Two (2)</td>
<td>2” Coarse Floating Filter</td>
</tr>
<tr>
<td>One (1)</td>
<td>RMS Stainless Steel Float Tree and Anchor</td>
</tr>
<tr>
<td>One (1)</td>
<td>Normally Open Float Switch for Pump Protection</td>
</tr>
<tr>
<td><strong>RMS SKID</strong></td>
<td></td>
</tr>
<tr>
<td>One (1)</td>
<td>Rainwater Filtration Made-to-Order Skid 75gpm at max pressure 125psi with Domestic Backup. Matched with 65/350 Simplex Submersible Pump in Cooling Jacket Above  &lt;br&gt;Includes:  &lt;br&gt;-2” Micron Bag Filter with Stainless steel housing  &lt;br&gt;-2” Carbon Filter with Stainless Steel Housing  &lt;br&gt;-UV Light Capable of 80 GPM  &lt;br&gt;-2” Flange Rainwater Inlet  &lt;br&gt;-2” Flange Domestic Inlet  &lt;br&gt;-2” Flange System Outlet  &lt;br&gt;-1” Flange Drain Line  &lt;br&gt;Two (2) - 2” Flow Meters on Rainwater and Domestic Line  &lt;br&gt;-2” RPZ  &lt;br&gt;-2” Domestic Motorized Valve  &lt;br&gt;-RMS 200 Controller - PLC Touchscreen U.L. Listed Control System with Modbus Bacnet Interface, ADD SEPARATE FLOW SCREEN WITH RESETTABLE TOTALS AND ABILITY TO DOWNLOAD DATA TO AN SD CARD  &lt;br&gt;-Single Point Power Disconnect Panel U.L. Listed  &lt;br&gt;-VFD  &lt;br&gt;-14 Gallon Pressure Tank and Tee with Pressure Sensor Downstream of Treatment  &lt;br&gt;-Pre-Plumbed in Copper Pro Press  &lt;br&gt;-Pre-Wired  &lt;br&gt;-ADD Manual Pressure Gauges and Ball valves Before and After Treatment System  &lt;br&gt;Dimensions of 84” L x 32” W x 72” H</td>
</tr>
<tr>
<td><strong>SUMP ACCESSORIES</strong></td>
<td></td>
</tr>
<tr>
<td>Two (2)</td>
<td>Additional Normally Open Float Switches for two Sump Applications</td>
</tr>
<tr>
<td><strong>SERVICES</strong></td>
<td></td>
</tr>
<tr>
<td>Two (2)</td>
<td>Two days of on-site assistance for product orientation prior to excavation (day 1) and system startup and owner training (day 2). Additional days available upon request of the contractor at time of bid.</td>
</tr>
<tr>
<td></td>
<td>Submittals, Renderings, Schematics, O&amp;M Plan and Warranty Documentation</td>
</tr>
</tbody>
</table>
The following is a breakdown of the inclusions RMS will be providing in Option 1 – 24,000 Gallons

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two (2)</td>
<td><strong>ADS SUPPLIED COMPONENTS THROUGH RMS</strong></td>
</tr>
<tr>
<td></td>
<td>ADS 12,000 Gallon HP Tank, 30' Risers and 2&quot; Inserta Tees for Vents as Shown on RMS drawings dated 3-6-19</td>
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<td>Two (3)</td>
<td><strong>RMS SUPPLIED TANK FITTINGS FOR FIELD INSTALLATION</strong></td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Four (4)</td>
<td>8&quot; Watertight Bulkhead Schedule 80 Flange Fittings</td>
</tr>
<tr>
<td>Two (2)</td>
<td><strong>PRE-FILTRATION IN TANK ACCESSORIES</strong></td>
</tr>
<tr>
<td></td>
<td>WFF300 Vortex Filter with steel lid capacity up to 12 ton (acc. To DIN 1072)</td>
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<td></td>
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<td>Two (2)</td>
<td>8&quot; Blind Inserts</td>
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<tr>
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<td></td>
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<td>2&quot; Coarse Floating Filter</td>
</tr>
<tr>
<td>One (1)</td>
<td>RMS Stainless Steel Float Tree and Anchor</td>
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<td>Normally Open Float Switch For Pump Protection</td>
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<tr>
<td>One (1)</td>
<td><strong>RMS SKID</strong></td>
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<tr>
<td></td>
<td>Rainwater Filtration Made-to-Order Skid 75gpm at max pressure 125psi with Domestic Backup. Matched with 65/GS50 Simplex Submersible Pump in Cooling Jacket Above</td>
</tr>
<tr>
<td></td>
<td>Includes:</td>
</tr>
<tr>
<td></td>
<td>-2&quot; 5 Micron Bag Filter with Stainless steel housing</td>
</tr>
<tr>
<td></td>
<td>-2&quot; Carbon Filter with Stainless Steel Housing</td>
</tr>
<tr>
<td></td>
<td>-UV Light Capable of 80 GPM</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>-2&quot; Flange Domestic Inlet</td>
</tr>
<tr>
<td></td>
<td>-2&quot; Flange System Outlet</td>
</tr>
<tr>
<td></td>
<td>-1&quot; Flange Drain Line</td>
</tr>
<tr>
<td></td>
<td>Two (2) -2&quot; Flow Meters on Rainwater and Domestic Line</td>
</tr>
<tr>
<td></td>
<td>-2&quot; RPZ</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>-RMS 200 Controller - PLC Touchscreen U.L. Listed Control System with Modbus Bacnet Interface. ADD SEPARATE FLOW SCREEN WITH REPEATABLE TOTALS AND ABILITY TO DOWNLOAD DATA TO AN SD CARD</td>
</tr>
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<td></td>
<td>-Single Point Power Disconnect Panel U.L. Listed</td>
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</tr>
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<td></td>
<td>Submittals, Renderings, Schematics, O&amp;M Plan and Warranty Documentation</td>
</tr>
</tbody>
</table>
Options A and B Description and Informational Drawings

This project has two potential options that are being considered.

1. **Option A** is tying into two existing rainwater headers. One is a 15 inch cast iron header and the other is a 10 inch cast iron header. These will be tied into with equivalent 16 inch and 10 inch PVC piping. This piping will run to pre-filters and then to three 12000 gallon tanks (36000 gallons total) ADS pipe tanks. The overflow from the tanks and pre-filters will be tied together and will be routed back to a vertical section of the existing 15 inch cast iron rainwater header, by accessing the pipe through the foundation wall. A submersible pump will pump the water from the tanks to a water filtration skid located in the cooling water sump room to the north.

2. **Option B** is tying into the existing 15 inch cast iron rainwater header only. This will be tied into with equivalent 16 inch PVC piping. This piping will run to pre-filters and then to two 12000 gallon (24000 gallons total) ADS pipe tanks. The overflow from the tanks and pre-filters will be tied together and will be routed back to a vertical section of the existing 15 inch cast iron rainwater header, by accessing the pipe through the foundation wall. A submersible pump will pump the water from the tanks to a water filtration skid located in the cooling water sump room to the north.

**Attachments:**
- Option A Description (1 page)
- Option B Description (1 page)
- Option A Drawings (3 pages)
  - M100A (plan), M101A (isometric) and M102A (excavation)
- Option B Drawings (3 pages)
  - M100B (plan), M101B (isometric) and M102B (excavation)
- Pictures (5 pages)
  - Picture View Markup of Drawing M100A
  - Picture 1 - 16" Rainwater header from inside Tropics Building
  - Picture 2 - 16" Rainwater header from outside Tropics Building
  - Picture 3 - 10" Rainwater header from inside Tropics Building
  - Picture 4 - 10" Rainwater header from outside Tropics Building
- RMS equipment drawing package (8 pages)
Option A Description

Piping

- As shown on attached M100A and M101A drawings.
- All interconnecting piping between equipment is in general contractor scope. Piping includes 16”, 12”, 10”, 8” and 2”.

Rainwater Storage System Equipment

- Main rainwater system equipment (WISY filters, tanks, smoothing inlets, pump, water filtration skid are to be procured through Rainwater Management Systems (RMS). RMS contact Dave Stark can provide quote on mechanical equipment package. General contractor will install all equipment. See RMS Equipment drawing package.

Excavation

- See Drawing M102A for excavation depths
- Geotechnical Report Summary:
  - Excavation for 5’ dia tank to be minimum 96’
  - Maximum slope of side of excavation 1.5 horizontal : 1 vertical
  - Pad below tanks 6” thick Class I or Class II material compacted per ASTM D2321
  - Place Class I or Class II around tanks and 6” above top of tanks minimum
  - Place geofabric around the Class I or Class II material
  - Native soils may be used above 6” above the tanks, compacted to 90% standard proctor (ASTM D698) typically or 95% standard proctor below sidewalks.
  - Water not observed in borings to depth of 21’, however no observance of ground water does not mean that ground water will never occur.

Electrical

- Power wire from existing 460V 3phase panel to single point power on water treatment skid
- Power wire from water treatment skid to the submersible tank pump (5HP)
- Wire from tank level float switches to water treatment skid
- Heat tracing for PVC piping exposed and above frost depth including power wiring for heat trace (Chromalox CPR Heat trace 10 W/ft). Estimate up to 100ft looped down and back inside pipe, 200ft total on each pipe.
Option B Description

Note: Difference between Option A and Option B is no connection to existing 10 inch rainwater header and only two storage tanks and two filters.

Piping

- As shown on attached M100B and M101B drawings.
- All interconnecting piping between equipment is in general contractor scope. Piping includes 16”, 12”, 8” and 2”.

Rainwater Storage System Equipment

- Main rainwater system equipment (WISY filters, tanks, smoothing inlets, pump, water filtration skid are to be procured through Rainwater Management Systems (RMS). RMS contact Dave Stark can provide quote on mechanical equipment package. General contractor will install all equipment. See RMS Equipment drawing package.

Excavation

- See Drawing M102B for excavation depths
- Geotechnical Report Summary:
  - Excavation for 5’ dia tank to be minimum 96”
  - Maximum slope of side of excavation 1.5 horizontal : 1 vertical
  - Pad below tanks 6” thick Class I or Class II material compacted per ASTM D2321
  - Place Class I or Class II around tanks and 6” above top of tanks minimum
  - Place geofabric around the Class I or Class II material
  - Native soils may be used above 6” above the tanks, compacted to 90% standard proctor (ASTM D698) typically or 95% standard proctor below sidewalks.
  - Water not observed in borings to depth of 21’, however no observance of ground water does not mean that ground water will never occur.

Electrical

- Power wire from existing 460V 3phase panel to single point power on water treatment skid
- Power wire from water treatment skid to the submersible tank pump (5HP)
- Wire from tank level float switches to water treatment skid
- Heat tracing for PVC piping exposed and above frost depth including power wiring for heat trace (Chromalox CPR Heat trace 10 W/ft). Estimate up to 100ft looped down and back inside pipe, 200ft total on each supply pipe.
Pictures 2 of 5

Picture 1 - 16" Rainwater header from inside Tropics Building

1. Existing 15" cast iron rainwater header
2. Tee in a new 16" PVC pipe to the underground rainwater tanks
3. Core drill through block wall for 16" PVC pipe.
4. Tie in the tank and pre-filter overflow to existing 15" cast iron pipe from exterior below grade through foundation wall.
Tie in the tank and pre-filter overflow to existing 15" cast iron pipe from exterior below grade through foundation wall.

16" PVC pipe inside building

Core drill through block wall for 16" PVC pipe.

Heat trace and drop to below frost depth approximate IE 1002.0ft
Pictures 5 of 5
Picture 4 - 10" Rainwater header from outside Tropics Building

- 10" PVC pipe inside building
- Core drill through block wall for 10" PVC pipe.
- Heat trace and drop to below frost depth approximate IE 1002.5ft
PLAN VIEW

ITEMS LIST:
1. VENT LINES WITH INSERTA T'S; ALL OTHER TANK PENETRATIONS TO BE WATERTIGHT FLANGES OR BULKHEAD FITTINGS.
2. WISY VORTEX FILTERS - WFF-300.
3. WISY 8" SMOOTHING INLETS.
4. WISY BLIND INSERTS.

36,000 GALLONS
ITEMS LIST:

1. VENT LINES WITH INSERTA T'S; ALL OTHER TANK PENETRATIONS TO BE WATERTIGHT FLANGES OR BULKHEAD FITTINGS.
2. WYSIS VORTEX FILTERS - WFF-300.
3. WYSIS 6" SMOOTHING INLETS.
4. WYSIS BLIND INSERTS.

24,000 GALLONS
ITEMS LIST:

1. VENT LINES WITH INSERTA T'S; ALL OTHER TANK PENETRATIONS TO BE WATERTIGHT FLANGES OR BULKHEAD FITTINGS.
2. WISY VORTEX FILTERS - WFF-300
3. WISY 8" SMOOTHING INLETS
4. SUBMERSIBLE PUMP IN COOLING JACKET
5. 2 - WISY 2" FLOATING INTAKE FILTERS
6. RMS LEVEL SENSOR
7. RMS STAINLESS FLOAT TREE WITH LOW LEVEL PUMP PROTECTION
8. 8" OVERFLOW DEVICE (SITE BUILT)
ITEM LIST:
1. NORMALLY CLOSED FLOAT SWITCH (QTY 1)
2. NORMALLY CLOSED 1" MOTORIZED VALVE-FAIL CLOSED

NOTES:
2. ELEVATIONS TO BE SET IN FIELD BY INSTALLER IN CONSULTATION WITH ENGINEER OF RECORD.
3. INSTALLER TO EXTEND WIRES FROM FLOAT SWITCH AND MOTORIZED VALVE TO RAINWATER MANAGEMENT SOLUTIONS 225 CONTROLLER AND TERMINATE ON THE DESIGNATED AND LABELED TERMINALS INSIDE THE CONTROLLER.
SIDE VIEW

TREATED RAINWATER FROM SKID WHEN PRESENT IN BELOW GROUND DETENTION.
DOMESTIC WATER FROM SKID WHEN RAINWATER IS NOT PRESENT IN DETENTION.

1" LINE IN FROM 1" DISCHARGE ON RAINWATER SKID

MINIMUM 4' AIR GAP BETWEEN RAINWATER FEED AND HIGHEST ELEVATION IN SWAMP

ELEVATION: TOP OF WATER LEVEL TDB
ELEVATION: TDO
ELEVATION: TDB
ELEVATION: SUMP BOTTOM TDB

ITEM LIST:
1. NORMALLY CLOSED FLOAT SWITCH (QTY 1)
2. NORMALLY CLOSED 1" MOTORIZED VALVE-FAIL CLOSED

NOTE: POND MAKEUP SWEEP DETAIL:
1. ONE (1) NORMALLY CLOSED INDOOR FLOAT SWITCH IN THE DOWN POSITION DEACTIVATES NC MOTORIZED VALVE TO OPEN AND FEEDS TREATED RAINWATER TO COOLING TOWER MAKEUP SWEEP UNITS.
2. FLOAT IN THE UP POSITION AND SILICON RUBBER NO MOTORIZED VALVE TO CLOSED AND STOP RAINWATER FEED TO SWEEP.
3. DETERMINE LENGTH ON FLOAT SWITCH TO LENGTH NEEDED TO IF FINAL ON AND OFF ELEVATION
4. ALL CONNECTIONS TO BE SET IN FIELD BY INSTALLER IN CONSULTATION WITH ENGINEER OF RECORD.
5. INSTALLER TO EXTEND WIRES FROM FLOAT SWITCH AND MOTORIZED VALVE TO RMS-250 CONTROLLER AND TERMINATE ON THE DESIGNATED AND LABELED TERMINAL ON THE CONTROLLER.

MINNESOTA ZOO
RECIRCULATING POND
MAKE UP TO SUMP

RAINWATER MANAGEMENT SOLUTIONS

ALL GRADES & ELEVATIONS TO BE SITE VERIFIED PRIOR TO CONSTRUCTION

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SIDE VIEW

TREATED RAWWATER FROM SHED WHEN PRESENT IN BELOW GROUND DRAINAGE.
DOMESTIC WASTEWATER FROM SHED WHEN RAWWATER IS NOT PRESENT IN DRAINAGE.

INSTALLER TO EXTEND 2" LINE FROM 2" DISCHARGE ON RAWWATER SHED CONNECT TO EXISTING IRRIGATION SYSTEM.

EXISTING IRRIGATION SYSTEM AND CONTROLS.

ITEM LIST:
1. CONNECTIVE PIPING AND ANY ADDITIONAL VALVES BY OTHERS

NOTES: IRRIGATION CONNECTION DETAIL
1. INSTALLER TO EXTEND AND CONNECT 2" RAWWATER FROM SHED TO EXISTING IRRIGATION SYSTEM AND PROVIDE ANY ADDITIONAL VALVES NECESSARY.
   PRESSURE DROP IS SENSORED AT THE PRESSURE TRANSDUCER ON THE SHED WHEN VALVES ON THE IRRIGATION ARE OPENED.
2. ALL IRRIGATION CONTROLS AND PIPING ARE INSTALLED.

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MINNESOTA ZOO
INDOOR IRRIGATION CONNECTION

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