BAXTER

"A Growing Community"

UTILITY COMMISSION AGENDA
Wednesday, February 3, 2016
5:30 p.m.

1. **Meeting Called to Order**

2. **Roll Call**

3. **Consent Agenda**
The following items are considered non-controversial by staff and are recommended to be read and passed in one motion. Any commission member, staff, citizen or meeting attendee can request one or more items be pulled from the consent agenda and the item will be pulled and addressed immediately after the passage of the consent agenda. Otherwise, the following will be passed in one motion:

   A) Approval of Minutes from January 6, 2016 (pp. 5 – 14).

Agenda

4. Progressive Consulting Engineer's Water Treatment Plant Evaluation Power Point Presentation and Water Treatment Plant Study (Enclosed in packet).

5. Progressive Consulting Engineer's Agreement for Professional Services for the Design of a Floating Decanter, Review Shop Drawings and Construction Observation (pp. 15 – 18).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Progressive Consulting Engineer's Agreement for Professional Services for the Design of a Floating Decanter, Review Shop Drawings and Construction Observation in the Not to Exceed amount of $5,000.00*

6. Progressive Consulting Engineer's Agreement for Professional Services for a Pilot Study of a Polymer Feed System (pp. 19 – 22).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Progressive Consulting Engineer's Agreement for Professional Services for a Pilot Study of a Polymer Feed System in the Not to Exceed amount of $12,000.00*

7. Lift Station No. 8 Reconstruction Plans and Specifications (Enclosed in packet).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Lift Station No. 8 Reconstruction Plans and Specifications and direct staff to bid the project.*

8. Lift Station No. 8 Reconstruction Pump and Control Panel Proposal from Quality Flow Systems (pp. 23 – 25).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Quality Flow Systems, Inc. Proposal for pumps, control panels and accessories in the total amount of $49,770.00 for the Lift Station No. 8 Reconstruction Project.*

9. Bolton & Menk Pavement Management Program Presentation (pp. 26 – 73).
**Staff recommends the Utilities Commission make a motion to City Council to adopt a resolution approving the 2016 Pavement Management Program.*

10. Bolton & Menk 2016 Pavement Management Engineering Contract (pp. 74 – 76).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Bolton & Menk Proposal for Engineering Services for the 2016 Pavement Management Program Implementation in the estimated cost of $14,700.00 depending on the number of meetings and number of maps required at the end of the implementation process.*

11. Bolton & Menk 2016 Chip Sealing Plans, Quantities & Specifications Contract (pp. 77 – 78).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Bolton & Menk Proposal for Engineering Services for the 2016 Chip Sealcoat Improvements Project in the not to exceed amount of $4,500.00*

12. Bolton & Menk Proposal for Amended Engineering Services for the Baxter Lift Station No. 3 Forcemain Reroute Project (pp. 79 – 80).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Bolton & Menk Proposal for Amended Engineering Services for the Baxter Lift Station No. 3 Forcemain Reroute Project in the estimated amount of $9,450.00 plus additional work as requested will be billed per hour at the agreed staff billing rates in the agreement.*

13. 2015 Excelsior Road Improvement Project Partial Pay Estimate No. 7 (pp. 81 - 93).
**Motion to rescind the January 6, 2016 motion to approve the Anderson Brothers Construction Final Pay Estimate No. 7 in the amount of $107,075.84 for the 2015 Excelsior Road Improvement Project.*

**Staff recommends the Utilities Commission make a motion to City Council to approve the Anderson Brothers Construction Partial Pay Estimate No. 7 in the amount of $85,181.81 for the 2015 Excelsior Road Improvement Project.*

14. 2015 Dellwood Drive & Novotny Road, Inglewood Drive and Independence Road Improvements Project Partial Pay Estimate No. 4 (pp. 94 – 103).

**Staff recommends the Utilities Commission make a motion to City Council to approve the R. L. Larson Excavating Partial Pay Estimate No. 4 in the amount of $44,874.79 for the 2015 Dellwood Drive & Novotny Road, Inglewood Drive and Independence Road Improvements Project.*

15. WSN 20-Year Maintenance Plan Update (2016-2036) for Sanitary Sewer Lift Stations (pp. 104 – 110).
**Staff recommends the Utilities Commission make a motion to City Council to adopt a resolution approving the 20-Year Maintenance Plan Update (2016-2036) for the Sanitary Sewer Lift Stations.*

16. Crow Wing County 207 CSAH 48 Project Update (pp. 111 – 115).
**Information only.*

17. WSN Engineering Proposal for the 2017 CSAH 48 Mill & Overlay from Foley Road to T.H. 210 Feasibility Report (pp. 116 – 121).
**Staff recommends the Utilities Commission make a motion to City Council to approve the WSN Engineering Proposal for the 2017 CSAH 48 Mill & Overlay from Foley Road to T.H. 210 Feasibility Report in the Not to Exceed amount of $6,300.00.*

18. WSN Engineering Proposal for Long Range Water & Sanitary Sewer Mapping Update (pp. 122 – 127).
**Staff recommends the Utilities Commission make a motion to City Council to approve the WSN Engineering Proposal for Long Range Water & Sanitary Sewer Mapping Update in the Not to Exceed amount of $9,500.00.*

19. WSN Memo – Yearend 2015 Road Status Update – MSAS Mileage Certification (pp. 128 – 132).
**Information only.*

20. WSN Memo - Holiday Station Store Ground Water Contamination (pp. 133 – 134).
**Information only.*

21. 2015 Paul Bunyan Trail Bridge Inspection (Enclosed in packet).
**Information only.*

22. 5-Year Capital Improvements Plan and Map (Enclosed in packet).
**Information only.*

23. TKDA Fixed Network Water Meter Replacement Project Plans and Specifications (Enclosed in packet).
**Information only. The City Council took action at the February 2 council meeting.*

24. Whiskey Creek Subwatershed Reports (Enclosed in packet).
**Information only.*

25. Wastewater Treatment Charges for December 2015 (pp. 135 – 138).
**Information only.*

26. Franchise Fees Update (pp. 139 - 141).
**Information only.*

27. Adjourn.

UTILITIES COMMISSION
January 6, 2016

The regular meeting of the Baxter Utilities Commission was called to order at 5:30 p.m. by Chairman Rock Yliniemi.

MEMBERS PRESENT: Commissioners Jack Christofferson, Dave Franzen, Doug Wolf, Chairman Rock Yliniemi and Council Liaison Mark Cross.

MEMBERS ABSENT: Commissioner Shawn Crochet.

STAFF PRESENT: Public Works Director/City Engineer Trevor Walter and Administrative Assistant Mary Haugen.

OTHERS PRESENT: WSN Consulting Engineer Aric Welch, SEH Consulting Engineer Scott Hedlund, Bolton & Menk Consulting Engineer Mike Rardin, WSB Consulting Engineer Chuck Rickart and WSB Project Manager Shawn Tracy.

APPROVAL OF MINUTES
MOTION by Commissioner Wolf, seconded by Commissioner Franzen to approve the Utilities Commission minutes of December 2, 2015. Motion carried unanimously.

BOLTON & MENK, INC. 2015 CHIP SEAL IMPROVEMENTS PROJECT REIMBURSEMENT REQUEST
Bolton & Menk Consulting Engineer Mike Rardin reviewed the original contract for the 2015 Chip Seal Improvement Project. Crow Wing County was the primary project administrator for both bidding and contract administration services for the project.

Bolton & Menk original proposal for engineering services was broken down to the following hourly estimated costs:

- Engineering Design Services $7,950.00
- Construction Observation Services $6,400.00

Mr. Rardin explained that time and cost to perform the services listed above exceeded what was estimated based on the following reasons:

1. Additional time was needed during project development to determine the actual streets and trails to be chipsealed
2. Pavement marking revisions and updates
3. Multiple revisions to streets and trails proposed to be chipsealed
4. Street and trails were re-evaluated and revised to maximize the streets to be chipsealed
5. Fairview Road, Brainerd section, was added to the project
6. Contractor performed the work slower than normal as well as exceeded the contract completion dates

Based on the items listed, Bolton & Menk estimated the streets, trail and pavement markings added $2,890.00 and the inefficient contractor operations added $4,274.00 to their design and construction observation costs for the reimbursement request of $7,164.00.

Commissioner Wolf inquired how the contractor inefficiency will play into future chip sealing projects. Public Works Director/City Engineer Walter explained that it can always play into future projects; however, two things the City cannot control, was the contract was with Crow Wing County Highway Department and the contractor that actually completed the work was not the prime contractor for the project. The city needs to look into altering the contract specifications to address subcontractors and most likely go to a working day contract instead of a start and final completion date contract.

The project had two crews which consisted of the prime contractor whose responsibility was the county roads and the subcontractor who did the urban areas. There are different operations between the county and city; the county sweeps the road but uses the chip seal product for shouldering whereas the city requires the roadway to be swept and the leftover product needs to be picked up and hauled away. There are a few other operations that also are different between rural County roads and City streets.

Commissioner Franzen expressed concern over the request, stating that construction observation is always a problem, additional funds are requested and the situation needs to be remedied for future projects. Public Works Director/City Engineer Walter stated the problem was not with the engineering firm's quality of work but the actual construction operations and the City may need to be in control of the actual contract in order to have more control of the project. Staff will look at making changes for 2016.

MOTION by Commissioner Wolf, seconded by Council Liaison Cross to recommend City Council approve the Bolton & Menk Reimbursement Request for the 2015 Chip Seal Improvements Project in the amount of $7,164.00. Motion carried unanimously.

Commissioner Franzen reiterated his request that construction observation needs to be reviewed.

WSB WHISKEY CREEK TRIBUTARY PROJECT FUNDING OPTIONS

WSB Project Manager Shawn Tracy gave a brief update on the project history for the Baxter Water Quality for the Whiskey Creek Tributary to the Mississippi River Project. The purpose of tonight's presentation was to review funding options for consideration, strategies and/or funding for land acquisition and a recommended course of action and timeline.

The area is a 70 acre parcel north of Excelsior Road and west of Cypress Drive and east of Golf Course Drive which is owned by Good Samaritan Society. The property owners plan to build on

a large portion of the property which will provide senior care and services in a park like setting. The property has direct access to the Paul Bunyan State Trail.

Funding opportunities include:

1. Clean Water Fund – MN Board of Soil and Water Resources
2. Clean Water Partnership Loan Fund – Minnesota Pollution Control Agency
3. Clean Water State Revolving Funding – Minnesota Pollution Control Agency
4. Other Sources

Land Acquisition Funding Opportunities include:

1. Land and Water Conservation Fund and Outdoor Recreation Grant – Nation Park Services and Minnesota DNR
2. Clean Water Partnership Loan Program – Minnesota Pollution Control Agency
3. Community Development Block Grant (Small Cities Development Grant) – Minnesota Department of Employment and Economic Development and U.S. Department of Housing and Urban Development
4. Water & Waste Disposal Loan & Grant Program – USDA Rural Development

Mr. Tracy stated that discussion will need to be held soon with representatives from Good Samaritan regarding the 12 acres north of Excelsior Road that will be needed for stormwater infrastructure project.

Stormwater runoff discharges to Whiskey Creek in the vicinity of Fleet Farm and the Good Samaritan property on Golf Course Drive; Whiskey Creek makes its way through the Northland Arboretum and a major wetland before emptying into the Mississippi River.

The City of Baxter currently has the Whiskey Creek Tributary Project scheduled for 2017 in th e5-Year CIP. A grant application for construction and possible property acquisition would need to be submitted this year. Mr. Tracy felt that partnering with the Board of Soil and Water Resources would be the most beneficial to the city for all grant opportunities.

WSB MONTHLY REPORT ON THE 2015 ISLE DRIVE EXTENSION IMPROVEMENT PROJECT

WSB Consulting Engineer Rickart gave a brief update on the 2015 Isle Drive Extension Improvement Project. The Isle Drive and CSAH 48 project has been under construction sense mid-May 2015. RL Larson Excavating together with their subcontractors have completed all primary work on the project including all major issues identified in the final punch list.

RL Larson requested and was granted a contract extension to December 1, 2015 to complete four primary items including:

1. Placing signs at the entrance to the bike and pedestrian path indicating "No Motorized Vehicles Permitted".
2. Completing the two pedestrian flasher systems on the project.
3. Determining final volume and price of the remaining top soil to be purchased by the City.
4. Disposing of the debris pile of trees and stumps located behind the new lift station #23.

Each of these items was completed prior to the December 1, 2015 completion date. There are some warranty items that will need to be reviewed in the spring of 2016 including insuring the storm water ponds all drain and a few bituminous low areas adjacent to the curb and gutter.

2015 ISLE DRIVE EXTENSION IMPROVEMENT PROJECT CHANGE ORDER NO. 3

WSB Consulting Engineer Rickart reviewed Change Order No. 3 for the 2015 Isle Drive Extension Improvement Project. WSB Consulting Engineer Rickart had no concerns with the Change Order No. 3 and recommends approval. The change order items are listed below:

- CSAH 48 Drainage Flume – The County requested that a drainage flume be constructed at the end of the curb and gutter on westbound CSAH 48 in the northwest quadrant of the intersection. This was installed to insure that erosion does not occur where the storm water is coming off the gutter into the ditch section and to minimize potential maintenance of the slope.

- Bike Symbol Pavement Markings – Six bike symbol pavement markings were added to the bike lanes on Isle Drive north of CSAH 48. These were included in the areas were the bike lane is between the right turn lane and the through lane of traffic. They were not included in the original plan.

- SE Quadrant Grading to 4:1 Slope – The original plan provided a 3:1 slope adjacent to CSAH 48 behind the path in the southeast quadrant of the intersection. After the path was installed it was determined that a 4:1 slope should be graded to insure the slope can be maintained and so that the shading of the roundabout area was minimized. This required: clearing and grubbing additional trees; re-grading the slope from the intersection east to the new right-in/right-out driveway to the Johnson property, and; lowering a fiber optic line.

- F& I GV and MH Posts – The contractor was requested to furnish and install posts for City installed signs at each Gate Valve and Manhole.

MOTION by Council Liaison Cross, seconded by Commissioner Franzen to recommend City Council approve the R. L. Larson Excavating Change Order No. 3 in the increased amount of $22,740.00 for the 2015 Isle Drive Extension Improvements Project. Motion carried unanimously.

2015 ISLE DRIVE EXTENSION IMPROVEMENT PROJECT CHANGE ORDER NO. 4

WSB Consulting Engineer Rickart reviewed Change Order No. 4 for the 2015 Isle Drive Extension Improvement Project. WSB Consulting Engineer Rickart had no concerns with the Change Order No. 4 and recommends approval. The change order items are listed below:

- Screening Top Soil – As a result of several factors the contractor was required to provide screening of the salvaged top soil on the project. The contractor expended significant additional labor and equipment costs to insure the top soil was suitable for turf establishment and the ultimate mowing of the boulevard areas. These factors included:

  1. The site was a wooded undisturbed area with extension root systems from the mature trees in the area.

  2. A clearing contract was let previously to clear the 22 acre project area as required for mitigation of the Long Eared Bat habitat. This contract was not completed prior to the bidding of the current contract. The contractor did not assume the full extent of the impact the root and branch debris from the clearing was going to have on the salvable top soil. The contractor placed the top soil in two piles, one south of CSAH 48 and one north of CSAH 48. After review of these piles it was determined that the top soil would not be acceptable for placing in the boulevards areas. This required the screening of the top soil to remove this debris.

- The contractor's actual time and material costs spent screening the top soil was $95,270.65. A spread sheet showing the costs is attached. It was agreed with the contractor that approximately 50% of these costs would be fair compensation for this work.

- Top Soil Excess – After the screening an excess pile of 1,280 CY's of top soil remains. This is currently the contractor's property. The contractor is requesting 220 CY's to complete their other projects in the Baxter area next spring. The remaining 1,060 CY's is available to be purchased by the City. Currently, the City purchases suitable top soil yearly for use in maintenance activities. Having this top soil stock piled and available will save time and cost for the City to purchase and haul next year.

MOTION by Council Liaison Cross, seconded by Commissioner Franzen to recommend City Council approve the R. L. Larson Excavating Change Order No. 4 in the increased amount of $47,680.00 for the 2015 Isle Drive Extension Improvements Project. Motion carried unanimously.

2015 ISLE DRIVE EXTENSION IMPROVEMENT PROJECT FINAL PAY ESTIMATE NO. 7

WSB Consulting Engineer Rickart reviewed the Final Pay Estimate No. 7 for the 2015 Isle Drive Extension Improvements Project. WSB Consulting Engineer Rickart had no concerns with the Final Pay Estimate No. 7 and recommends approval.

MOTION by Council Liaison Cross, seconded by Commissioner Franzen to recommend City Council approve the R. L. Larson Excavating Final Pay Estimate No. 7 in the amount of $339,827.37 for the 2015 Isle Drive Extension Improvement Project. Motion carried unanimously.

SEH MONTHLY REPORT ON THE 2015 MILL AND OVERLAY IMPROVEMENTS PROJECT

SEH Consulting Engineer Hedlund gave a brief update on the project. All work for 2015 ended the week of November 2, 2015. Reclaiming and paving operations for Edgewood Drive north of Clearwater Road and at the Glory Road/Isle Drive intersection are planned to resume and be completed in May 2016 depending on the weather in the spring of 2016.

2015 MILL AND OVERLAY IMPROVEMENTS PROJECT TESTING FEE SERVICES

SEH Consulting Engineer Hedlund explained the fee increase is for construction materials testing for concrete work by their subcontractor Braun Intertec. The original and amended testing budget did not include concrete testing and was primarily based on the original mill and overlay construction quantities.

Also note that the project's scope changed significantly when more full depth reclamation was required than originally anticipated. The original contract was for more mill and inlay which is significantly less testing requirements.

SEH Consulting Engineer Hedlund noted that the project is still under budget compared to the numbers presented at the final assessment hearing.

MOTION by Commissioner Franzen, seconded by Commissioner Wolf to recommend City Council approve the 2015 Mill and Overlay Improvements Project Testing Fee Services increase in the amount of $25,137.00. Motion carried unanimously.

SEH MONTHLY REPORT ON THE 2015 EXCELSIOR ROAD IMPROVEMENTS PROJECT

SEH Consulting Engineer Hedlund gave a brief update on the project. The project is near final completion and they are waiting for submittal of the IC134's. SEH is working on as built drawings for the City.

2015 EXCELSIOR ROAD IMPROVEMENTS PROJECT FINAL PAY ESTIMATE NO. 7

SEH Consulting Engineer Hedlund submitted Final Pay Estimate No. 7 for the 2015 Excelsior Road Improvements Project to the commission. SEH Consulting Engineer Hedlund has no concerns with Final Pay Estimate No. 7 and recommends approval.

SEH Consulting Engineer Hedlund informed the commission the project is still under budget compared to the numbers presented at the final assessment hearing..

MOTION by Commissioner Franzen, seconded by Commissioner Christofferson to recommend City Council approve the Anderson Brothers Final Pay Estimate No. 7 in the amount of $107,075.84 for the 2015 Excelsior Road Improvements Project. Motion carried unanimously.

SEH MONTHLY REPORT ON THE 2016 FAIRVIEW ROAD AND TRAIL IMPROVEMENT PROJECT

SEH Consulting Engineer Hedlund gave an update on the project. The 2016 Fairview Road project will proceed but the separated off-street trail component will not be part of the plan. City Council has removed all grade separated bike and pedestrian trails from the project in 2016.

2016 FAIRVIEW ROAD AND TRAIL IMPROVEMENTS PROJECT FEASIBILITY REPORT

The 2016 Fairview Road and Trail Improvements Project Feasibility Report was submitted to the commission as information only. City Council approved the feasibility report at the January 5, 2016 council meeting.

WSN MONTHLY REPORT ON THE 2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS PROJECT

WSN Consulting Engineer Welch gave a brief update on the 2015 Dellwood Drive, Novotny Road, Independence Road and Inglewood Drive Improvements Project.

Work Completed to Date

Independence Road: Work is complete and ready for final payment.
Inglewood Drive: Work is substantially complete except for the bituminous trail between Fairview Road and Inglewood Drive. There are also several punch list items that will not be completed until next spring.

Dellwood Drive and Novotny Road: All underground work on Dellwood Drive and Novotny Road is complete and tested. Roadway work is complete through the bituminous base course. Grading and topsoil is complete and the project has been temporary seeded and mulched for the winter.

The Contractor has been working on locating a leak in the Audubon Way watermain extension since early December. The location of the leak has been narrowed down to the section of directional drilled pipe between Hilltop Trailer Sales and Holiday Inn & Suites.

Project Schedule
The Contractor has suspended operations and will begin work again next spring.

Completion Dates
Per Change Order No. 2 Agreement, work will on Dellwood Drive and Novotny Road will be suspended for the winter as long as the conditions in the agreement have been satisfied. Work will commence in the spring with the revised substantial completion date of May 26, 2016 and final completion date of June 9, 2016.

Easements
Dellwood Drive and Novotny Road right-of-way: One roadway easement remains to be signed on Dellwood Drive.

Audubon Way watermain extension: Hilltop Trailer Sales has agreed to the easement and has given the City written permission to proceed with the Audubon Way watermain extension; however, the easement is currently being held up by the bank financing the property.

Engineering
Independence Road and Inglewood Drive record drawings are complete and will be sent to City staff for review. Dellwood Drive and Novotny Road record drawings will be completed next spring after the Contractor completes the project. The Contractor has not asked for a partial pay estimate this period. We will be meeting with the Contractor next month to discuss quantities and anticipate a partial pay estimate will submitted in February.

EXCELSIOR ROAD, FAIRVIEW ROAD AND EDGEWOOD DRIVE FEASIBILITY REPORT
WSN Consulting Engineer Welch informed the commission this report was to study the feasibility of reconfiguring an existing transportation corridor configuration located northwest of the T.H. 210 / T.H. 371 intersection on Excelsior Road.

Recently two private developments in the project area have been under consideration, expediting the need for consideration of the proposed improvements. The recommendation is to construct a single lane roundabout at the intersection of Excelsior Road with Fairview Drive from the south and Edgewood Drive from the north.

After an extensive discussion on the road, water, sanitary sewer, and storm sewer layouts were covered the Commission consensus was that the remaining items that needed decisions were policy decisions that needed to be made directly by City Council.

MOTION by Commissioner Wolf, seconded by Commissioner Christofferson to recommend City Council approve the Excelsior Road, Fairview Road and Edgewood Drive Feasibility Report. Motion carried unanimously.

CROW WING COUNTY'S 2016 DELLWOOD DRIVE RECONSTRUCTION PROJECT LETTER

The Crow Wing County 2016 Dellwood Drive Reconstruction project letter was submitted to the commission as information only. Crow Wing County will begin tree clearing of the right-of-way starting on Monday, January 4th weather permitting.

Mike's Tree Service has been contracted to complete the work and it is expected to be completed within a few days after they start.

MILLS INDOOR SHOOTING RANGE PROJECT DEVELOPMENT AGREEMENT FINAL ACCEPTANCE

Public Works Director /City Engineer Walter informed the commission that Mills Indoor Shooting Range Project Development Agreement can now be closed out since the project has been completed per the Development Agreement and City specifications.

MOTION by Commissioner Christofferson, seconded by Commissioner Franzen to recommend City Council approve the final acceptance of the Mills Indoor Shooting Range Project as per the Development Agreement. Motion carried unanimously.

NORTHERN LAKES SENIOR LIVING PROJECT DEVELOPMENT AGREEMENT FINAL ACCEPTANCE

Public Works Director /City Engineer Walter informed the commission that Northern Lakes Senior Living Project Development Agreement can now be closed out since the project has been completed per the Development Agreement and City specifications. Final acceptance of the project can be done by the City and the Irrevocable Letter of Credit No. 105887734 in the amount of $89,510.44 can be released.

MOTION by Commissioner Wolf, seconded by Commissioner Christofferson to recommend City Council approve the final acceptance of the Northern Lakes Senior Living Project as per the Development Agreement and release the Irrevocable Letter of Credit No. 105887734 in the amount of $89,510.44 to TM Excelsior, LLC. Motion carried unanimously.

WATER METER AMI/AMR

The Water Meter AMI/AMR was submitted to the commission as information only. The project is proceeding in 2016.

WASTEWATER TREATMENT PLANT CHARGES FOR NOVEMBER 2015

The Brainerd Public Utilities Wastewater Plant Charges for November 2015 was submitted to the commission as information only.

SPECIAL MEETING

Public Works Director/City Engineer Walter requested the commission set a special meeting for January 20, 2016 to review the Bolton & Menk Pavement Management Program.

MOTION by Council Liaison Cross, seconded by Commissioner Christofferson to set a special meeting for January 21, 2016 at 5:00 p.m. to review the Bolton & Menk Pavement Management Program. Motion carried unanimously.

ADJOURNMENT

MOTION by Commissioner Wolf, seconded by Council Liaison Cross to adjourn the meeting at 8:30 p.m. Motion carried unanimously.

Approved by:

Rock Yliniemi
Chairman

Submitted by,

Mary Haugen
Administrative Assistant

SHORT FORM OF AGREEMENT BETWEEN OWNER AND ENGINEER FOR PROFESSIONAL SERVICES

THIS IS AN AGREEMENT effective as of _____ ("Effective Date") between

The City of Baxter, MN ("Owner")

and Progressive Consulting Engineers, Inc. ("Engineer").

Engineer agrees to provide the services described below to Owner for Floating Decanter ("Project").

Description of Engineer's Services: Design of a floating decanter, review shop drawing and visit site to observe its construction and operation.

1.01 Basic Agreement

A. Engineer shall provide, or cause to be provided, the services set forth in this Agreement, and Owner shall pay Engineer for such Services as set forth in Paragraph 9.01.

2.01 Payment Procedures

A. *Preparation of Invoices.* Engineer will prepare a monthly invoice in accordance with Engineer's standard invoicing practices and submit the invoice to Owner.

B. *Payment of Invoices.* Invoices are due and payable within 30 days of receipt. If Owner fails to make any payment due to Engineer for services and expenses within 30 days after receipt of Engineer's invoice, the amounts due to Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) from said thirtieth day. In addition, Engineer may, without liability, after giving seven days written notice to Owner, suspend services under this Agreement until Engineer has been paid in full all amounts due for services, expenses, and other related charges. Payments will be credited first to interest and then to principal.

3.01 Additional Services

Owner and Engineer further agree as follows:

A. If authorized by Owner, or if required because of changes in the Project, Engineer shall furnish services in addition to those set forth above.

B. Owner shall pay Engineer for such additional services as follows: For additional services of Engineer's employees engaged directly on the Project an amount equal to the cumulative hours charged to the Project by each class of Engineer's employees times standard hourly rates for each applicable billing class; plus reimbursable expenses and Engineer's consultants' charges, if any.

4.01 Termination

A. The obligation to provide further services under this Agreement may be terminated:

1. For cause,

EJCDC E-520 Short Form of Agreement Between Owner and Engineer for Professional Services
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a. Notwithstanding the foregoing, this Agreement will not terminate as a result of a substantial failure under paragraph 4.01.A.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its failure and proceeds diligently to cure such failure within no more than 30 days of receipt of notice; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

2. For convenience, by Owner effective upon the receipt of notice by Engineer.

B. The terminating party under paragraphs 4.01.A.1 or 4.01.A.2 may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to demobilize personnel and equipment from the Project site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

5.01 Controlling Law

A. This Agreement is to be governed by the law of the state in which the Project is located.

6.01 Successors, Assigns, and Beneficiaries

A. Owner and Engineer each is hereby bound and the partners, successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by paragraph 6.01.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the partners, successors, executors, administrators, and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Neither Owner nor Engineer may assign, sublet, or transfer any rights under or interest (including, but without limitation, moneys that are due or may become due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated or restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

7.01 General Considerations

A. The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with Engineer's services. Engineer and its consultants may use or rely upon the design services of others, including, but not limited to, contractors, manufacturers, and suppliers.

B. Engineer shall not at any time supervise, direct, or have control over any contractor's work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, for safety precautions and programs incident to a contractor's work progress, nor for any failure of any contractor to comply with laws and regulations applicable to contractor's work.

C. Engineer neither guarantees the performance of any contractor nor assumes responsibility for any contractor's failure to furnish and perform its work in accordance with the contract between Owner and such contractor.

D. Engineer shall not be responsible for the acts or omissions of any contractor, subcontractor, or supplier, or of any contractor's agents or employees or any other persons (except Engineer's own employees) at the Project site or otherwise furnishing or performing any of construction work; or for any decision made on interpretations or clarifications of the construction contract given by Owner without consultation and advice of Engineer.

E. The general conditions for any construction contract documents prepared hereunder are to be the "Standard General Conditions of the Construction Contract as prepared by the Engineers Joint Contract Documents Committee (No. C-700, 2002 Edition).

F. All design documents prepared or furnished by Engineer are instruments of service, and Engineer retains an ownership and property interest (including the copyright and the right of reuse) in such documents, whether or not the Project is completed.

G. To the fullest extent permitted by law, Owner and Engineer (1) waive against each other, and the other's employees, officers, directors, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to the Project, and (2) agree that Engineer's total liability to Owner under this Agreement shall be limited to $50,000

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or the total amount of compensation received by Engineer, whichever is greater.

H. The parties acknowledge that Engineer's scope of services does not include any services related to a Hazardous Environmental Condition (the presence of asbestos, PCBs, petroleum, hazardous substances or waste, and radioactive materials). If Engineer or any other party encounters a Hazardous Environmental Condition, Engineer may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until Owner: (i) retains appropriate specialist consultants or contractors to identify and, as appropriate, abate, remediate, or remove the Hazardous Environmental Condition; and (ii) warrants that the Site is in full compliance with applicable Laws and Regulations.

8.01 Total Agreement

A. This Agreement (consisting of pages 1 to 4 inclusive together with any expressly incorporated appendix), constitutes the entire agreement between Owner and Engineer and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly executed written instrument.

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9.01 Payment (Hourly Rates Plus Reimbursable Expenses)

A. Using the procedures set forth in paragraph 2.01, Owner shall pay Engineer as follows:

1. An amount equal to the cumulative hours charged to the Project by each class of Engineer's employees times standard hourly rates for each applicable billing class for all services performed on the Project, plus reimbursable expenses and Engineer's consultants' charges, if any.

2. Engineer's Standard Hourly Rates are as follows.

Project Principal	$175.00/hour
Project Engineer	$175.00/hour
Tech	$ 75.00/hour
Word Processor	$ 60.00/hour
Mileage	$ 0.55/mile

3. The total compensation for services and reimbursable expenses is not to exceed $5,000

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

OWNER:

By: _____

Title: _____

Date Signed: _____

Address for giving notices:

P.O Box 2626
13190 Memorywood Drive
Baxter MN 56425

ENGINEER: Progressive Consulting Engineers, Inc.

By: _____

Title: President

Date Signed: _____

License or Certificate No. and State 11262 MN

Address for giving notices:

6120 Earle Brown Dr.
Minneapolis, MN 55430

EJCDC E-520 Short Form of Agreement Between Owner and Engineer for Professional Services
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SHORT FORM OF AGREEMENT BETWEEN OWNER AND ENGINEER FOR PROFESSIONAL SERVICES

THIS IS AN AGREEMENT effective as of _____ ("Effective Date") between

The City of Baxter, MN ("Owner")

and Progressive Consulting Engineers, Inc. ("Engineer").

Engineer agrees to provide the services described below to Owner for Polymer Feed System ("Project").

Description of Engineer's Services: Design of a polymer feed system, including site visits to observe the feeding equipment and its operation. Evaluate results.

Owner and Engineer further agree as follows:

1.01 Basic Agreement

A. Engineer shall provide, or cause to be provided, the services set forth in this Agreement, and Owner shall pay Engineer for such Services as set forth in Paragraph 9.01.

2.01 Payment Procedures

A. *Preparation of Invoices*. Engineer will prepare a monthly invoice in accordance with Engineer's standard invoicing practices and submit the invoice to Owner.

B. *Payment of Invoices*. Invoices are due and payable within 30 days of receipt. If Owner fails to make any payment due to Engineer for services and expenses within 30 days after receipt of Engineer's invoice, the amounts due to Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) from said thirtieth day. In addition, Engineer may, without liability, after giving seven days written notice to Owner, suspend services under this Agreement until Engineer has been paid in full all amounts due for services, expenses, and other related charges. Payments will be credited first to interest and then to principal.

3.01 Additional Services

A. If authorized by Owner, or if required because of changes in the Project, Engineer shall furnish services in addition to those set forth above.

B. Owner shall pay Engineer for such additional services as follows: For additional services of Engineer's employees engaged directly on the Project an amount equal to the cumulative hours charged to the Project by each class of Engineer's employees times standard hourly rates for each applicable billing class; plus reimbursable expenses and Engineer's consultants' charges, if any.

4.01 Termination

A. The obligation to provide further services under this Agreement may be terminated:

1. For cause,

a. By either party upon 30 days written notice in the event of substantial failure by the other party to perform in accordance with the Agreement's terms through no fault of the terminating party.

b. By Engineer:

1) upon seven days written notice if Engineer believes that Engineer is being requested by Owner to furnish or perform services contrary to Engineer's responsibilities as a licensed professional;

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or

2) upon seven days written notice if the Engineer's services for the Project are delayed or suspended for more than 90 days for reasons beyond Engineer's control.

3) Engineer shall have no liability to Owner on account of such termination.

c. Notwithstanding the foregoing, this Agreement will not terminate as a result of a substantial failure under paragraph 4.01.A.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its failure and proceeds diligently to cure such failure within no more than 30 days of receipt of notice; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

2. For convenience, by Owner effective upon the receipt of notice by Engineer.

B. The terminating party under paragraphs 4.01.A.1 or 4.01.A.2 may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to demobilize personnel and equipment from the Project site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

5.01 Controlling Law

A. This Agreement is to be governed by the law of the state in which the Project is located.

6.01 Successors, Assigns, and Beneficiaries

A. Owner and Engineer each is hereby bound and the partners, successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by paragraph 6.01.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the partners, successors, executors, administrators, and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Neither Owner nor Engineer may assign, sublet, or transfer any rights under or interest (including, but without limitation, moneys that are due or may become due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated or restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

7.01 General Considerations

A. The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with Engineer's services. Engineer and its consultants may use or rely upon the design services of others, including, but not limited to, contractors, manufacturers, and suppliers.

B. Engineer shall not at any time supervise, direct, or have control over any contractor's work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, for safety precautions and programs incident to a contractor's work progress, nor for any failure of any contractor to comply with laws and regulations applicable to contractor's work.

C. Engineer neither guarantees the performance of any contractor nor assumes responsibility for any contractor's failure to furnish and perform its work in accordance with the contract between Owner and such contractor.

D. Engineer shall not be responsible for the acts or omissions of any contractor, subcontractor, or supplier, or of any contractor's agents or employees or any other persons (except Engineer's own employees) at the Project site or otherwise furnishing or performing any of construction work; or for any decision made on interpretations or clarifications of the construction contract given by Owner without consultation and advice of Engineer.

E. The general conditions for any construction contract documents prepared hereunder are to be the "Standard General Conditions of the Construction Contract as prepared by the Engineers Joint Contract Documents Committee (No. C-700, 2002 Edition).

F. All design documents prepared or furnished by Engineer are instruments of service, and Engineer retains an ownership and property interest (including the copyright and the right of reuse) in such documents, whether or not the Project is completed.

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G. To the fullest extent permitted by law, Owner and Engineer (1) waive against each other, and the other's employees, officers, directors, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to the Project, and (2) agree that Engineer's total liability to Owner under this Agreement shall be limited to $50,000 or the total amount of compensation received by Engineer, whichever is greater.

H. The parties acknowledge that Engineer's scope of services does not include any services related to a Hazardous Environmental Condition (the presence of asbestos, PCBs, petroleum, hazardous substances or waste, and radioactive materials). If Engineer or any other party encounters a Hazardous Environmental Condition, Engineer may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until Owner: (i) retains appropriate specialist consultants or contractors to identify and, as appropriate, abate, remediate, or remove the Hazardous Environmental Condition; and (ii) warrants that the Site is in full compliance with applicable Laws and Regulations.

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A. Using the procedures set forth in paragraph 2.01, Owner shall pay Engineer as follows:

1. An amount equal to the cumulative hours charged to the Project by each class of Engineer's employees times standard hourly rates for each applicable billing class for all services performed on the Project, plus reimbursable expenses and Engineer's consultants' charges, if any.

2. Engineer's Standard Hourly Rates are as follows.

Project Principal	$175.00/hour
Project Engineer	$175.00/hour
Tech	$ 75.00/hour
Word Processor	$ 60.00/hour
Mileage	$ 0.55/mile

3. The total compensation for services and reimbursable expenses is not to exceed $12,000

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

OWNER:	ENGINEER:
By: _____	By: _____
Title: _____	Title: _____
Date Signed: _____	Date Signed: _____
	License or Certificate No. and State _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____

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WIDSETH SMITH NOLTING

Brainerd/Baxter
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidsethSmithNolting.com

MEMO

Date: January 20, 2016
To: **Trevor Walter, Baxter Public Works Director**
From: Aric Welch
Cc:
Project Name: Lift Station No. 8 Reconstruction
Project No.: 0102B0375.000
Subject: **Lift Station No. 8 Pump and Control Panel Proposal**

City of Baxter is scheduled to complete reconstruction of existing Lift Station No. 8 this year as part of the continuing program to maintain all lift stations over a 20 to 25 year life cycle. To assure compatibility of control panel/radio telemetry equipment/operations, pump/impellor type, motor phase/voltage and pump base elbows, the City works with Quality Flow Systems, Inc. to provide a "standardized lift station package". This minimizes the type and amount of spare parts the City of Baxter maintains to assure timely response to lift station issues and cost effective maintenance of the 23 lift stations operated by the City.

WSN has requested a proposal from Quality Flow Systems, Inc. to supply two pumps, control panel, two aluminum access hatches, pump base elbows, submersible pressure transducer, two backup floats and accessories for the reconstruction of Lift Station No. 8. Attached is the proposal from Pat Malay at QFS for the sum of $49,770 to supply the necessary components. The pumps and equipment will be provided to the City selected contractor for installation.

QUALITY FLOW SYSTEMS, INC.
800 6th Street NW
New Prague, MN 56071
Phone(952)758-9445
Fax(952)758-9661

January 19, 2016

TO: City of Baxter
Attn: Trevor or Kevin

SUBJECT: Baxter, MN
Lift Station 8 Equipment

Dear Gentlemen;
Please find attached our proposal for the lift station equipment package. We include on-site installation assistance during the switchover.

Lift Station #8:

Two (2) KSB KRT F80-200/34X (190 mm), 5hp, 1750 rpm, 230/3, heavy duty submersible capable of pumping 149 gpm @ 38' TDH. Pumps to be furnished with the following:

a) 5HP, 1750 RPM, Explosion Proof Motor, 230/3/60
b) 3" X 4" base elbow
c) Stainless steel upper guide pipe bracket
d) 80' of 2" stainless steel guide pipe (80' total)
e) 50' of submersible power cable
f) 18' Stainless steel lifting chain
g) Handle for pump

One (1) **Lift Station - Duplex Control Panel;** Duplex pump control panel for operation on 230 Volt, 1-Phase, 60-Hz incoming service. The enclosure is 1-door; pad-mounted, NEMA 3R, 304 Stainless Steel, measuring approximately 48"H x 36"W x 12"D with 18"H leg-stand system. 3-point pad-lockable handle and steel (painted white) component chassis will be provided. The system will provide control for two (2) 5HP KSB submersible pumps in response to wetwell level as sensed by submersible level transducer (primary) and float switches (back-up). To include:

Qty	Description
1	CB; Main Disconnect; 240VAC; 100A; Service Entrance Rated
1	CB; Emergency Disconnect; 240VAC; 100A; Interlocked with Main
2	CB; Pump breaker; 240VAC; 40A
1	Control power transformer; 3KVA
1	Generator Receptacle with angle adapter
1	Control Power Breaker; 1P; 10A
1	Convenience Receptacle; GFI; with breaker; 1P; 15A
1	Switch for yard light
1	Phase monitor
1	Surge Arrestor; 3-Phase
1	Heater; Fan-forced; Thermostatically controlled
2	Light-Pilot; P-T-T; 120VAC FV; Green Fresnel Cap (equipment running)
A/R	Light-Pilot; P-T-T; 120VAC FV; Red Fresnel Cap (Various pump fails, hi level)
2	Push Button; (pump reset)
A/R	Control Relay; 3PDT; 120VAC; w/ Indicating Light (includes socket)
1	Ground Lug; 3-Conductor
1	PLC; QCI Model 1500ct; color touchscreen (Primary)
1	Symcom Model ISS-105 float controller (Back-up)
2	Mitsubishi Model F720 VFD's for phase conversion and motor starting
1	Strobe Light; Red
1	Window kit over RTMs
1	New radio, antenna and coaxial cable (100')
A/R	Terminal Block; Single; 18-10AWG

Lift Station– Loose Equipment & Instrumentation;
To include:

	Qty	Description
	1	Submersible Transducer; 4-20mA Loop powered; 60 ft cable
	2	Float Switch; Suspended; Non-mercury; 60 ft cable
	A/R	Wiring diagrams, bills of material, equipment data sheets, etc.
	A/R	Onsite start-up of pumps, pump control panel and instrumentation
One	(1)	"Halliday" 30" X 54" H1R3054 H-20 rated access cover per the cities standard.
One	(1)	"Halliday" 30" X 48" S1R3048 300lb rated access cover per the cities standard.
One	(1)	J-Hook
Two	(2)	Cable Rack
One	(1)	Engineered drawings for submittal and O&M's
One	(1)	Freight allowed to job site
One	(1)	Lot start-up and training

TOTAL DELIVERED SELLING PRICE - - $49,770.00 (+ tax included)
(Frt Allowed to Jobsite)

Should there be any questions on the above described equipment, please feel free to contact us at (952)758-9445.

Sincerely,

Patrick Malay

Pat Malay

BOLTON & MENK, INC.
Consulting Engineers & Surveyors
7656 Design Road, Suite 200 • Baxter, MN 56425-8676
Phone (218) 825-0684 • Fax (218) 825-0685
www.bolton-menk.com

MEMORANDUM

2016 PAVEMENT MANAGEMENT PROGRAM

Date: January 22, 2016

To: Trevor Walter, PE

From: Mike Rardin, PE MPR

Subject: Pavement Management Program
BMI Project B11.110059

The purpose of this memorandum is to provide information regarding a street pavement management program consisting of seven areas in the City based on a seven year sealcoat cycle. We have also updated your street pavement database and, based on the 7 proposed management areas, created a long term Capital Improvement Plan (CIP) for your use. This information will allow the City to consider, adopt, and fund an official pavement management plan for the long term.

Problem Statement

The City's streets are beginning to wear out and there is no formal City program to provide for the preservation and perpetuation of existing City streets. The City desires to consider establishing a formal pavement management program to provide for the long term maintenance, rehabilitation, or reconstruction of City streets beyond the filling of potholes, patching, and crack filling that is currently being done.

Providing a mechanism now, to address the problem of deteriorating streets, is a responsible action for the city to take and will help avoid having a large portion of the network deteriorate all at once. A street pavement management program can extend pavement life and enhance system-wide performance in a cost-effective and efficient way by providing the right maintenance or repair at the right time.

BMI Study

During 2013 an engineering inspection and evaluation of each street, based on the PASER methodology, was completed by Bolton & Menk, Inc. (BMI). Based on that study, BMI produced the "Comprehensive Pavement Management System" report, dated July 16, 2013, which identified a maintenance and rehabilitation strategy with associated costs for every City owned paved street. Street segments were prioritized based on their condition ratings providing the City a "guide" to future road maintenance / rehabilitation needs and costs.

The following recommendations were provided in the 2013 BMI report:

1. Adopt the 2013 plan as a framework for future maintenance of City Streets.
2. Continue the ongoing crack rout/seal program and begin a sealcoat program to extend the life of the streets with condition ratings of 6 (<15 years old) and higher.
3. Formalize an ongoing mill and overlay program for streets with condition ratings of 5 and for those segments rated 6 that are 15 years and older.
4. Increase the total annual budget amount for street maintenance in order to maintain all streets with a condition rating of 5 and above. This increase, based on a 5-year Preservation Budget Plan, would bring the proposed Local Aid type street funding levels for sealcoat to $302,600/year and the proposed funding levels for mill and overlay to $1,461,000/year.
5. Street reconstruction and reclamation/paving for streets with condition ratings of 1-4 should be financed and completed separately as non-preservation improvements that would be implemented when other factors deem the timing appropriate. Financing could be done in multiple ways, including but not limited to, assessments and bonding.
6. Municipal State Aid Funds are available for State Aid street maintenance and improvements. The City should increase the maintenance portion of the MSA allocation to at least 25%, or even consider increasing to 35% to accelerate pavement preservation activities. The MSA street plan could be handled separately from the Local Aid street preservation plan since the MSA program will provide the City a constant source of revenue to draw from and/or leverage toward MSA bonding.
7. Although many budgeting options can be developed, it is important that the budget plan optimize the remaining pavement life by aggressively targeting preservation improvements first.
8. The City should use the information provided within the 2013 report as part of the comprehensive Capital Improvement Planning process. In so doing, the City will better prioritize improvement needs and more effectively manage assets.
9. Annual segment evaluation and management plan updates are recommended for street segments that receive heavier traffic volumes or that are currently rated in the 5 to 6 condition range. Street segments that have lighter traffic volumes are recommended to be inspected on a two year cycle. Forecasting PASER values is an inexact science as the environment and varying uses of roadways present numerous variables that will ultimately determine a future roadway condition. Through repetition of the surface evaluation, the City will be able establish their own deterioration curves and better predict the pavement lifecycle for Baxter streets.

2014 and 2015 Street Project Implications

Based on the 2013 BMI plan, citywide sealcoat and rehabilitation projects were undertaken in 2014 and 2015. During the development of these projects, the following questions, not all inclusive, were raised:

1. Why are streets being repaired "randomly" across the community? What is the rationale for that?
2. Can this work be consolidated into more well defined areas for easy explanation and understanding?

3. Will consolidation of this work be more economical? Of less impact to property owners?
4. Can a program be developed that would allow for flexible routine repairs with relatively uniform funding needs? Can annual costs vary to allow for doing the right thing at the right time while at the same time keeping funding and costs relatively uniform or stable over the long term with less inflationary impacts?

Based on these questions, the City felt a need to update their pavement database and consider a formal Pavement Management Program that could meet their needs now and into the future.

Proposed Program Concepts

During 2015 BMI updated ratings in the City's pavement database reflecting actual 2014 and 2015 street projects; however, citywide street pavement evaluations (ratings) were not performed. Based on this update, a Pavement Management Program has been developed for City discussion and consideration. The proposed pavement program, including the updated street pavement database, is attached as **"Exhibit A - Street Pavement Management Program"**.

The following major concepts are included in the proposed program:

1. Appropriate pavement maintenance and rehabilitation done at the proper time reduces City pavement costs over the long term
2. The PMS methodology used is the PASER system
3. Preventive maintenance strategies consist of patching, crack sealing, and seal coating
4. Rehabilitation strategies consists of overlays, reclamation, and reconstruction
5. Preventive maintenance strategies are employed on streets with PASER ratings of 6 or higher
6. Rehabilitation strategies are employed on streets with PASER ratings of 5 and lower
7. The City is divided into seven (7) pavement management areas, of roughly comparable size, to the extent practicable
8. Street inspections and PASER ratings are scheduled for 2016 and every 3 years thereafter
9. Rehabilitation projects are prioritized with worst being considered first
10. Future utility coordination and development efforts are factored into project identification and prioritization
11. Paved streets that are expected to be reconstructed in conjunction with future utility installations (water / sewer) will not be programmed for preventive maintenance or rehabilitation activities under this program
12. This program is aimed at addressing existing City (local and MSA) street pavement preservation and perpetuation needs only
13. Construction of new (additional) streets and enhancement or reconstruction of existing streets due to utility or redevelopment needs are acknowledged in the street database but are not funded under this program

Proposed CIP

Based on the proposed program and City staff input, BMI has developed a long term pavement management plan beginning in 2016 with rehabilitation projects in Area 6 and maintenance projects in Area 3. Based on the long term plan, a CIP was developed - see **"Appendix A - Street Pavement Management Program"**. The CIP provides for planned pavement

management activities as well as other previously planned street projects being considered by the City.

The following should be noted regarding the CIP provided in the proposed plan:

1. projects in the City's current 5-year CIP are highlighted in blue
2. in order to meet the current 2016 sealcoat budget of $200,000 and $500,000 annually thereafter, along with aligning with past sealcoat and rehabilitation projects, some sealcoat projects had to be deferred from their initial "plan" year to a future year; those projects are highlighted in tan
3. there are approximately thirty (30) rehabilitation projects in the plan that are not currently in the adopted City CIP; those proposed projects should be placed in the City's official 5 year CIP or deferred to a future year to be determined
4. new construction projects funded outside this program have been highlighted in green
5. streets identified for future utility installations are highlighted in pink; reconstruction costs (current dollars) are estimated and shown for informational purposes; and, no maintenance activities are programmed fort these streets
6. finally, three (3) streets contained in the current CIP scheduled as 2018 mill / overlay projects were sealcoated during 2015 and could be dropped from the CIP as mill / overlay projects

Maps

BMI has developed a map showing the 7 pavement management areas - see **"Appendix B - Street Pavement Management Program"**. For illustrative purposes sealcoat maps are shown for 2016 (area 3) and 2017 (area 4) - **"Exhibits B and C - Sealcoat Maps"**.

Funding

Based on the proposed Pavement Management Plan and long term management activities, the program cost is currently estimated at $2,010,000 per year. This cost is comprised of two categories - maintenance (sealcoating) currently estimated to cost $370,000 per year and rehabilitation (mill & overlays, reclamation, and reconstruction) currently estimated to cost $1,640,000 per year. Currently programmed and projected program costs are shown in **"Appendix D - Street Pavement Management Program"** attached. We suggest a fund be established for this program and that it be capitalized with adequate funds to accommodate annual program cost fluctuations. Prior capitalization of this fund will allow for annual fluctuations in costs and inflation creep for some time. However, the City should expect the need for revenue increases approximately every three to five years.

We understand that a preventive maintenance (sealcoat) budget has been established in the amount of $200,000 for 2016 and $500,000 annually thereafter. Pavement rehabilitation projects are currently programmed through 2022 at an annual cost of $1,640,000 - this amount is expected to decrease in the future once deferred rehabilitation work has been completed.

Summary

This program is intended to establish a formal practice and funding to preserve and perpetuate existing City (local and MSA) street pavements. Funding for new (additional) street projects and

street projects required due to utility and development needs is not provided for in this program and those projects should be addressed separately outside this program when they are being proposed.

We suggest City street pavements be inspected and PASER rated in 2016 to monitor overall network condition and to allow for future programming of preventive maintenance and rehabilitation activities per the proposed Street Pavement Management Program.

The attached 2016 and 2017 sealcoat maps can be used for the City sealcoat projects for those respective years.

The following streets can be removed from the current City CIP as mill / overlay projects scheduled for 2018 since they were sealcoated last year:

Segment ID	Road Name	Begin	End
327-030	Cedar Scenic Road	Burr Oak Dr	Red Sequoia Dr
448-010	Northwoods Drive	Cottage Grove	Camden Rd
448-020	Northwoods Drive	Camden Rd	Clearwater Rd

A resolution adopting this program has been prepared for City use and is attached as **"Exhibit D - Resolution Adopting Pavement Management Program"**.

Attachments:

Exhibit A - Street Pavement Management Program
Exhibit B - 2016 Sealcoat Map
Exhibit C - 2017 Sealcoat Map
Exhibit D - Resolution Adopting Pavement Management Program

Exhibit A

Street Pavement Management Program

City of Baxter

Street Pavement Management Program

Prepared By: Bolton & Menk, Inc.

January 22, 2016

CERTIFICATION

Street Pavement Management Program

For

City of Baxter, Minnesota

Bolton & Menk Project No. B11.110059

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: Michael P. Rardin

Michael P. Rardin, P.E.
License No. 14482

Date: January 22, 2016

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PROGRAM PURPOSE

Delays in maintenance increase the quantity of pavement defects and their severity so that when corrected, the rehabilitation cost is much greater. It is beneficial from both a cost and user perspective to focus on preventive maintenance efforts, where possible, to extend pavement life and enhance system-wide performance in a cost-effective and efficient way by providing the right maintenance or repair at the right time.

Therefore, the purpose of this program is to:

1) Preserve and perpetuate existing City owned local and MSA street pavements in a fiscally responsible manner
2) Correct pavement deficiencies and slow the rate of pavement deterioration
3) Consider immediate and long term needs of existing local street pavements
4) Coordinate pavement maintenance and rehabilitation with utility repairs and redevelopment efforts
5) Provide information for better informed and involved decision making

Providing a mechanism, to address the problem of deteriorating streets, is a responsible action for the City to take and will help avoid having a large portion of the network deteriorate at any one time.

PROGRAM GOAL

The goal of the Street Pavement Management Program is to continuously maintain the City owned (local and MSA) street system in a safe and fiscally responsible manner. To accomplish this, the Public Works Department will program and implement long-term, cost-effective maintenance and rehabilitation strategies in a manner intended to maximize street pavement lives at the lowest long term cost.

To accomplish this, preventive maintenance activities (crack sealing and sealcoats) should be performed on local streets with PASER ratings of 6 and higher; and, rehabilitation activities should be performed on local streets with PASER ratings of 5 and lower.

BACKGROUND

The City's street network consists of approximately 84 miles of paved roadways. Of this total, approximately 68 miles are local streets and 16 miles are Municipal State Aid (MSA) streets. There are approximately 9.0 miles of privately owned and maintained streets in the City of which about 0.4 mile are paved.

The City of Baxter is a relatively young community with buried infrastructure that has substantial useful life remaining. Most paved streets were constructed after 1980 and the paved roadway system was significantly expanded during the late 1990s/early 2000s due to the commercial and residential development boom. As a result, past street pavement management consisted of minimal emphasis on pavement maintenance as it was not necessary at the time.

There are approximately 10.3 miles of paved local (non MSA) streets without utilities (water / sewer). The City intends reconstruct these streets in conjunction with future utility installations.

At this time the most common pavement distress defects noted for the City streets are transverse and shrinkage cracks. There are minimal pavement distresses associated with rutting, corrugations, shoving or excess asphalt. A majority of the streets in Baxter are in relatively good condition. Many of the transverse and longitudinal road cracks have been routed and sealed, an indication this maintenance procedure has been occurring. Sealcoating of some streets began in 2014 with additional street sealcoating done during 2015. Rehabilitation of select streets began in 2014 with many currently programmed for rehabilitation.

PAVEMENT MANAGEMENT SYSTEM

In 2013, BMI developed and the City accepted the PASER Pavement Management System (PMS) to assist in identifying and tracking street pavement performance and condition at a network level of management (Street Pavement Database). This system is able to objectively evaluate the condition of a street, establish a pavement rating condition, and estimate its maintenance / rehabilitation needs. The PASER methodology is based on a consistent numeric rating scale ranging from 10 for a newly surfaced street to 1 for a failed surface. Ratings are obtained from a field inspection of the entire street surface based on the quantity, type, and severity of distresses in the pavement. This evaluation is done in a manner to assure that similar sections consistently receive similar ratings.

The PASER PMS methodology "predicts" what a typical life cycle might be for a bituminous or concrete surfaced street. Naturally, any individual street's life can vary significantly depending on the volume and weight of traffic, soil conditions, etc. However, using the "predicted" life cycle experiences of similar pavements results in the following PASER recommended pavement management strategies:

Pavement Rating Condition	Typical Recommended Management Strategy	
	Category	Strategy
9 - 10	Maintenance	Seal Coat
6 - 7 - 8	Maintenance	Crack Rout & Seal, Patching, Sealcoating
5 - 6	Rehabilitation	Mill & Overlay
3 - 4	Rehabilitation	Full Depth Reclamation & Paving
1 - 2	Rehabilitation	Full Depth Reconstruction

The Street Pavement Database, shown in Appendix A, was developed by BMI in 2013 and updated in 2015 to fit this program. The database consists of all city and private streets along with their respective pavement ratings and management strategies and is used as the basis for pavement management planning.

PROGRAM METHODOLOGY

A seven-year rotation or cycle will be utilized to allow maintenance and rehabilitation activities to be focused in one "area" of the City per year. A seven-year cycle was chosen based on preventive maintenance research which shows that roads, in good condition, should be sealcoated every 5-7 years. Based on this cycle, the City was divided into 7 management areas of comparable size (Appendix B). The areas were also divided along physical boundaries where possible.

Using 2015 updated PASER ratings, a weighted overall condition rating was established for each area. Rehabilitation projects were programmed in those areas with the greatest amount of poor pavement (worst is first). Preventive maintenance activities (crack filling and sealcoating) were programmed for those same respective areas three years later in order to sealcoat the newly-paved streets.

Based on recent past construction and maintenance activities, the following initial rotation schedule was developed:

PMP Area	Rehabilitation Year	Maintenance Year	Inspection Year
3	-	2016	2016
4	-	2017	2016
5	-	2018	2016
6	2016	2019	2016
7	2017	2020	2016
1	2018	2021	2016
2	2019	2022	2016
3	2020	2023	2019
4	2021	2024	2019
5	2022	2025	2019

PROGRAM ELEMENTS

The following items comprise the iterative steps that are proposed to be taken in order to deliver on the program's objectives.

Evaluation

The PMS establishes a network-level analysis of the street segments and recommends a management strategy based upon similar pavements. Project level analysis has been or will be completed for each area to verify that 1) the streets identified for maintenance or rehabilitation are the correct ones and, 2) that an appropriate management strategy is decided upon.

Several years prior to the planned improvement, the City will re-evaluate programmed pavements to verify the information and strategies in the PMS database. Staff will also verify the need for utility repair or replacement in conjunction with street rehabilitation projects.

Finally, possible or planned redevelopment efforts and commercial business needs as well as Comprehensive Plan initiatives will be taken into consideration in deciding upon a management strategy for each street being evaluated for maintenance or rehabilitation.

Paved streets that are expected to be reconstructed in conjunction with future utility installations (water / sewer) will not be programmed for preventive maintenance or rehabilitation activities under this program.

Streets should be rated at least every 2 to 3 years to keep the network database accurate to ensure good long term planning and CIP development. A 3 year inspection (pavement rating) schedule is utilized in this program.

Project Identification and Selection

Based on the PASER analysis, visual evaluations, test reports, and utility and development related needs, staff will determine street segments in need of maintenance or rehabilitation for the first 7 years of the program. Then, appropriate maintenance and rehabilitation strategies will be applied to the segments based upon the factors discussed above. Projects will be identified and their appropriate management strategies will be used to create a long term pavement management plan, Appendix C. The first five years of the pavement management plan will be used as the basis for the City's Street CIP.

Construction

The selected segments within an area will be combined or divided into various projects based upon staff's determination of project scope, complexity, etc. Projects will be coordinated to ensure that property owner disruption is minimized to the extent possible.

PAVEMENT MANAGEMENT STRATEGIES

The following strategies will be used in the street Pavement Management Program. Each has its own life cycle and contributes to extending the life of a given pavement section differently and in varying degrees.

Miscellaneous Patching

A significant maintenance effort incorporating "isolated" subgrade correction, patch & repair, milling and placement of structural or leveling overlays. This work is usually performed 1-2 years before an area is scheduled to be sealcoated or microsurfaced.

Crack Sealing

Crack sealing is the placement of a sealant in a crack that has been thoroughly cleaned and dried. This provides a protective coating and seals out water. This work is usually performed prior to a sealcoat or microsurfacing application.

Sealcoating

This is the surface application of an asphalt emulsion followed by the placement of small-graded aggregate (rock). The purpose of this treatment is to seal the pavement surface from oxidation and the effects of moisture and may also add surface friction to the pavement. Sealcoating can extend the life of a pavement in good condition by 5-7 years.

Sealcoating will be performed on a similar cycle as the more intensive street maintenance efforts, however, it will lag three (3) years behind the rehabilitation or reconstruction program which allows for the sealcoating of newly constructed streets. Sealcoating newly paved streets in the 2 - 4 year range has been shown to be a proactive long-term preventive maintenance strategy for pavements.

Mill & Overlay/Resurfacing

This process becomes necessary when the upper surface layer (1"-2") of a pavement has deteriorated considerably. Milling consists of grinding the existing bituminous surface down at the outside edges or in some cases the entire pavement width is milled to a uniform depth, depending on the extent of the surface distresses. In either situation, milling removes degraded pavement and creates an even surface assuring a consistent thickness of new pavement. Resurfacing can extend the life of a pavement by 10-15 years.

Pavement Reclamation, Removal, or Replacement

All existing asphalt pavement is removed through a full-depth milling process, pulverized to a specific gradation, reclaimed and recycled in with the existing aggregate base before a new full-depth hot mix asphalt pavement is installed. Pavement removal and replacement establishes a new pavement section that can last for 20-40 years depending on subsequent maintenance, condition of underlying utilities, and curb condition.

Reconstruction

This option may incorporate the same procedure as pavement removal and replacement; however, it may also involve subgrade soil corrections, removal of aggregate base, replacement of curb & gutter, utility reconstruction, and accessory constructions. A new full-depth hot mix asphalt pavement is then installed. Reconstruction establishes a new pavement section that can last for 40-60 years depending on subsequent maintenance.

The following elements will be incorporated as a part of the various strategies to the extent deemed necessary:

Utility Repair or Replacement

City staff, as well as representatives from the private utilities (Electric, Gas, and Telecommunications) will be consulted to determine existing infrastructure reliability and need for replacement. Needed repairs will be coordinated with planned street maintenance and rehabilitation projects to the extent practicable. Non-disruptive construction methods may be required for utility projects if a street pavement is in relatively good condition.

Concrete Curb & Gutter Installation or Repair

Spot repair of curb & gutter will only be undertaken when needed to promote pavement drainage. Scraped or scuffed curbing, that is functionally sound, will not be replaced. Repairs will be made with matching curb or of a design similar to the existing curb.

Sidewalk and Trail Repair or Replacement

Repair or replacement of sidewalks and trails will only be done in conjunction with major rehabilitation or reconstruction projects, and then only as needed. Spot repairs or replacement of sidewalks and trails is normally addressed outside this program.

Driveway Reconstruction

During certain rehabilitation strategies it may be necessary to replace a driveway apron and/or a portion of a driveway to facilitate street construction. Driveways will only be repaired to the extent necessary to achieve the needed street construction.

Due to the convenience of having a general contractor in the area, many residents may request their driveway be paved in conjunction with the project. Staff will facilitate this process by connecting the individual property owners with the contractor but will not incorporate private work into public projects.

Trees

Trees will be protected from damage and/or removal to the extent possible. In some instances removal of trees for the benefit of the overall project may be necessary, i.e. replacement of curbing or a ditch to achieve positive drainage.

Retaining Walls
Replacement of retaining walls, located on City right-of-way, will only be undertaken where the street project necessitates removal of all or part of the wall; or, where the wall is substantially out of alignment (vertically or horizontally) to the point where failure of the wall is imminent. Replacement of retaining walls, on private property, will be undertaken only where the street project necessitates that be done.

Right-of-way Encroachments
Removal and relocation of right-of-way encroachments, i.e. fences, shrubs, sprinkler systems, etc. shall be completed by, and at the expense of the adjacent property owner.

The following table summarizes the work elements that will be considered in conjunction with implementation of each management strategy:

Type of Work	Sealcoating	Mill & Overlay	Pavement Replacement	Reconstruction
Utility Repair or Replacement		X	X	X
Curb & Gutter Repair or Installation		X	X	X
Sidewalk Repair or Installation		X	X	X
Streetlighting Repair or Installation				X
Trees				X
Retaining Walls				X
Right-of-Way Encroachments				X

COMMUNICATION & OUTREACH

City staff will determine the streets designated for maintenance and rehabilitation as well as the appropriate management strategy. However, citizen input may be desired at times to deal with concerns about drainage, trees, utility problems, etc. as well as significant neighborhood events.

Informational pieces on the overall program and purpose will be placed on the City's web page.

Typical Project Implementation Timeline
The following schedule is a guideline to be used for property owner review and communication. The purpose of the meetings with residents will not be to discuss the merits of the project nor to modify the results of the engineering analysis on the proper method or extent of repair. Instead, the intent of the meetings will be to answer resident questions about the design & construction process, to identify opportunities to correct existing problems or minimize possible inconvenience, and to establish and maintain resident communication from project development through construction.

Task/Step	Time Prior to Construction	Example Timeline
Notice of proposed project; information on property owner responsibility for right-of-way encroachment issues (as appropriate)	18 months	Jan. 2017
Request for information from adjacent property owners	12 months	May 2017
Initial resident meeting; primary purpose is to identify issues that would affect design	10 months	July 2017
Feasibility Report to City Council (consider preliminary plans)	6-7 months	Nov. - Dec. 2017
Resident meeting to review preliminary plans	6-7 months	Dec. - Jan. 2018
Project approval/final plan approval by City Council (written notice mailed to residents)	2 months	Jan. - Feb. 2018
Pre-construction meeting with residents	2-4 weeks	April - May 2018
Construction	-	May - Oct. 2018

FUNDING

Based on the 2015 updated database and the PASER analysis methodology, it appears that an annual investment of $2,040,000 is needed to maintain the local street network as described above. This cost is comprised of two categories - **maintenance** (sealcoating) currently estimated to cost $400,000 per year; and, **rehabilitation** (mill & overlays, reclamation, and reconstruction) currently estimated to cost $1,640,000 per year. Future rehabilitation costs are expected to decrease from this initial amount as the City catches up with past deferred maintenance on streets. Projected program funding needs are shown in Appendix D - Pavement Management Program Funding.

PROGRAM BENEFITS

The following items have been identified as overall benefits of the program:

Objective & fair program

Various street segments are evaluated objectively based upon quantitative data. The selected maintenance strategies are based upon the latest pavement research and designed to improve the overall pavement network.

Proactive maintenance extends pavement life-cycle

Effective maintenance strategies are used to extend the life-cycle of the pavement and are designed in anticipation of future maintenance efforts.

Higher level of service to the public

Drainage, rideability, surface friction and overall aesthetic appearance are improved thus providing a higher level of service to the traveling public who use the streets as well as those who live adjacent to them.

Consolidated work plan

Street maintenance, rehabilitation, and reconstruction activities, for a given year, are consolidated into one of seven (7) areas in the City. This results in lower mobilization costs to contractors, more efficient communication with residents, and less inconvenience to property owners and the traveling public.

SUMMARY

The historical approach to managing pavements has been reactive – wait until pavements fail then fix them. The investment in good or fair pavements and the use of quantitative data was limited. With the establishment of a Pavement Management Program, street segments and associated rehabilitation strategies, which benefit the network as a whole, are identified first. From there, individual projects are analyzed and verified at the project level. This new approach is proactive, and emphasizes preservation and perpetuation of the existing system along with enhanced system-wide performance through thoughtful, conscientious application of the right pavement management strategy at the right time.

Appendix A

Street Pavement Database

Street Pavement Database
January 22, 2016

Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
101-010	HIGHLAND SCENIC RD	D2	7	COUNTY			527.1379789		Asphalt	COUNTY		9							
101-020	HIGHLAND SCENIC RD	D2 / E2	7	COUNTY			987.6457521		Asphalt	COUNTY		9							
101-030	HIGHLAND SCENIC RD	E2	7	COUNTY			943.9834525		Asphalt	COUNTY		9							
101-040	HIGHLAND SCENIC RD	E2	7	COUNTY			277.8386477		Asphalt	COUNTY		9							
101-050	HIGHLAND SCENIC RD	E2	7	COUNTY			56.42040128		Asphalt	COUNTY		9							
101-050	HIGHLAND SCENIC RD	E2	7	COUNTY			997.7273188		Asphalt	COUNTY		9							
101-060	HIGHLAND SCENIC RD	E2	7	COUNTY			1281.842633		Asphalt	COUNTY		9							
101-070	HIGHLAND SCENIC RD	E3	7	COUNTY			3483.623632		Asphalt	COUNTY		9							
101-080	HIGHLAND SCENIC RD	E3	5	COUNTY			3.854315116		Asphalt	COUNTY		10							
101-090	HIGHLAND SCENIC RD	E3	5	COUNTY			1959.420498		Asphalt	COUNTY		9							
101-095	HIGHLAND SCENIC RD	E3	5	COUNTY			57.01376999		Asphalt	COUNTY		9							
101-100	HIGHLAND SCENIC RD	E3 / E4	5	COUNTY			1936.628126		Asphalt	COUNTY		9							
101-110	HIGHLAND SCENIC RD	E4	5	COUNTY			752.6203862		Asphalt	COUNTY		9							
101-120	HIGHLAND SCENIC RD	E4	5	COUNTY			577.6359675		Asphalt	COUNTY		9							
101-130	HIGHLAND SCENIC RD	E4	5	COUNTY			2260.721418		Asphalt	COUNTY		9							
101-140	HIGHLAND SCENIC RD	E4	5	COUNTY			724.6513025		Asphalt	COUNTY		9							
101-150	HIGHLAND SCENIC RD	E4	5	COUNTY			1465.574817		Asphalt	COUNTY		9							
101-160	HIGHLAND SCENIC RD	E4 / E5	5	COUNTY			997.2837738		Asphalt	COUNTY		9							
101-170	HIGHLAND SCENIC RD	E5 / D5	5	COUNTY			808.1737698		Asphalt	COUNTY		9							
101-180	HIGHLAND SCENIC RD	D5	5	COUNTY			115.5397735		Asphalt	COUNTY		9							
101-190	HIGHLAND SCENIC RD	D5	5	COUNTY			1248.423789		Asphalt	COUNTY		9							
101-200	HIGHLAND SCENIC RD	D5	5	COUNTY			436.9439372		Asphalt	COUNTY		9							
101-210	HIGHLAND SCENIC RD	D5	5	COUNTY			1168.043196		Asphalt	COUNTY		9							
101-220	HIGHLAND SCENIC RD	D5	5	COUNTY			1111.826398		Asphalt	COUNTY		9							
102-010	MAPLETON RD	F1	7	COUNTY			5540.728938		Asphalt	COUNTY	30	7				2005	2005		
102-020	MAPLETON RD	F1 / F2	7	COUNTY			5140.288958		Asphalt	COUNTY	30	7				2005	2005		
102-030	MAPLETON RD	F2 / F3	7	COUNTY			2545.870542		Asphalt	COUNTY	30	7		26	7355	2003	2003		
102-040	MAPLETON RD	F3	6	COUNTY			1225.396884		Asphalt	COUNTY	30	7		26	3540	2003	2003		
102-050	MAPLETON RD	F3	6	COUNTY			1416.999575		Asphalt	COUNTY	30	7		28	4408	1999	1999		
102-060	MAPLETON RD	F3	6	COUNTY			2631.00569	RURAL	Asphalt	COUNTY	30	7		28	8185	1999	1999		
102-070	MAPLETON RD	E3	6	COUNTY			2631.00569	RURAL	Asphalt	COUNTY	30	10		24	7016	2015	2015		
103-010	PINE BEACH RD	A3	3	COUNTY			615.2566875		Asphalt	COUNTY									
103-020	PINE BEACH RD	A3	3	COUNTY			81.88964735		Asphalt	COUNTY									
107-010	STATE HWY 210	D1	7	STATE			1319.835556			STATE		10							
107-020	STATE HWY 210	D1	7	STATE			461.5080772			STATE		10							
107-025	STATE HWY 210	E1	7	STATE			1460.373964			STATE		10							
107-030	STATE HWY 210	E1 / E2 / D2	7	STATE			7270.087342			STATE		10							
107-040	STATE HWY 210	D2 / D3	7	STATE			3782.557275			STATE		10							
107-050	STATE HWY 210	D3	7	STATE			2057.125541			STATE		10							
107-060	STATE HWY 210	D3 / D4	5	STATE			4084.59113			STATE		10							
107-070	STATE HWY 210	D4	5	STATE			1239.757853			STATE		10							
107-080	STATE HWY 210	D4	5	STATE			1289.855128			STATE		10							
107-090	STATE HWY 210	D4 / C4 / C5	5	STATE			3699.978607			STATE		10							
107-100	STATE HWY 210	C5	5	STATE			513.5829019			STATE		10							
107-110	STATE HWY 210	E1	1	STATE			2945.465599			STATE		10							
107-120	STATE HWY 210	E2 / D2	1	STATE			2549.884287			STATE		10							
107-130	STATE HWY 210	E1 / E2 / D2	1	STATE			1756.085852			STATE		10							
107-140	STATE HWY 210	D2 / D3	2	STATE			3781.986287			STATE		10							
107-150	STATE HWY 210	D3	2	STATE			1963.194755			STATE		10							
107-160	STATE HWY 210	D3 / D4	3	STATE			4193.915807			STATE		10							
107-170	STATE HWY 210	D4	3	STATE			1250.312688			STATE		10							
107-175	STATE HWY 210	D4	4	STATE			66.93839438			STATE		10							
107-180	STATE HWY 210	D4	4	STATE			1285.827198			STATE		10							
107-190	STATE HWY 210	D4 / C4 / C5	4	STATE			3678.347855			STATE		10							
107-195	STATE HWY 210	C5	4	STATE			66.75859319			STATE		10							
107-200	STATE HWY 210	C5	4	STATE			534.6011441			STATE		10							
108-010	STATE HWY 371	E3 / F3	6	STATE			7663.274899		Asphalt	STATE		10							
108-020	STATE HWY 371	E3 / F3	6	STATE			7648.921673		Asphalt	STATE		10							
108-030	STATE HWY 371	E3 / E4 / D4	5	STATE			5810.3484		Asphalt	STATE		10							
108-040	STATE HWY 371	E3 / E4 / D4	5	STATE			5803.288504		Asphalt	STATE		10							
108-050	STATE HWY 371	D4	5	STATE			2688.063149		Asphalt	STATE		10							
108-060	STATE HWY 371	D4	5	STATE			2678.217866		Asphalt	STATE		10							
108-070	STATE HWY 371	D4	5	STATE			82.08388702		Asphalt	STATE		10							
108-080	STATE HWY 371	D4	5	STATE			82.2116351		Asphalt	STATE		10							

Street Pavement Database
January 22, 2016

Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
108-090	STATE HWY 371	C4 / D4	3	STATE			948.0965844		Asphalt	STATE		10							
108-100	STATE HWY 371	C4 / D4	4	STATE			941.0415592		Asphalt	STATE		10							
108-110	STATE HWY 371	C4	3	STATE			2657.013312		Asphalt	STATE		10							
108-120	STATE HWY 371	C4	4	STATE			2656.646076		Asphalt	STATE		10							
108-130	STATE HWY 371	B4 / C4	3	STATE			2793.109799		Asphalt	STATE		10							
108-140	STATE HWY 371	B4 /C4	4	STATE			2790.792253		Asphalt	STATE		10							
108-150	STATE HWY 371	B4	3	STATE			3094.889737		Asphalt	STATE		10							
108-160	STATE HWY 371	B4	4	STATE			3041.093365		Asphalt	STATE		10							
108-170	STATE HWY 371	A4 / B4 /	3	STATE			1850.710247		Asphalt	STATE		10							
108-180	STATE HWY 371	A3 / A4 / B4	4	STATE			2138.834076		Asphalt	STATE		10							
108-190	STATE HWY 371	A3	3	STATE			2057.215183		Asphalt	STATE		10							
108-200	STATE HWY 371	A3	4	STATE			1778.410917		Asphalt	STATE		10							
108-210	STATE HWY 371	A3	3	STATE			596.0171916		Asphalt	STATE		10							
108-220	STATE HWY 371	A3	4	STATE			687.0075371		Asphalt	STATE		10							
109-010	WISE RD	A3	3	COUNTY			991.3742106		Asphalt	COUNTY									
301-010	AFTON RD	C3	3	LOCAL			171.9995276	RURAL	Asphalt	CITY_1	30	4		26	497	2004	2004		8
301-020	AFTON RD	C3	3	LOCAL			328.4281855	RURAL	Asphalt	CITY_1	30	4		26	949	2004	2004		8
301-030	AFTON RD	C3	3	LOCAL			182.736972	RURAL	Asphalt	CITY_1	30	4		26	528	2004	2004		8
302-010	ART WARD DR	D2	2	LOCAL			398.4089157	RURAL	Asphalt	CITY_4		4		26	1151	2005	2005		7
302-020	ART WARD DR	D2	2	LOCAL			456.725916	RURAL	Asphalt	CITY_4		4		26	1319	2005	2005		7
302-030	ART WARD DR	D2	2	LOCAL			559.5001604	RURAL	Asphalt	CITY_4		4		26	1616	2005	2005		7
303-010	ASHDALE LN	E2	7	LOCAL			1175.020143	RURAL	Asphalt	CITY_3	30	4		24	3133	1991	1991		6
303-020	ASHDALE LN	E2	7	LOCAL			702.674644	RURAL	Asphalt	CITY_3	30	4		24	1874	1991	1991		6
303-030	ASHDALE LN	E2	7	LOCAL			279.5901053	RURAL	Asphalt	CITY_3	30	4		24	746	1991	1991		6
304-010	ASHLEY RD	B1 / B2	2	LOCAL			2836.575347	RURAL	Asphalt	CITY_2	30	4	Y	24	7564	1995	1995		6
305-010	ATWATER RD	C3	3	LOCAL			183.0000075	RURAL	Asphalt	CITY_2	30	4		26	529	2005	2005		8
305-020	ATWATER RD	C3	3	LOCAL			604.5069943	RURAL	Asphalt	CITY_2	30	4		26	1746	2005	2005		8
305-030	ATWATER RD	C3	3	LOCAL			588.4108827	RURAL	Asphalt	CITY_2	30	4		26	1700	2005	2005		8
306-010	AUDUBON WAY	A4	4	LOCAL			1165.557044	URBAN	Asphalt	CONTRACT	30	7		36	4662	2004	2004		7
306-020	AUDUBON WAY	A4 / B4	4	LOCAL			923.5148682	URBAN	Asphalt	CONTRACT	30	7		36	3694	2004	2004		7
307-010	AUSTIN RD	C3	3	LOCAL			496.5119594	RURAL	Asphalt	CITY_1	30	4		26	1434	2004	2004		7
308-010	BARBERRY CT	C3	2	LOCAL			238.1133537	RURAL	Asphalt	CITY_2	30	4		26	688	2004	2004		7
309-010	BASSWOOD RD	D4	5	LOCAL			603.6638731	RURAL	Asphalt	CITY_3	30	4		26	1744	1994	1994		6
310-010	BAXTER DR	C5	4	LOCAL			358.4102648	URBAN	Asphalt	CONTRACT	30	4		42	1673	2003	2003		8
310-020	BAXTER DR	C5	4	LOCAL			223.7316383	RURAL	Asphalt	CONTRACT	30	4		24	597	1979	2002		7
310-030	BAXTER DR	C5	4	LOCAL			418.2661529	RURAL	Asphalt	CONTRACT	30	4		24	1115	1979	2002		6
310-040	BAXTER DRIVE	C5	4	LOCAL			612	URBAN	Asphalt		30	4		24	1632				6
311-010	BAXTER LIONS RD	D2	2	LOCAL			467.9212043	RURAL	Asphalt	CITY_4	30	4		26	1352	2005	2005		7
312-010	BAYWOOD RD	C2	2	LOCAL			861.2087381	RURAL	Asphalt	CITY_2	30	4	Y	24	2297	1995	1995		6
313-010	BERRYWOOD DR	D4 / E4	5	LOCAL			909.8161754	URBAN	Asphalt	CONTRACT	30	7		36	3639	2001	2001	2015	8
313-020	BERRYWOOD DR	D4	5	LOCAL			1347.081674	URBAN	Asphalt	CONTRACT	30	7		36	5388	2003	2003	2015	8
314-010	BIRCH DR	D4	5	LOCAL			595.2460585	RURAL	Asphalt	CITY_3	30	4		26	1720	2002	2002		7
315-010	BIRCHDALE LN	E2	7	LOCAL			554.1964498	RURAL	Asphalt	CITY_3	30	4		24	1478	1991	1991		6
315-020	BIRCHDALE LN	E2	7	LOCAL			784.840961	RURAL	Asphalt	CITY_3	30	4		24	2093	1991	1991		6
316-010	BLACK OAK RD	C2	2	LOCAL			457.7221721	RURAL	Asphalt	CITY_2	30	4	Y	26	1322	2001	2001		7
316-020	BLACK OAK RD	C2	2	LOCAL			151.4619668	RURAL	Asphalt	CITY_2	30	4		26	438	2001	2001		7
317-010	BLACKBERRY CT	C3	2	LOCAL			235.5853983	RURAL	Asphalt	CITY_2	30	4		26	681	2004	2004		7
318-010	BRANDON RD	D5	5	LOCAL			1019.434472	URBAN	Asphalt	CITY_3				26	2945	2005	2005		8
319-010	BRENTWOOD CIR	E2	7	LOCAL			890.0987182	RURAL	Asphalt	CITY_3	30	4		24	2374	1987	1987		6
320-010	BRENTWOOD RD	E1 / E2	7	LOCAL			813.6570504	RURAL	Asphalt	CITY_3	30	4		24	2170	1995	1995		6
320-020	BRENTWOOD RD	E2	7	LOCAL			916.6286435	RURAL	Asphalt	CITY_3	30	4		24	2444	1991	1991		6
320-030	BRENTWOOD RD	E2	7	LOCAL			955.5267235	RURAL	Asphalt	CITY_3	30	4		24	2548	1991	1991		6
320-040	BRENTWOOD RD	E2	7	LOCAL			758.1588536	RURAL	Asphalt	CITY_3	30	4		24	2022	1991	1991		6
321-010	BRIARWOOD LN	E1	7	LOCAL			384.6958009	RURAL	Gravel	CITY_3	30	4		26	1111	2015	2015		10
321-020	BRIARWOOD LN	E1	7	LOCAL			1248.269831	RURAL	Gravel	CITY_3	30	4		26	3606	2015	2015		10
321-030	BRIARWOOD LN	E1 / E2	7	LOCAL			934.8986397	RURAL	Asphalt	CITY_3	30	4		24	2493	1993	1993		6
322-010	BROWNSVILLE CIR	C1	1	LOCAL			537.4094013	RURAL	Asphalt	CITY_2	30	4		26	1553	2007	2007		8
323-010	CALCUTTA RD	C3	2	LOCAL			995.3011781	RURAL	Asphalt	CITY_4	30	4		26	2875	2005	2005		7
324-010	CAMDEN RD	C2	2	LOCAL			990.0313667	RURAL	Asphalt	CITY_2	30	4		26	2860	2000	2000	2015	8
325-010	CAMWOOD TRL	E4	6	LOCAL			1965.679531	RURAL	Asphalt	CITY_3	30	4	Y	24	5242	1995	1995		5
325-020	CAMWOOD TRL	E4	6	LOCAL			2242.000023	RURAL	Asphalt	CITY_3	30	4	Y	24	5979	1994	1994		5
326-010	CARLOS RD	D5	5	LOCAL			337.4530526	URBAN	Asphalt	CITY_3	30	7		36	1350	2005	2005		8
327-010	CEDAR SCENIC RD	C1	1	LOCAL			665.8963112	RURAL	Asphalt	CITY_2	30	4		24	1776	1997	1997		4
327-020	CEDAR SCENIC RD	C1	1	LOCAL			1767.230419	RURAL	Asphalt	CITY_2	30	4		24	4713	1997	1997	2015	8

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
327-030	CEDAR SCENIC RD	C1	1	LOCAL			589.1594568	RURAL	Asphalt	CITY_2	30	4		24	1571	1997	1997	2015	8
327-040	CEDAR SCENIC RD	C1	1	LOCAL			243.7255872	RURAL	Asphalt	CITY_2	30	4		26	704	2007	2007	2015	8
327-050	CEDAR SCENIC RD	C1	1	LOCAL			674.9369261	RURAL	Asphalt	CITY_2	30	4		26	1950	2007	2007	2015	8
327-060	CEDAR SCENIC RD	C1	1	LOCAL			2439.609577	RURAL	Asphalt	CITY_2	30	4		26	7048	2007	2007	2015	8
327-070	CEDAR SCENIC RD	C1	1	LOCAL			479.6051352	RURAL	Asphalt	CITY_2	30	4		26	1386	2007	2007	2015	8
327-080	CEDAR SCENIC RD	C1	1	LOCAL			345.9123304	RURAL	Asphalt	CITY_2	30	4		26	999	2007	2007	2015	8
327-090	CEDAR SCENIC RD	C1	1	LOCAL			153.5475883	RURAL	Asphalt	CITY_2	30	4		26	444	2002	2002	2015	8
327-100	CEDAR SCENIC RD	C1	1	LOCAL			65.54377921	RURAL	Asphalt	CITY_2	30	4		26	189	2002	2002	2014	8
327-110	CEDAR SCENIC RD	C1	1	LOCAL			747.2019054	RURAL	Asphalt	CITY_2	30	4		26	2159	2002	2002	2014	8
327-120	CEDAR SCENIC RD	C1 / C2	1	LOCAL			566.2931555	RURAL	Asphalt	CITY_2	30	4		26	1636	2002	2002	2014	8
327-130	CEDAR SCENIC RD	C2	1	LOCAL			1054.139356	RURAL	Asphalt	CITY_2	30	4		26	3045	2002	2002	2014	8
328-010	CEDARDALE LN	E2	7	LOCAL			519.4731671	RURAL	Asphalt	CITY_3	30	4		24	1385	1991	1991		6
328-020	CEDARDALE LN	E2	7	LOCAL			564.1134723	RURAL	Asphalt	CITY_3	30	4		24	1504	1991	1991		6
328-030	CEDARDALE LN	E2	7	LOCAL			372.9261966	RURAL	Asphalt	CITY_3	30	4		24	994	1991	1991		6
328-040	CEDARDALE LN	E2	7	LOCAL			569.5184228	RURAL	Asphalt	CITY_3	30	4		24	1519	1991	1991		6
328-050	CEDARDALE LN	E2	7	LOCAL			966.9634039	RURAL	Asphalt	CITY_3	30	4		24	2579	1991	1991		6
328-060	CEDARDALE LN	E2	7	LOCAL			312.5877729	RURAL	Asphalt	CITY_3	30	4		24	834	1991	1991		6
329-010	CHARLES ST	C5	4	LOCAL			73.8024776	URBAN	Asphalt	CONTRACT	30	4		40	328	2003	2003		8
329-020	CHARLES ST	C5	4	LOCAL			410.3035458	URBAN	Asphalt	CONTRACT	30	4		40	1824	2003	2003		8
330-010	CHERRYWOOD DR	D3	2	LOCAL			613.0000355	RURAL	Asphalt	CITY_4	30	4		24	1635	1989	1989	2015	8
330-020	CHERRYWOOD DR	D3	2	LOCAL			1283.51697	RURAL	Asphalt	CITY_4	30	4		24	3423	1999	1999	2015	8
330-030	CHERRYWOOD DR	C3 / D3	2	LOCAL			776.8658028	RURAL	Asphalt	CITY_4	30	4		24	2072	1999	1999		6
330-040	CHERRYWOOD DR	C3	2	LOCAL			250.0000005	RURAL	Asphalt	CITY_4	30	4		26	722	2003	2003		7
330-050	CHERRYWOOD DR	C3	2	LOCAL			381.4108008	RURAL	Asphalt	CITY_4	30	4		26	1102	2005	2005		7
330-060	CHERRYWOOD DR	C3	2	LOCAL			474.6076901	RURAL	Asphalt	CITY_4	30	4		26	1371	2005	2005		7
330-070	CHERRYWOOD DR	C3	2	LOCAL			1332.284678	RURAL	Asphalt	CITY_4	30	4		26	3849	2005	2005		7
330-080	CHERRYWOOD DR	C3	2	LOCAL			374.653168	RURAL	Asphalt	CITY_4	30	4		26	1082	2005	2005		7
331-010	CHESTNUT DR	E4	6	LOCAL			1363.767974	RURAL	Asphalt	CITY_3		4	Y	26	3940				7
332-010	CIRCLE PINES RD	C2	1	LOCAL			1485.4154	RURAL	Asphalt	CITY_2	30	4		24	3961	1993	1993		6
333-010	CLEARWATER CT	C3	2	LOCAL			551.0904387	RURAL	Asphalt	CITY_1	30	4		26	1592	2004	2004		7
334-010	CLEARWATER RD	C2	1	LOCAL			180.3197354	RURAL	Asphalt	CITY_1	40	4		24	481	1980	2011		9
334-020	CLEARWATER RD	C2	1	LOCAL			1095.312922	RURAL	Asphalt	CITY_1	40	4	Y	24	2921	1980	2011		9
334-030	CLEARWATER RD	C2	1	LOCAL			500.2439479	RURAL	Asphalt	CITY_1	40	4	Y	24	1334	1980	2011		9
334-040	CLEARWATER RD	C2	1	LOCAL			476.0490147	RURAL	Asphalt	CITY_1		4	Y	24	1269	1980	2011		8
334-050	CLEARWATER RD	C2 / C3	2	MSA	105	10	2683.1821	RURAL	Asphalt	CITY_1	40	5		40	11925	2006	2006		8
334-060	CLEARWATER RD	C3	2	MSA	105	10	387.000366	RURAL	Asphalt	CITY_1	40	5		40	1720	2006	2006		7
334-070	CLEARWATER RD	C3	2	MSA	105	15	1072.297649	URBAN	Asphalt	CITY_1	40	5		40	4766	2004	2004		7
334-080	CLEARWATER RD	C3	2	MSA	105	15	565.995015	URBAN	Asphalt	CITY_1	40	5		40	2516	2004	2004		7
334-090	CLEARWATER RD	C3	2	MSA	105	15	932.2984007	URBAN	Asphalt	CITY_1	40	5		40	4144	2004	2004		7
334-100	CLEARWATER RD	C3	3	MSA	105	20	1359.596263	URBAN	Asphalt	CITY_1		9		40	6043	2004	2004		7
334-110	CLEARWATER RD	C3	3	MSA	105	30	412.3033065	RURAL	Asphalt	CITY_1		9		40	1832	2004	2004		7
334-120	CLEARWATER RD	C3	3	MSA	105	30	708.7000226	RURAL	Asphalt	CITY_1		9		40	3150	2004	2004		7
334-130	CLEARWATER RD	C3	3	MSA	105	40	373.0041346	RURAL	Asphalt	CITY_1	40	9		40	1658	2003	2003		7
334-140	CLEARWATER RD	C3 / C4	3	MSA	105	40	1146.90768	RURAL	Asphalt	CITY_1	40	9		40	5097	2003	2003		7
334-150	CLEARWATER RD	C4	3	MSA	105	40	450.1393759	RURAL	Asphalt	CITY_1	40	9		40	2001	2003	2003		7
334-160	CLEARWATER RD	C4	3	MSA	105	50	1219.980057	RURAL	Asphalt	CITY_1	40	9		40	5422	2003	2003		7
334-170	CLEARWATER RD	C4	3	STATE			130.9185805			CONTRACT	40								
334-180	CLEARWATER RD	C4	4	STATE			154.8814712			CONTRACT	30								
334-190	CLEARWATER RD	C4	4	MSA	105	60	439.7530748	URBAN	Asphalt	CONTRACT	30	7		44	2150	1991	1991		5
334-200	CLEARWATER RD	C4	4	MSA	105	70	476.3956551	URBAN	Asphalt	CONTRACT	30	7		44	2329	1996	1996		6
334-210	CLEARWATER RD	C4	4	LOCAL			200.0736264	URBAN	Asphalt	CONTRACT		7		44	978	2008	2008		8
334-220	CLEARWATER RD	C4	4	LOCAL			960.9679218	URBAN	Asphalt	CONTRACT		7		44	4698	2007	2007		8
335-010	COLLEGE RD	D4	5	MSA	103	10	447.669081	URBAN	Asphalt	CONTRACT	40	9		65	3233	2000	2000		5
335-020	COLLEGE RD	D4	5	MSA	103	10	303.3932012	URBAN	Asphalt	CONTRACT	40	9		65	2191	2000	2000		5
335-030	COLLEGE RD	D4	5	MSA	103	10	974.1497601	URBAN	Asphalt	CONTRACT	40	9		65	7036	2000	2000		5
335-040	COLLEGE RD	D4	5	MSA	103	10	1030.55528	URBAN	Asphalt	CONTRACT	40	9		65	7443	2000	2000		5
335-050	COLLEGE RD	D4	5	MSA	103	20	667.8355351	URBAN	Asphalt	CONTRACT	40	9		65	4823	2000	2000	2014	8
335-060	COLLEGE RD	D4 / D5	5	MSA	103	20	975.9734415	URBAN	Asphalt	CONTRACT	40	9		65	7049	2000	2000	2014	8
335-070	COLLEGE RD	D5	5	MSA	103	20	1035.845989	URBAN	Asphalt	CONTRACT	40	9		65	7481	2000	2000		10
336-010	CONIFER DR	D5	5	LOCAL			256.5993025	URBAN	Asphalt	CITY_3	30	7		36	1026	2005	2005		8
336-020	CONIFER DR	D5	5	LOCAL			270.5815654	URBAN	Asphalt	CITY_3	30	7		36	1082	2005	2005		8
337-010	CONSERVATION DR	C5	4	LOCAL			643.5472407	URBAN	Asphalt	CONTRACT	30	4		36	2574	1985	1985		5
337-020	CONSERVATION DR	C5	4	LOCAL			360.0000549	URBAN	Asphalt	CONTRACT	30	4		36	1440	1993	1993		6
337-030	CONSERVATION DR	C5	4	LOCAL			345.2534846	RURAL	Asphalt	CONTRACT	30	4		26	997	2003	2015		9

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
338-010	COSMOS RD	C3	2	LOCAL			375.3001727	RURAL	Asphalt	CITY_2	30	4		26	1084	2004	2004		7
338-020	COSMOS RD	C3	2	LOCAL			329.6128488	RURAL	Asphalt	CITY_2	30	4		26	952	2004	2004		7
338-030	COSMOS RD	C3	2	LOCAL			371.3319211	RURAL	Asphalt	CITY_2	30	4		26	1073	2004	2004		7
339-010	COTTAGE GROVE DR	C2	2	LOCAL			336.9738465	RURAL	Asphalt	CITY_2	30	4		26	973	1995	1995	2015	8
339-020	COTTAGE GROVE DR	C2	2	LOCAL			366.623922	RURAL	Asphalt	CITY_2	30	4		26	1059	1995	1995	2015	8
339-030	COTTAGE GROVE DR	C2	2	LOCAL			541.1602302	RURAL	Asphalt	CITY_2	30	4		26	1563	1995	1995	2015	8
339-040	COTTAGE GROVE DR	C2	2	LOCAL			829.9999446	RURAL	Asphalt	CITY_2	30	4		26	2398	2000	2000	2015	8
339-050	COTTAGE GROVE DR	C2	2	LOCAL			270.1451168	RURAL	Asphalt	CITY_2	30	4		26	780	2003	2003	2015	8
340-010	COTTAGE GROVE TER	C2	2	LOCAL			446.8880236	RURAL	Asphalt	CITY_2	30	4		26	1291	1995	1995	2015	8
753-010	CYPRESS DR	E4	5				886		Non-Ex										
341-010	CYPRESS DR	D4	5	MSA	113	20	845.8588961	URBAN	Asphalt	CONTRACT		9		44	4135	2001	2001		7
341-020	CYPRESS DR	D4	5	MSA	113	20	753.9328625	URBAN	Asphalt	CONTRACT		9		44	3686	2001	2001		7
341-030	CYPRESS DR	D4	5	MSA	113	30	337.8121118	RURAL	Asphalt	CONTRACT	30	7		26	976	1994	1994		5
341-040	CYPRESS DR	D4	5	MSA	113	30	381.6003263	RURAL	Asphalt	CONTRACT	30	7		26	1102	1994	1994		5
341-050	CYPRESS DR	D4	5	MSA	113	30	939.8377917	RURAL	Asphalt	CONTRACT	30	7		24	2506	1993	1993		5
341-060	CYPRESS DR	C4	4	MSA	113	0	390.39385	RURAL	Asphalt	CONTRACT	30	4		24	1041	2002	2002	2014	8
341-070	CYPRESS DR	C4	4	MSA	113	60	2731.83543	URBAN	Asphalt	CONTRACT		7		72	21855	2007	2007		8
341-080	CYPRESS DR	C4	4	MSA	113	60	1192.664606	URBAN	Asphalt	CONTRACT		7		72	9541	2007	2007		8
342-010	DAHLIN RD	C3	2	LOCAL			1314.784448	RURAL	Asphalt	CITY_4	30	4		26	3798	2005	2005		7
343-010	DEERWOOD RD	D1	1	LOCAL			550.9999809	RURAL	Gravel	CITY_2	30	4	Y						
343-020	DEERWOOD RD	D1	1	LOCAL			581.062814	RURAL	Asphalt	CITY_2	30	4		26	1679	2004	2004		7
343-030	DEERWOOD RD	D1	1	LOCAL			190.2536603	RURAL	Asphalt	CITY_2	30	4		26	550	2002	2002		7
343-040	DEERWOOD RD	D1	1	LOCAL			521.1389497	RURAL	Asphalt	CITY_2	30	4		26	1506	2002	2002		7
343-050	DEERWOOD RD	D1	1	LOCAL			448.3919225	RURAL	Asphalt	CITY_2	30	4		26	1295	2002	2002		7
344-010	DELLWOOD DR	C4	4	LOCAL			1044.555106	URBAN	Asphalt	CONTRACT	30	10		36	4178	1985	2015		9
344-020	DELLWOOD DR	C4	4	LOCAL			500.251338	URBAN	Asphalt	CONTRACT	30	10		32	1779	1993	2015		9
344-030	DELLWOOD DR	C4	4	MSA	116	30	1190.278703	URBAN	Asphalt	CONTRACT	30	10		32	4232	1993	2015		9
344-040	DELLWOOD DR	B4 / C4	4	LOCAL			2841.571453	URBAN	Asphalt	CONTRACT	30	10		32	10103	1993	2015		9
344-050	DELLWOOD DR	B4	4	MSA	116	50	374.0047196	URBAN	Asphalt	CONTRACT		10		36	1496	1993	2015		9
344-060	DELLWOOD DR	B4	4	MSA	116	50	92.68081579	URBAN	Asphalt	CONTRACT	30	10		36	371	2002	2015		9
344-070	DELLWOOD DR	B4	4	MSA	116	60	949.3191587	URBAN	Asphalt	CONTRACT	30	7		36	3797	2002	2002	2015	8
344-080	DELLWOOD DR	B4	4	MSA	116	70	1318.110765	URBAN	Asphalt	CONTRACT	30	10		36	5272	2015	2015		10
345-010	DESIGN RD	C4	4	LOCAL			1169.275425	URBAN	Asphalt	CONTRACT	30	7		36	4677	1981	2002	2014	8
346-010	DOGWOOD DR	D4	5	LOCAL			703.2091659	URBAN	Asphalt	CONTRACT	30	9		44	3438	2001	2001		7
346-020	DOGWOOD DR	D4	5	LOCAL			365.5858008	URBAN	Asphalt	CONTRACT	30	9		44	1787	2000	2000		8
346-030	DOGWOOD DR	D4	5	LOCAL			413.4957322	URBAN	Asphalt	CONTRACT	30	9		36	1654	1995	1995		6
346-040	DOGWOOD DR	D4	5	LOCAL			1328.550057	URBAN	Asphalt	CONTRACT	30	9		36	5314	1995	1995		6
347-010	DONALD ST	C3	2	LOCAL			585.5097419	RURAL	Asphalt	CITY_4	30	4		24	1561	1989	1989	2014	8
347-020	DONALD ST	C3	2	LOCAL			533.0053253	RURAL	Asphalt	CITY_4	30	4		24	1421	1989	1989	2014	8
348-010	DOUGLAS FIR DR	D4	5	LOCAL			1357.603984	URBAN	Asphalt	CONTRACT	30	9		56	8447	2001	2001	2014	8
348-020	DOUGLAS FIR DR	D4 / E4	5	LOCAL			409.8206146	URBAN	Asphalt	CONTRACT	30	9		44	2004	2001	2001	2014	8
348-030	DOUGLAS FIR DR	E4	5	LOCAL			1467.813556	URBAN	Asphalt	CONTRACT	30	9		44	7176	2001	2001	2014	8
349-010	EAGLE DR	D5 / E5	6	LOCAL			921.1737904	RURAL	Asphalt	CITY_3	30	4	Y	24	2456	1981	1981		3
349-020	EAGLE DR	E5	6	LOCAL			812.3501629	RURAL	Asphalt	CITY_3	30	4	Y	24	2166	1981	1981		3
350-010	EAGLE RIDGE DR	E5	6	LOCAL			671.3899398	RURAL	Asphalt	CITY_3	30	4	Y	24	1790	1981	1981		3
350-020	EAGLE RIDGE DR	E5	6	LOCAL			1456.557371	RURAL	Asphalt	CITY_3	30	4	Y	24	3884	1981	1981		3
351-010	EDGEWOOD DR	C4	3	MSA	115	10	1640.007476	URBAN	Asphalt	CONTRACT	30	10		36	6560	1990	2015		9
351-020	EDGEWOOD DR	C4	3	MSA	115	20	1176.249251	URBAN	Asphalt	CONTRACT	30	10		32	4182	1993	2015		9
351-030	EDGEWOOD DR	C4	3	LOCAL			665.3803387	URBAN	Asphalt	CONTRACT	30	10		32	2366	1993	2015		9
351-040	EDGEWOOD DR	B4 / C4	3	LOCAL			2193.230477	URBAN	Asphalt	CONTRACT	30	10		32	7798	1993	2015		9
351-050	EDGEWOOD DR	B4	4	LOCAL			471.9161422	URBAN	Asphalt	CONTRACT	30	10		36	1888	2002	2015		9
351-060	EDGEWOOD DR	B4	4	LOCAL			1529.846351	URBAN	Asphalt	CONTRACT	30	7		36	6119	2002	2002	2015	8
351-070	EDGEWOOD DR	B4	4	LOCAL			1134.503013	URBAN	Asphalt	CONTRACT	30	7		36	4538	2004	2004	2015	8
351-080	EDGEWOOD DR	B4	4	LOCAL			1913.895353	URBAN	Asphalt	CONTRACT	30	7		36	7656	2004	2004		8
351-090	EDGEWOOD DR	A3 / B3 / B4	4	LOCAL			11.99296828	URBAN	Asphalt	CONTRACT		7		36	48	2004	2004		8
351-100	EDGEWOOD DR	A3	4	LOCAL			2203.44021	URBAN	Asphalt	CONTRACT	30	7		36	8814	2004	2004		8
352-010	EDMONTON RD	D3	2	LOCAL			996.5067218	RURAL	Asphalt	CITY_4	30	4		26	2879	1999	1999	2014	8
353-010	ELDER DR	D4	5	LOCAL			578.9714191	URBAN	Asphalt	CONTRACT	30	10		44	2831	1998	2015		9
353-020	ELDER DR	D4	5	LOCAL			656.9483065	URBAN	Asphalt	CONTRACT	30	10		44	3212	1998	2015		9
353-030	ELDER DR	D4	5	LOCAL			976.0334195	URBAN	Asphalt	CONTRACT	30	10		44	4772	1998	2015		9
353-040	ELDER DR	D4	5	LOCAL			145.3402655	URBAN	Asphalt	CONTRACT	30	10		44	711	1998	2015		9
353-050	ELDER DR	D4	5	LOCAL			185.7459888	URBAN	Asphalt	CONTRACT	30	10		44	908	1998	1998		8
353-060	ELDER DR	D4	5	LOCAL			197.259679	URBAN	Asphalt	CONTRACT	30	4		44	964	1998	1998		8
354-010	ELMWOOD DR	D4	5	LOCAL			681.4393604	URBAN	Asphalt	CONTRACT	30	10		36	2726	1998	1998	2014	8

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
355-010	EMILY CIR	D2	1	LOCAL			210.1555019	RURAL	Asphalt	CITY_2	30	4		26	607	1996	1996		6
356-010	EMILY RD	D2	1	LOCAL			451.4083754	RURAL	Asphalt	CITY_2	30	4		26	1304	1996	1996		6
356-020	EMILY RD	D2	1	LOCAL			505.9962842	RURAL	Asphalt	CITY_2	30	4		26	1462	1996	1996		6
356-030	EMILY RD	D2	1	LOCAL			619.0225972	RURAL	Asphalt	CITY_2	30	4		26	1788	1996	1996		6
357-010	EVERGREEN DR	E4	5	MSA	102	10	105.3097398	RURAL	Asphalt	CONTRACT	30	4		24	281	1996	1996		6
357-020	EVERGREEN DR	E4	5	MSA	102	10	2502.077742	RURAL	Asphalt	CONTRACT	30	4		24	6672	1996	1996	2014	8
357-030	EVERGREEN DR	E4	5	MSA	102	10	54.54189436	RURAL	Asphalt	CONTRACT	30	4		24	145	1996	1996	2014	8
357-040	EVERGREEN DR	D4 / E4	5	MSA	102	15	571.6596076	URBAN	Asphalt	CONTRACT	30	9		44	2795	2005	2005	2014	8
357-050	EVERGREEN DR	D4	5	MSA	102	20	1204.830335	URBAN	Asphalt	CONTRACT	30	9		36	4819	2000	2000	2014	8
358-010	EXCELSIOR RD	C3	2	LOCAL			686.7464886	RURAL	Asphalt	CITY_4	30	4		26	1984	2003	2003		7
358-020	EXCELSIOR RD	C3	2	LOCAL			332.6478667	RURAL	Asphalt	CITY_4	30	4		26	961	2003	2003		7
358-030	EXCELSIOR RD	C3	3	MSA	106	10	269.8859119	RURAL	Asphalt	CITY_1	30	5		34	1020	1989	1989		5
358-040	EXCELSIOR RD	C3	3	MSA	106	10	1267.678116	RURAL	Asphalt	CITY_1	30	5		34	4789	1989	1989		6
358-050	EXCELSIOR RD	C3	3	MSA	106	10	825.1579055	RURAL	Asphalt	CITY_1	30	5		34	3117	1989	1989		5
358-060	EXCELSIOR RD	C3	3	MSA	106	10	457.1284842	RURAL	Asphalt	CITY_1	30	5		34	1727	1989	1989		6
358-070	EXCELSIOR RD	C3	3	MSA	106	10	314.8220683	RURAL	Asphalt	CITY_1	30	5		34	1189	1989	1989		6
358-080	EXCELSIOR RD	C4	3	MSA	106	10	673.6783156	RURAL	Asphalt	CITY_1	30	5		34	2545	1989	1989		6
358-090	EXCELSIOR RD	C4	3	MSA	106	10	766.6987216	RURAL	Asphalt	CITY_1	30	5		34	2896	1989	1989		6
358-100	EXCELSIOR RD	C4	3	MSA	106	10	362.9275601	RURAL	Asphalt	CITY_1	30	5		34	1371	1989	1989		4
358-110	EXCELSIOR RD	C4	3	MSA	106	15	399.080108	URBAN NORTH/RURAL SOUTH	Asphalt	CONTRACT	30	7		65	2882	2000	2000		5
358-120	EXCELSIOR RD	C4	3	STATE			63.20690443			CONTRACT									
358-130	EXCELSIOR RD	C4	4	MSA	106	20	253.3236698	RURAL	Asphalt	CONTRACT	30	9		65	1830	1983	1983		6
358-140	EXCELSIOR RD	C4	4	MSA	106	30	988.827185	URBAN	Asphalt	CONTRACT	30	9		44	4834	1983	2002		4
358-150	EXCELSIOR RD	C4	4	MSA	106	30	417.0000159	URBAN	Asphalt	CONTRACT	30	7		44	2039	1983	2002		4
358-160	EXCELSIOR RD	C4	4	MSA	106	40	906.8194468	URBAN	Asphalt	CONTRACT	30	7		44	4433	1990	2002		4
358-170	EXCELSIOR RD	C4	4	MSA	106	50	1036.723388	URBAN	Asphalt	CONTRACT	30	10		40	4608	2015	2015		10
358-180	EXCELSIOR RD	C4	4	MSA	106	50	789.3168388	URBAN	Asphalt	CONTRACT	30	10		40	3508	2015	2015		10
358-190	EXCELSIOR RD	C5	4	MSA	106	60	644.207359	RURAL NORTH/URBAN SOUTH	Asphalt	CONTRACT	30	7		36	2577	1993	1993		4
358-200	EXCELSIOR RD	C5	4	MSA	106	70	836.9842077	URBAN	Asphalt	CONTRACT	30	7		44	4092	1993	1993		5
359-010	FAIRFAX CT	D3	2	LOCAL			591.8478216	RURAL	Asphalt	CITY_4	30	4		26	1710	2002	2002	2014	8
360-010	FAIRFAX RD	D3	2	LOCAL			646.9142358	RURAL	Asphalt	CITY_4	30	4		26	1869	2002	2002	2014	8
361-010	FAIRMONT CT	D3	2	LOCAL			273.339532	RURAL	Asphalt	CITY_4	30	4		26	790	2000	2000	2014	8
362-010	FAIRVIEW RD	D1	1	LOCAL			308.4321403	RURAL	Asphalt	CITY_2		4		26	891				7
362-020	FAIRVIEW RD	D1	1	LOCAL			699.3653936	RURAL	Asphalt	CITY_2	30	4		26	2020	2004	2004		7
362-030	FAIRVIEW RD	D2	1	LOCAL			769.8542786	RURAL	Asphalt	CITY_2	30	4		26	2224	2004	2004		7
362-040	FAIRVIEW RD	D2	1	LOCAL			342.1427149	RURAL	Asphalt	CITY_1	30	4		24	912	1998	1998		5
362-050	FAIRVIEW RD	D2	1	LOCAL			335.8938886	RURAL	Asphalt	CITY_1	30	4		24	896	1998	1998		5
362-060	FAIRVIEW RD	D2	1	LOCAL			1473.54934	RURAL	Asphalt	CITY_1	30	4		24	3929	1989	1989		4
362-070	FAIRVIEW RD	D2	2	LOCAL			911.9926556	RURAL	Asphalt	CITY_1	30	4		24	2432	1989	1989		4
362-080	FAIRVIEW RD	D2	2	LOCAL			723.7142537	RURAL	Asphalt	CITY_1	30	4		24	1930	1989	1989		6
362-090	FAIRVIEW RD	D2	2	LOCAL			1282.575712	RURAL	Asphalt	CITY_1	30	4		24	3420	1989	1989		5
362-100	FAIRVIEW RD	D3	2	LOCAL			599.5474981	RURAL	Asphalt	CITY_1	30	4		24	1599	1989	1989		5
362-110	FAIRVIEW RD	D3	2	LOCAL			282.9871008	RURAL	Asphalt	CITY_1	30	4		24	755	1998	1998		6
362-120	FAIRVIEW RD	D3	2	LOCAL			277.7070051	RURAL	Asphalt	CITY_1	30	4		24	741	1998	1998		6
362-130	FAIRVIEW RD	D3	2	LOCAL			1493.440223	RURAL	Asphalt	CITY_1	30	4		24	3983	1989	1989		6
362-140	FAIRVIEW RD	D3	2	LOCAL			358.967001	RURAL	Asphalt	CITY_1	30	4		24	957	1998	1998		6
362-150	FAIRVIEW RD	D3	3	LOCAL			230.5299953	RURAL	Asphalt	CITY_1	30	4		24	615	1998	1998		6
362-160	FAIRVIEW RD	D3	3	LOCAL			2535.555087	RURAL	Asphalt	CITY_1	30	4		24	6761	1998	1998		6
362-170	FAIRVIEW RD	D3 / D4	3	LOCAL			2591.432866	RURAL	Asphalt	CITY_1	30	4		24	6910	1998	1998		6
362-175	FAIRVIEW RD (EXT.)	C4 / D4	3	LOCAL			570		Non-Ex										
362-180	FAIRVIEW RD	D4	4	LOCAL			711.913062	URBAN	Asphalt	CONTRACT	30	4		32	2531	1983	2002	2014	8
362-190	FAIRVIEW RD	D4	4	LOCAL			426.0597254	URBAN	Asphalt	CONTRACT	30	4		32	1515	1990	2002	2014	8
362-200	FAIRVIEW RD	D4	4	LOCAL			194.9793874	RURAL	Asphalt	CONTRACT	30	4		24	520	2002	2002	2014	8
362-210	FAIRVIEW RD	C4 / C5	4	LOCAL			625.507885	RURAL	Asphalt	CONTRACT	30	4	Y	24	1668	1985	1985		4
362-220	FAIRVIEW RD	C5	4	LOCAL			603.0557766	RURAL	Asphalt	CONTRACT	30	10		24	1608	1985	2015		9
362-230	FAIRVIEW RD	C5	4	LOCAL			171.9732271	RURAL	Asphalt	CONTRACT	30	10		24	459	1985	2015		9
362-240	FAIRVIEW RD	C5	4	LOCAL			272.2305201	RURAL	Asphalt	CONTRACT	30	4		24	726	1998	1998	2015	8
363-010	FIREWOOD DR	C3	3	LOCAL			245.0355129	RURAL	Asphalt	CITY_1	30	4		26	708	2003	2003		7
363-020	FIREWOOD DR	C3 / C4	3	LOCAL			1093.555463	RURAL	Asphalt	CITY_1	30	4		26	3159	2003	2003		7
363-030	FIREWOOD DR	C4	3	LOCAL			1024.119413	RURAL	Asphalt	CITY_1	30	4		26	2959	2002	2002		7
364-010	FIRST ST	E2	7	LOCAL			502.8747769	RURAL	Asphalt	CITY_3	30	4		24	1341	1991	1991		6
364-020	FIRST ST	E2	7	LOCAL			473.1723693	RURAL	Asphalt	CITY_3	30	4		24	1262	1991	1991		6
365-010	FLINTWOOD DR	C3 / D3	3	LOCAL			1423.534562	RURAL	Asphalt	CITY_1	30	4		26	4112	1998	1998		6
366-010	FOLEY RD	D2	7	LOCAL			254.3029385	CURB ONE SIDE	Asphalt	CITY_4		9		24	678	1998	1998		6

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
366-020	FOLEY RD	D2 / D3	7	LOCAL			3755.16858	CURB ONE SIDE	Asphalt	CITY_4		9		24	10014	1998	1998		5
366-030	FOLEY RD	D3	5	LOCAL			1683.145566	CURB ONE SIDE	Asphalt	CITY_4		9		24	4488	1998	1998		5
366-040	FOLEY RD	D3	5	LOCAL			161.3958053	CURB ONE SIDE	Asphalt	CITY_4		9		24	430	1998	1998		5
366-050	FOLEY RD	D3	5	LOCAL			596.27444	CURB ONE SIDE	Asphalt	CITY_4		9		24	1590	1998	1998		5
366-060	FOLEY RD	D3	5	LOCAL			2119.598869	CURB ONE SIDE	Asphalt	CITY_4		9		24	5652	1998	1998		5
366-070	FOLEY RD	D3 / D4	5	LOCAL			1526.83142	CURB ONE SIDE	Asphalt	CITY_4		10		24	4072	1998	2015		9
367-010	FOREST DR	C4	3	LOCAL			1795.477298	RURAL	Asphalt	CITY_1	30	4		24	4788	1979	1979	2014	8
367-020	FOREST DR	C4	3	LOCAL			352.9211004	RURAL	Asphalt	CITY_1	30	4		24	941	1979	1979	2014	8
367-030	FOREST DR	C4	3	LOCAL			229.9302001	RURAL	Asphalt	CITY_1	30	4		24	613	1979	1979	2014	8
367-040	FOREST DR	C4	3	LOCAL			146.0010923	RURAL	Asphalt	CITY_1	30	4		24	389	1979	1979	2014	8
367-050	FOREST DR	C4	3	LOCAL			235.7221846	RURAL	Asphalt	CITY_1	30	4		24	629	1979	1979	2014	8
367-060	FOREST DR	C4	3	LOCAL			296.2871415	RURAL	Asphalt	CITY_1	30	4		26	856	2003	2003	2014	8
368-010	FORESTON RD	D1	1	LOCAL			185.251245	RURAL	Asphalt	CITY_2	30	4		26	535	2002	2002		7
369-010	FORESTVIEW DR	F3	6	LOCAL			319.5581969	RURAL	Asphalt	CITY_3		4	Y	24	852	1990	1990		6
369-020	FORESTVIEW DR	F3	6	LOCAL			460.251438	RURAL	Asphalt	CITY_3	30	4	Y	24	1227	1990	1990		6
369-030	FORESTVIEW DR	F3	6	LOCAL			889.4537422	RURAL	Asphalt	CITY_3	30	4	Y	24	2372	1990	1990		6
369-040	FORESTVIEW DR	F3	6	LOCAL			1916.460393	RURAL	Asphalt	CITY_3	30	4	Y	24	5111	1995	1995		6
369-050 (Delete	FORESTVIEW DR	F3	6	LOCAL				RURAL	Asphalt	CITY_3		4	Y	24	0	1995	1995		6
369-060	FORESTVIEW DR	F3	6	LOCAL			1288.247908	RURAL	Asphalt	CITY_3	30	4	Y	24	3435	1995	1995		6
369-070	FORESTVIEW DR	F3 / F4	6	LOCAL			767.5778325	RURAL	Asphalt	CITY_3	30	4	Y	24	2047	1988	1988		4
369-080	FORESTVIEW DR	F4	6	LOCAL			812.7044371	RURAL	Asphalt	CITY_3	30	4	Y	24	2167	1988	1988		4
369-090	FORESTVIEW DR	F4	6	LOCAL			327.6468785	RURAL	Asphalt	CITY_3	30	4		24	874	1988	1988		4
369-100	FORESTVIEW DR	E4	6	LOCAL			487.5320324	RURAL	Asphalt	CITY_3	30	4	Y	24	1300	1988	1988		4
369-110	FORESTVIEW DR	E4	6	LOCAL			267.0383578	RURAL	Asphalt	CITY_3	30	4	Y	24	712	1988	1988		4
369-120	FORESTVIEW DR	E4	6	LOCAL			980.5952082	RURAL	Asphalt	CITY_3	30	4	Y	24	2615	1988	1988		4
370-010	FORTHUN RD	D3 / D4	5	LOCAL			1167.297558	URBAN	Asphalt	CONTRACT	30	9		36	4669	2005	2005		8
370-020	FORTHUN RD	D4	5	LOCAL			285.6229204	URBAN	Asphalt	CONTRACT	30	9		36	1142	2000	2000		6
370-030	FORTHUN RD	D4	5	LOCAL			374.1699308	URBAN	Asphalt	CONTRACT	30	9		36	1497	2000	2000		6
370-040	FORTHUN RD	D4	5	LOCAL			372.5159975	URBAN	Asphalt	CONTRACT	30	9		36	1490	2000	2000		5
370-050	FORTHUN RD	D4	5	LOCAL			687.2920942	URBAN	Asphalt	CONTRACT	30	10		36	2749	1998	1998	2014	8
371-010	FOX PL	C4	3	LOCAL			232.9958847	RURAL	Asphalt	CITY_1	30	4		24	621	1979	1979	2014	8
372-010	FOX RD	C3	3	LOCAL			1081.087252	RURAL	Asphalt	CITY_1	30	4		26	3123	2000	2000	2014	8
373-010	FRANKLIN DR	B3 / B4	3	LOCAL			1389.720372	RURAL	Asphalt	CITY_1		4		26	4015	2014	2014		10
374-010	FUSCHIA DR	F4	6	LOCAL			896.73531	RURAL	Asphalt	CITY_3	30	4	Y	26	2591	2000	2000		7
374-020	FUSCHIA DR	E4	6	LOCAL			513.1620836	RURAL	Asphalt	CITY_3	30	4	Y	26	1482	1996	1996		6
374-030	FUSCHIA DR	E4	6	LOCAL			47.34016974	RURAL	Asphalt	CITY_3		4		26	137				6
374-040	FUSCHIA DR	E4	6	LOCAL			193.6331418		Non-Ex	CITY_3									
375-010	GARRISON RD	D4	5	LOCAL			459.9768275	URBAN	Asphalt	PRIVATE				28	1431				9
376-010	GINKO DR	C3	3	LOCAL			182.2950398	RURAL	Asphalt	CITY_1	30	5		26	527	2004	2004		7
377-010	GLENWOOD DR	D3	3	LOCAL			173.5979527	RURAL	Asphalt	CITY_1	30	4		24	463	1998	1998		6
377-020	GLENWOOD DR	D3	3	LOCAL			1287.165077	RURAL	Asphalt	CITY_1	30	4		24	3432	1989	1989		6
377-030	GLENWOOD DR	D3	3	LOCAL			278.6442288	RURAL	Asphalt	CITY_1	30	4		24	743	1989	1989		6
377-040	GLENWOOD DR	C3	3	LOCAL			527.4462346	RURAL	Asphalt	CITY_1	30	4		24	1407	1989	1989		6
378-010	GLORY RD	D3	5	LOCAL			573.8144774	RURAL	Asphalt	CONTRACT	30	4		26	1658	2005	2005		8
378-020	GLORY RD	D3	5	LOCAL			555.36358	RURAL	Asphalt	CONTRACT	30	4		24	1481	2000	2000		5
378-030	GLORY RD	D3 / D4	5	LOCAL			1059.402655	URBAN	Asphalt	CONTRACT	30	4		44	5179	2000	2000		5
378-040	GLORY RD	D4	5	LOCAL			483.9054027	URBAN	Asphalt	CONTRACT		10		65	3495	2000	2015		9
378-050	GLORY RD	D4	5	LOCAL			1013.800125	URBAN	Asphalt	CONTRACT		10		65	7322	2000	2015		9
378-060	GLORY RD	D4	5	STATE			68.09385382			CONTRACT									
379-010	GOEDDERZ RD	D4	5	LOCAL			180.9706982	URBAN	Asphalt	CONTRACT	30	9		36	724	1995	1995		7
379-020	GOEDDERZ RD	D4	5	LOCAL			926.4466828	URBAN	Asphalt	CONTRACT	30	9		36	3706	1995	1995		6
380-010	GOLF COURSE DR	D4	4	STATE			84.05806029			CONTRACT									
380-020	GOLF COURSE DR	D4	4	MSA	109	10	146.7397516	URBAN	Asphalt	CONTRACT	30	9		36	587	1983	2002	2014	8
380-030	GOLF COURSE DR	C4 / D4	4	MSA	109	10	639.8080481	URBAN	Asphalt	CONTRACT	30	9		36	2559	1983	2002	2014	8
380-040	GOLF COURSE DR	C4	4	MSA	109	20	997.1319187	URBAN	Asphalt	CONTRACT	30	7		38	4210	1981	2002		5
380-050	GOLF COURSE DR	C4	4	MSA	109	20	434.4103027	URBAN	Asphalt	CONTRACT	30	7		38	1834	1981	1981		6
380-060	GOLF COURSE DR	C4	4	MSA	109	20	66.18150535	URBAN	Asphalt	CONTRACT	30	7		38	279	1981	1981		4
380-070	GOLF COURSE DR	C4	4	MSA	109	30	502.1103557	RURAL	Asphalt	CONTRACT	30	7		24	1339	1996	1996		8
380-080	GOLF COURSE DR	C4	4	MSA	109	30	694.1689525	RURAL	Asphalt	CONTRACT	30	7		24	1851	1996	1996		4
380-090	GOLF COURSE DR	C4	4	MSA	109	30	947.6520159	RURAL	Asphalt	CONTRACT	30	7		24	2527	1996	1996		5
380-100	GOLF COURSE DR	C4	4	MSA	109	30	52.33585526	RURAL	Asphalt	CONTRACT	30	7		24	140	1996	1996		5
380-110	GOLF COURSE DR	B4 / C4	4	MSA	109	40	1755.995315	URBAN	Asphalt	CONTRACT	30	9		36	7024	1996	1996		6
381-010	GRAND OAKS CT	C3 / D3	3	LOCAL			499.5331541	RURAL	Asphalt	CITY_1	30	4		26	1443	2001	2001	2014	8
382-010	GRAND OAKS DR	D3	3	LOCAL			813.0146613	RURAL	Asphalt	CITY_1	30	4		26	2349	2001	2001	2014	8

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382-020	GRAND OAKS DR	C3 / D3	3	LOCAL			1089.129231	RURAL	Asphalt	CITY_1	30	4		26	3146	2001	2001	2014	8
382-030	GRAND OAKS DR	C3	3	LOCAL			1455.78176	RURAL	Asphalt	CITY_1	30	5		26	4206	2004	2004		7
382-040	GRAND OAKS DR	C3	3	LOCAL			1796.126643	RURAL	Asphalt	CITY_1	30	5		26	5189	2004	2004		7
382-050	GRAND OAKS DR	C3	3	LOCAL			1330.324272	RURAL	Asphalt	CITY_1	30	5		26	3843	2004	2004		7
382-060	GRAND OAKS DR	C3	3	LOCAL			503.2438056	RURAL	Asphalt	CITY_1	30	5		26	1454	2003	2003		7
382-070	GRAND OAKS DR	C3	3	LOCAL			254.5806482	RURAL	Asphalt	CITY_1	30	5		26	735	2003	2003		7
383-010	GREEN BRIAR DR	C3	3	LOCAL			624.2664787	RURAL	Asphalt	CITY_1	30	5		26	1803	2003	2003		7
384-010	GREENWOOD RD	D4	5	LOCAL			723.7775418	RURAL	Asphalt	CITY_3	30	4		24	1930	1995	1995		6
384-020	GREENWOOD RD	D4	5	LOCAL			804.0554376	RURAL	Asphalt	CITY_3	30	4		24	2144	1993	1993		7
384-030	GREENWOOD RD	D4 / D5	5	LOCAL			602.3243914	RURAL	Asphalt	CITY_3	30	4		26	1740	2002	2002		7
384-040	GREENWOOD RD	D5	5	LOCAL			175.6927907	RURAL	Asphalt	CITY_3	30	4		26	508	2002	2002		7
384-050	GREENWOOD RD	D5	5	LOCAL			1182.564076	RURAL	Asphalt	CITY_3	30	4		26	3416	2002	2002		7
385-010	HASTINGS RD	E4	5	LOCAL			1368.84594	URBAN	Asphalt	CONTRACT	30	7		44	6692	2012	2012		10
385-020	HASTINGS RD	D4 / E4	5	LOCAL			1259.934486	URBAN	Asphalt	CONTRACT	30	9		44	6160	2005	2005		8
385-030	HASTINGS RD	D4	5	LOCAL			661.6288098	URBAN	Asphalt	CONTRACT	30	9		44	3235	2001	2001		7
385-040	HASTINGS RD	D4	5	LOCAL			989.8103316	URBAN	Asphalt	CONTRACT	30	9		44	4839	2001	2001		7
386-010	HEMLOCK DR	B3 / C3	3	LOCAL			1230.634594	RURAL	Asphalt	CITY_1	30	4		26	3555	2004	2004		8
387-010	HINCKLEY CT	D4	5	LOCAL			375.8555347	URBAN	Asphalt	CONTRACT	30	7		36	1503	2002	2002		8
388-010	HINCKLEY RD	D4	5	LOCAL			659.1445955	URBAN	Asphalt	CONTRACT	30	7		36	2637	2004	2004		8
389-010	HOLLY DR	B3 / C3	3	LOCAL			1175.015312	RURAL	Asphalt	CITY_1	30	4		26	3394	2004	2004		8
390-010	HOMESTEAD DR	D3	5	LOCAL			936.4021788	RURAL	Asphalt	CONTRACT	30	4		26	2705	2005	2005		8
390-020	HOMESTEAD DR	E3	5	LOCAL			922.4114967	RURAL	Asphalt	CONTRACT	30	4		26	2665	2005	2005		8
391-010	HONEYSUCKLE WAY	D2	1	LOCAL			766.3518766	RURAL	Asphalt	CITY_2	30	4		26	2214	2004	2004		7
391-020	HONEYSUCKLE WAY	D2	1	LOCAL			242.693621	RURAL	Asphalt	CITY_2	30	4		26	701	2004	2004		7
391-030	HONEYSUCKLE WAY	D2	1	LOCAL			701.6135267	RURAL	Asphalt	CITY_2	30	4		26	2027	2004	2004		7
392-010	INDEPENDENCE RD	E1	7	LOCAL			432.3003658	RURAL	Asphalt	CITY_3		9		36	1729	2010	2010		9
392-020	INDEPENDENCE RD	E1	7	LOCAL			279.9113791	RURAL	Asphalt	CITY_3		9		36	1120	2015	2015		10
393-010	INDUSTRIAL PARK RD	D4	5	LOCAL			570.444383	URBAN	Asphalt	CONTRACT	30	9		36	2282	2000	2000	2015	8
393-020	INDUSTRIAL PARK RD	D4	5	LOCAL			1594.222056	URBAN	Asphalt	CONTRACT	30	9		36	6377	2000	2000	2015	8
393-030	INDUSTRIAL PARK RD	D4	5	LOCAL			1413.621812	URBAN	Asphalt	CONTRACT	30	9		36	5654	1989	1989	2015	8
393-040	INDUSTRIAL PARK RD	D4	5	LOCAL			808.2297054	RURAL	Asphalt	CONTRACT		9		36	3233	1989	1989		5
393-050	INDUSTRIAL PARK RD	D4 / D5	5	LOCAL			2665.011526	RURAL	Asphalt	CONTRACT		9		36	10660	1989	1989		6
394-010	INGLEWOOD DR	D3	2	STATE			58.74505316			STATE									
394-020	INGLEWOOD DR	D3	2	MSA	107	10	213.6643392	RURAL	Asphalt	CITY_1	30	5		24	570	1989	1989		6
394-030	INGLEWOOD DR	D3	2	MSA	107	10	226.4572643	URBAN	Asphalt	CITY_1	30	10		36	906	2015	2015		10
394-040	INGLEWOOD DR	D3	2	MSA	107	10	838.9947227	URBAN	Asphalt	CITY_1	30	10		36	3356	2015	2015		10
394-050	INGLEWOOD DR	D3	2	MSA	107	10	377.0547803	URBAN	Asphalt	CITY_1	30	10		36	1508	2015	2015		10
394-060	INGLEWOOD DR	C3	2	MSA	107	10	416.1842403	URBAN	Asphalt	CITY_1	30	10		36	1665	2015	2015		10
394-070	INGLEWOOD DR	C3	2	MSA	107	20	1485.08558	URBAN	Asphalt	CITY_1	30	5		40	6600	2004	2004		7
394-080	INGLEWOOD DR	C3	2	MSA	107	20	252.0571977	URBAN	Asphalt	CITY_1	30	5		40	1120	2004	2004		7
394-090	INGLEWOOD DR	C3	2	MSA	107	20	269.9966841	URBAN	Asphalt	CITY_1	30	5		40	1200	2004	2004		7
394-100	INGLEWOOD DR	C3	2	MSA	107	20	637.0191917	URBAN	Asphalt	CITY_1	30	5		40	2831	2004	2004		7
394-110	INGLEWOOD DR	B3 / C3	3	MSA	107	30	2748.020678	URBAN	Asphalt	CITY_1	30	5		40	12213	2004	2004		7
394-120	INGLEWOOD DR (Woida Rd	B3	3	LOCAL			5170	RURAL	Asphalt	CITY_1		10		36	20680	2015	2015		10
395-010	INTERLACKEN RD	E3	7	LOCAL			602.5424848	RURAL	Asphalt	CITY_4	30	4		36	2410	2000	2000	2014	8
396-010	IRONWOOD DR	F3	6	LOCAL			511.0571979	RURAL	Asphalt	CITY_4		4		26	1476	2006	2006		7
396-020	IRONWOOD DR	F3	6	LOCAL			891.0931124	RURAL	Asphalt	CITY_4		4		26	2574	2006	2006		7
397-010	ISLE DR	E3	5	LOCAL			541.3166815	URBAN	Asphalt	CONTRACT	30	9		44	2646	2005	2005	2015	8
397-020	ISLE DR	E3	5	LOCAL			431.3417323	URBAN	Asphalt	CONTRACT	30	9		44	2109	2005	2005	2015	8
397-030	ISLE DR	E4	5	LOCAL			256.8003925	URBAN	Asphalt	CONTRACT	30	9		44	1255	2005	2005	2015	8
397-040	ISLE DR	D4 / E4	5	LOCAL			1803.937279	URBAN	Asphalt	CONTRACT	30	9		44	8819	2000	2000	2015	8
397-050	ISLE DR	D4	5	LOCAL			327.2024695	URBAN	Asphalt	CONTRACT	30	7		36	1309	2004	2004		7
397-060	ISLE DR	D4	5	LOCAL			255.7966036	URBAN	Asphalt	CONTRACT	30	7		36	1023	2004	2004		7
397-070	ISLE DR	D4	5	LOCAL			638.4402272	URBAN	Asphalt	CONTRACT	30	7		36	2554	2004	2004		7
398-010	JADEWOOD DR	B3	3	LOCAL			1388.813616	RURAL	Asphalt	CITY_2	30	4	Y	26	4012	2002	2002		7
399-010	JASPERWOOD DR	F3	6	LOCAL			1412.416366	RURAL	Asphalt	CITY_4	30	4		28	4394	1999	1999	2014	8
399-020	JASPERWOOD DR	F3	6	LOCAL			1144.568818	RURAL	Asphalt	CITY_4	30	4		28	3561	1999	1999	2014	8
399-030	JASPERWOOD DR	F3	6	LOCAL			604.2021275	RURAL	Asphalt	CITY_4	30	4		28	1880	1999	1999	2014	8
399-040	JASPERWOOD DR	F3	6	LOCAL			567.56424	RURAL	Asphalt	CITY_4	30	4		28	1766	1999	1999	2014	8
400-010	JEPSON RD	E3	7	LOCAL			495.6645379	RURAL	Asphalt	CITY_4	30	4		26	1432	2000	2000	2014	8
401-010	JEWELWOOD DR	C3	3	LOCAL			220.7983614	RURAL	Asphalt	CITY_2	30	4		26	638	2005	2005		8
401-020	JEWELWOOD DR	C3	3	LOCAL			359.969274	RURAL	Asphalt	CITY_2	30	4		26	1040	2005	2005		8
401-030	JEWELWOOD DR	C3	3	LOCAL			1576.762635	RURAL	Asphalt	CITY_2	30	4		26	4555	2005	2005		8
401-040	JEWELWOOD DR	C3	3	LOCAL			182.9620001	RURAL	Asphalt	CITY_2	30	4		26	529	2005	2005		8

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
401-050	JEWELWOOD DR	B3 / C3	3	LOCAL			529.15524	RURAL	Asphalt	CITY_2	30	4		26	1529	2005	2005		8
401-060	JEWELWOOD DR	B3	3	LOCAL			887.0232002	RURAL	Asphalt	CITY_2	30	4	Y	26	2563	2002	2002		8
402-010	JOHN ST	D3	3	LOCAL			340.7029066	RURAL	Asphalt	CITY_1	30	4		24	909	1989	1989		6
403-010	JOLER RD	E1	7	LOCAL			573.5248192	RURAL	Asphalt	CITY_3	30	4		26	1657	2003	2003		6
403-020	JOLER RD	E1 / E2	7	LOCAL			983.0782621	RURAL	Asphalt	CITY_3	30	4		26	2840	2003	2003		6
404-010	JONESWOOD CIR	F3	6	LOCAL			306.6790417	RURAL	Asphalt	CITY_4	30	4		26	886	2003	2003		7
405-010	JONESWOOD DR	F3	6	LOCAL			368.9239542	RURAL	Asphalt	CITY_4	30	4		26	1066	2003	2003		7
405-020	JONESWOOD DR	F3	6	LOCAL			296.5269237	RURAL	Asphalt	CITY_4	30	4		26	857	2003	2003		7
405-030	JONESWOOD DR	F3	6	LOCAL			686.5736573	RURAL	Asphalt	CITY_4	30	4		26	1983	2003	2003		7
406-010	JORDAN RD	E2	7	LOCAL			183.9684107	RURAL	Asphalt	CITY_3	30	4		26	531	2001	2001		7
406-020	JORDAN RD	E2	7	LOCAL			564.0029222	RURAL	Asphalt	CITY_3	30	4		26	1629	2001	2001		7
406-030	JORDAN RD	E2	7	LOCAL			483.3085647	RURAL	Asphalt	CITY_3	30	4		26	1396	2001	2001		7
406-040	JORDAN RD	E2	7	LOCAL			184.8982937	RURAL	Asphalt	CITY_3	30	4		26	534	2001	2001		7
406-050	JORDAN RD	E2	7	LOCAL			182.1572812	RURAL	Asphalt	CITY_3	30	4		26	526	2003	2003		7
407-010	JOSHUA TREE CIR	F3	6	LOCAL			319.7202735	RURAL	Asphalt	CITY_4	30	4		26	924	2003	2003		7
408-010	JOSHUA TREE DR	F3	6	LOCAL			634.8512836	RURAL	Asphalt	CITY_4	30	4		26	1834	2003	2003		7
409-010	KELLY CIR	D2	1	LOCAL			210.1477269	RURAL	Asphalt	CITY_2	30	4		26	607	1996	1996		6
410-010	KELLY DR	D2	1	LOCAL			385.9964444	RURAL	Asphalt	CITY_2	30	4		26	1115	1996	1996		6
410-020	KELLY DR	D2	1	LOCAL			1107.090329	RURAL	Asphalt	CITY_2	30	4		26	3198	1996	1996		6
411-010	KENWOOD CT	D3	2	LOCAL			820.9056743	RURAL	Asphalt	CITY_4	30	4		24	2189	1989	1989		6
412-010	KENWOOD DR	D3	2	LOCAL			1153.103446	RURAL	Asphalt	CITY_4	30	4		26	3331	2004	2004		7
412-020	KENWOOD DR	D3	2	LOCAL			374.0031196	RURAL	Asphalt	CITY_4	30	4		26	1080	2004	2004		7
412-030	KENWOOD DR	D3	2	LOCAL			118.6767274	RURAL	Asphalt	CITY_4	30	4		26	343	2004	2004		7
412-040	KENWOOD DR	D3	2	LOCAL			575.5761324	RURAL	Asphalt	CITY_4	30	4		24	1535	1989	1989		6
412-050	KENWOOD DR	C3 / D3	2	LOCAL			480.9822419	RURAL	Asphalt	CITY_4	30	4		24	1283	1989	1989		6
412-060	KENWOOD DR	C3	2	LOCAL			264.3590788	RURAL	Asphalt	CITY_4	30	4		24	705	1989	1989		6
413-010	KIMBERLEE CT	C3	2	LOCAL			240.1077298	RURAL	Asphalt	CITY_2		4		18	480	2006	2006		7
413-020	KIMBERLEE CT	C3	2	LOCAL			803.5272746	RURAL	Asphalt	CITY_2		4		26	2321	2006	2006		7
414-010	KIMBERLEE DR	C3	2	LOCAL			669.5452139	RURAL	Asphalt	CITY_2		4		26	1934	2006	2006		7
414-020	KIMBERLEE DR	C3	2	LOCAL			430.4445857	RURAL	Asphalt	CITY_2		4		26	1244	2006	2006		7
414-030	KIMBERLEE DR	C3	2	LOCAL			472.1567624	RURAL	Asphalt	CITY_2		4		26	1364	2006	2006		7
414-040	KIMBERLEE DR	C3	2	LOCAL			423.7962947	RURAL	Asphalt	CITY_2		4		26	1224	2006	2006		7
415-010	KINGWOOD DR	E3	7	LOCAL			1062.648095	RURAL	Asphalt	CITY_4	30	4		26	3070	2000	2000	2014	8
415-020	KINGWOOD DR	E3	7	LOCAL			579.915942	RURAL	Asphalt	CITY_4	30	4		26	1675	2000	2000	2014	8
415-030	KINGWOOD DR	D3	7	LOCAL			738.3123119	RURAL	Asphalt	CITY_4	30	4		26	2133	2000	2000	2014	8
416-010	KIRKWOOD DR	B4 / C4	3	LOCAL			1528.843555	RURAL	Asphalt	CITY_1		4		26	4417	2006	2006		8
417-010	KIRKWOOD LN	C4	3	LOCAL			526.0449618	RURAL	Asphalt	CITY_1	30	4		40	2338	2006	2006		8
418-010	KNOLLWOOD CT	D3	7	LOCAL			660.0898638	RURAL	Asphalt	CITY_4	30	4		26	1907	2000	2000	2014	8
419-010	KNOLLWOOD DR	E3 / F3	7	LOCAL			3244.048274	URBAN	Asphalt	CITY_4	30	9		44	15860	2003	2003	2014	8
419-020	KNOLLWOOD DR	E3	7	MSA	101	10	1341.381734	URBAN	Asphalt	CITY_4	30	9		36	5366	2000	2000		5
419-030	KNOLLWOOD DR	E3	7	MSA	101	10	388.7792549	URBAN	Asphalt	CITY_4	30	9		36	1555	2000	2000		5
419-040	KNOLLWOOD DR	E3	7	MSA	101	10	1068.415241	URBAN	Asphalt	CITY_4	30	9		36	4274	2000	2000		5
419-050	KNOLLWOOD DR	E3	7	MSA	101	10	466.610468	URBAN	Asphalt	CITY_4	30	9		36	1866	2000	2000		5
419-060	KNOLLWOOD DR	D3	7	MSA	101	10	446.418939	URBAN	Asphalt	CITY_4	30	9		36	1786	2000	2000		5
419-070	KNOLLWOOD DR	D3	7	MSA	101	10	634.5206359	URBAN	Asphalt	CITY_4	30	9		36	2538	2000	2000		5
419-080	KNOLLWOOD DR	D3	7	MSA	101	10	635.9706576	URBAN	Asphalt	CITY_4	30	9		36	2544	2000	2000		5
419-090	KNOLLWOOD DR	D3	7	MSA	101	10	319.2613167	URBAN	Asphalt	CITY_4	30	9		36	1277	2000	2000		5
419-100	KNOLLWOOD DR	D3	7	MSA	101	10	243.3228356	URBAN	Asphalt	CITY_4	30	9		36	973	2000	2000		5
419-110	KNOLLWOOD DR	D3	7	MSA	101	20	278.7321872	URBAN E SIDE; RURAL W SIDE	Asphalt	CITY_4	30	9		32	991	1998	1998		6
419-120	KNOLLWOOD DR	D3	2	STATE			52.50475653												
419-130	KNOLLWOOD DR	D3	2	LOCAL			168.2138741	RURAL	Asphalt	CITY_4	30	4		36	673	1998	1998		6
419-140	KNOLLWOOD DR	D3	2	LOCAL			433.5132643	RURAL	Asphalt	CITY_4	30	4		26	1252	2003	2003	2014	8
419-150	KNOLLWOOD DR	D3	2	LOCAL			67.9957889	RURAL	Asphalt	CITY_4	30	4		26	196	2003	2003	2014	8
419-160	KNOLLWOOD DR	D3	2	LOCAL			271.7854626	RURAL	Asphalt	CITY_4	30	4		26	785	2002	2002	2014	8
419-170	KNOLLWOOD DR	D3	2	LOCAL			262.80222	RURAL	Asphalt	CITY_4	30	4		26	759	2002	2002	2014	8
419-180	KNOLLWOOD DR	D3	2	LOCAL			263.9994228	RURAL	Asphalt	CITY_4	30	4		26	763	2000	2000	2014	8
419-190	KNOLLWOOD DR	D3	2	LOCAL			261.1151647	RURAL	Asphalt	CITY_4	30	4		26	754	2000	2000	2014	8
419-200	KNOLLWOOD DR	D3	2	LOCAL			295.0193576	RURAL	Asphalt	CITY_4	30	4		26	852	1999	1999	2014	8
419-210	KNOLLWOOD DR	D3	2	LOCAL			496.995267	RURAL	Asphalt	CITY_4	30	4		26	1436	1999	1999	2014	8
420-010	KNOTTY PINE DR	F3	6	LOCAL			872.1664706	RURAL	Asphalt	CITY_4	30	4		26	2520	2004	2004		7
420-020	KNOTTY PINE DR	F3	6	LOCAL			269.8959332	RURAL	Asphalt	CITY_4	30	4		26	780	2004	2004		7
420-030	KNOTTY PINE DR	F3	6	LOCAL			227.2433401	RURAL	Asphalt	CITY_4	30	4		26	656	2003	2003		7
420-040	KNOTTY PINE DR	F3	6	LOCAL			635.20191	RURAL	Asphalt	CITY_4	30	4		26	1835	2003	2003		7
421-010	LAKE FOREST RD	B3	4	LOCAL			742.2591296	URBAN	Asphalt	CONTRACT	30	7		44	3629	2006	2006		8

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
421-020	LAKE FOREST RD	A3 / B3	4	LOCAL			549.3197277	URBAN	Asphalt	CONTRACT	30	7		48	2930	2004	2004		8
421-030	LAKE FOREST RD	A3	4	LOCAL			458.2884675	URBAN	Asphalt	CONTRACT	30	7		48	2444	2004	2004		8
422-010	LAKEWOOD LN	E2	7	LOCAL			1099.896534	RURAL	Asphalt	CITY_4	30	4		26	3177	1995	1995		6
423-010	LANCER DR	D2	1	LOCAL			682.3308889	RURAL	Asphalt	CITY_2	30	4		26	1971	2004	2004		7
423-020	LANCER DR	D2	1	LOCAL			271.5027736	RURAL	Asphalt	CITY_2	30	4		26	784	2004	2004		7
424-010	LANCER PL	D2	1	LOCAL			359.425392	RURAL	Asphalt	CITY_2	30	4		26	1038	2004	2004		7
425-010	LAND O LAKES RD	E4	6	LOCAL			858.0829486	RURAL	Asphalt	CITY_3	30	4	Y	26	2479	1996	1996		6
426-010	LAREDO RD	F4	6	LOCAL			858.5476994	RURAL	Asphalt	CITY_3	30	4	Y	26	2480	1996	1996		6
427-010	LAVERNE CIR	D2	2	LOCAL			718.4443745	RURAL	Asphalt	CITY_4	30	4		26	2076	2005	2005	2014	8
428-010	LYNNDALE CT	B3	2	LOCAL			364.5622433	RURAL	Asphalt	CITY_2	30	4	Y	24	972	1994	1994		6
429-010	LYNNDALE DR	C3	2	LOCAL			1346.676305	RURAL	Asphalt	CITY_2	30	4		26	3890	2006	2006		7
429-020	LYNNDALE DR	C3	2	LOCAL			318.3807534	RURAL	Asphalt	CITY_2	30	4	Y	24	849	1994	1994		7
429-030	LYNNDALE DR	C3	2	LOCAL			1280.796498	RURAL	Asphalt	CITY_2	30	4	Y	24	3415	1994	1994		6
430-010	LYNNDALE LN	C2 / C3	2	LOCAL			1815.973917	RURAL	Asphalt	CITY_2	30	4	Y	24	4843	1994	1994		7
430-020	LYNNDALE LN	B3 / C3	2	LOCAL			603.9480293	RURAL	Asphalt	CITY_2	30	4	Y	24	1611	1994	1994		7
430-030	LYNNDALE LN	B3	2	LOCAL			1099.224728	RURAL	Asphalt	CITY_2	30	4	Y	24	2931	1994	1994		7
431-010	LYNWOOD DR	C4	3	LOCAL			473.5415852	RURAL	Asphalt	CITY_1		4		26	1368	2006	2006		8
431-020	LYNWOOD DR	B4 / C4	3	LOCAL			1870.312904	RURAL	Asphalt	CITY_1		4		26	5403	2006	2006		8
431-030	LYNWOOD DR	B4	3	LOCAL			246.1575658	RURAL	Asphalt	CITY_1		4		26	711	2006	2006		8
431-040	LYNWOOD DR	B4	3	LOCAL			389.8456476	URBAN	Asphalt	CITY_1		4		40	1733	2006	2006		8
432-010	MADELINE DR	D3	3	LOCAL			605.6811155	RURAL	Asphalt	CITY_1	30	4		24	1615	1989	1989		6
432-020	MADELINE DR	D3	3	LOCAL			732.3602275	RURAL	Asphalt	CITY_1	30	4		24	1953	1989	1989		6
433-010	MAPLETON CT	F3	6	LOCAL			21.68892129	RURAL	Asphalt	CITY_4	30	4		26	63	2002	2002		7
433-020	MAPLETON CT	F3	6	LOCAL			324.1594731	RURAL	Asphalt	CITY_4	30	4		26	936	2002	2002		7
434-010	MAPLEWOOD DR	D2	2	LOCAL			1386.561355	RURAL	Asphalt	CITY_4	30	4		24	3697	1989	1989		6
434-020	MAPLEWOOD DR	D2	2	LOCAL			1222.030838	RURAL	Asphalt	CITY_4	30	4		24	3259	1989	1989		6
434-030	MAPLEWOOD DR	D2	2	LOCAL			341.3134061	RURAL	Asphalt	CITY_4		4		24	910	1989	1989		6
435-010	MARBLE RD	F3	6	LOCAL			198.6173922	RURAL	Asphalt	CITY_4	30	4		26	574	2003	2003		7
435-020	MARBLE RD	F3	6	LOCAL			368.930044	RURAL	Asphalt	CITY_4	30	4		26	1066	2003	2003		7
435-030	MARBLE RD	F3	6	LOCAL			373.8229209	RURAL	Asphalt	CITY_4	30	4		26	1080	2003	2003		7
435-040	MARBLE RD	F3	6	LOCAL			246.727777	RURAL	Asphalt	CITY_4	30	4		26	713	2003	2003		7
435-050	MARBLE RD	F3	6	LOCAL			714.564716	RURAL	Asphalt	CITY_4		4		26	2064	2006	2006		7
436-010	MAROHN RD	D2	7	LOCAL			1374.672226	RURAL	Asphalt	CITY_3	30	4		24	3666	1991	1991		6
437-010	MARY ST	D3	3	LOCAL			713.2047724	RURAL	Asphalt	CITY_1	30	4		24	1902	1989	1989		6
437-020	MARY ST	D3	3	LOCAL			416.7299673	RURAL	Asphalt	CITY_1	30	4		24	1111	1989	1989		6
438-010	MARYLAND RD	F3	6	LOCAL			735	RURAL	Asphalt	CITY_3	30	4		26	2123	1995	1995		6
439-010	MEDFORD RD	F3	6	LOCAL			536.3747808	RURAL	Asphalt	CITY_3	30	4		26	1550	1995	1995		6
440-010	MEMORYWOOD DR	D2	1	STATE			53.18469524			CITY_1									
440-020	MEMORYWOOD DR	D2	1	MSA	104	10	79.19189315	RURAL	Asphalt	CITY_1		5		36	317	1989	1989		6
440-030	MEMORYWOOD DR	D2	1	MSA	104	10	107.2361279	RURAL	Asphalt	CITY_1	30	5		34	405	1989	1989		6
440-040	MEMORYWOOD DR	D2	1	MSA	104	10	645.2990191	RURAL	Asphalt	CITY_1	30	5		34	2438	1989	1989		5
440-050	MEMORYWOOD DR	D2	1	MSA	104	10	506.3721554	RURAL	Asphalt	CITY_1	30	5		34	1913	1989	1989		6
440-060	MEMORYWOOD DR	D2	1	MSA	104	10	1582.536319	RURAL	Asphalt	CITY_1	30	5		34	5978	1989	1989		6
440-070	MEMORYWOOD DR	D2	1	MSA	104	10	112.9859519	RURAL	Asphalt	CITY_1	30	5		34	427	1989	1989		6
440-080	MEMORYWOOD DR	D2	1	MSA	104	10	1508.250713	RURAL	Asphalt	CITY_1	30	5		34	5698	1989	1989		6
440-090	MEMORYWOOD DR	C2	1	MSA	104	10	459.386533	RURAL	Asphalt	CITY_1	30	5		34	1735	1989	1989		6
440-100	MEMORYWOOD DR	C2	1	MSA	104	10	333.60943	RURAL	Asphalt	CITY_1	30	5		34	1260	1989	1989		6
440-110	MEMORYWOOD DR	C2	2	MSA	104	10	1523.762606	RURAL	Asphalt	CITY_1	30	5		34	5756	1989	1989		6
440-120	MEMORYWOOD DR	C2	2	MSA	104	10	1544.932311	RURAL	Asphalt	CITY_1	30	5		34	5836	1989	1989		6
440-130	MEMORYWOOD DR	C2	2	MSA	104	10	567.9501093	RURAL	Asphalt	CITY_1	30	5		34	2146	1989	1989		6
441-010	MEREDITH DR	E1 / E2	1	STATE			56.86122303			CITY_3									
441-020	MEREDITH DR	D1	1	LOCAL			207.6191103	RURAL	Asphalt	CITY_2		4		26	600				7
441-030	MEREDITH DR	D1	1	LOCAL			1268.3515	RURAL	Asphalt	CITY_2	30	4		26	3664	2004	2004		8
441-040	MEREDITH DR	D1	1	LOCAL			710.721298	RURAL	Asphalt	CITY_2	30	4		26	2053	2004	2004		8
441-050	MEREDITH DR	D1	1	LOCAL			585.1244005	RURAL	Asphalt	CITY_2	30	4		26	1690	2004	2004		7
441-060	MEREDITH DR	D1	1	LOCAL			535.4639027	RURAL	Asphalt	CITY_2	30	4		26	1547	2003	2003		7
442-010	MICHELLE CIR	D1	1	LOCAL			1539.566683	RURAL	Asphalt	CITY_2	30	4		26	4448	2003	2003		7
442-020	MICHELLE CIR	D1	1	LOCAL			399.5403878	RURAL	Asphalt	CITY_2	30	4		26	1154	2003	2003		7
442-030	MICHELLE CIR	D1	1	LOCAL			205.4452559	RURAL	Asphalt	CITY_2	30	4		26	594	2003	2003		7
443-010	MILDRED RD	F3	6	LOCAL			1011.679872	RURAL	Asphalt	CITY_4	30	4		26	2923	2006	2006		8
444-010	MISSISSIPPI RD	F4	6	LOCAL			628.2943198	RURAL	Asphalt	CITY_3	30	4	Y	24	1675	1988	1988		5
445-010	MOUNTAIN ASH DR	E2 / F2	7	LOCAL			3394.021196	RURAL	Asphalt	CITY_4	30	4		24	9051	2003	2003	2014	8
445-020	MOUNTAIN ASH DR	E2	7	LOCAL			758.9931804	RURAL	Asphalt	CITY_4	30	4		24	2024	2003	2003	2014	8
445-030	MOUNTAIN ASH DR	E2	7	LOCAL			283.7101337	RURAL	Asphalt	CITY_4	30	4		24	757	1992	1992		7

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
445-040	MOUNTAIN ASH DR	E2	7	LOCAL			846.6531065	RURAL	Asphalt	CITY_4	30	4		24	2258	1992	1992		6
445-050	MOUNTAIN ASH DR	E2	7	LOCAL			954.3786113	RURAL	Asphalt	CITY_4	30	4		24	2545	1992	1992		6
446-010	NOBLE FIR DR	E2	7	LOCAL			346.1563396	RURAL	Asphalt	CITY_3	30	4		26	1000	2001	2001		7
447-010	NORTHERN OAK DR	E2	7	LOCAL			338.97562	RURAL	Asphalt	CITY_3	30	4		26	979	2001	2001		7
448-010	NORTHWOODS DR	C2	2	LOCAL			695.3563001	RURAL	Asphalt	CITY_2	30	4		26	2009	1997	1997	2015	8
448-020	NORTHWOODS DR	C2	2	LOCAL			406.7491825	RURAL	Asphalt	CITY_2	30	4		26	1175	1997	1997	2015	8
449-010	NORWAY DR	D1	1	LOCAL			2766.929674	RURAL	Asphalt	CITY_2	30	4		26	7993	2004	2004		8
450-010	NORWAY SPRUCE DR	E2	7	LOCAL			547.0445274	RURAL	Asphalt	CITY_3		4		26	1580	2006	2006		8
450-020	NORWAY SPRUCE DR	E2	7	LOCAL			191.5422522	RURAL	Asphalt	CITY_3	30	4		26	553	2006	2006		8
450-030	NORWAY SPRUCE DR	E2	7	LOCAL			287.0087854	RURAL	Asphalt	CITY_3	30	4		26	829	2001	2001		7
450-040	NORWAY SPRUCE DR	E2	7	LOCAL			615.2151364	RURAL	Asphalt	CITY_3	30	4		26	1777	2001	2001		7
451-010	NOVOTNY RD	B4	4	LOCAL			237.9951647	URBAN	Asphalt	CONTRACT	30	7		52	1375	2004	2004		7
451-020	NOVOTNY RD	B4	4	STATE			84.69614157			CONTRACT									
451-030	NOVOTNY RD	B4	4	MSA	114	10	214.8969862	RURAL	Asphalt	CONTRACT	30	10		24	573	2015	2015		10
451-040	NOVOTNY RD	B4	4	MSA	114	10	533.6997356	RURAL	Asphalt	CONTRACT	30	10		24	1423	2015	2015		10
451-050	NOVOTNY RD	B4	4	MSA	114	10	505.1338666	RURAL	Asphalt	CONTRACT	30	10		24	1347	2015	2015		10
452-010	OAK ST	D2	1	LOCAL			600.806355	RURAL	Asphalt	CITY_2	30	4		24	1602	1992	1992		6
452-020	OAK ST	D2	1	LOCAL			466.0032788	RURAL	Asphalt	CITY_2	30	4		24	1243	1992	1992		6
452-030	OAK ST	D2	1	LOCAL			595.9619394	RURAL	Asphalt	CITY_2	30	4		24	1589	1992	1992		6
453-010	OAKDALE RD	F3	6	LOCAL			444.6612825	RURAL	Asphalt	CITY_4	30	4		26	1285	2004	2004		7
453-020	OAKDALE RD	F3	6	LOCAL			809.9937195	RURAL	Asphalt	CITY_4	30	4		26	2340	2004	2004		7
454-010	OAKWOOD DR	D1	1	LOCAL			1213.56981	RURAL	Asphalt	CITY_2	30	4		26	3506	2002	2002		7
454-020	OAKWOOD DR	C1 / D1	1	LOCAL			856.0850502	RURAL	Asphalt	CITY_2	30	4		26	2473	2002	2002		7
454-030	OAKWOOD DR	C1 / C2	1	LOCAL			2867.765971	RURAL	Asphalt	CITY_1	30	4		26	8285	2002	2002		7
454-040	OAKWOOD DR	C2	1	LOCAL			1007.251502	RURAL	Asphalt	CITY_1	30	4		26	2910	2002	2002		7
455-010	OLIVEWOOD DR	D1	1	LOCAL			651.1095331	RURAL	Asphalt	CITY_2	30	4	Y	24	1736	1994	1994		5
455-020	OLIVEWOOD DR	D1	1	LOCAL			1430.775452	RURAL	Asphalt	CITY_2	30	4	Y	24	3815	1994	1994		6
455-030	OLIVEWOOD DR	D1	1	LOCAL			752.3306431	RURAL	Asphalt	CITY_2	30	4	Y	24	2006	1994	1994		7
455-040	OLIVEWOOD DR	C1	1	LOCAL			366.8100815	RURAL	Asphalt	CITY_2	30	4		26	1060	2007	2007		7
456-010	OTTERTAIL CIR	F3	6	LOCAL			948.8812595	RURAL	Asphalt	CITY_4	30	4		26	2741	2004	2004		7
457-010	PAPER BIRCH CIR	D1	1	LOCAL			237.9289385	RURAL	Asphalt	CITY_2	30	4		26	687	2002	2002		7
458-010	PAPER BIRCH DR	D1	1	LOCAL			640.7414347	RURAL	Asphalt	CITY_2	30	4		26	1851	2003	2003		7
458-020	PAPER BIRCH DR	D1	1	LOCAL			560.468432	RURAL	Asphalt	CITY_2	30	4		26	1619	2002	2002		7
459-010	PARIS RD	F3	6	LOCAL			407.4634928	RURAL	Asphalt	CITY_4	30	4		28	1268	1999	1999		6
459-020	PARIS RD	F3	6	LOCAL			702.8643043	RURAL	Asphalt	CITY_4	30	4		28	2187	1999	1999	2014	8
460-010	PARK ST	D3	7	LOCAL			705.3582224	RURAL	Asphalt	CITY_4	30	4		26	2038	2000	2000	2014	8
461-010	PARKVIEW CIR	F3	6	LOCAL			715.7452162	RURAL	Asphalt	CITY_3	30	4	Y	24	1909	1995	1995		6
462-010	PARKWOOD CT	E2 / E3	7	LOCAL			700.9986685	RURAL	Asphalt	CITY_4	30	4		26	2025	1999	1999		6
463-010	PARKWOOD DR	E2	7	LOCAL			292.9989427	RURAL	Asphalt	CITY_4	30	4		26	846	1998	1998		6
463-020	PARKWOOD DR	E2	7	LOCAL			442.3957236	RURAL	Asphalt	CITY_4	30	4		26	1278	1998	1998		6
463-030	PARKWOOD DR	E2	7	LOCAL			577.4108641	RURAL	Asphalt	CITY_4	30	4		26	1668	1998	1998		6
463-040	PARKWOOD DR	E2	7	LOCAL			648.9646385	RURAL	Asphalt	CITY_4	30	4		26	1875	1998	1998		6
463-050	PARKWOOD DR	E2 / E3	7	LOCAL			300.0033272	RURAL	Asphalt	CITY_4	30	4		24	800	1992	1992	2014	8
463-060	PARKWOOD DR	D3 / E3	7	LOCAL			578.7886779	RURAL	Asphalt	CITY_4	30	4		24	1543	2000	2000	2014	8
464-010	PEARL DR	B4	4	LOCAL			664.6464155	URBAN	Asphalt	CONTRACT	30	7		36	2659	2004	2004		8
465-010	PERCH LAKE DR	E3	5	LOCAL			476.5435432	RURAL	Asphalt	PRIVATE	30	4		26	1377	2005	2005		8
466-010	RED PINE CIR	D4 / E4 / E5	5	LOCAL			2371.161487	RURAL	Asphalt	CITY_3	30	4		24	6323	2002	2002		7
467-010	RED SEQUOIA DR	C1	1	LOCAL			1083.016364	RURAL	Asphalt	CITY_2		4		26	3129	2007	2007		7
468-010	RIVER VISTA CT	F3 / F4	6	LOCAL			484.7089779	RURAL	Asphalt	CITY_3	30	4	Y	24	1293	1990	1990		2
469-010	RIVER VISTA DR	F3	6	LOCAL			1010.409773	RURAL	Asphalt	CITY_3	30	4	Y	24	2694	1988	1988		4
469-020	RIVER VISTA DR	F3	6	LOCAL			938.2975608	RURAL	Asphalt	CITY_3	30	4	Y	24	2502	1988	1988		3
469-030	RIVER VISTA DR	F3	6	LOCAL			1090.942874	RURAL	Asphalt	CITY_3	30	4	Y	24	2909	1986	1986		3
469-040	RIVER VISTA DR	F3	6	LOCAL			396.8644007	RURAL	Asphalt	CITY_3	30	4	Y	24	1058	1986	1986		2
470-010	RIVERWOOD RD	F3	6	LOCAL			612.6084006	RURAL	Asphalt	CITY_3	30	4	Y	26	1770	1997	1997		6
471-010	ROCKROSE DR	C3	2	LOCAL			735.8595008	na	Non-Ex	CITY_2	30	4		26	2126	2004	2004		
471-020	ROCKROSE DR	C3	2	LOCAL			170.1484002	RURAL	Asphalt	CITY_2	30	4		26	492	2004	2004		8
471-030	ROCKROSE DR	C3	2	LOCAL			426.0062004	RURAL	Asphalt	CITY_2	30	4		26	1231	2004	2004		7
472-010	SAVANNAH OAKS DR	E2	7	LOCAL			789.6119821	RURAL	Asphalt	CITY_3		4		26	2281	2006	2006		8
472-020	SAVANNAH OAKS DR	E2	7	LOCAL			1010.326876	RURAL	Asphalt	CITY_3		4		26	2919	2006	2006		8
473-010	SCENIC RIVER DR	F4	6	LOCAL			636.640484	RURAL	Asphalt	CITY_3	30	4	Y	24	1698	1990	1990		5
473-020	SCENIC RIVER DR	F4	6	LOCAL			869.1040885	RURAL	Asphalt	CITY_3	30	4	Y	24	2318	1995	1995		5
473-030	SCENIC RIVER DR	F4	6	LOCAL			1039.952482	RURAL	Asphalt	CITY_3	30	4	Y	24	2773	1995	1995		5
473-040	SCENIC RIVER DR	E4	6	LOCAL			519.7135473	RURAL	Asphalt	CITY_3	30	4	Y	24	1386	1995	1995		5
473-050	SCENIC RIVER DR	E4	6	LOCAL			1253.432755	RURAL	Asphalt	CITY_3	30	4	Y	24	3342	1995	1995		5

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
474-010	SECOND ST	E2	7	LOCAL			879.080653	RURAL	Asphalt	CITY_3	30	4		26	2540	2003	2003		7
474-020	SECOND ST	E2	7	LOCAL			700.5444002	RURAL	Asphalt	CITY_3	30	4		26	2024	2003	2003		7
474-030	SECOND ST	E2	7	LOCAL			465.5281007	RURAL	Asphalt	CITY_3	30	4		24	1241	1991	1991		6
474-040	SECOND ST	E2	7	LOCAL			466.7772843	RURAL	Asphalt	CITY_3	30	4		24	1245	1991	1991		6
474-050	SECOND ST	E2	7	LOCAL			462.2462312		Non-Ex										
475-010	SHADOWWOOD DR	D2	1	LOCAL			1204.883708	RURAL	Asphalt	CITY_2	30	4		26	3481	2004	2004		7
476-010	SHOREVIEW DR	C1	1	LOCAL			1865.658339	RURAL	Asphalt	CITY_2	30	4		26	5390	2007	2007		7
477-010	SPRINGWOOD CT	C2	2	LOCAL			251.0906554	RURAL	Asphalt	CITY_2	30	4		26	725	2001	2001		7
478-010	SPRINGWOOD DR	C2	2	LOCAL			666.2080021	RURAL	Asphalt	CITY_2	30	4	Y	26	1925	2001	2001		7
479-010	TIMBERLANE DR	D3	7	LOCAL			848.0673365	RURAL	Asphalt	CITY_4	30	4		26	2450	2000	2000	2014	8
479-020	TIMBERLANE DR	D3	7	LOCAL			613.557671	RURAL	Asphalt	CITY_4	30	4		26	1772	2000	2000	2014	8
479-030	TIMBERLANE DR	D3	7	LOCAL			1899.789425	RURAL	Asphalt	CITY_4	30	4		26	5488	2000	2000	2014	8
479-040	TIMBERLANE DR	D3	7	LOCAL			214.2713909	RURAL	Asphalt	CITY_4	30	4		26	619	2000	2000	2014	8
480-010	TIMBERWOOD DR	E1	7	LOCAL			930.513725	URBAN	Asphalt	CITY_3		9		36	3722	2010	2010		9
481-010	TRAVINE DR	D2	1	LOCAL			1409.400039	RURAL	Asphalt	CITY_2	30	4		26	4072	2003	2003	2014	8
481-020	TRAVINE DR	D2	1	LOCAL			363.7792467	RURAL	Asphalt	CITY_2	30	4		26	1051	2003	2003	2014	8
481-030	TRAVINE DR	D2	1	LOCAL			815.5970459	RURAL	Asphalt	CITY_2	30	4		26	2356	2002	2002	2014	8
481-040	TRAVINE DR	D1	1	LOCAL			459.2756607	RURAL	Asphalt	CITY_2	30	4		26	1327	2002	2002	2014	8
481-050	TRAVINE DR	C1	1	LOCAL			396.5432963	RURAL	Asphalt	CITY_2	30	4		26	1146	2002	2002	2014	8
482-010	UNIVERSAL RD	C4	4	MSA	117	10	1179.573307	RURAL	Asphalt	CONTRACT	30	4		24	3146	1995	1995		5
483-010	WEDGEWOOD RD	E2	7	LOCAL			482.5781027	RURAL	Asphalt	CITY_4	30	4		24	1287	1995	1995		6
483-020	WEDGEWOOD RD	E2	7	LOCAL			479.0587913	RURAL	Asphalt	CITY_4	30	4		24	1277	1998	1998		6
483-030	WEDGEWOOD RD	E2	7	LOCAL			914.1178295	RURAL	Asphalt	CITY_4	30	4		24	2438	1999	1999		6
483-040	WEDGEWOOD RD	E2	7	LOCAL			764.9408534	RURAL	Asphalt	CITY_4	30	4		26	2210	1999	1999		6
484-010	WELTON RD	C2	2	LOCAL			610.6626051	RURAL	Asphalt	CITY_2	30	4	Y	24	1628	1995	1995		6
484-020	WELTON RD	C2	2	LOCAL			409.1258847	RURAL	Asphalt	CITY_2	30	4	Y	24	1091	1995	1995		6
484-030	WELTON RD	C2 / B2	2	LOCAL			1019.724887	RURAL	Asphalt	CITY_2	30	4	Y	24	2719	1995	1995		6
484-040	WELTON RD	B2	2	LOCAL			687.0237693	RURAL	Asphalt	CITY_2	30	4	Y	24	1832	1995	1995		6
485-010	WHISPERING WOODS LN	B4	4	LOCAL			462.481955	URBAN	Asphalt	CONTRACT	30	7		36	1850	2002	2002		7
485-020	WHISPERING WOODS LN	B4	4	LOCAL			162.2847009	URBAN	Asphalt	CONTRACT	30	7		36	649	2002	2002		7
485-030	WHISPERING WOODS LN	B4	4	LOCAL			822.6586829	RURAL	Gravel	CONTRACT									
486-010	WHITE PINE DR	C4	3	LOCAL			244.347614	RURAL	Asphalt	CITY_1		4		14	380	2006	2006		8
487-010	WILDFLOWER DR	C4 / B4	3	LOCAL			1235.770676	RURAL	Asphalt	CITY_1		4		26	3570	2014	2014		10
487-020	WILDFLOWER DR	B4	3	LOCAL			898.4707952	RURAL	Asphalt	CITY_1		4		26	2596	2014	2014		10
488-010	WOIDA RD	B3	3	LOCAL			1560.678528	RURAL	Asphalt	COUNTY	30	4	Y	24	4162	1989	1989		4
488-020	WOIDA RD	B3	3	LOCAL			541.8257631	RURAL	Asphalt	CITY_2	30	4	Y	24	1445	1989	1989		4
488-030	WOIDA RD	B3	3	LOCAL			583.003459	RURAL	Asphalt	CITY_2	30	4		26	1684	2014	2014		10
488-040	WOIDA RD	B3	3	MSA	108	10	839.9377503	RURAL	Asphalt	CITY_1	30	4		24	2240	1985	1985		4
488-050	WOIDA RD	B3	3	MSA	108	10	328.9792891	RURAL	Asphalt	CITY_1	30	4		24	877	1985	1985		4
488-060	WOIDA RD	B3	3	MSA	108	10	1179.406131	RURAL	Asphalt	CITY_1	30	4		24	3145	1985	1985		4
488-070	WOIDA RD	B3	3	MSA	108	10	595.9586179	RURAL	Asphalt	CITY_1	30	4		24	1589	1985	1985		4
488-080	WOIDA RD	B3 / B4	3	MSA	108	10	641.0289042	RURAL	Asphalt	CITY_1	30	4		24	1709	1985	1985		4
488-090	WOIDA RD	B4	3	MSA	108	10	717.0318316	RURAL	Asphalt	CITY_1	30	4		24	1912	1985	1985		4
488-100	WOIDA RD	B4	3	MSA	108	14	324.4785158	RURAL	Asphalt	CITY_1	30	4		44	1586	2006	2006		7
488-110	WOIDA RD	B4	3	MSA	108	14	417.3262417	RURAL	Asphalt	CITY_1	30	4		44	2040	2006	2006		7
488-120	WOIDA RD	B4	3	MSA	108	14	263.2641584	RURAL	Asphalt	CONTRACT	30	7		44	1287	2006	2006		7
488-130	WOIDA RD	B4	3	STATE			82.43920152			CONTRACT									
488-140	WOIDA RD	B4	4	MSA	108	15	257.1737042	URBAN	Asphalt	CONTRACT	30	9		44	1257	1993	1993		6
488-150	WOIDA RD	B4	4	MSA	108	20	804.2773835	URBAN	Asphalt	CONTRACT	30	9		36	3217	1996	1996		6
489-010	WOODLAND RD	D3	7	LOCAL			487.0614138	RURAL	Asphalt	CITY_4	30	4		24	1299	2000	2000	2014	8
490-010	CAMWOOD CT	E4	6	LOCAL			661.713062		Gravel	PRIVATE		4							
491-010	CAMWOOD TRL	E4	6	LOCAL			583.3957337		Gravel	PRIVATE		4							
491-020	CAMWOOD TRL	E4	6	LOCAL			508.9094029		Gravel	PRIVATE		4							
492-010	DAKAR RD	C3	2	LOCAL			294.8415327	RURAL	Asphalt			7		26	852				8
493-010	WHITE SAND RD	D2	1	PRIVATE			164.5942904	RURAL	Asphalt	PRIVATE				20	366				4
493-020	WHITE SAND RD	D2	1	PRIVATE			130.5344218	RURAL	Gravel	PRIVATE									
494-010		C3	2	PRIVATE			462.1687999		Non-Ex										
494-020		C3	2	PRIVATE			485.1593975		Non-Ex										
495-010		C3	2	PRIVATE			186.2835407		Non-Ex										
496-010	ROCKROSE DR	C3	2	PRIVATE			369.6794261		Non-Ex										
496-020	ROCKROSE DR	C3	2	PRIVATE			82.68975412		Non-Ex										
497-010	ROSE DR	D4	5	PRIVATE			344.0528129		Non-Ex	PRIVATE									
498-010	PINEWOOD RD	D1	1	PRIVATE			609.1504795		Non-Ex										
701-010	ARROWWOOD DR	D3	5	PRIVATE			403.3782928			PRIVATE									

Street Pavement Database
January 22, 2016

Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	MSA Route	MSA Segment	Shape Length	Section	Street Surface	Plow Route	Speed Limit	Load Limit	Needs Water / Sewer Installed	Pavement Width	Sq Yds	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating
702-010	BLUESTEM CT	D3	3	PRIVATE			215.2996273												
702-020	BLUESTEM CT	D3	3	PRIVATE			586.1440385												
703-010	BROADMOOR DR	C4	4	PRIVATE			751.3329011			PRIVATE									
704-010	BUR OAK DR	B1 / C1	1	PRIVATE			2626.822439			PRIVATE									
705-010	CARDINAL DR	D3	5	PRIVATE			635.5004679			PRIVATE									
706-010	DALTON RD	C4	4	PRIVATE			296.7750726			PRIVATE									
706-020	DALTON RD	C4	4	PRIVATE			276.7921031			PRIVATE									
707-010	FAIRWAY DR	C4	4	PRIVATE			225.5346307			PRIVATE									
707-020	FAIRWAY DR	C4	4	PRIVATE			476.2298953			PRIVATE									
708-010	FOUNTAIN RD	D3	2	PRIVATE			673.0036925			PRIVATE									
708-020	FOUNTAIN RD	D3	2	PRIVATE			330.4688349			PRIVATE	0								
709-010	GARLAND DR	B3	3	PRIVATE			210.7890911			PRIVATE									
710-010	GARRISON RD	D4	5	PRIVATE			701.4298187			PRIVATE	30			36	2806	1998	1998		
711-010	GREY WOLF RD	D4	5	PRIVATE			470.4619067			PRIVATE									
712-010	GROUSE DR	D3	5	PRIVATE			416.0067947			PRIVATE									
713-010	ISLE COURT	E3	5	PRIVATE			750			PRIVATE									
714-010	HILLY OAKS DR	G1	7	PRIVATE			4126.553966			PRIVATE									
715-010	HOSTA DR	D3	5	PRIVATE			546.455258			PRIVATE									
716-010	INGLEWOOD CT	C3	2	PRIVATE			591.4467894			PRIVATE									
717-010	JERICHO RD	E2	7	PRIVATE			624.289821			PRIVATE		4							
718-010	KIMBERLEE DR	C2	2	PRIVATE			488.5518203			PRIVATE				14	760	2006	2006		
719-010	LINKS LN	C4	4	PRIVATE			81.8936256			PRIVATE									
719-020	LINKS LN	C4	4	PRIVATE			217.803267			PRIVATE									
720-010	LITTLE BASS LAKE DR	G1 / H1	7	PRIVATE			2265.159299			PRIVATE									
721-010	MEADOW CT	B3	3	PRIVATE			599.5676718			PRIVATE									
722-010	MILE LAKE DR	D1	1	PRIVATE			3507.795779			PRIVATE									
723-010	NINEBARK DR	B2 / C2	2	PRIVATE			2765.018019			PRIVATE									
724-010	PAR DR	C4	4	PRIVATE			353.5538904			PRIVATE									
724-010	PAR DR	C4	4	PRIVATE			287.0870756			PRIVATE									
725-010	PERCH LAKE DR	E3	5	PRIVATE			1049.737606		Asphalt	PRIVATE									
726-010	PERSIMMON DR	E1	7	PRIVATE			617.0249471			PRIVATE									
727-010	PRESERVE CIR	D2	7	PRIVATE			797.595342			PRIVATE						2007	2007		
728-010	RED RIVER DR	F1 / G1 / G2	7	PRIVATE			4947.335035			PRIVATE									
728-020	RED RIVER DR	F1	7	PRIVATE			5459.156594			PRIVATE									
729-010	RICHFIELD RD	G1	7	PRIVATE			137.3543837			PRIVATE									
730-010	RUSH LAKE CT	D2	7	PRIVATE			689.8886261			PRIVATE									
731-010	SANDSTONE RD	D2 / D3	2	PRIVATE			1111.1833		Asphalt	PRIVATE									
732-010	TIMBER RIDGE DR	G1 / H1	7	PRIVATE			5532.782876			PRIVATE									
733-010	ASPEN DR	D5	5	LOCAL			552.0532333	RURAL	Asphalt			4		26	1595				7
733-020	ASPEN DR	D5	5	LOCAL			363.9861943	RURAL	Asphalt			4		26	1052				7
734-010	AUDUBON SPUR	A4	4	LOCAL			251.2419996		Non-Ex										
735-070	CHERRYWOOD DR	D3	2	LOCAL			725.1143572		Non-Ex										
736-090	CYPRESS DR	C4 / D4	5	MSA	113	70	849.3420396		Non-Ex										
737-090	DELLWOOD DR	A4 / B4	4	LOCAL			2666.331119	RURAL	Asphalt			4		24	7110	1978	1978		3
739-080	ISLE DR	E3	5	LOCAL			1526.640826		Asphalt			10		36	6107	2015	2015		10
739-090	ISLE DR	E3	6	LOCAL			1760.283175		Asphalt			10		36	7041	2015	2015		10
740-010	JOLER RD	E2	7	LOCAL			351.5621928		Gravel										
740-020	JOLER RD	E2	7	LOCAL			547.4317386		Gravel										
741-010	KENNETH AVE	D3	3	LOCAL			1149.24403		Non-Ex										
743-010	MEREDITH DR	E2	7	LOCAL			547.7834059		Non-Ex										
744-010	MESA OAK DR	C2	1	PRIVATE			359.0367885												
751-160	WOIDA RD	B4	4	MSA	108	30	1116.858843		Non-Ex										
752-010	FALCON DRIVE	E3	5	LOCAL			311	URBAN	Asphalt			10		40	1382	2015	2015		10
752-020	FALCON DRIVE	E3	5	LOCAL			1270	Non-Ex											

NOTES:

Owner Code: 1 = City
2 = County
3 = State
4 = Private

New Ratings Applied Due to Various Activities:
New Pavement or FD Reclamation - 10
New Overlay - 9
New Sealcoat - 8

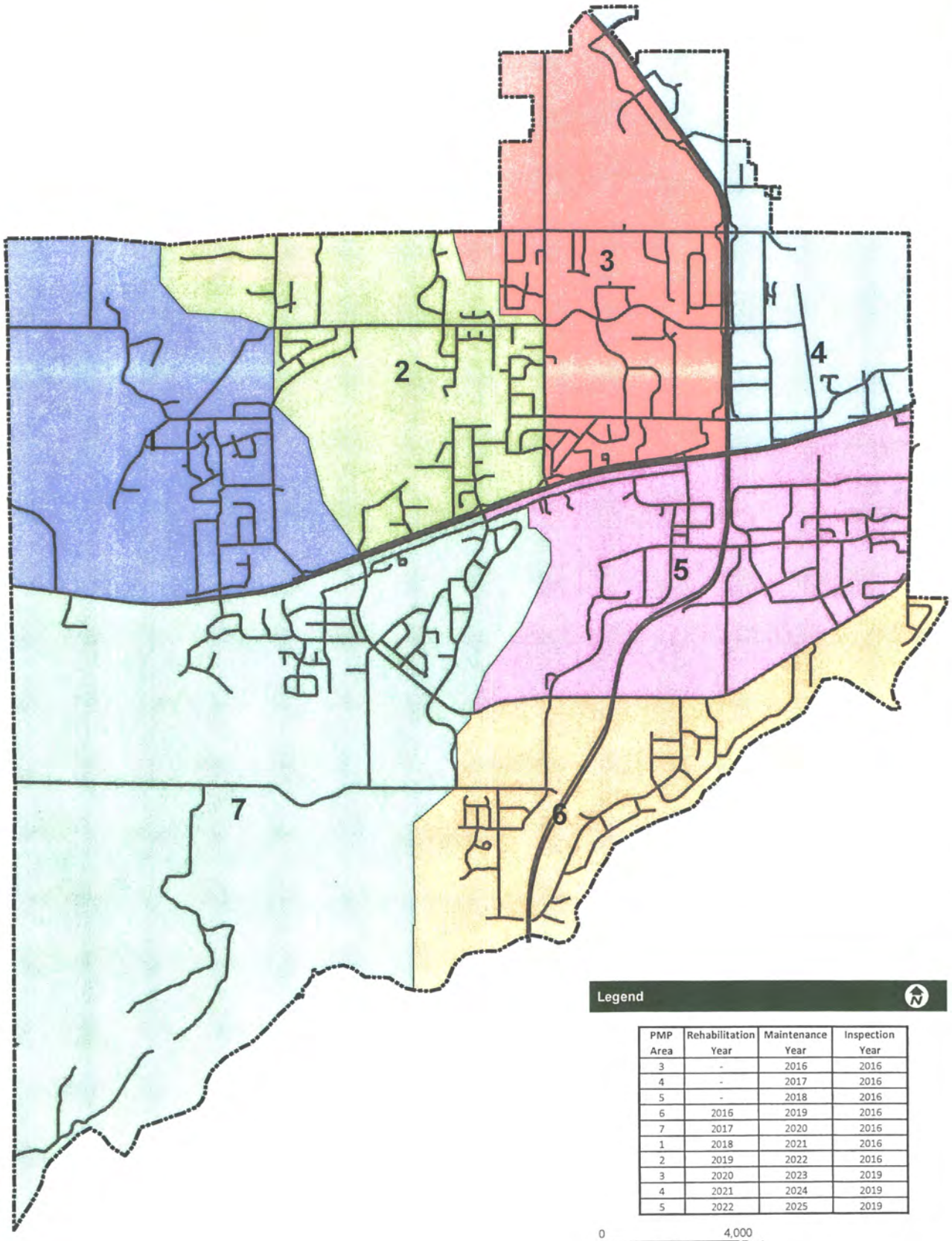
Pavement Areas (Sq Yds) - areas shown above do not include cul-de-sacs or turn lanes

Appendix B
Pavement Management Areas

Pavement Management Areas

Pavement Management Plan

January, 2016



Legend

PMP Area	Rehabilitation Year	Maintenance Year	Inspection Year
3	-	2016	2016
4	-	2017	2016
5	-	2018	2016
6	2016	2019	2016
7	2017	2020	2016
1	2018	2021	2016
2	2019	2022	2016
3	2020	2023	2019
4	2021	2024	2019
5	2022	2025	2019

0 4,000 Feet

Source: Crow Wing County, 2013 Aerial Photo - Crow Wing County

Map Document: \\arcserver1\gis\BAXTIB11110059\ESRI\Maps\Baxt_Pvmt_Mgmt_Area_85x11.mxd
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Appendix C

Pavement Management Plan and CIP

Street PMP and CIP
January 22, 2016

Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	Needs Water / Sewer Installed	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating	Proposed Improvement Year	Proposed Improvement	Proposed Cost	2016 Sealcoat Projects	2017 Sealcoat Projects	2018 Sealcoat Projects	2019 Sealcoat Projects	2020 Sealcoat Projects	2021 Sealcoat Projects	2022 Sealcoat Projects	2016 Rehab Projects	2017 Rehab Projects	2018 Rehab Projects	2019 Rehab Projects	2020 Rehab Projects	2021 Rehab Projects	2022 Rehab Projects	Future Utility Reconstruction Projects
322-010	BROWNSVILLE CIR	C1	1	LOCAL		2007	2007		8	2021	Sealcoat	$ 3,493						$ 3,493									
327-010	CEDAR SCENIC RD	C1	1	LOCAL		1997	1997		4	2018	FD Reclamation	$ 58,599						$ 3,995				$ 58,599					
327-020	CEDAR SCENIC RD	C1	1	LOCAL		1997	1997	2015	8	2021	Sealcoat	$ 10,603						$ 10,603									
327-030	CEDAR SCENIC RD	C1	1	LOCAL		1997	1997	2015	8	2018	2" Mill & Overlay	$ 28,280						$ 3,535				$ 28,280					
327-040	CEDAR SCENIC RD	C1	1	LOCAL		2007	2007	2015	8	2021	Sealcoat	$ 1,584						$ 1,584									
327-050	CEDAR SCENIC RD	C1	1	LOCAL		2007	2007	2015	8	2021	Sealcoat	$ 4,387						$ 4,387									
327-060	CEDAR SCENIC RD	C1	1	LOCAL		2007	2007	2015	8	2021	Sealcoat	$ 15,857						$ 15,857									
327-070	CEDAR SCENIC RD	C1	1	LOCAL		2007	2007	2015	8	2021	Sealcoat	$ 3,117						$ 3,117									
327-080	CEDAR SCENIC RD	C1	1	LOCAL		2007	2007	2015	8	2021	Sealcoat	$ 2,248						$ 2,248									
327-090	CEDAR SCENIC RD	C1	1	LOCAL		2002	2002	2015	8	2021	Sealcoat	$ 998						$ 998									
327-100	CEDAR SCENIC RD	C1	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 426						$ 426									
327-110	CEDAR SCENIC RD	C1	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 4,857						$ 4,857									
327-120	CEDAR SCENIC RD	C1 / C2	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 3,681						$ 3,681									
327-130	CEDAR SCENIC RD	C2	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 6,852						$ 6,852									
332-010	CIRCLE PINES RD	C2	1	LOCAL		1993	1993		6	2017	2" Mill & Overlay	$ 71,300						$ 8,912			$ 71,300						
334-010	CLEARWATER RD	C2	1	LOCAL		1980	2011		9	2021	Sealcoat	$ 1,082						$ 1,082									
334-020	CLEARWATER RD	C2	1	LOCAL	Y	1980	2011		9	TBD	Reconstruction	$ 204,458															$ 204,458
334-030	CLEARWATER RD	C2	1	LOCAL	Y	1980	2011		9	TBD	Reconstruction	$ 83,379															$ 83,379
334-040	CLEARWATER RD	C2	1	LOCAL	Y	1980	2011		8	TBD	Reconstruction	$ 88,862															$ 88,862
343-010	DEERWOOD RD	D1	1	LOCAL	Y					TBD	Reconstruction	$ 102,853															$ 102,853
343-020	DEERWOOD RD	D1	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 3,777						$ 3,777									
343-030	DEERWOOD RD	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 1,237						$ 1,237									
343-040	DEERWOOD RD	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 3,387						$ 3,387									
343-050	DEERWOOD RD	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 2,915						$ 2,915									
355-010	EMILY CIR	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 10,928						$ 1,366				$ 10,928					
356-010	EMILY RD	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 23,473						$ 2,934				$ 23,473					
356-020	EMILY RD	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 26,312						$ 3,289				$ 26,312					
356-030	EMILY RD	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 32,189						$ 4,024				$ 32,189					
362-010	FAIRVIEW RD	D1	1	LOCAL					7	2021	Sealcoat	$ 2,005						$ 2,005									
362-020	FAIRVIEW RD	D1	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 4,546						$ 4,546									
362-030	FAIRVIEW RD	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 5,004						$ 5,004									
362-040	FAIRVIEW RD	D2	1	LOCAL		1998	1998		5	2016	FD Reclamation	$ 30,109						$ 2,053		$ 30,109							
362-050	FAIRVIEW RD	D2	1	LOCAL		1998	1998		5	2018	2" Mill & Overlay	$ 16,123						$ 2,015				$ 16,123					
362-060	FAIRVIEW RD	D2	1	LOCAL		1989	1989		4	2018	FD Reclamation	$ 129,672						$ 8,841				$ 129,672					
368-010	FORESTON RD	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 1,204						$ 1,204									
391-010	HONEYSUCKLE WAY	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 4,981						$ 4,981									
391-020	HONEYSUCKLE WAY	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 1,578						$ 1,578									
391-030	HONEYSUCKLE WAY	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 4,560						$ 4,560									
409-010	KELLY CIR	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 10,928						$ 1,366				$ 10,928					
410-010	KELLY DR	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 20,072						$ 2,509				$ 20,072					
410-020	KELLY DR	D2	1	LOCAL		1996	1996		6	2018	2" Mill & Overlay	$ 57,569						$ 7,196				$ 57,569					
423-010	LANCER DR	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 4,435						$ 4,435									
423-020	LANCER DR	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 1,765						$ 1,765									
424-010	LANCER PL	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 2,336						$ 2,336									
441-020	MEREDITH DR	D1	1	LOCAL					7	2021	Sealcoat	$ 1,350						$ 1,350									
441-030	MEREDITH DR	D1	1	LOCAL		2004	2004		8	2021	Sealcoat	$ 8,244						$ 8,244									
441-040	MEREDITH DR	D1	1	LOCAL		2004	2004		8	2021	Sealcoat	$ 4,620						$ 4,620									
441-050	MEREDITH DR	D1	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 3,803						$ 3,803									
441-060	MEREDITH DR	D1	1	LOCAL		2003	2003		7	2021	Sealcoat	$ 3,481						$ 3,481									
442-010	MICHELLE CIR	D1	1	LOCAL		2003	2003		7	2021	Sealcoat	$ 10,007						$ 10,007									
442-020	MICHELLE CIR	D1	1	LOCAL		2003	2003		7	2021	Sealcoat	$ 2,597						$ 2,597									
442-030	MICHELLE CIR	D1	1	LOCAL		2003	2003		7	2021	Sealcoat	$ 1,335						$ 1,335									
449-010	NORWAY DR	D1	1	LOCAL		2004	2004		8	2021	Sealcoat	$ 17,985						$ 17,985									
452-010	OAK ST	D2	1	LOCAL		1992	1992		6	2017	2" Mill & Overlay	-						$ 3,605			-						
452-020	OAK ST	D2	1	LOCAL		1992	1992		6	2017	2" Mill & Overlay	-						$ 2,796			-						
452-030	OAK ST	D2	1	LOCAL		1992	1992		6	2017	2" Mill & Overlay	$ 88,200						$ 3,576			$ 88,200						
454-010	OAKWOOD DR	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 7,888						$ 7,888									
454-020	OAKWOOD DR	C1 / D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 5,565						$ 5,565									
454-030	OAKWOOD DR	C1 / C2	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 18,640						$ 18,640									
454-040	OAKWOOD DR	C2	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 6,547						$ 6,547									
455-010	OLIVEWOOD DR	D1	1	LOCAL	Y	1994	1994		5	TBD	Reconstruction	$ 121,540															$ 121,540
455-020	OLIVEWOOD DR	D1	1	LOCAL	Y	1994	1994		6	TBD	Reconstruction	$ 267,078															$ 267,078
455-030	OLIVEWOOD DR	D1	1	LOCAL	Y	1994	1994		7	TBD	Reconstruction	$ 140,435															$ 140,435
455-040	OLIVEWOOD DR	C1	1	LOCAL		2007	2007		7	2021	Sealcoat	$ 2,384						$ 2,384									
457-010	PAPER BIRCH CIR	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 1,547						$ 1,547									
458-010	PAPER BIRCH DR	D1	1	LOCAL		2003	2003		7	2021	Sealcoat	$ 4,165						$ 4,165									
458-020	PAPER BIRCH DR	D1	1	LOCAL		2002	2002		7	2021	Sealcoat	$ 3,643						$ 3,643									
467-010	RED SEQUOIA DR	C1	1	LOCAL		2007	2007		7	2021	Sealcoat	$ 7,040						$ 7,040									
475-010	SHADOWWOOD DR	D2	1	LOCAL		2004	2004		7	2021	Sealcoat	$ 7,832						$ 7,832									
476-010	SHOREVIEW DR	C1	1	LOCAL		2007	2007		7	2021	Sealcoat	$ 12,127						$ 12,127									
481-010	TRAVINE DR	D2	1	LOCAL		2003	2003	2014	8	2021	Sealcoat	$ 9,161						$ 9,161									
481-020	TRAVINE DR	D2	1	LOCAL		2003	2003	2014	8	2021	Sealcoat	$ 2,365						$ 2,365									
481-030	TRAVINE DR	D2	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 5,301						$ 5,301									
481-040	TRAVINE DR	D1	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 2,985						$ 2,985									
481-050	TRAVINE DR	C1	1	LOCAL		2002	2002	2014	8	2021	Sealcoat	$ 2,578						$ 2,578									
302-010	ART WARD DR	D2	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 2,590							$ 2,590								
302-020	ART WARD DR	D2	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 2,969							$ 2,969								
302-030	ART WARD DR	D2	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 3,637							$ 3,637								
304-010	ASHLEY RD	B1 / B2	2	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 529,494															$ 529,494
308-010	BARBERRY CT	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 1,548							$ 1,548								
311-010	BAXTER LIONS RD	D2	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 3,041							$ 3,041								
312-010	BAYWOOD RD	C2	2	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 160,759															$ 160,759
316-010	BLACK OAK RD	C2	2	LOCAL	Y	2001	2001		7	TBD	Reconstruction	$ 92,562															$ 92,562
316-020	BLACK OAK RD	C2	2	LOCAL		2001	2001		7	2022	Sealcoat	$ 985							$ 985								
317-010	BLACKBERRY CT	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 1,531							$ 1,531								
323-010	CALCUTTA RD	C3	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 6,469							$ 6,469								

Street PMP and CIP
January 22, 2016

Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	Needs Water / Sewer Installed	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating	Proposed Improvement Year	Proposed Improvement	Proposed Cost	2016 Sealcoat Projects	2017 Sealcoat Projects	2018 Sealcoat Projects	2019 Sealcoat Projects	2020 Sealcoat Projects	2021 Sealcoat Projects	2022 Sealcoat Projects	2016 Rehab Projects	2017 Rehab Projects	2018 Rehab Projects	2019 Rehab Projects	2020 Rehab Projects	2021 Rehab Projects	2022 Rehab Projects	Future Utility Reconstruction Projects
324-010	CAMDEN RD	C2	2	LOCAL		2000	2000	2015	8	2022	Sealcoat	$ 6,435							$ 6,435								
330-010	CHERRYWOOD DR	D3	2	LOCAL		1989	1989	2015	8	2022	Sealcoat	$ 3,678							$ 3,678								
330-020	CHERRYWOOD DR	D3	2	LOCAL		1999	1999	2015	8	2022	Sealcoat	$ 7,701							$ 7,701								
330-030	CHERRYWOOD DR	C3 / D3	2	LOCAL		1999	1999		6	2018	2" Mill & Overlay	$ 37,290							$ 4,661		$ 37,290						
330-040	CHERRYWOOD DR	C3	2	LOCAL		2003	2003		7	2022	Sealcoat	$ 1,625							$ 1,625								
330-050	CHERRYWOOD DR	C3	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 2,479							$ 2,479								
330-060	CHERRYWOOD DR	C3	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 3,085							$ 3,085								
330-070	CHERRYWOOD DR	C3	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 8,660							$ 8,660								
735-070	CHERRYWOOD DR	D3	2	LOCAL																							
330-080	CHERRYWOOD DR	C3	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 2,435							$ 2,435								
333-010	CLEARWATER CT	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 3,582							$ 3,582								
338-010	COSMOS RD	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 2,439							$ 2,439								
338-020	COSMOS RD	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 2,142							$ 2,142								
338-030	COSMOS RD	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 2,414							$ 2,414								
339-010	COTTAGE GROVE DR	C2	2	LOCAL		1995	1995	2015	8	2022	Sealcoat	$ 2,190							$ 2,190								
339-020	COTTAGE GROVE DR	C2	2	LOCAL		1995	1995	2015	8	2022	Sealcoat	$ 2,383							$ 2,383								
339-030	COTTAGE GROVE DR	C2	2	LOCAL		1995	1995	2015	8	2022	Sealcoat	$ 3,518							$ 3,518								
339-040	COTTAGE GROVE DR	C2	2	LOCAL		2000	2000	2015	8	2022	Sealcoat	$ 5,395							$ 5,395								
339-050	COTTAGE GROVE DR	C2	2	LOCAL		2003	2003	2015	8	2022	Sealcoat	$ 1,756							$ 1,756								
340-010	COTTAGE GROVE TER	C2	2	LOCAL		1995	1995	2015	8	2022	Sealcoat	$ 2,905							$ 2,905								
342-010	DAHLIN RD	C3	2	LOCAL		2005	2005		7	2022	Sealcoat	$ 8,546							$ 8,546								
492-010	DAKAR RD	C3	2	LOCAL					8	2022	Sealcoat	$ 1,916							$ 1,916								
347-010	DONALD ST	C3	2	LOCAL		1989	1989	2014	8	2022	Sealcoat	$ 3,513							$ 3,513								
347-020	DONALD ST	C3	2	LOCAL		1989	1989	2014	8	2022	Sealcoat	$ 3,198							$ 3,198								
352-010	EDMONTON RD	D3	2	LOCAL		1999	1999	2014	8	2022	Sealcoat	$ 6,477							$ 6,477								
358-010	EXCELSIOR RD	C3	2	LOCAL		2003	2003		7	2022	Sealcoat	$ 4,464							$ 4,464								
358-020	EXCELSIOR RD	C3	2	LOCAL		2003	2003		7	2022	Sealcoat	$ 2,162							$ 2,162								
359-010	FAIRFAX CT	D3	2	LOCAL		2002	2002	2014	8	2022	Sealcoat	$ 3,847							$ 3,847								
360-010	FAIRFAX RD	D3	2	LOCAL		2002	2002	2014	8	2022	Sealcoat	$ 4,205							$ 4,205								
361-010	FAIRMONT CT	D3	2	LOCAL		2000	2000	2014	8	2022	Sealcoat	$ 1,777							$ 1,777								
362-070	FAIRVIEW RD	D2	2	LOCAL		1989	1989		4	2019	FD Reclamation	$ 80,255							$ 5,472				$ 80,255				
362-080	FAIRVIEW RD	D2	2	LOCAL		1989	1989		6	2022	Sealcoat	$ 4,342							$ 4,342								
362-090	FAIRVIEW RD	D2	2	LOCAL		1989	1989		5	2019	2" Mill & Overlay	$ 61,564							$ 7,695				$ 61,564				
362-100	FAIRVIEW RD	D3	2	LOCAL		1989	1989		5	2019	2" Mill & Overlay	$ 28,778							$ 3,597				$ 28,778				
362-110	FAIRVIEW RD	D3	2	LOCAL		1998	1998		6	2022	Sealcoat	$ 1,698							$ 1,698								
362-120	FAIRVIEW RD	D3	2	LOCAL		1998	1998		6	2022	Sealcoat	$ 1,666							$ 1,666								
362-130	FAIRVIEW RD	D3	2	LOCAL		1989	1989		6	2022	Sealcoat	$ 8,961							$ 8,961								
362-140	FAIRVIEW RD	D3	2	LOCAL		1998	1998		6	2022	Sealcoat	$ 2,154							$ 2,154								
411-010	KENWOOD CT	D3	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 39,403							$ 4,925	$ 39,403							
412-010	KENWOOD DR	D3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 7,495							$ 7,495								
412-020	KENWOOD DR	D3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 2,431							$ 2,431								
412-030	KENWOOD DR	D3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 771							$ 771								
412-040	KENWOOD DR	D3	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 27,828							$ 3,453	$ 27,828							
412-050	KENWOOD DR	C3 / D3	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 23,087							$ 2,886	$ 23,087							
412-060	KENWOOD DR	C3	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 12,589							$ 1,586	$ 12,589							
413-010	KIMBERLEE CT	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 1,080							$ 1,080								
413-020	KIMBERLEE CT	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 5,223							$ 5,223								
414-010	KIMBERLEE DR	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 4,352							$ 4,352								
414-020	KIMBERLEE DR	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 2,798							$ 2,798								
414-030	KIMBERLEE DR	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 3,069							$ 3,069								
414-040	KIMBERLEE DR	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 2,755							$ 2,755								
419-130	KNOLLWOOD DR	D3	2	LOCAL		1998	1998		6	2022	Sealcoat	$ 1,514							$ 1,514								
419-140	KNOLLWOOD DR	D3	2	LOCAL		2003	2003	2014	8	2022	Sealcoat	$ 2,818							$ 2,818								
419-150	KNOLLWOOD DR	D3	2	LOCAL		2003	2003	2014	8	2022	Sealcoat	$ 442							$ 442								
419-160	KNOLLWOOD DR	D3	2	LOCAL		2002	2002	2014	8	2022	Sealcoat	$ 1,767							$ 1,767								
419-170	KNOLLWOOD DR	D3	2	LOCAL		2002	2002	2014	8	2022	Sealcoat	$ 1,708							$ 1,708								
419-180	KNOLLWOOD DR	D3	2	LOCAL		2000	2000	2014	8	2022	Sealcoat	$ 1,716							$ 1,716								
419-190	KNOLLWOOD DR	D3	2	LOCAL		2000	2000	2014	8	2022	Sealcoat	$ 1,697							$ 1,697								
419-200	KNOLLWOOD DR	D3	2	LOCAL		1999	1999	2014	8	2022	Sealcoat	$ 1,918							$ 1,918								
419-210	KNOLLWOOD DR	D3	2	LOCAL		1999	1999	2014	8	2022	Sealcoat	$ 3,230							$ 3,230								
427-010	LAVERNE DR	D2	2	LOCAL		2005	2005	2014	8	2022	Sealcoat	$ 4,670							$ 4,670								
428-010	LYNNDALE CT	B3	2	LOCAL	Y	1994	1994		6	TBD	Reconstruction	$ 68,052															$ 68,052
429-010	LYNNDALE DR	C3	2	LOCAL		2006	2006		7	2022	Sealcoat	$ 8,753							$ 8,753								
429-020	LYNNDALE DR	C3	2	LOCAL	Y	1994	1994		7	2020	Reconstruction	$ 59,431							$ 1,910					$ 59,431			
429-030	LYNNDALE DR	C3	2	LOCAL	Y	1994	1994		6	2020	Reconstruction	$ 239,082							$ 7,685					$ 239,082			
430-010	LYNNDALE LN	C2 / C3	2	LOCAL	Y	1994	1994		7	2020	Reconstruction	$ 338,982							$ 10,896					$ 338,982			
430-020	LYNNDALE LN	B3 / C3	2	LOCAL	Y	1994	1994		7	2020	Reconstruction	$ 112,737							$ 3,624					$ 112,737			
430-030	LYNNDALE LN	B3	2	LOCAL	Y	1994	1994		7	2020	Reconstruction	$ 205,189							$ 6,595					$ 205,189			
434-010	MAPLEWOOD DR	D2	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 66,555							$ 8,319	$ 66,555							
434-020	MAPLEWOOD DR	D2	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 58,657							$ 7,332	$ 58,657							
434-030	MAPLEWOOD DR	D2	2	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 16,353							$ 2,048	$ 16,353							
448-010	NORTHWOODS DR	C2	2	LOCAL		1997	1997	2015	8	2018	2" Mill & Overlay	$ 36,159							$ 4,520			$ 36,159					
448-020	NORTHWOODS DR	C2	2	LOCAL		1997	1997	2015	6	2018	2" Mill & Overlay	$ 21,151							$ 2,644			$ 21,151					
471-010	ROCKROSE DR	C3	2	LOCAL		2004	2004																				
471-020	ROCKROSE DR	C3	2	LOCAL		2004	2004		8	2022	Sealcoat	$ 1,106							$ 1,106								
471-030	ROCKROSE DR	C3	2	LOCAL		2004	2004		7	2022	Sealcoat	$ 2,769							$ 2,769								
477-010	SPRINGWOOD CT	C2	2	LOCAL		2001	2001		7	2022	Sealcoat	$ 1,632							$ 1,632								
478-010	SPRINGWOOD DR	C2	2	LOCAL	Y	2001	2001		7	TBD	Reconstruction	$ 134,722															$ 134,722
484-010	WELTON RD	C2	2	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 113,990															$ 113,990
484-020	WELTON RD	C2	2	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 76,370															$ 76,370
484-030	WELTON RD	C2 / B2	2	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 190,349															$ 190,349
484-040	WELTON RD	B2	2	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 128,244															$ 128,244
301-010	AFTON RD	C3	3	LOCAL		2004	2004		8	2016	Sealcoat	$ 1,118	$ 1,118														
301-020	AFTON RD	C3	3	LOCAL		2004	2004		8	2016	Sealcoat	$ 2,135	$ 2,135														
301-030	AFTON RD	C3	3	LOCAL		2004	2004		8	2016	Sealcoat	$ 1,188	$ 1,188														
305-010	ATWATER RD	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 1,190	$ 1,190														

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	Needs Water / Sewer Installed	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating	Proposed Improvement Year	Proposed Improvement	Proposed Cost	2016 Sealcoat Projects	2017 Sealcoat Projects	2018 Sealcoat Projects	2019 Sealcoat Projects	2020 Sealcoat Projects	2021 Sealcoat Projects	2022 Sealcoat Projects	2016 Rehab Projects	2017 Rehab Projects	2018 Rehab Projects	2019 Rehab Projects	2020 Rehab Projects	2021 Rehab Projects	2022 Rehab Projects	Future Utility Reconstruction Projects
305-020	ATWATER RD	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 3,929	$ 3,929														
305-030	ATWATER RD	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 3,825	$ 3,825														
307-010	AUSTIN RD	C3	3	LOCAL		2004	2004		7	2016	Sealcoat	$ 3,227	$ 3,227														
351-030	EDGEWOOD DR	C4	3	LOCAL		1993	2015		9	2017	Sealcoat	$ 5,323		$ 5,323													
351-040	EDGEWOOD DR	B4 / C4	3	LOCAL		1993	2015		9	2017	Sealcoat	$ 17,546		$ 17,546													
362-150	FAIRVIEW RD	D3	3	LOCAL		1998	1998		6	2018	FD Reclamation	$ 11,065										$ 11,065					
362-160	FAIRVIEW RD	D3	3	LOCAL		1998	1998		6	2018	FD Reclamation	$ 121,707										$ 121,707					
362-170	FAIRVIEW RD	D3 / D4	3	LOCAL		1998	1998		6	2018	FD Reclamation	$ 124,389										$ 124,389					
362-175	FAIRVIEW RD (EXT.)	C4 / D4	3	LOCAL						2017	New Street	$ 568,000															
363-010	FIREWOOD DR	C3	3	LOCAL		2003	2003		7	2016	Sealcoat	$ 1,593	$ 1,593														
363-020	FIREWOOD DR	C3 / C4	3	LOCAL		2003	2003		7	2016	Sealcoat	$ 7,108	$ 7,108														
363-030	FIREWOOD DR	C4	3	LOCAL		2002	2002		7	2016	Sealcoat	$ 6,657	$ 6,657														
365-010	FLINTWOOD DR	C3 / D3	3	LOCAL		1998	1998		6	2018	2" Mill & Overlay	$ 74,024										$ 74,024					
367-010	FOREST DR	C4	3	LOCAL		1979	1979	2014	8	2018	Sealcoat	$ 10,773			$ 10,773												
367-020	FOREST DR	C4	3	LOCAL		1979	1979	2014	8	2018	Sealcoat	$ 2,118			$ 2,118												
367-030	FOREST DR	C4	3	LOCAL		1979	1979	2014	8	2018	Sealcoat	$ 1,380			$ 1,380												
367-040	FOREST DR	C4	3	LOCAL		1979	1979	2014	8	2018	Sealcoat	$ 876			$ 876												
367-050	FOREST DR	C4	3	LOCAL		1979	1979	2014	8	2018	Sealcoat	$ 1,414			$ 1,414												
367-060	FOREST DR	C4	3	LOCAL		2003	2003	2014	8	2018	Sealcoat	$ 1,926			$ 1,926												
371-010	FOX PL	C4	3	LOCAL		1979	1979	2014	8	2018	Sealcoat	$ 1,398			$ 1,398												
372-010	FOX RD	C3	3	LOCAL		2000	2000	2014	8	2018	Sealcoat	$ 7,027			$ 7,027												
373-010	FRANKLIN DR	B3 / B4	3	LOCAL		2014	2014		10	2016	Sealcoat	$ 9,033	$ 9,033														
376-010	GINKO DR	C3	3	LOCAL		2004	2004		7	2016	Sealcoat	$ 1,185	$ 1,185														
377-010	GLENWOOD DR	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 8,333								$ 8,333							
377-020	GLENWOOD DR	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 61,784								$ 61,784							
377-030	GLENWOOD DR	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 13,375								$ 13,375							
377-040	GLENWOOD DR	C3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 25,317								$ 25,317							
381-010	GRAND OAKS CT	C3 / D3	3	LOCAL		2001	2001	2014	8	2018	Sealcoat	$ 3,247			$ 3,247												
382-010	GRAND OAKS DR	D3	3	LOCAL		2001	2001	2014	8	2018	Sealcoat	$ 5,285			$ 5,285												
382-020	GRAND OAKS DR	C3 / D3	3	LOCAL		2001	2001	2014	8	2018	Sealcoat	$ 7,079			$ 7,079												
382-030	GRAND OAKS DR	C3	3	LOCAL		2004	2004		7	2016	Sealcoat	$ 9,463	$ 9,463														
382-040	GRAND OAKS DR	C3	3	LOCAL		2004	2004		7	2016	Sealcoat	$ 11,675	$ 11,675														
382-050	GRAND OAKS DR	C3	3	LOCAL		2004	2004		7	2016	Sealcoat	$ 8,647	$ 8,647														
382-060	GRAND OAKS DR	C3	3	LOCAL		2003	2003		7	2016	Sealcoat	$ 3,271	$ 3,271														
382-070	GRAND OAKS DR	C3	3	LOCAL		2003	2003		7	2016	Sealcoat	$ 1,655	$ 1,655														
383-010	GREEN BRIAR DR	C3	3	LOCAL		2003	2003		7	2016	Sealcoat	$ 4,058	$ 4,058														
386-010	HEMLOCK DR	B3 / C3	3	LOCAL		2004	2004		8	2016	Sealcoat	$ 7,999	$ 7,999														
389-010	HOLLY DR	B3 / C3	3	LOCAL		2004	2004		8	2016	Sealcoat	$ 7,638	$ 7,638														
394-120	INGLEWOOD DR (Woida Rd	B3	3	LOCAL		2015	2015		10	2016	Sealcoat	$ 41,360	$ 41,360														
398-010	JADEWOOD DR	B3	3	LOCAL	Y	2002	2002		7	TBD	Reconstruction	$ 280,849															$ 280,849
401-010	JEWELWOOD DR	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 1,435	$ 1,435														
401-020	JEWELWOOD DR	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 2,340	$ 2,340														
401-030	JEWELWOOD DR	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 10,249	$ 10,249														
401-040	JEWELWOOD DR	C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 1,189	$ 1,189														
401-050	JEWELWOOD DR	B3 / C3	3	LOCAL		2005	2005		8	2016	Sealcoat	$ 3,440	$ 3,440														
401-060	JEWELWOOD DR	B3	3	LOCAL	Y	2002	2002		8	TBD	Reconstruction	$ 179,376															$ 179,376
402-010	JOHN ST	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 16,354								$ 16,354							
741-010	KENNETH AVE	D3	3	LOCAL																							
416-010	KIRKWOOD DR	B4 / C4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 9,937	$ 9,937														
417-010	KIRKWOOD LN	C4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 5,260	$ 5,260														
431-010	LYNWOOD DR	C4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 3,078	$ 3,078														
431-020	LYNWOOD DR	B4 / C4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 12,157	$ 12,157														
431-030	LYNWOOD DR	B4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 1,600	$ 1,600														
431-040	LYNWOOD DR	B4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 3,898	$ 3,898														
432-010	MADELINE DR	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 29,073								$ 29,073							
432-020	MADELINE DR	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 35,153								$ 35,153							
437-010	MARY ST	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 34,234								$ 34,234							
437-020	MARY ST	D3	3	LOCAL		1989	1989		6	2016	2" Mill & Overlay	$ 20,003								$ 20,003							
486-010	WHITE PINE DR	C4	3	LOCAL		2006	2006		8	2016	Sealcoat	$ 855	$ 855														
487-010	WILDFLOWER DR	C4 / B4	3	LOCAL		2014	2014		10	2017	Sealcoat	$ 8,033		$ 8,033													
487-020	WILDFLOWER DR	B4	3	LOCAL		2014	2014		10	2017	Sealcoat	$ 5,840		$ 5,840													
488-010	WOIDA RD	B3	3	LOCAL	Y	1989	1989		4	TBD	Reconstruction	$ 291,327															$ 291,327
488-020	WOIDA RD	B3	3	LOCAL	Y	1989	1989		4	TBD	Reconstruction	$ 101,141															$ 101,141
488-030	WOIDA RD	B3	3	LOCAL		2014	2014		10	2016	Sealcoat	$ 3,790	$ 3,790														
734-010	AUDUBON SPUR	A4	4	LOCAL																							
306-010	AUDUBON WAY	A4	4	LOCAL		2004	2004		7	2017	Sealcoat	$ 10,490		$ 10,490													
306-020	AUDUBON WAY	A4 / B4	4	LOCAL		2004	2004		7	2017	Sealcoat	$ 8,312		$ 8,312													
310-010	BAXTER DR	C5	4	LOCAL		2003	2003		8	2017	Sealcoat	$ 3,763		$ 3,763													
310-020	BAXTER DR	C5	4	LOCAL		1979	2002		7	2017	FD Reclamation	-									-						
310-030	BAXTER DR	C5	4	LOCAL		1979	2002		6	2017	FD Reclamation	$ 147,200									$ 147,200						
310-040	BAXTER DRIVE	C5	4	LOCAL					6	2017	Sealcoat	$ 3,672		$ 3,672													
329-010	CHARLES ST	C5	4	LOCAL		2003	2003		8	2017	Sealcoat	$ 738		$ 738													
329-020	CHARLES ST	C5	4	LOCAL		2003	2003		8	2017	Sealcoat	$ 4,103		$ 4,103													
334-210	CLEARWATER RD	C4	4	LOCAL		2008	2008		8	2017	Sealcoat	$ 2,201		$ 2,201													
334-220	CLEARWATER RD	C4	4	LOCAL		2007	2007		8	2017	Sealcoat	$ 10,571		$ 10,571													
337-010	CONSERVATION DR	C5	4	LOCAL		1985	1985		5	2021	2" Mill & Overlay	$ 46,335													$ 46,335		
337-020	CONSERVATION DR	C5	4	LOCAL		1993	1993		6	2017	Sealcoat	$ 3,240		$ 3,240													
337-030	CONSERVATION DR	C5	4	LOCAL		2003	2015		9	2017	Sealcoat	$ 2,244		$ 2,244													
344-010	DELLWOOD DR	C4	4	LOCAL		1985	2015		9	2017	Sealcoat	$ 9,401		$ 9,401													
344-020	DELLWOOD DR	C4	4	LOCAL		1993	2015		9	2017	Sealcoat	$ 4,002		$ 4,002													
344-040	DELLWOOD DR	B4 / C4	4	LOCAL		1993	2015		9	2017	Sealcoat	$ 22,733		$ 22,733													
737-090	DELLWOOD DR	A4 / B4	4	LOCAL		1978	1978		3	2016	FD Reclamation	$ 93,300		$ 15,998						$ 93,300							
345-010	DESIGN RD	C4	4	LOCAL		1981	2002	2014	8	2019	Sealcoat	$ 10,523				$ 10,523											
351-050	EDGEWOOD DR	B4	4	LOCAL		2002	2015		9	2017	Sealcoat	$ 4,247		$ 4,247													
351-060	EDGEWOOD DR	B4	4	LOCAL		2002	2002	2015	8	2019	Sealcoat	$ 13,769				$ 13,769											
351-070	EDGEWOOD DR	B4	4	LOCAL		2004	2004	2015	8	2019	Sealcoat	$ 10,211				$ 10,211											

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351-080	EDGEWOOD DR	B4	4	LOCAL		2004	2004		8	2017	Sealcoat	$ 17,225		$ 17,225													
351-090	EDGEWOOD DR	A3 / B3 / B4	4	LOCAL		2004	2004		8	2017	Sealcoat	$ 108		$ 108													
351-100	EDGEWOOD DR	A3	4	LOCAL		2004	2004		8	2017	Sealcoat	$ 19,831		$ 19,831													
362-180	FAIRVIEW RD	D4	4	LOCAL		1983	2002	2014	8	2019	Sealcoat	$ 5,695				$ 5,695											
362-190	FAIRVIEW RD	D4	4	LOCAL		1990	2002	2014	8	2019	Sealcoat	$ 3,408				$ 3,408											
362-200	FAIRVIEW RD	D4	4	LOCAL		2002	2002	2014	8	2019	Sealcoat	$ 1,170				$ 1,170											
362-210	FAIRVIEW RD	C4 / C5	4	LOCAL	Y	1985	1985		4	TBD	Reconstruction	$ 116,761															$ 116,761
362-220	FAIRVIEW RD	C5	4	LOCAL		1985	2015		9	2017	Sealcoat	$ 3,618		$ 3,618													
362-230	FAIRVIEW RD	C5	4	LOCAL		1985	2015		9	2017	Sealcoat	$ 1,032		$ 1,032													
362-240	FAIRVIEW RD	C5	4	LOCAL		1998	1998	2015	8	2019	Sealcoat	$ 1,633				$ 1,633											
421-010	LAKE FOREST RD	B3	4	LOCAL		2006	2006		8	2017	Sealcoat	$ 8,165		$ 8,165													
421-020	LAKE FOREST RD	A3 / B3	4	LOCAL		2004	2004		8	2017	Sealcoat	$ 6,592		$ 6,592													
421-030	LAKE FOREST RD	A3	4	LOCAL		2004	2004		8	2017	Sealcoat	$ 5,499		$ 5,499													
451-010	NOVOTNY RD	B4	4	LOCAL		2004	2004		7	2017	Sealcoat	$ 3,094		$ 3,094													
464-010	PEARL DR	B4	4	LOCAL		2004	2004		8	2017	Sealcoat	$ 5,982		$ 5,982													
485-010	WHISPERING WOODS LN	B4	4	LOCAL		2002	2002		7	2017	Sealcoat	$ 4,162		$ 4,162													
485-020	WHISPERING WOODS LN	B4	4	LOCAL		2002	2002		7	2017	Sealcoat	$ 1,461		$ 1,461													
485-030	WHISPERING WOODS LN	B4	4	LOCAL																							
733-010	ASPEN DR	D5	5	LOCAL					7	2018	Sealcoat	$ 3,588			$ 3,588												
733-020	ASPEN DR	D5	5	LOCAL					7	2018	Sealcoat	$ 2,366			$ 2,366												
309-010	BASSWOOD RD	D4	5	LOCAL		1994	1994		6	2017	2" Mill & Overlay	$ 31,391			$ 3,924						$ 31,391						
313-010	BERRYWOOD DR	D4 / E4	5	LOCAL		2001	2001	2015	8	2019	Sealcoat	$ 8,188				$ 8,188											
313-020	BERRYWOOD DR	D4	5	LOCAL		2003	2003	2015	8	2019	Sealcoat	$ 12,124				$ 12,124											
314-010	BIRCH DR	D4	5	LOCAL		2002	2002		7	2018	Sealcoat	$ 3,869			$ 3,869												
318-010	BRANDON RD	D5	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 6,626			$ 6,626												
326-010	CARLOS RD	D5	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 3,037			$ 3,037												
336-010	CONIFER DR	D5	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 2,309			$ 2,309												
336-020	CONIFER DR	D5	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 2,435			$ 2,435												
346-010	DOGWOOD DR	D4	5	LOCAL		2001	2001		7	2018	Sealcoat	$ 7,735			$ 7,735												
346-020	DOGWOOD DR	D4	5	LOCAL		2000	2000		8	2018	Sealcoat	$ 4,021			$ 4,021												
346-030	DOGWOOD DR	D4	5	LOCAL		1995	1995		6	2017	2" Mill & Overlay	$ 29,772			$ 3,721						$ 29,772						
346-040	DOGWOOD DR	D4	5	LOCAL		1995	1995		6	2017	2" Mill & Overlay	$ 95,656			$ 11,957						$ 95,656						
348-010	DOUGLAS FIR DR	D4	5	LOCAL		2001	2001	2014	8	2019	Sealcoat	$ 19,006				$ 19,006											
348-020	DOUGLAS FIR DR	D4 / E4	5	LOCAL		2001	2001	2014	8	2019	Sealcoat	$ 4,508				$ 4,508											
348-030	DOUGLAS FIR DR	E4	5	LOCAL		2001	2001	2014	8	2019	Sealcoat	$ 16,146				$ 16,146											
353-010	ELDER DR	D4	5	LOCAL		1998	2015		9	2018	Sealcoat	$ 6,369			$ 6,369												
353-020	ELDER DR	D4	5	LOCAL		1998	2015		9	2018	Sealcoat	$ 7,226			$ 7,226												
353-030	ELDER DR	D4	5	LOCAL		1998	2015		9	2018	Sealcoat	$ 10,736			$ 10,736												
353-040	ELDER DR	D4	5	LOCAL		1998	2015		9	2018	Sealcoat	$ 1,599			$ 1,599												
353-050	ELDER DR	D4	5	LOCAL		1998	1998		8	2018	Sealcoat	$ 2,043			$ 2,043												
353-060	ELDER DR	D4	5	LOCAL		1998	1998		8	2018	Sealcoat	$ 2,170			$ 2,170												
354-010	ELMWOOD DR	D4	5	LOCAL		1998	1998	2014	8	2019	Sealcoat	$ 6,133				$ 6,133											
752-010	FALCON DRIVE	E3	5	LOCAL		2015	2015		10	2018	Sealcoat	$ 3,110			$ 3,110												
752-020	FALCON DRIVE	E3	5	LOCAL																							
366-030	FOLEY RD	D3	5	LOCAL		1998	1998		5	2022	2" Mill & Overlay	$ 80,791														$ 80,791	
366-040	FOLEY RD	D3	5	LOCAL		1998	1998		5	2022	2" Mill & Overlay	$ 7,747														$ 7,747	
366-050	FOLEY RD	D3	5	LOCAL		1998	1998		5	2022	2" Mill & Overlay	$ 28,621														$ 28,621	
366-060	FOLEY RD	D3	5	LOCAL		1998	1998		5	2022	2" Mill & Overlay	$ 101,741														$ 101,741	
366-070	FOLEY RD	D3 / D4	5	LOCAL		1998	2015		9	2018	Sealcoat	$ 9,161			$ 9,161												
370-010	FORTHUN RD	D3 / D4	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 10,506			$ 10,506												
370-020	FORTHUN RD	D4	5	LOCAL		2000	2000		6	2018	Sealcoat	$ 2,571			$ 2,571												
370-030	FORTHUN RD	D4	5	LOCAL		2000	2000		6	2018	Sealcoat	$ 3,368			$ 3,368												
370-040	FORTHUN RD	D4	5	LOCAL		2000	2000		5	2020	FD Reclamation	$ 26,621												$ 26,621			
370-050	FORTHUN RD	D4	5	LOCAL		1998	1998	2014	8	2020	Sealcoat	$ 6,186					$ 6,186										
375-010	GARRISON RD	D4	5	LOCAL					9	2018	Sealcoat	$ 3,220			$ 3,220												
378-010	GLORY RD	D3	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 3,730			$ 3,730												
378-020	GLORY RD	D3	5	LOCAL		2000	2000		5	2022	2" Mill & Overlay	$ 26,657														$ 26,657	
378-030	GLORY RD	D3 / D4	5	LOCAL		2000	2000		5	2022	2" Mill & Overlay	$ 93,227														$ 93,227	
378-040	GLORY RD	D4	5	LOCAL		2000	2015		9	2018	Sealcoat	$ 7,863			$ 7,863												
378-050	GLORY RD	D4	5	LOCAL		2000	2015		9	2018	Sealcoat	$ 16,474			$ 16,474												
379-010	GOEDDERZ RD	D4	5	LOCAL		1995	1995		7	2018	Sealcoat	$ 1,629			$ 1,629												
379-020	GOEDDERZ RD	D4	5	LOCAL		1995	1995		6	2017	2" Mill & Overlay	$ 66,704			$ 8,338						$ 66,704						
384-010	GREENWOOD RD	D4	5	LOCAL		1995	1995		6	2017	2" Mill & Overlay	$ 34,741			$ 4,343						$ 34,741						
384-020	GREENWOOD RD	D4	5	LOCAL		1993	1993		7	2018	Sealcoat	$ 4,824			$ 4,824												
384-030	GREENWOOD RD	D4 / D5	5	LOCAL		2002	2002		7	2018	Sealcoat	$ 3,915			$ 3,915												
384-040	GREENWOOD RD	D5	5	LOCAL		2002	2002		7	2018	Sealcoat	$ 1,142			$ 1,142												
384-050	GREENWOOD RD	D5	5	LOCAL		2002	2002		7	2018	Sealcoat	$ 7,687			$ 7,687												
385-010	HASTINGS RD	E4	5	LOCAL		2012	2012		10	2018	Sealcoat	$ 15,057			$ 15,057												
385-020	HASTINGS RD	D4 / E4	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 13,859			$ 13,859												
385-030	HASTINGS RD	D4	5	LOCAL		2001	2001		7	2018	Sealcoat	$ 7,278			$ 7,278												
385-040	HASTINGS RD	D4	5	LOCAL		2001	2001		7	2018	Sealcoat	$ 10,888			$ 10,888												
387-010	HINCKLEY CT	D4	5	LOCAL		2002	2002		8	2018	Sealcoat	$ 3,383			$ 3,383												
388-010	HINCKLEY RD	D4	5	LOCAL		2004	2004		8	2018	Sealcoat	$ 5,932			$ 5,932												
390-010	HOMESTEAD DR	D3	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 6,087			$ 6,087												
390-020	HOMESTEAD DR	E3	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 5,896			$ 5,896												
393-010	INDUSTRIAL PARK RD	D4	5	LOCAL		2000	2000	2015	8	2020	Sealcoat	$ 5,134					$ 5,134										
393-020	INDUSTRIAL PARK RD	D4	5	LOCAL		2000	2000	2015	8	2020	Sealcoat	$ 14,348					$ 14,348										
393-030	INDUSTRIAL PARK RD	D4	5	LOCAL		1989	1989	2015	8	2017	FD Reclamation	-			$ 12,723						-						
393-040	INDUSTRIAL PARK RD	D4	5	LOCAL		1989	1989		5	2017	FD Reclamation	-			$ 7,274						-						
393-050	INDUSTRIAL PARK RD	D4 / D5	5	LOCAL		1989	1989		6	2017	FD Reclamation	$ 597,700			$ 23,985						$ 597,700						
397-010	ISLE DR	E3	5	LOCAL		2005	2005	2015	8	2020	Sealcoat	$ 5,954					$ 5,954										
397-020	ISLE DR	E3	5	LOCAL		2005	2005	2015	8	2020	Sealcoat	$ 4,745					$ 4,745										
397-030	ISLE DR	E4	5	LOCAL		2005	2005	2015	8	2020	Sealcoat	$ 2,825					$ 2,825										
397-040	ISLE DR	D4 / E4	5	LOCAL		2000	2000	2015	8	2020	Sealcoat	$ 19,843					$ 19,843										
397-050	ISLE DR	D4	5	LOCAL		2004	2004		7	2018	Sealcoat	$ 2,945			$ 2,945												
397-060	ISLE DR	D4	5	LOCAL		2004	2004		7	2018	Sealcoat	$ 2,302			$ 2,302												

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397-070	ISLE DR	D4	5	LOCAL		2004	2004		7	2018	Sealcoat	$ 5,746			$ 5,746												
739-080	ISLE DR	E3	5	LOCAL		2015	2015		10	2018	Sealcoat	$ 13,740			$ 13,740												
485-010	PERCH LAKE DR	E3	5	LOCAL		2005	2005		8	2018	Sealcoat	$ 3,098			$ 3,098												
466-010	RED PINE CIR	D4 / E4 / E5	5	LOCAL		2002	2002		7	2018	Sealcoat	$ 14,227			$ 14,227												
490-010	CAMWOOD CT	E4	6	LOCAL																							
325-010	CAMWOOD TRL	E4	6	LOCAL	Y	1995	1995		5	TBD	Reconstruction	$ 366,927															$ 366,927
491-010	CAMWOOD TRL	E4	6	LOCAL																							
325-020	CAMWOOD TRL	E4	6	LOCAL	Y	1994	1994		5	TBD	Reconstruction	$ 418,507															$ 418,507
491-020	CAMWOOD TRL	E4	6	LOCAL																							
331-010	CHESTNUT DR	E4	6	LOCAL	Y				7	TBD	Reconstruction	$ 275,784															$ 275,784
349-010	EAGLE DR	D5 / E5	6	LOCAL	Y	1981	1981		3	TBD	Reconstruction	$ 171,952															$ 171,952
349-020	EAGLE DR	E5	6	LOCAL	Y	1981	1981		3	TBD	Reconstruction	$ 151,639															$ 151,639
350-010	EAGLE RIDGE DR	E5	6	LOCAL	Y	1981	1981		3	TBD	Reconstruction	$ 125,326															$ 125,326
350-020	EAGLE RIDGE DR	E5	6	LOCAL	Y	1981	1981		3	TBD	Reconstruction	$ 271,891															$ 271,891
369-010	FORESTVIEW DR	F3	6	LOCAL	Y	1990	1990		6	TBD	Reconstruction	$ 59,651															$ 59,651
369-020	FORESTVIEW DR	F3	6	LOCAL	Y	1990	1990		6	TBD	Reconstruction	$ 85,914															$ 85,914
369-030	FORESTVIEW DR	F3	6	LOCAL	Y	1990	1990		6	TBD	Reconstruction	$ 166,031															$ 166,031
369-040	FORESTVIEW DR	F3	6	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 357,739															$ 357,739
369-050	FORESTVIEW DR	F3	6	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 240,473															$ 240,473
369-070	FORESTVIEW DR	F3 / F4	6	LOCAL	Y	1988	1988		4	TBD	Reconstruction	$ 143,281															$ 143,281
369-080	FORESTVIEW DR	F4	6	LOCAL	Y	1988	1988		4	TBD	Reconstruction	$ 151,705															$ 151,705
369-090	FORESTVIEW DR	F4	6	LOCAL		1988	1988		4	2016	FD Reclamation	$ 28,833				$ 1,866				$ 28,833							
369-100	FORESTVIEW DR	E4	6	LOCAL	Y	1988	1988		4	TBD	Reconstruction	$ 91,006															$ 91,006
369-110	FORESTVIEW DR	E4	6	LOCAL	Y	1988	1988		4	TBD	Reconstruction	$ 49,847															$ 49,847
369-120	FORESTVIEW DR	E4	6	LOCAL	Y	1988	1988		4	TBD	Reconstruction	$ 183,044															$ 183,044
374-010	FUSCHIA DR	F4	6	LOCAL	Y	2000	2000		7	TBD	Reconstruction	$ 181,340															$ 181,340
374-020	FUSCHIA DR	E4	6	LOCAL	Y	1996	1996		6	TBD	Reconstruction	$ 103,773															$ 103,773
374-030	FUSCHIA DR	E4	6	LOCAL					6	2019	Sealcoat	$ 308				$ 308											
374-040	FUSCHIA DR	E4	6	LOCAL																							
396-010	IRONWOOD DR	F3	6	LOCAL		2006	2006		7	2019	Sealcoat	$ 3,322				$ 3,322											
396-020	IRONWOOD DR	F3	6	LOCAL		2006	2006		7	2019	Sealcoat	$ 5,792				$ 5,792											
739-090	ISLE DR	E3	6	LOCAL		2015	2015		10	2019	Sealcoat	$ 15,843				$ 15,843											
399-010	JASPERWOOD DR	F3	6	LOCAL		1999	1999	2014	8	2019	Sealcoat	$ 9,887				$ 9,887											
399-020	JASPERWOOD DR	F3	6	LOCAL		1999	1999	2014	8	2019	Sealcoat	$ 8,012				$ 8,012											
399-030	JASPERWOOD DR	F3	6	LOCAL		1999	1999	2014	8	2019	Sealcoat	$ 4,229				$ 4,229											
399-040	JASPERWOOD DR	F3	6	LOCAL		1999	1999	2014	8	2019	Sealcoat	$ 3,973				$ 3,973											
404-010	JONESWOOD CIR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 1,893				$ 1,893											
405-010	JONESWOOD DR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 2,398				$ 2,398											
405-020	JONESWOOD DR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 1,927				$ 1,927											
405-030	JONESWOOD DR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 4,463				$ 4,463											
407-010	JOSHUA TREE CIR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 2,078				$ 2,078											
408-010	JOSHUA TREE DR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 4,127				$ 4,127											
420-010	KNOTTY PINE DR	F3	6	LOCAL		2004	2004		7	2019	Sealcoat	$ 5,669				$ 5,669											
420-020	KNOTTY PINE DR	F3	6	LOCAL		2004	2004		7	2019	Sealcoat	$ 1,754				$ 1,754											
420-030	KNOTTY PINE DR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 1,477				$ 1,477											
420-040	KNOTTY PINE DR	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 4,129				$ 4,129											
425-010	LAND O LAKES RD	E4	6	LOCAL	Y	1996	1996		6	TBD	Reconstruction	$ 173,523															$ 173,523
426-010	LAREDO RD	F4	6	LOCAL	Y	1996	1996		6	TBD	Reconstruction	$ 173,617															$ 173,617
433-010	MAPLETON CT	F3	6	LOCAL		2002	2002		7	2019	Sealcoat	$ 141				$ 141											
433-020	MAPLETON CT	F3	6	LOCAL		2002	2002		7	2019	Sealcoat	$ 2,107				$ 2,107											
435-010	MARBLE RD	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 1,291				$ 1,291											
435-020	MARBLE RD	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 2,398				$ 2,398											
435-030	MARBLE RD	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 2,430				$ 2,430											
435-040	MARBLE RD	F3	6	LOCAL		2003	2003		7	2019	Sealcoat	$ 1,604				$ 1,604											
435-050	MARBLE RD	F3	6	LOCAL		2006	2006		7	2019	Sealcoat	$ 4,645				$ 4,645											
438-010	MARYLAND RD	F3	6	LOCAL		1995	1995		6	2019	Sealcoat	$ 4,778				$ 4,778											
439-010	MEDFORD RD	F3	6	LOCAL		1995	1995		6	2019	Sealcoat	$ 3,486				$ 3,486											
443-010	MILDRED RD	F3	6	LOCAL		2006	2006		8	2019	Sealcoat	$ 6,576				$ 6,576											
444-010	MISSISSIPPI RD	F4	6	LOCAL	Y	1988	1988		5	TBD	Reconstruction	$ 117,282															$ 117,282
453-010	OAKDALE RD	F3	6	LOCAL		2004	2004		7	2019	Sealcoat	$ 2,890				$ 2,890											
453-020	OAKDALE RD	F3	6	LOCAL		2004	2004		7	2019	Sealcoat	$ 5,265				$ 5,265											
456-010	OTTERTAIL CIR	F3	6	LOCAL		2004	2004		7	2019	Sealcoat	$ 6,168				$ 6,168											
459-010	PARIS RD	F3	6	LOCAL		1999	1999		6	2018	2" Mill & Overlay	$ 22,818				$ 2,852					$ 22,818						
459-020	PARIS RD	F3	6	LOCAL		1999	1999	2014	8	2019	Sealcoat	$ 4,920				$ 4,920											
461-010	PARKVIEW CIR	F3	6	LOCAL	Y	1995	1995		6	TBD	Reconstruction	$ 133,606															$ 133,606
468-010	RIVER VISTA CT	F3 / F4	6	LOCAL	Y	1990	1990		2	TBD	Reconstruction	$ 90,479															$ 90,479
469-010	RIVER VISTA DR	F3	6	LOCAL	Y	1988	1988		4	TBD	Reconstruction	$ 188,610															$ 188,610
469-020	RIVER VISTA DR	F3	6	LOCAL	Y	1988	1988		3	TBD	Reconstruction	$ 175,149															$ 175,149
469-030	RIVER VISTA DR	F3	6	LOCAL	Y	1986	1986		3	TBD	Reconstruction	$ 203,643															$ 203,643
469-040	RIVER VISTA DR	F3	6	LOCAL	Y	1986	1986		2	TBD	Reconstruction	$ 74,081															$ 74,081
470-010	RIVERWOOD RD	F3	6	LOCAL	Y	1997	1997		6	TBD	Reconstruction	$ 123,883															$ 123,883
473-010	SCENIC RIVER DR	F4	6	LOCAL	Y	1990	1990		5	TBD	Reconstruction	$ 118,840															$ 118,840
473-020	SCENIC RIVER DR	F4	6	LOCAL	Y	1995	1995		5	TBD	Reconstruction	$ 162,233															$ 162,233
473-030	SCENIC RIVER DR	F4	6	LOCAL	Y	1995	1995		5	TBD	Reconstruction	$ 194,124															$ 194,124
473-040	SCENIC RIVER DR	E4	6	LOCAL	Y	1995	1995		5	TBD	Reconstruction	$ 97,013															$ 97,013
473-050	SCENIC RIVER DR	E4	6	LOCAL	Y	1995	1995		5	TBD	Reconstruction	$ 233,974															$ 233,974
303-010	ASHDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 56,401					$ 7,050			$ 56,401							
303-020	ASHDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 33,728					$ 4,216			$ 33,728							
303-030	ASHDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 13,420					$ 1,678			$ 13,420							
315-010	BIRCHDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 26,601					$ 3,325			$ 26,601							
315-020	BIRCHDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 37,672					$ 4,709			$ 37,672							
319-010	BRENTWOOD CIR	E2	7	LOCAL		1987	1987		6	2020	Sealcoat	$ 5,341					$ 5,341										
320-010	BRENTWOOD RD	E1 / E2	7	LOCAL		1995	1995		6	2016	2" Mill & Overlay	$ 38,056					$ 4,882			$ 38,056							
320-020	BRENTWOOD RD	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 43,998					$ 5,500			$ 43,998							
320-030	BRENTWOOD RD	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 45,865					$ 5,733			$ 45,865							

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320-040	BRENTWOOD RD	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 36,392					$ 4,549			$ 36,392							
321-010	BRIARWOOD LN	E1	7	LOCAL		2015	2015		10	2020	Sealcoat	$ 2,501					$ 2,501										
321-020	BRIARWOOD LN	E1	7	LOCAL		2015	2015		10	2020	Sealcoat	$ 8,114					$ 8,114										
321-030	BRIARWOOD LN	E1 / E2	7	LOCAL		1993	1993		6	2016	2" Mill & Overlay	$ 44,875					$ 5,609			$ 44,875							
328-010	CEDARDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 24,935					$ 3,117			$ 24,935							
328-020	CEDARDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 27,077					$ 3,385			$ 27,077							
328-030	CEDARDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 17,900					$ 2,238			$ 17,900							
328-040	CEDARDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 27,337					$ 3,417			$ 27,337							
328-050	CEDARDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 46,414					$ 5,802			$ 46,414							
328-060	CEDARDALE LN	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 15,004					$ 1,876			$ 15,004							
364-010	FIRST ST	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 24,138					$ 3,017			$ 24,138							
364-020	FIRST ST	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 22,712					$ 2,839			$ 22,712							
366-010	FOLEY RD	D2	7	LOCAL		1998	1998		6	2020	Sealcoat	$ 1,526					$ 1,526										
366-020	FOLEY RD	D2 / D3	7	LOCAL		1998	1998		5	2017	2" Mill & Overlay	$ 180,248					$ 22,531				$ 180,248						
392-010	INDEPENDENCE RD	E1	7	LOCAL		2010	2010		9	2020	Sealcoat	$ 3,691					$ 3,691										
392-020	INDEPENDENCE RD	E1	7	LOCAL		2015	2015		10	2020	Sealcoat	$ 2,519					$ 2,519										
395-010	INTERLACKEN RD	E3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 5,423					$ 5,423										
400-010	JEPSON RD	E3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 3,222					$ 3,222										
403-010	JOLER RD	E1	7	LOCAL		2003	2003		6	2020	Sealcoat	$ 3,728					$ 3,728										
740-010	JOLER RD	E2	7	LOCAL																							
403-020	JOLER RD	E1 / E2	7	LOCAL		2003	2003		6	2020	Sealcoat	$ 6,390					$ 6,390										
740-020	JOLER RD	E2	7	LOCAL																							
406-010	JORDAN RD	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 1,196					$ 1,196										
406-020	JORDAN RD	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 3,666					$ 3,666										
406-030	JORDAN RD	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 3,142					$ 3,142										
406-040	JORDAN RD	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 1,202					$ 1,202										
406-050	JORDAN RD	E2	7	LOCAL		2003	2003		7	2020	Sealcoat	$ 1,184					$ 1,184										
415-010	KINGWOOD DR	E3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 6,907					$ 6,907										
415-020	KINGWOOD DR	E3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 3,769					$ 3,769										
415-030	KINGWOOD DR	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 4,799					$ 4,799										
418-010	KNOLLWOOD CT	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 4,291					$ 4,291										
419-010	KNOLLWOOD DR	E3 / F3	7	LOCAL		2003	2003	2014	8	2020	Sealcoat	$ 35,685					$ 35,685										
422-010	LAKEWOOD LN	E2	7	LOCAL		1995	1995		6	2017	2" Mill & Overlay	$ 60,000					$ 7,149				$ 60,000						
436-010	MAROHN RD	D2	7	LOCAL		1991	1991		6	2017	2" Mill & Overlay	$ 72,900					$ 8,248				$ 72,900						
743-010	MEREDITH DR	E2	7	LOCAL																							
445-010	MOUNTAIN ASH DR	E2 / F2	7	LOCAL		2003	2003	2014	8	2020	Sealcoat	$ 20,364					$ 20,364										
445-020	MOUNTAIN ASH DR	E2	7	LOCAL		2003	2003	2014	8	2020	Sealcoat	$ 4,554					$ 4,554										
445-030	MOUNTAIN ASH DR	E2	7	LOCAL		1992	1992		7	2020	Sealcoat	$ 1,702					$ 1,702										
445-040	MOUNTAIN ASH DR	E2	7	LOCAL		1992	1992		6	2017	2" Mill & Overlay	$ 42,000					$ 5,080				$ 42,000						
445-050	MOUNTAIN ASH DR	E2	7	LOCAL		1992	1992		6	2017	2" Mill & Overlay	$ 47,000					$ 5,726				$ 47,000						
446-010	NOBLE FIR DR	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 2,250					$ 2,250										
447-010	NORTHERN OAK DR	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 2,203					$ 2,203										
450-010	NORWAY SPRUCE DR	E2	7	LOCAL		2006	2006		8	2020	Sealcoat	$ 3,556					$ 3,556										
450-020	NORWAY SPRUCE DR	E2	7	LOCAL		2006	2006		8	2020	Sealcoat	$ 1,245					$ 1,245										
450-030	NORWAY SPRUCE DR	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 1,866					$ 1,866										
450-040	NORWAY SPRUCE DR	E2	7	LOCAL		2001	2001		7	2020	Sealcoat	$ 3,999					$ 3,999										
460-010	PARK ST	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 4,585					$ 4,585										
462-010	PARKWOOD CT	E2 / E3	7	LOCAL		1999	1999		6	2018	2" Mill & Overlay	$ 36,452					$ 4,556				$ 36,452						
463-010	PARKWOOD DR	E2	7	LOCAL		1998	1998		6	2018	2" Mill & Overlay	$ 15,236					$ 1,904				$ 15,236						
463-020	PARKWOOD DR	E2	7	LOCAL		1998	1998		6	2017	2" Mill & Overlay	$ 25,000					$ 2,876				$ 25,000						
463-030	PARKWOOD DR	E2	7	LOCAL		1998	1998		6	2020	Sealcoat	$ 3,753					$ 3,753										
463-040	PARKWOOD DR	E2	7	LOCAL		1998	1998		6	2020	Sealcoat	$ 4,218					$ 4,218										
463-050	PARKWOOD DR	E2 / E3	7	LOCAL		1992	1992	2014	8	2020	Sealcoat	$ 1,800					$ 1,800										
463-060	PARKWOOD DR	D3 / E3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 3,473					$ 3,473										
472-010	SAVANNAH OAKS DR	E2	7	LOCAL		2006	2006		8	2020	Sealcoat	$ 5,132					$ 5,132										
472-020	SAVANNAH OAKS DR	E2	7	LOCAL		2006	2006		8	2020	Sealcoat	$ 6,567					$ 6,567										
474-010	SECOND ST	E2	7	LOCAL		2003	2003		7	2020	Sealcoat	$ 5,714					$ 5,714										
474-020	SECOND ST	E2	7	LOCAL		2003	2003		7	2020	Sealcoat	$ 4,554					$ 4,554										
474-030	SECOND ST	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 22,345					$ 2,793			$ 22,345							
474-040	SECOND ST	E2	7	LOCAL		1991	1991		6	2016	2" Mill & Overlay	$ 22,405					$ 2,801			$ 22,405							
474-050	SECOND ST	E2	7	LOCAL																							
479-010	TIMBERLANE DR	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 5,512					$ 5,512										
479-020	TIMBERLANE DR	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 3,988					$ 3,988										
479-030	TIMBERLANE DR	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 12,349					$ 12,349										
479-040	TIMBERLANE DR	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 1,393					$ 1,393										
480-010	TIMBERWOOD DR	E1	7	LOCAL		2010	2010		9	2020	Sealcoat	$ 8,375					$ 8,375										
483-010	WEDGEWOOD RD	E2	7	LOCAL		1995	1995		6	2017	2" Mill & Overlay	$ 25,000					$ 2,895				$ 25,000						
483-020	WEDGEWOOD RD	E2	7	LOCAL		1998	1998		6	2018	2" Mill & Overlay	$ 22,995					$ 2,874				$ 22,995						
483-030	WEDGEWOOD RD	E2	7	LOCAL		1999	1999		6	2018	2" Mill & Overlay	$ 43,878					$ 5,485				$ 43,878						
483-040	WEDGEWOOD RD	E2	7	LOCAL		1999	1999		6	2020	Sealcoat	$ 4,972					$ 4,972										
480-010	WOODLAND RD	D3	7	LOCAL		2000	2000	2014	8	2020	Sealcoat	$ 2,922					$ 2,922										
											Totals		$ 197,181	$ 219,225	$ 374,654	$ 247,413	$ 436,435	$ 318,118	$ 302,084	$ 1,268,548	$ 1,793,479	$ 802,638	$ 170,597	$ 982,242	$ 46,335	$ 338,785	$ 9,338,489
											Sealcoats	$ 2,095,109	ave annual cost ===>	$ 299,301													
											Rehabs	$ 5,402,625	ave annual cost =	$ 771,804													
											New Costs	$ 568,099															
											Future Utility Projects	$ 9,338,489															
											Total	$ 17,404,224															

440-020	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 10,453						$ 713				$ 10,453					
440-030	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 13,369						$ 912				$ 13,369					
440-040	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 80,447						$ 5,485				$ 80,447					
440-050	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 63,128						$ 4,304				$ 63,128					
440-060	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 197,290						$ 13,452				$ 197,290					
440-070	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 14,086						$ 960				$ 14,086					
440-080	MEMORYWOOD DR	D2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 188,029						$ 12,820				$ 188,029					
440-090	MEMORYWOOD DR	C2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 57,270						$ 3,905				$ 57,270					
440-100	MEMORYWOOD DR	C2	1	MSA		1989	1989		6	2018	FD Reclamation	$ 41,590						$ 2,836				$ 41,590					

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	Needs Water / Sewer Installed	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating	Proposed Improvement Year	Proposed Improvement	Proposed Cost	2016 Sealcoat Projects	2017 Sealcoat Projects	2018 Sealcoat Projects	2019 Sealcoat Projects	2020 Sealcoat Projects	2021 Sealcoat Projects	2022 Sealcoat Projects	2016 Rehab Projects	2017 Rehab Projects	2018 Rehab Projects	2019 Rehab Projects	2020 Rehab Projects	2021 Rehab Projects	2022 Rehab Projects	Future Utility Reconstruction Projects
334-050	CLEARWATER RD	C2 / C3	2	MSA		2006	2006		8	2022	Sealcoat	$ 26,832							$ 26,832								
334-060	CLEARWATER RD	C3	2	MSA		2006	2006		7	2022	Sealcoat	$ 3,870							$ 3,870								
334-070	CLEARWATER RD	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 10,723							$ 10,723								
334-080	CLEARWATER RD	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 5,660							$ 5,660								
334-090	CLEARWATER RD	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 9,323							$ 9,323								
394-020	INGLEWOOD DR	D3	2	MSA		1989	1989		6	2022	Sealcoat	$ 1,282							$ 1,282								
394-030	INGLEWOOD DR	D3	2	MSA		2015	2015		10	2022	Sealcoat	$ 2,038							$ 2,038								
394-040	INGLEWOOD DR	D3	2	MSA		2015	2015		10	2022	Sealcoat	$ 7,551							$ 7,551								
394-050	INGLEWOOD DR	D3	2	MSA		2015	2015		10	2022	Sealcoat	$ 3,393							$ 3,393								
394-060	INGLEWOOD DR	C3	2	MSA		2015	2015		10	2022	Sealcoat	$ 3,746							$ 3,746								
394-070	INGLEWOOD DR	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 14,851							$ 14,851								
394-080	INGLEWOOD DR	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 2,521							$ 2,521								
394-090	INGLEWOOD DR	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 2,700							$ 2,700								
394-100	INGLEWOOD DR	C3	2	MSA		2004	2004		7	2022	Sealcoat	$ 6,370							$ 6,370								
440-110	MEMORYWOOD DR	C2	2	MSA		1989	1989		6	2018	FD Reclamation	$ 189,962							$ 12,952			$ 189,962					
440-120	MEMORYWOOD DR	C2	2	MSA		1989	1989		6	2018	FD Reclamation	$ 192,602							$ 13,132			$ 192,602					
440-130	MEMORYWOOD DR	C2	2	MSA		1989	1989		6	2018	FD Reclamation	$ 70,804							$ 4,828			$ 70,804					
334-100	CLEARWATER RD	C3	3	MSA		2004	2004		7	2018	Sealcoat	$ 13,596			$ 13,596												
334-110	CLEARWATER RD	C3	3	MSA		2004	2004		7	2018	Sealcoat	$ 4,123			$ 4,123												
334-120	CLEARWATER RD	C3	3	MSA		2004	2004		7	2018	Sealcoat	$ 7,087			$ 7,087												
334-130	CLEARWATER RD	C3	3	MSA		2003	2003		7	2018	Sealcoat	$ 3,730			$ 3,730												
334-140	CLEARWATER RD	C3 / C4	3	MSA		2003	2003		7	2018	Sealcoat	$ 11,469			$ 11,469												
334-150	CLEARWATER RD	C4	3	MSA		2003	2003		7	2018	Sealcoat	$ 4,501			$ 4,501												
334-160	CLEARWATER RD	C4	3	MSA		2003	2003		7	2018	Sealcoat	$ 12,200			$ 12,200												
351-010	EDGEWOOD DR	C4	3	MSA		1990	2015		9	2019	Sealcoat	$ 14,760				$ 14,760											
351-020	EDGEWOOD DR	C4	3	MSA		1993	2015		9	2019	Sealcoat	$ 9,410				$ 9,410											
358-030	EXCELSIOR RD	C3	3	MSA		1989	1989		5	2020	2" Mill & Overlay	$ 18,352												$ 18,352			
358-040	EXCELSIOR RD	C3	3	MSA		1989	1989		6	2019	Sealcoat	$ 10,775				$ 10,775											
358-050	EXCELSIOR RD	C3	3	MSA		1989	1989		5	2020	2" Mill & Overlay	$ 56,111												$ 56,111			
358-060	EXCELSIOR RD	C3	3	MSA		1989	1989		6	2019	Sealcoat	$ 3,886				$ 3,886											
358-070	EXCELSIOR RD	C3	3	MSA		1989	1989		6	2019	Sealcoat	$ 2,676				$ 2,676											
358-080	EXCELSIOR RD	C4	3	MSA		1989	1989		6	2019	Sealcoat	$ 5,726				$ 5,726											
358-090	EXCELSIOR RD	C4	3	MSA		1989	1989		6	2019	Sealcoat	$ 6,517				$ 6,517											
358-100	EXCELSIOR RD	C4	3	MSA		1989	1989		4	2019	FD Reclamation	$ 45,245											$ 45,245				
358-110	EXCELSIOR RD	C4	3	MSA		2000	2000		5	2019	FD Reclamation	$ 95,114											$ 95,114				
394-110	INGLEWOOD DR	B3 / C3	3	MSA		2004	2004		7	2019	Sealcoat	$ 27,480				$ 27,480											
488-040	WOIDA RD	B3	3	MSA		1985	1985		4	2020	FD Reclamation	$ 73,915												$ 73,915			
488-050	WOIDA RD	B3	3	MSA		1985	1985		4	2020	FD Reclamation	$ 28,950												$ 28,950			
488-060	WOIDA RD	B3	3	MSA		1985	1985		4	2020	FD Reclamation	$ 103,788												$ 103,788			
488-070	WOIDA RD	B3	3	MSA		1985	1985		4	2020	FD Reclamation	$ 52,444												$ 52,444			
488-080	WOIDA RD	B3 / B4	3	MSA		1985	1985		4	2020	FD Reclamation	$ 56,411												$ 56,411			
488-090	WOIDA RD	B4	3	MSA		1985	1985		4	2020	FD Reclamation	$ 63,099												$ 63,099			
488-100	WOIDA RD	B4	3	MSA		2006	2006		7	2018	Sealcoat	$ 3,569			$ 3,569												
488-110	WOIDA RD	B4	3	MSA		2006	2006		7	2018	Sealcoat	$ 4,591			$ 4,591												
488-120	WOIDA RD	B4	3	MSA		2006	2006		7	2018	Sealcoat	$ 2,896			$ 2,896												
334-190	CLEARWATER RD	C4	4	MSA		1991	1991		5	2016	FD Reclamation	-		$ 4,837						-							
334-200	CLEARWATER RD	C4	4	MSA		1996	1996		6	2016	FD Reclamation	$ 168,000		$ 5,240						$ 168,000							
341-060	CYPRESS DR	C4	4	MSA		2002	2002	2014	8	2018	Sealcoat	$ 2,342			$ 2,342												
341-070	CYPRESS DR	C4	4	MSA		2007	2007		8	2017	Sealcoat	$ 49,173		$ 49,173													
341-080	CYPRESS DR	C4	4	MSA		2007	2007		8	2017	Sealcoat	$ 21,468		$ 21,468													
344-030	DELLWOOD DR	C4	4	MSA		1993	2015		9	2017	Sealcoat	$ 9,522		$ 9,522													
344-050	DELLWOOD DR	B4	4	MSA		1993	2015		9	2017	Sealcoat	$ 3,366		$ 3,366													
344-060	DELLWOOD DR	B4	4	MSA		2002	2015		9	2017	Sealcoat	$ 834		$ 834													
344-070	DELLWOOD DR	B4	4	MSA		2002	2002	2015	8	2019	Sealcoat	$ 8,544				$ 8,544											
344-080	DELLWOOD DR	B4	4	MSA		2015	2015		10	2017	Sealcoat	$ 11,863		$ 11,863													
358-130	EXCELSIOR RD	C4	4	MSA		1983	1983		6	2019	FD Reclamation	$ 60,375											$ 60,375				
358-140	EXCELSIOR RD	C4	4	MSA		1983	2002		4	2019	FD Reclamation	$ 159,531											$ 159,531				
358-150	EXCELSIOR RD	C4	4	MSA		1983	2002		4	2019	FD Reclamation	$ 67,276											$ 67,276				
358-160	EXCELSIOR RD	C4	4	MSA		1990	2002		4	2019	FD Reclamation	$ 146,300											$ 146,300				
358-170	EXCELSIOR RD	C4	4	MSA		2015	2015		10	2017	Sealcoat	$ 10,367		$ 10,367													
358-180	EXCELSIOR RD	C4	4	MSA		2015	2015		10	2017	Sealcoat	$ 7,893		$ 7,893													
358-190	EXCELSIOR RD	C5	4	MSA		1993	1993		4	2021	FD Reclamation	$ 85,035													$ 85,035		
358-200	EXCELSIOR RD	C5	4	MSA		1993	1993		5	2021	2" Mill & Overlay	$ 73,655													$ 73,655		
380-020	GOLF COURSE DR	D4	4	MSA		1983	2002	2014	8	2018	Sealcoat	$ 1,321			$ 1,321												
380-030	GOLF COURSE DR	C4 / D4	4	MSA		1983	2002	2014	8	2018	Sealcoat	$ 5,758			$ 5,758												
380-040	GOLF COURSE DR	C4	4	MSA		1981	2002		5	2016	FD Reclamation	-		$ 9,473						-							
380-050	GOLF COURSE DR	C4	4	MSA		1981	1981		6	2016	FD Reclamation	-		$ 4,127						-							
380-060	GOLF COURSE DR	C4	4	MSA		1981	1981		4	2016	FD Reclamation	-		$ 629						-							
380-070	GOLF COURSE DR	C4	4	MSA		1996	1996		6	2016	FD Reclamation	-		$ 3,013						-							
380-080	GOLF COURSE DR	C4	4	MSA		1996	1996		4	2016	FD Reclamation	-		$ 4,165						-							
380-090	GOLF COURSE DR	C4	4	MSA		1996	1996		5	2016	FD Reclamation	-		$ 5,588						-							
380-100	GOLF COURSE DR	C4	4	MSA		1996	1996		5	2016	FD Reclamation	-		$ 314						-							
380-110	GOLF COURSE DR	B4 / C4	4	MSA		1996	1996		6	2016	FD Reclamation	$ 1,305,000		$ 15,804						$ 1,305,000							
451-030	NOVOTNY RD	B4	4	MSA		2015	2015		10	2017	Sealcoat	$ 1,289		$ 1,289													
451-040	NOVOTNY RD	B4	4	MSA		2015	2015		10	2017	Sealcoat	$ 3,202		$ 3,202													
451-050	NOVOTNY RD	B4	4	MSA		2015	2015		10	2017	Sealcoat	$ 3,031		$ 3,031													
482-010	UNIVERSAL RD	C4	4	MSA		1995	1995		5	2021	2" Mill & Overlay	$ 56,620													$ 56,620		
488-140	WOIDA RD	B4	4	MSA		1993	1993		6	2017	Sealcoat	$ 2,829		$ 2,829													
488-150	WOIDA RD	B4	4	MSA		1996	1996		6	2016	FD Reclamation	$ 128,700		$ 7,238						$ 128,700							
751-160	WOIDA RD	B4	4	MSA																							
335-010	COLLEGE RD	D4	5	MSA		2000	2000		5	2018	FD Reclamation	$ 106,694				$ 7,275						$ 106,694					
335-020	COLLEGE RD	D4	5	MSA		2000	2000		5	2018	FD Reclamation	$ 72,309				$ 4,930						$ 72,309					
335-030	COLLEGE RD	D4	5	MSA		2000	2000		5	2018	FD Reclamation	$ 232,172				$ 15,830						$ 232,172					

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Identifier	Full Road Name	Map Book ID	Mgmt Area	Route	Needs Water / Sewer Installed	Year Constructed	Last Year Improved	Last Year Sealcoated	Current Rating	Proposed Improvement Year	Proposed Improvement	Proposed Cost	2016 Sealcoat Projects	2017 Sealcoat Projects	2018 Sealcoat Projects	2019 Sealcoat Projects	2020 Sealcoat Projects	2021 Sealcoat Projects	2022 Sealcoat Projects	2016 Rehab Projects	2017 Rehab Projects	2018 Rehab Projects	2019 Rehab Projects	2020 Rehab Projects	2021 Rehab Projects	2022 Rehab Projects	Future Utility Reconstruction Projects
335-040	COLLEGE RD	D4	5	MSA		2000	2000		5	2018	FD Reclamation	$ 245,616				$ 16,747						$ 245,616					
335-040	COLLEGE RD	D4	5	MSA		2000	2000		5	2018	Hf Turn Lane	$ 150,000				$ 16,747											
335-050	COLLEGE RD	D4	5	MSA		2000	2000	2014	8	2019	Sealcoat	$ 10,852				$ 10,852											
335-060	COLLEGE RD	D4 / D5	5	MSA		2000	2000	2014	8	2019	Sealcoat	$ 15,860				$ 15,860											
335-070	COLLEGE RD	D5	5	MSA		2000	2000		10	2019	Sealcoat	$ 16,832				$ 16,832											
753-010	CYPRESS DR	E4	5							2019	New Const	$ 2,530,800															
341-010	CYPRESS DR	D4	5	MSA		2001	2001		7	2019	Reconstruction	-											-				
341-020	CYPRESS DR	D4	5	MSA		2001	2001		7	2019	Reconstruction	$ 960,000											$ 960,000				
341-030	CYPRESS DR	D4	5	MSA		1994	1994		5	2022	2" Mill & Overlay	$ 17,566														$ 17,566	
341-040	CYPRESS DR	D4	5	MSA		1994	1994		5	2022	2" Mill & Overlay	$ 19,843														$ 19,843	
341-050	CYPRESS DR	D4	5	MSA		1993	1993		5	2022	2" Mill & Overlay	$ 45,112														$ 45,112	
736-090	CYPRESS DR	C4 / D4	5	MSA						2018	New Const	$ 9,060,500															
357-010	EVERGREEN DR	E4	5	MSA		1996	1996		6	2019	Sealcoat	$ 632				$ 632											
357-020	EVERGREEN DR	E4	5	MSA		1996	1996	2014	8	2019	Sealcoat	$ 15,012				$ 15,012											
357-030	EVERGREEN DR	E4	5	MSA		1996	1996	2014	8	2019	Sealcoat	$ 327				$ 327											
357-040	EVERGREEN DR	D4 / E4	5	MSA		2005	2005	2014	8	2019	Sealcoat	$ 6,288				$ 6,288											
357-050	EVERGREEN DR	D4	5	MSA		2000	2000	2014	8	2019	Sealcoat	$ 10,843				$ 10,843											
419-110	KNOLLWOOD DR	D3	7	MSA		1998	1998		6	2020	Sealcoat	$ 2,230					$ 2,230										
419-020	KNOLLWOOD DR	E3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 96,579					$ 12,072					$ 96,579					
419-030	KNOLLWOOD DR	E3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 27,992					$ 3,499					$ 27,992					
419-040	KNOLLWOOD DR	E3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 76,926					$ 9,616					$ 76,926					
419-050	KNOLLWOOD DR	E3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 33,596					$ 4,199					$ 33,596					
419-060	KNOLLWOOD DR	D3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 32,142					$ 4,018					$ 32,142					
419-070	KNOLLWOOD DR	D3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 45,685					$ 5,711					$ 45,685					
419-080	KNOLLWOOD DR	D3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 45,790					$ 5,724					$ 45,790					
419-090	KNOLLWOOD DR	D3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 22,987					$ 2,873					$ 22,987					
419-100	KNOLLWOOD DR	D3	7	MSA		2000	2000		5	2018	2" Mill & Overlay	$ 17,519					$ 2,190					$ 17,519					
											Totals	$ 18,274,312	$ -	$ 185,364	$ 77,183	$ 227,950	$ 52,132	$ 45,386	$ 131,771	$ 1,601,700	$ -	$ 2,175,038	$ 1,533,842	$ 453,069	$ 215,310	$ 82,522	$ -
											Sealcoats	$ 719,786	ave annual cost ===>	$ 102,827													
											Rehabs	$ 6,061,479	ave annual cost >	$ 865,926													
											New Const	$ 11,741,299															
											Total PMP Costs		$ 197,181	$ 404,589	$ 451,838	$ 475,362	$ 488,567	$ 363,504	$ 433,855	$ 2,870,248	$ 1,793,479	$ 2,977,676	$ 1,704,438	$ 1,435,311	$ 261,645	$ 421,306	$ 9,338,489
											City Budget		$ 200,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000								
											Under Budget		$ 2,819	$ 95,411	$ 48,162	$ 24,638	$ 11,433	$ 136,496	$ 66,145								

Note - blue highlighted segments are in the current Baxter 2016 - 2020 CIP

No sealcoats or M/O projects planned; street reconstruction planned with future water / sewer installation

CIP Project could be revised to a sealcoat project

New Construction

Deferred Sealcoat Project

	Total Pgm Cost 2016 - 2022	Ave Annual Cost 2016-2022
Sealcoat Projects	$2,814,896	$402,128
Rehabilitation Projects	$11,464,104	$1,637,729
Totals	$14,279,000	$2,039,857

Appendix D

Program Funding

Local Streets Pavement Maintenance and Rehabilitation						
	MAINTENANCE		REHABILITATION / RECONSTRUCTION			
Program Year	PMP area	Cost	PMP area	Cost	Grand Total	Infl. factor
2016	3	$197,181	6	$1,601,700	$1,798,881	0%
2017	4	$404,589	7	$0	$404,589	0%
2018	5	$451,838	1	$2,175,038	$2,626,876	0%
2019	6	$475,362	2	$1,533,842	$2,009,204	0%
2020	7	$488,567	3	$453,069	$941,636	0%
2021	1	$363,504	4	$215,310	$578,814	0%
2022	2	$433,855	5	$82,522	$516,377	0%
2023	3	$428,854	6	$900,000	$1,328,854	0%
2024	4	$433,143	7	$909,000	$1,342,143	1%
2025	5	$437,474	1	$918,090	$1,355,564	1%
2026	6	$441,849	2	$927,271	$1,369,120	1%
2027	7	$446,267	3	$936,544	$1,382,811	1%
2028	1	$450,730	4	$945,909	$1,396,639	1%
2029	2	$455,237	5	$955,368	$1,410,605	1%
2030	3	$459,790	6	$964,922	$1,424,712	1%
2031	4	$464,388	7	$974,571	$1,438,959	1%
2032	5	$469,031	1	$984,317	$1,453,348	1%
2033	6	$473,722	2	$994,160	$1,467,882	1%
2034	7	$478,459	3	$1,004,102	$1,482,561	1%
2035	1	$483,244	4	$1,014,143	$1,497,386	1%
2036	2	$488,076	5	$1,024,284	$1,512,360	1%

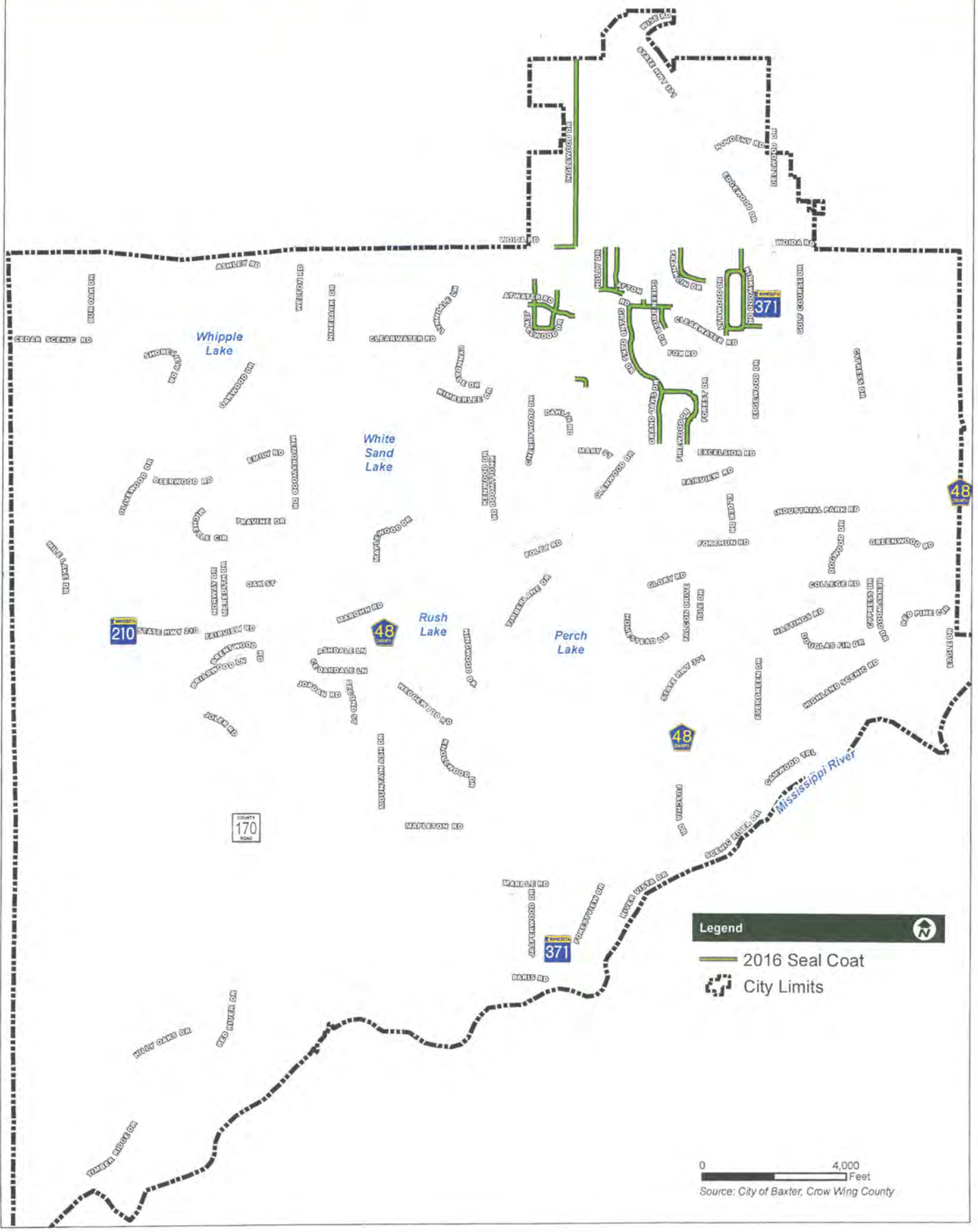
Exhibit B

2016 Sealcoat Map

2016 Seal Coat Project

City of Baxter, MN

January, 2016



Map Document: \\arcserver1\gis\BAXTNB11110059\ESRI\Maps\Baxter 2016 Seal Coat 85x11.mxd
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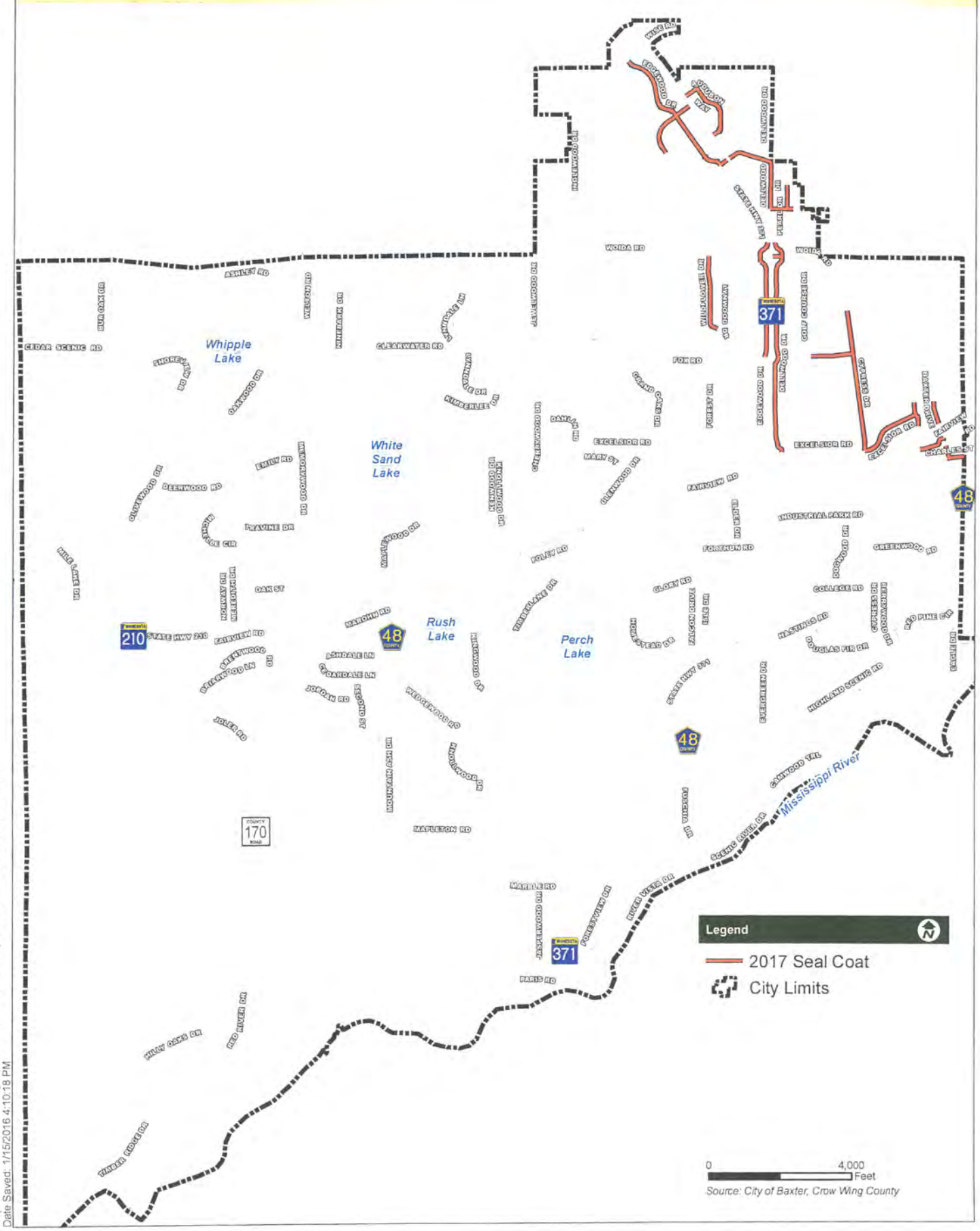
Exhibit C

2017 Sealcoat Map

2017 Seal Coat Project

City of Baxter, MN

January, 2016



Map Document: \\arcserver1\gis\BAXTI\B11110059\ESRI\Maps\Baxter 2017 Seal Coat 85x11.mxd
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Exhibit D

RESOLUTION NO. _____

RESOLUTION ADOPTING THE CITY'S STREET PAVEMENT MANAGEMENT PROGRAM

WHEREAS, the City wishes to maintain its streets in a cost-effective and responsible manner; and

WHEREAS, in the past minimal street maintenance has been completed on City streets after initial construction to City standards, and

WHEREAS, more extensive maintenance and rehabilitation strategies are needed to maintain the City street network to its existing condition, and

WHEREAS, the Street Pavement Management Program has been developed to address the needs of City (local and MSA) streets

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Baxter, that the City hereby adopts the attached Street Pavement Management Program **Date.**

Reviewed for Administration:

Adopted by the City Council **Date**

_____
City Manager

_____
Mayor

Attest:

_____
City Clerk

BOLTON & MENK, INC.
Consulting Engineers & Surveyors
7656 Design Road, Suite 200 • Baxter, MN 56425-8676
Phone (218) 825-0684 • Fax (218) 825-0685
www.bolton-menk.com

January 15, 2016

Mr. Trevor Walter, Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
PO Box 2626
Baxter, MN 56425

RE: Proposal for Engineering Services
Pavement Management Program Implementation
City of Baxter, Minnesota

Dear Mr. Walter,

Last year the City desired to update their street pavement database and consider development of a long term pavement management program. In April the City authorized BMI to provide services for this work. As per our agreement, we have completed that work as follows:

- Updated the street Pavement Evaluation (database) to reflect street improvement and sealcoat projects performed through 2015; this utilized past PASER evaluations; new evaluations were not included in this effort
    - a draft database was provided during June 2015
    - a final database was provided during December 2015
- Reorganized the database into seven zones (areas) in the City and created a long term street Capital Improvement Plan (CIP) based on a seven zone (sealcoat cycle) pavement management program; the CIP consists of proposed sealcoat, rehabilitation, and reconstruction projects - estimated project costs and construction years were included; based on a variety of items, future project mapping was eliminated from this effort
    - the long term CIP was provided during December 2015
    - the PMP area map was provided during July
- Created a Pavement Management Program document, based on the above documents, which the City could adopt to formalize pavement management in the City
    - the Street Pavement Management Program document was provided during December 2015

Based on our discussion on January 8th, I understand you would like additional updates and revisions made to the database, the management document, and the long term CIP that we have provided. You would like BMI to present the proposed pavement management plan and participate in Commission and Council discussions associated with adoption of this plan. Finally, you felt that street pavement PASER evaluations (ratings) should be obtained during 2016.

As a result, you requested BMI to submit a proposal which would provide services for the work generally described above. Some of the work desired is straight forward and easy to estimate while some is difficult to quantify due to unknown Commission and Council needs associated with this type of policy discussion. The following scope and costs are offered for your consideration:

Scope of Services:

1. Update the street Pavement Evaluation (database) with the most current City CIP reflecting programmed projects from 2016 through 2020. This utilizes past PASER evaluations; new evaluations are not included in this effort.
    a. Deliverables - Street Pavement Evaluation database (spreadsheet and GIS layer)
2. Revise the long term management plan CIP to reflect the City's 2016 - 2020 CIP using sealcoat budgets of $200,000 for 2016 and $500,000 per year thereafter. The CIP will include proposed sealcoat, rehabilitation, reconstruction projects, and respective estimated project costs, along with currently programmed projects
    a. Deliverable - Long term CIP (incorporated into the street pavement database spreadsheet)
3. Map streets proposed for 2016 and 2017 sealcoating illustrating the preventive maintenance projects proposed under the management plan and the revised long term CIP
    a. Deliverables - Proposed 2016 and 2017 Sealcoat Maps
4. Update the City map book identifying all (existing and non-existing) streets and street segments in the City
    a. Deliverables - Map Book (PDF and GIS layer)
5. Attend Commission and Council Meetings to present the proposed management plan and CIP for adoption purposes
6. Provide various maps, as requested, to aid in staff, Commission, and Council discussions and to document final CIP projects
7. Provide PASER evaluations (ratings) for select City streets
    a. Deliverable - PASER ratings incorporated into street Pavement Evaluation database (spreadsheet and GIS layer)

City Obligations: To complete this work, BMI will need the City to:

1. Provide a "gator" vehicle with safety equipment to be used for PASER street evaluations; one 40 hour week is expected for this

Estimated Costs: We propose to provide the above described services at the following estimated costs:

1. Update the street Pavement Evaluation (database and GIS Layer) - $3,300
2. Revise the long term management plan CIP - $3,300
3. Provide maps (PDF) for the proposed 2016 and 2017 sealcoats - $800
4. Update the City map book (PDF) - $1,500

5. Attend staff, Commission, and Council Meetings - $500 each
6. Provide various maps (PDF) - $400 each
7. Provide PASER evaluations (ratings) for select City streets - $4,000
8. Additional requested work - $150 per hour

Thank you for the opportunity to present this proposal. Please feel free to contact me at 218-232-6536 or via e-mail at michaelra@bolton-menk.com if you have any questions or if you require additional information.

Sincerely,
BOLTON & MENK, INC.

Michael P Rardin

Mike Rardin, PE
Senior Project Manager

We hereby accept this proposal and authorize Bolton & Menk, Inc. to proceed with this work.

Accepted: _____ _____
Darrel Olson, Mayor — Kelly Steele, Asst. Administrator/City Clerk

Date: _____ _____

BOLTON & MENK, INC.
Consulting Engineers & Surveyors
7656 Design Road, Suite 200 • Baxter, MN 56425-8676
Phone (218) 825-0684 • Fax (218) 825-0685
www.bolton-menk.com

January 21, 2016

Mr. Trevor Walter, Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
PO Box 2626
Baxter, MN 56425

RE: Proposal for Engineering Services - 2016 Chip Sealcoat Improvements
City of Baxter, Minnesota

Dear Mr. Walter,

We understand that the City of Baxter is considering a street sealcoat project for 2016 and has budgeted an amount of $200,000 towards that project. We further understand that the City may request Crow Wing County to provide bidding and contract administration services for this project, but the City desires to retain responsibility for design and construction observation services. If County services are utilized, approved City plans will be due to Crow Wing County in the near future.

Due to a number of issues the City is considering, you have requested that Bolton & Menk, Inc. (BMI) submit a proposal for design purposes only at this time. As such, the following scope and costs are offered for your consideration:

Scope of Services: Based on our understanding and familiarity with your past sealcoat projects in Baxter, we propose to provide the following services.

1. Engineering Design Services:
    a. Development of construction plans and technical specifications.
    b. Related coordination with City and County Staff.
2. Bidding Services:
    a. None requested at this time.
3. Construction Services:
    a. None requested at this time.

City Obligations: To complete this work as described above, BMI will need the City to provide:

1. A list of streets to be sealcoated (from City Pavement Management Plan).
2. A map showing streets to be sealcoated.
3. Pavement marking cut sheets with quantities for each street to be sealcoated.

Proposed Engineering Budget: We propose to provide the engineering services described above for an hourly not to exceed cost of $4,500.

Thank you for the opportunity to present this proposal. Please feel free to contact me at 218-232-6536 or via e-mail at michaelra@bolton-menk.com if you have any questions or if you require additional information.

Sincerely,
BOLTON & MENK, INC.

Michael P Rardin

Mike Rardin, PE
Senior Project Manager

We hereby accept this proposal and authorize Bolton & Menk, Inc. to proceed with this work.

Accepted: _____ _____
Darrel Olson, Mayor Kelly Steele, Asst. Administrator/City Clerk

Date: _____ _____

BOLTON & MENK, INC.
Consulting Engineers & Surveyors
7656 Design Road, Suite 200 • Baxter, MN 56425-8676
Phone (218) 825-0684 • Fax (218) 825-0685
www.bolton-menk.com

January 19, 2016

Mr. Trevor Walter, Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
PO Box 2626
Baxter, MN 56425

RE: Proposal for Amended Engineering Services
Baxter Lift Station #3 Forcemain Re-route
City of Baxter, Minnesota

Dear Mr. Walter,

In February 2015, Bolton & Menk, Inc. entered into an agreement with the City of Baxter to provide design and construction observation services to develop and construct the Lift Station #3 Forcemain Re-route Improvement for a not to exceed hourly cost of $63,420. The total estimated cost for our services included a total of $40,325 for survey, geotechnical investigation, preliminary engineering, and final engineering. As you are aware, construction plans were developed and reviewed by City staff but public bidding was delayed.

Per our recent conversation, we believe a fee amendment to our original engineering services agreement for the Baxter Lift Station #3 (LS 3) Forcemain Re-route should be considered due to the following circumstances:

1. During design, Bolton & Menk survey staff identified areas where no easement was dedicated with the COSTCO Plat as indicated in the original project RFP and as understood by City staff. As a result, the City Attorney has initiated a process to obtain the originally intended easement area in the COSTCO Plat. To date, the City has received and recorded an easement for parcels held by the Costco Wholesale Corporation but has not received a response from the other property owner, Michael Holdings of Baxter, LLC.

2. It was identified during railroad utility permitting that the Burlington Northern Railroad still retained ownership of the Foley Road right-of-way (MnDOT R/W parcels 200 and 200B) and that the City would pay significant initial and annual utility permit fees as a result. We understand that the City Attorney is attempting to acquire the easement areas and that the City would like us to identify and design a new forcemain route that will remove forcemain length from Railroad utility permit fee responsibility.

3. During 2015 construction of Inglewood Road, improvements were completed in the Fairview Road/Madeline Avenue area, which included completing a portion of the planned LS #3 forcemain re-routing. Those changes will need to be updated and integrated into the LS #3 Forcemain Re-route plans.

As you requested, we have prepared a proposal which would provide services for the supplemental work to address the issues outlined above. The following scope and costs are offered for your consideration:

Scope of Services and Cost:

1. Survey Services to obtain field topographic data and utility locates along Hwy 371 south of the railroad tracks and integrate changes into the design file. Estimated Cost = $1,790.
2. Revise plans to include Inglewood Road/Fairview Road/Madeline Avenue 2015 construction information and prepare new forcemain alignment south of the railroad tracks along Hwy 371 to reduce or limit annual railroad permit fee. Estimated Cost = $7,660.
3. Additional work, as requested, to assist City staff and the City Attorney acquire easements and railroad utility permit would be billed per the agreed to staff billing rates.

It would be our intent to have construction plans ready for public bid during spring 2016 with construction to be completed during summer/fall 2016, assuming the City is able to acquire outstanding easements along the proposed forcemain route.

Thank you for the opportunity to present this fee amendment proposal. Please feel free to contact me at 218-821-7256 or via e-mail at phillipma@bolton-menk.com if you have any questions or if you require additional information.

Sincerely,
BOLTON & MENK, INC.

Phil Martin, PE
Senior Project Manager

We hereby accept this proposal and authorize Bolton & Menk, Inc. to proceed with this work.

Accepted: _____ _____
Darrel Olson, Mayor — Kelly Steele, Asst. Administrator/City Clerk

Date: _____ _____

OWNER
CONTRACTOR
SEH

APPLICATION FOR PAYMENT NO. 7

PROJECT NO. BAXTE 128763
CITY NO. 4108
SAP NO. 230-106-002
OWNER CITY OF BAXTER, MN
CONTRACTOR ANDERSON BROTHERS CONSTRUCTION CO. OF BRAINERD, LLC

CONTRACTOR FOR: 2015 EXCELSIOR ROAD IMPROVEMENTS
AGREEMENT DATE: 4/7/2015
FOR WORK ACCOMPLISHED THROUGH: 12/15/2015

					CONTRACT		THIS PAYMENT		WORK TO DATE	
ITEM	MNDOT	DESCRIPTION	UNIT	UNIT COST	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
1	2021.501	MOBILIZATION	LUMP SUM	$80,000.00	1.00	$80,000.00		$0.00	1.00	$80,000.00
2	2101.501	CLEARING	ACRE	$5,500.00	0.56	$3,080.00		$0.00	0.56	$3,080.00
3	2101.502	CLEARING	TREE	$315.00	3.00	$945.00		$0.00	7.00	$2,205.00
4	2101.506	GRUBBING	ACRE	$5,500.00	0.56	$3,080.00		$0.00	0.56	$3,080.00
5	2101.507	GRUBBING	TREE	$105.00	3.00	$315.00		$0.00	7.00	$735.00
6	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	$17.00	2,413.00	$41,021.00		$0.00	2,475.00	$42,075.00
7	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	$27.50	57.00	$1,567.50		$0.00	57.00	$1,567.50
8	2104.501	REMOVE CURB AND GUTTER	LIN FT	$2.10	2,462.00	$5,170.20		$0.00	2,145.50	$4,505.55
9	2104.501	REMOVE GUARDRAIL	LIN FT	$6.30	590.00	$3,717.00		$0.00	583.00	$3,672.90
10	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	$1.05	16,817.00	$17,657.85		$0.00	18,068.30	$18,971.72
11	2104.505	REMOVE CONCRETE PAVEMENT	SQ YD	$8.50	69.00	$586.50		$0.00	129.20	$1,098.20
12	2104.509	REMOVE WOOD POST	EACH	$23.20	59.00	$1,368.80		$0.00	59.00	$1,368.80
13	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	$475.00	17.00	$8,075.00		$0.00	16.00	$7,600.00
14	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	$4.75	441.00	$2,094.75		$0.00	31.00	$147.25
15	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	$2.05	604.00	$1,238.20		$0.00	687.00	$1,408.35
16	2104.521	SALVAGE CHAIN LINK FENCE	LIN FT	$10.55	50.00	$527.50		$0.00	42.00	$443.10
17	2104.521	SALVAGE WOOD FENCE	LIN FT	$10.55	60.00	$633.00		$0.00	60.00	$633.00
18	2104.521	SALVAGE CONCRETE BOX CULVERT	LIN FT	$125.00	152.00	$19,000.00		$0.00	152.00	$19,000.00
19	2104.521	SALVAGE PIPE SEWER (STORM)	LIN FT	$18.50	170.00	$3,145.00		$0.00	167.00	$3,089.50
20	2104.523	SALVAGE CONCRETE BOX CULVERT END SECTION	EACH	$1,250.00	2.00	$2,500.00		$0.00	2.00	$2,500.00
21	2104.523	SALVAGE CASTING	EACH	$160.00	4.00	$640.00		$0.00	0.00	$0.00
22	2104.523	SALVAGE DRAINAGE STRUCTURE	EACH	$195.00	4.00	$780.00		$0.00	4.00	$780.00
23	2104.523	SALVAGE PIPE APRON	EACH	$450.00	1.00	$450.00		$0.00	0.00	$0.00
24	2104.523	SALVAGE COMMERCIAL SIGN	EACH	$105.00	1.00	$105.00		$0.00	1.00	$105.00
25	2104.523	SALVAGE SIGN TYPE C	EACH	$26.50	37.00	$980.50		$0.00	29.00	$768.50
26	2104.523	SALVAGE SIGN SPECIAL	EACH	$26.50	6.00	$159.00		$0.00	0.00	$0.00
27	2104.603	ABANDON STORM SEWER	LIN FT	$60.00	20.00	$1,200.00		$0.00	20.00	$1,200.00
28	2104.607	SALVAGE RANDOM RIPRAP	CU YD	$52.75	195.00	$10,286.25		$0.00	177.00	$9,336.75
29	2104.618	SALVAGE BLOCK RETAINING WALL	SQ FT	$3.20	250.00	$800.00		$0.00	250.00	$800.00
30	2105.501	COMMON EXCAVATION (P)	CU YD	$8.20	6,362.00	$52,168.40		$0.00	6,362.00	$52,168.40
31	2105.507	SUBGRADE EXCAVATION	CU YD	$9.75	13,906.00	$135,583.50	32.40	$315.90	6,981.80	$68,072.55
32	2105.511	CHANNEL AND POND EXCAVATION	CU YD	$10.75	4,773.00	$51,309.75		$0.00	4,773.00	$51,309.75
33	2105.522	SELECT GRANULAR BORROW (LV)	CU YD	$14.00	9,609.00	$134,526.00		$0.00	1,548.00	$21,672.00
34	2105.601	DEWATERING	LUMP SUM	$160,000.00	1.00	$160,000.00		$0.00	1.00	$160,000.00
35	2105.602	EXCAVATION SPECIAL (SUBGRADE POTHOLE)	EACH	$800.00	7.00	$5,600.00		$0.00	6.00	$4,800.00
36	2105.607	EXCAVATION SPECIAL (EAST POND)	CU YD	$22.50	3,020.00	$67,950.00		$0.00	3,153.09	$70,944.53
37	2123.61	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$125.00	15.00	$1,875.00		$0.00	23.50	$2,937.50
38	2130.501	WATER	MGAL	$50.00	500.00	$25,000.00		$0.00	111.50	$5,575.00

OWNER
CONTRACTOR
SEH

APPLICATION FOR PAYMENT NO. 7

PROJECT NO. BAXTE 128763
CITY NO. 4108
SAP NO. 230-106-002
OWNER CITY OF BAXTER, MN
CONTRACTOR ANDERSON BROTHERS CONSTRUCTION CO. OF BRAINERD, LLC

CONTRACTOR FOR: 2015 EXCELSIOR ROAD IMPROVEMENTS
AGREEMENT DATE: 4/7/2015
FOR WORK ACCOMPLISHED THROUGH: 12/15/2015

					CONTRACT		THIS PAYMENT		WORK TO DATE	
ITEM	MNDOT	DESCRIPTION	UNIT	UNIT COST	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
39	2211.503	AGGREGATE BASE, CLASS 6 (CV) (P)	CU YD	$23.50	4,036.00	$94,846.00		$0.00	4,036.00	$94,846.00
40	2232.501	MILL BITUMINOUS SURFACE (1.5")	SQ YD	$1.50	3,291.00	$4,936.50		$0.00	3,243.00	$4,864.50
41	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	$2.50	2,192.00	$5,480.00		$0.00	1,672.00	$4,180.00
42	2360.501	TYPE SP 9.5 WEARING COURSE MIX (2,C) TRAIL	TON	$85.00	266.00	$22,610.00		$0.00	237.69	$20,203.65
43	2360.501	TYPE SP 9.5 WEARING COURSE MIX (3,C)	TON	$69.00	5,512.00	$380,328.00		$0.00	5,143.31	$354,888.39
44	2360.502	TYPE SP 12.5 NON WEARING COURSE MIX (3,B)	TON	$52.00	2,504.00	$130,208.00		$0.00	2,390.44	$124,302.88
45	2411.521	GRANULAR BACKFILL (LV)	CU YD	$9.50	5,309.00	$50,435.50		$0.00	0.00	$0.00
46	2501.515	12" RC PIPE APRON	EACH	$515.00	4.00	$2,060.00		$0.00	4.00	$2,060.00
47	2501.515	15" RC PIPE APRON	EACH	$535.00	3.00	$1,605.00		$0.00	4.00	$2,140.00
48	2501.515	18" RC PIPE APRON	EACH	$560.00	1.00	$560.00		$0.00	1.00	$560.00
49	2501.515	24" RC PIPE APRON	EACH	$686.00	1.00	$686.00		$0.00	1.00	$686.00
50	2501.515	27" RC PIPE APRON	EACH	$890.00	1.00	$890.00		$0.00	1.00	$890.00
51	2501.515	36" RC PIPE APRON	EACH	$1,400.00	1.00	$1,400.00		$0.00	2.00	$2,800.00
52	2501.515	48" RC PIPE APRON	EACH	$1,850.00	1.00	$1,850.00		$0.00	1.00	$1,850.00
53	2501.521	22" SPAN RC PIPE-ARCH CULV IIA	LIN FT	$55.50	159.00	$8,824.50		$0.00	159.00	$8,824.50
54	2501.571	INSTALL CONCRETE BOX CULVERT	LIN FT	$265.00	152.00	$40,280.00		$0.00	152.00	$40,280.00
55	2501.573	INSTALL CONCRETE BOX CULVERT END SECTION	EACH	$4,220.00	2.00	$8,440.00		$0.00	2.00	$8,440.00
56	2501.573	INSTALL CONCRETE APRON	EACH	$815.00	1.00	$815.00		$0.00	0.00	$0.00
57	2501.602	TRASH GUARD FOR 12" PIPE APRON	EACH	$300.00	4.00	$1,200.00		$0.00	4.00	$1,200.00
58	2501.602	TRASH GUARD FOR 15" PIPE APRON	EACH	$350.00	3.00	$1,050.00		$0.00	4.00	$1,400.00
59	2501.602	TRASH GUARD FOR 18" PIPE APRON	EACH	$375.00	1.00	$375.00		$0.00	1.00	$375.00
60	2501.602	TRASH GUARD FOR 24" PIPE APRON	EACH	$750.00	1.00	$750.00		$0.00	1.00	$750.00
61	2501.602	TRASH GUARD FOR 27" PIPE APRON	EACH	$815.00	1.00	$815.00		$0.00	1.00	$815.00
62	2501.602	TRASH GUARD FOR 36" PIPE APRON	EACH	$1,200.00	1.00	$1,200.00		$0.00	2.00	$2,400.00
63	2501.602	TRASH GUARD FOR 48" PIPE APRON	EACH	$1,750.00	1.00	$1,750.00		$0.00	1.00	$1,750.00
64	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	$31.00	513.00	$15,903.00		$0.00	539.00	$16,709.00
65	2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT	$32.50	636.00	$20,670.00		$0.00	781.00	$25,382.50
66	2503.541	18" RC PIPE SEWER DES 3006 CL III	LIN FT	$37.75	1,849.00	$69,799.75		$0.00	1,854.00	$69,988.50
67	2503.541	24" RC PIPE SEWER DES 3006 CL IV	LIN FT	$47.25	50.00	$2,362.50		$0.00	44.00	$2,079.00
68	2503.541	27" RC PIPE SEWER DES 3006 CL III	LIN FT	$54.50	28.00	$1,526.00		$0.00	28.00	$1,526.00
69	2503.541	30" RC PIPE SEWER DES 3006 CL III	LIN FT	$58.25	46.00	$2,679.50		$0.00	46.00	$2,679.50
70	2503.541	36" RC PIPE SEWER DES 3006 CL IV	LIN FT	$81.00	282.00	$22,842.00		$0.00	398.00	$32,238.00
71	2503.541	48" RC PIPE SEWER DES 3006 CL IV	LIN FT	$125.00	158.00	$19,750.00		$0.00	174.00	$21,750.00
72	2503.571	INSTALL PIPE SEWER	LIN FT	$23.25	156.00	$3,627.00		$0.00	128.00	$2,976.00
73	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	$745.00	2.00	$1,490.00		$0.00	2.00	$1,490.00
74	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	$875.00	5.00	$4,375.00		$0.00	8.00	$7,000.00
75	2503.603	12" PVC SANITARY SEWER PIPE	LIN FT	$68.00	64.00	$4,352.00		$0.00	44.00	$2,992.00

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SAP NO. 230-106-002
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CONTRACTOR ANDERSON BROTHERS CONSTRUCTION CO. OF BRAINERD, LLC

CONTRACTOR FOR: 2015 EXCELSIOR ROAD IMPROVEMENTS
AGREEMENT DATE: 4/7/2015
FOR WORK ACCOMPLISHED THROUGH: 12/15/2015

					CONTRACT		THIS PAYMENT		WORK TO DATE	
ITEM	MNDOT	DESCRIPTION	UNIT	UNIT COST	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
76	2503.603	CLEAN & VIDEO TAPE PIPE SEWER	LIN FT	$16.00	64.00	$1,024.00		$0.00	0.00	$0.00
77	2503.603	BYPASS PUMPING	LUMP SUM	$9,750.00	1.00	$9,750.00		$0.00	1.00	$9,750.00
78	2504.601	LOWER WATER MAIN	LUMP SUM	$8,500.00	1.00	$8,500.00		$0.00	1.50	$12,750.00
79	2504.602	ADJUST VALVE BOX	EACH	$370.00	18.00	$6,660.00		$0.00	21.00	$7,770.00
80	2504.603	HYDRANT RISER	LIN FT	$1,350.00	0.50	$675.00		$0.00	0.50	$675.00
81	2504.604	3" INSULATION	SQ YD	$24.50	120.00	$2,940.00		$0.00	124.10	$3,040.45
82	2506.501	CONSTRUCT DRAINAGE STRUCTURE DES 4007	LIN FT	$205.00	28.08	$5,756.40		$0.00	28.38	$5,817.90
83	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES SPECIAL	EACH	$5,000.00	2.00	$10,000.00		$0.00	2.00	$10,000.00
84	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES H	EACH	$950.00	8.00	$7,600.00		$0.00	8.00	$7,600.00
85	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES 48-4020	EACH	$1,750.00	19.00	$33,250.00		$0.00	19.00	$33,250.00
86	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES 60-4020	EACH	$2,400.00	5.00	$12,000.00		$0.00	4.00	$9,600.00
87	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES 72-4020	EACH	$3,100.00	2.00	$6,200.00		$0.00	2.00	$6,200.00
88	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES 84-4020	EACH	$4,700.00	2.00	$9,400.00		$0.00	3.00	$14,100.00
89	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES 96-4020	EACH	$6,100.00	3.00	$18,300.00		$0.00	3.00	$18,300.00
90	2506.516	CASTING ASSEMBLY	EACH	$800.00	41.00	$32,800.00		$0.00	53.00	$42,400.00
91	2506.521	INSTALL CASTING	EACH	$525.00	4.00	$2,100.00		$0.00	0.00	$0.00
92	2506.521	INSTALL DRAINAGE STRUCTURE	EACH	$1,600.00	4.00	$6,400.00		$0.00	4.00	$6,400.00
93	2506.602	ADJUST FRAME MANHOLE CASTING	EACH	$525.00	17.00	$8,925.00		$0.00	22.00	$11,550.00
94	2506.602	ADJUST FRAME & RING CASTING	EACH	$525.00	5.00	$2,625.00		$0.00	2.00	$1,050.00
95	2506.602	RECONSTRUCT MANHOLE INVERT	EACH	$1,000.00	1.00	$1,000.00		$0.00	1.00	$1,000.00
96	2511.501	RANDOM RIP RAP CLASS III	CU YD	$110.00	107.00	$11,770.00		$0.00	177.43	$19,517.30
97	2511.607	INSTALL RIPRAP	CU YD	$52.75	195.00	$10,286.25		$0.00	147.00	$7,754.25
98	2521.501	6" CONCRETE WALK	SQ FT	$6.50	2,569.00	$16,698.50		$0.00	2,751.00	$17,881.50
99	2531.501	CONCRETE CURB AND GUTTER DESIGN B612	LIN FT	$21.10	22.00	$464.20		$0.00	23.00	$485.30
100	2531.501	CONCRETE CURB AND GUTTER DESIGN B618	LIN FT	$21.10	220.00	$4,642.00		$0.00	193.50	$4,082.85
101	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	$13.75	2,880.00	$39,600.00		$0.00	3,209.00	$44,123.75
102	2531.618	TRUNCATED DOMES	SQ FT	$31.75	217.00	$6,889.75		$0.00	116.00	$3,683.00
103	2540.602	BOLLARD	EACH	$1,055.00	1.00	$1,055.00	1.00	$1,055.00	1.00	$1,055.00
104	2540.618	INSTALL BLOCK RETAINING WALL	SQ FT	$10.55	250.00	$2,637.50		$0.00	0.00	$0.00
105	2545.511	LIGHTING UNIT TYPE SPECIAL	EACH	$4,400.00	18.00	$79,200.00		$0.00	18.00	$79,200.00
106	2545.515	LIGHT FOUNDATION DESIGN E MODIFIED	EACH	$800.00	18.00	$14,400.00		$0.00	18.00	$14,400.00
107	2545.523	2" NON-METALLIC CONDUIT	LIN FT	$5.00	3,475.00	$17,375.00		$0.00	3,950.00	$19,750.00
108	2545.523	2" NON-METALLIC CONDUIT (DIRECTIONAL BORE)	LIN FT	$16.00	275.00	$4,400.00		$0.00	773.00	$12,368.00
109	2545.531	UNDERGROUND WIRE 1 COND NO 4	LIN FT	$1.45	12,300.00	$17,835.00		$0.00	11,181.00	$16,212.45
110	2545.531	UNDERGROUND WIRE 1 COND NO 6	LIN FT	$1.00	12,300.00	$12,300.00		$0.00	10,262.00	$10,262.00
111	2545.531	UNDERGROUND WIRE 1 COND NO 12	LIN FT	$0.55	3,800.00	$2,090.00		$0.00	2,910.00	$1,600.50
112	2545.541	SERVICE CABINET	EACH	$6,300.00	1.00	$6,300.00		$0.00	1.00	$6,300.00
113	2545.544	SERVICE EQUIPMENT	EACH	$1,600.00	1.00	$1,600.00		$0.00	1.00	$1,600.00

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CONTRACTOR ANDERSON BROTHERS CONSTRUCTION CO. OF BRAINERD, LLC

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FOR WORK ACCOMPLISHED THROUGH: 12/15/2015

					CONTRACT		THIS PAYMENT		WORK TO DATE	
ITEM	MNDOT	DESCRIPTION	UNIT	UNIT COST	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
114	2545.545	EQUIPMENT PAD	EACH	$700.00	1.00	$700.00		$0.00	1.00	$700.00
115	2545.553	HANDHOLE	EACH	$588.00	1.00	$588.00		$0.00	1.00	$588.00
116	2557.603	INSTALL CHAIN LINK FENCE	LIN FT	$10.55	38.00	$400.90		$0.00	22.00	$232.10
117	2557.603	INSTALL WOOD FENCE	LIN FT	$21.10	60.00	$1,266.00		$0.00	60.00	$1,266.00
118	2563.601	TRAFFIC CONTROL	LUMP SUM	$3,375.00	1.00	$3,375.00		$0.00	1.00	$3,375.00
119	2563.601	DETOUR SIGNING	LUMP SUM	$1,500.00	1.00	$1,500.00		$0.00	1.00	$1,500.00
120	2564.531	SIGN PANELS TYPE C	SQ FT	$42.00	226.00	$9,492.00		$0.00	379.25	$15,928.50
121	2564.537	INSTALL SPECIAL SIGN	EACH	$525.00	1.00	$525.00		$0.00	1.00	$525.00
122	2564.537	INSTALL SIGN TYPE C	EACH	$160.00	3.00	$480.00		$0.00	4.00	$640.00
123	2564.537	INSTALL SIGN SPECIAL	EACH	$160.00	6.00	$960.00		$0.00	0.00	$0.00
124	2565.616	PEDESTRIAN CROSSWALK FLASHER SYSTEM	SYS	$21,000.00	1.00	$21,000.00	0.05	$1,050.00	1.00	$21,000.00
125	2565.616	REVISE FLASHER SYSTEM	SYS	$3,700.00	1.00	$3,700.00		$0.00	1.00	$3,700.00
126	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.10	4,475.00	$9,397.50		$0.00	5,227.00	$10,976.70
127	2573.505	FLOTATION SILT CURTAIN TYPE MOVING WATER	LIN FT	$21.05	90.00	$1,894.50		$0.00	30.00	$631.50
128	2573.515	TEMPORARY DITCH CHECK TYPE 3	LIN FT	$5.25	60.00	$315.00		$0.00	0.00	$0.00
129	2573.53	STORM DRAIN INLET PROTECTION	EACH	$160.00	50.00	$8,000.00		$0.00	58.00	$9,280.00
130	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	$685.00	11.00	$7,535.00		$0.00	0.00	$0.00
131	2574.508	FERTILIZER TYPE 3	POUND	$0.65	1,434.00	$932.10		$0.00	1,675.00	$1,088.75
132	2574.525	COMMON TOPSOIL BORROW (LV)	CU YD	$27.00	3,390.00	$91,530.00		$0.00	2,199.00	$59,373.00
133	2575.501	SEEDING	ACRE	$800.00	4.07	$3,256.00		$0.00	4.76	$3,808.00
134	2575.501	SEEDING (TEMPORARY)	ACRE	$52.75	4.47	$235.79		$0.00	0.00	$0.00
135	2575.502	SEED MIXTURE 22-111	POUND	$3.25	271.00	$880.75		$0.00	420.00	$1,365.00
136	2575.502	SEED MIXTURE 25-141	POUND	$3.50	298.00	$1,043.00		$0.00	400.00	$1,400.00
137	2575.502	SEED MIXTURE 25-151	POUND	$2.95	87.00	$256.65		$0.00	100.00	$295.00
138	2575.502	SEED MIXTURE 33-361	POUND	$35.00	128.00	$4,480.00		$0.00	70.00	$2,450.00
139	2575.502	SEED MIXTURE 34-181	POUND	$375.00	3.00	$1,125.00		$0.00	3.00	$1,125.00
140	2575.505	SODDING TYPE LAWN	SQ YD	$8.25	2,167.00	$17,877.75		$0.00	2,760.00	$22,770.00
141	2575.523	EROSION CONTROL BLANKET CATEGORY 3	SQ YD	$2.50	17,732.00	$44,330.00		$0.00	6,008.00	$15,020.00
142	2575.562	HYDRAULIC MATRIX TYPE MULCH	POUND	$1.00	15,890.00	$15,890.00		$0.00	28,940.00	$28,940.00
143	2582.501	PAVT MSSG (LT ARROW) EPOXY (SEE CHANGE ORDER NO. 1)	EACH	$130.00	21.00	$2,730.00		$0.00	0.00	$0.00
144	2582.501	PAVT MSSG (RT ARROW) EPOXY (SEE CHANGE ORDER NO. 1)	EACH	$130.00	8.00	$1,040.00		$0.00	0.00	$0.00
145	2582.501	PAVT MSSG (THRU ARROW) EPOXY (SEE CHANGE ORDER NO. 1)	EACH	$130.00	1.00	$130.00		$0.00	0.00	$0.00
146	2582.502	4" SOLID LINE WHITE-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$0.27	6,265.00	$1,691.55		$0.00	0.00	$0.00
147	2582.502	4" SOLID LINE YELLOW-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$0.30	2,910.00	$873.00		$0.00	0.00	$0.00
148	2582.502	4" BROKEN LINE YELLOW-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$0.30	600.00	$180.00		$0.00	0.00	$0.00

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ITEM	MNDOT	DESCRIPTION	UNIT	UNIT COST	CONTRACT QUANTITY	CONTRACT AMOUNT	THIS PAYMENT QUANTITY	THIS PAYMENT AMOUNT	WORK TO DATE QUANTITY	WORK TO DATE AMOUNT
149	2582.502	4" DOUBLE SOLID LINE YELLOW-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$0.60	3,950.00	$2,370.00		$0.00	0.00	$0.00
150	2582.502	8" SOLID LINE WHITE-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$3.70	270.00	$999.00		$0.00	0.00	$0.00
151	2582.502	24" SOLID LINE WHITE-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$7.50	32.00	$240.00		$0.00	0.00	$0.00
152	2582.502	24" SOLID LINE YELLOW-EPOXY (SEE CHANGE ORDER NO. 1)	LIN FT	$6.00	57.00	$342.00		$0.00	0.00	$0.00
TOTAL ITEMS BID						$2,476,917.04		$2,420.90		$2,184,474.06
CHANGE ORDER NO. 1										
143A	2582.501	PAVT MSSG (LT ARROW) EPOXY	EACH	$130.00	(21.00)	($2,730.00)		$0.00	0.00	$0.00
144A	2582.501	PAVT MSSG (RT ARROW) EPOXY	EACH	$130.00	(8.00)	($1,040.00)		$0.00	0.00	$0.00
145A	2582.501	PAVT MSSG (THRU ARROW) EPOXY	EACH	$130.00	(1.00)	($130.00)		$0.00	0.00	$0.00
146A	2582.502	4" SOLID LINE WHITE-EPOXY	LIN FT	$0.27	(6,265.00)	($1,691.55)		$0.00	0.00	$0.00
147A	2582.502	4" SOLID LINE YELLOW-EPOXY	LIN FT	$0.30	(2,910.00)	($873.00)		$0.00	0.00	$0.00
148A	2582.502	4" BROKEN LINE YELLOW-EPOXY	LIN FT	$0.30	(600.00)	($180.00)		$0.00	0.00	$0.00
149A	2582.502	4" DOUBLE SOLID LINE YELLOW-EPOXY	LIN FT	$0.60	(3,950.00)	($2,370.00)		$0.00	0.00	$0.00
150A	2582.502	8" SOLID LINE WHITE-EPOXY	LIN FT	$3.70	(270.00)	($999.00)		$0.00	0.00	$0.00
151A	2582.502	24" SOLID LINE WHITE-EPOXY	LIN FT	$7.50	(32.00)	($240.00)		$0.00	0.00	$0.00
152A	2582.502	24" SOLID LINE YELLOW-EPOXY	LIN FT	$6.00	(57.00)	($342.00)		$0.00	0.00	$0.00
153	2582.501	PAVEMENT MESS (LEFT ARROW) - PAINT	EACH	$82.50	21.00	$1,732.50		$0.00	35.00	$2,887.50
154	2582.501	PAVEMENT MESS (RIGHT ARROW) - PAINT	EACH	$82.50	8.00	$660.00		$0.00	10.00	$825.00
155	2582.501	PAVEMENT MESS (THRU ARROW) - PAINT	EACH	$82.50	1.00	$82.50		$0.00	0.00	$0.00
156	2582.502	4" SOLID LINE WHITE - PAINT	LINI FT	$0.17	6,265.00	$1,065.05		$0.00	7,025.00	$1,194.25
157	2582.502	4" SOLID LINE YELLOW - PAINT	LINI FT	$0.17	2,910.00	$494.70		$0.00	3,606.00	$613.02
158	2582.502	4" BROKEN LINE YELLOW - PAINT	LINI FT	$0.17	600.00	$102.00		$0.00	1,121.00	$190.57
159	2582.502	4" DOUBLE LINE YELLOW - PAINT	LINI FT	$0.33	3,950.00	$1,303.50		$0.00	1,920.00	$633.60
160	2582.502	8" SOLID LINE WHITE - PAINT	LINI FT	$2.42	270.00	$653.40		$0.00	271.00	$655.82
161	2582.502	24" SOLID LINE WHITE - PAINT	LINI FT	$3.85	32.00	$123.20		$0.00	43.00	$165.55
162	2582.502	24" SOLID LINE YELLOW - PAINT	LINI FT	$3.52	57.00	$200.64		$0.00	0.00	$0.00
163	2360.502	DEDUCT TO ALLOW RAP IN WEARING COURSE MIXTURE	TON	$5.00	(8,016.00)	($40,080.00)		$0.00	(5,381.00)	($26,905.00)
164	2573.521	SEDIMENT REMOVAL (VACUUM TRUCK)	LUMP SUM	$1,484.38	1.00	$1,484.38		$0.00	1.00	$1,484.38
165		WASHING SALVAGED RIP RAP	LUMP SUM	$1,718.94	1.00	$1,718.94		$0.00	1.00	$1,718.94
TOTAL CHANGE ORDER NO. 1						($41,054.74)		$0.00		($16,536.37)
CHANGE ORDER NO. 2										
166		TIED CONCRETE BLOCK MAT (FLEXAMAT)	SF	$21.72	720.00	$15,638.40		$0.00	900.00	$19,548.00
167		CONCRETE J-BARRIER	LF	$22.00	96.00	$2,112.00		$0.00	96.00	$2,112.00
168		TOPSOIL 25% MATERIAL COST DEDUCT	CY	($1.69)	3,390.00	($5,729.10)		$0.00	2,199.00	($3,716.31)
TOTAL CHANGE ORDER NO. 2						$12,021.30		$0.00		$17,943.69

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AGREEMENT DATE: 4/7/2015
FOR WORK ACCOMPLISHED THROUGH: 12/15/2015

ITEM	MNDOT	DESCRIPTION	UNIT	UNIT COST	CONTRACT QUANTITY	CONTRACT AMOUNT	THIS PAYMENT QUANTITY	THIS PAYMENT AMOUNT	WORK TO DATE QUANTITY	WORK TO DATE AMOUNT
CHANGE ORDER NO. 4										
169		REPAIR IRRIGATION SYSTEM AT TRAILS HEAD BUSINESS CENTER	LUMP SUM	$2,503.60	1.00	$2,503.60		$0.00	1.00	$2,503.60
170		REPAIR IRRIGATION SYSTEM AT MANN LAKES 12 THEATRE	LUMP SUM	$1,936.00	1.00	$1,936.00		$0.00	1.00	$1,936.00
171		PAVEMENT MARKING REMOVAL	LIN FT	$2.00	531.00	$1,062.00		$0.00	531.00	$1,062.00
172		RELOCATE EXISTING PEDESTRIAN FLASHER BASES BY FLEET FARM	LUMP SUM	$2,961.13	1.00	$2,961.13		$0.00	1.00	$2,961.13
TOTAL CHANGE ORDER NO. 4						$8,462.73		$0.00		$8,462.73
MATERIAL STORED ON SITE										
		SEED MIXTURES (AGASSIZ SEED & SUPPLY)	LUMP SUM	$2,698.63				$0.00	0.00	$0.00
BACKSHEET ADJUSTMENT NO. 1										
		UNRESOLVED REPAIRS TO PAUL BUNYAN STATE TRAIL BRIDGE NO. 18529 DAMAGED BY CONTRACTOR ON 06/24/15	LUMP SUM	($25,000.00)				$0.00	0.00	$0.00
BACKSHEET ADJUSTMENT NO. 2										
		BITUMINOUS DENSITY DISINCENTIVE	LUMP SUM	($4,941.22)			1.00	($4,941.22)	1.00	($4,941.22)
SUMMARY										
TOTAL ITEMS BID						$2,476,917.04		$2,420.90		$2,184,474.06
MATERIAL STORED ON SITE						$0.00		$0.00		$0.00
BACKSHEET ADJUSTMENT NO. 1						$0.00		$0.00		$0.00
BACKSHEET ADJUSTMENT NO. 2						$0.00		($4,941.22)		($4,941.22)
CHANGE ORDER NO. 1						($41,054.74)		$0.00		($16,536.37)
CHANGE ORDER NO. 2						$12,021.30		$0.00		$17,943.69
CHANGE ORDER NO. 4						$8,462.73		$0.00		$8,462.73
TOTAL						$2,456,346.33		($2,520.32)		$2,189,402.89

The undersigned Contractor certifies that all previous payments received from the Owner for work done under this contract have been applied to discharge in full all obligations the Contractor incurred in connection with the work covered by said progress payments. The undersigned Contractor agrees to pay all subcontractors within 10 days of receipt of payment from the municipality for undisputed services provided by the subcontractor. The Contractor agrees to pay interest as described under Minnesota state statute.

Gross Amount Due	$2,189,402.89
Less Retainage (1%)	$21,894.03
Amount Eligible to Date	$2,167,508.86
Less Previous Payments	$2,082,327.05
Amount Due This Application	**$85,181.81**

SUBMITTED ANDERSON BROTHERS CONSTRUCTION CO. O
PO BOX 668
BRAINERD, MN 56401-0668
BY: Al Krause DATE: 1/18/16

RECOMMENDED SEH
416 S 6TH ST STE 200
BRAINERD, MN 56401
BY: Scott D. Hedlund DATE: 1-19-16

APPROVED CITY OF BAXTER
PO BOX 2626
BAXTER, MN 56425-2626
BY: _____ DATE: _____
Kelly Steele, Asst. City Administrator/Clerk

APPROVED CITY OF BAXTER
PO BOX 2626
BAXTER, MN 56425-2626
BY: _____ DATE: _____
Darrel Olson, Mayor

APPROVED CITY OF BAXTER - UTILITIES COMMISSION
PO BOX 2626
BAXTER, MN 56425-2626
BY: _____ DATE: _____

STATE AID FOR LOCAL TRANSPORTATION
BACKSHEET ADJUSTMENT

Rev.July 2010
Page 1 of 1

SAP 230-106-002	Minn. Proj. No.	**BA No. 2**
Project Location Excelsior Road from Cypress Drive to the East City Limits in Baxter		
Local Agency City of Baxter		Local Project No. BAXTE 128763
Contractor Anderson Brothers Construction Co		Contract No.
Address/City/State/Zip PO Box 668, Brainerd, MN 56401		
Total Backsheet Adjustment Amount ($4,941.22)		

Specification 32 12 16 Plant Mixed Asphalt Pavement of the Project Manual provides for density disincentives. The Maximum Density method (MnDOT Specification 2360) for the Project indicates that the Contractor earned a disincentive of ($4,941.22). The Plant Mixed Asphalt Pavement (MnDOT Specification 2360) Density Incentive/Disincentive Worksheets are located in the Engineer's Project File.

Ver03April2015

Plant Mixed Asphalt Pavement (Mn/DOT Specification 2360) Density Incentive/Disincentive Worksheet

Specification Year 2015

S.A.P 230-106-002	Contractor	Anderson Brothers	MDR #	3A-2015-098	Bid Price ($/ton)	$52.00	Total Tons Produced: 1478
CR Excelsior Rd	Engineer	Scott Hedlund	Plant:	Base 4	% Passing #8 Sieve:	54	Max. Density Tons: 1478
Location Baxter			Date Paved	9/1/2015	1% Reduced Prjct?	Yes	Max./Total Ratio: 1.00
SPNWB330B			Date Cored	9/2/2015	Long. Jnt. Density?	Yes	

Lots Required: 3
Over-ride # of Lots:
Tons/Lot: 492.7

Mix Design Type	SP (Gyratory)
Mix Course	NW (Non-Wearing)
Max. Aggr. Size	B (3/4 Inch)
ESALS [Traffic Level]	1 to < 3 (Level 3)
Air Voids	3%
Asphalt Binder Grade	B in PG 58-28
Shoulder?	No
Tons or Sq Yd in. Prjct?	Tons

Sample Number	301	302										
Sample Tons	84	420										
Tons Represented	420	1058										
Density Tons	420	1058										
Individual Air Voids	2.7	2.8										
Individual Gmm	2.498	2.497										
Moving Avg. Gmm	2.498	2.497										

Average Gmm ===> 2.497 Design Air Voids: 3.0 Min. Air Voids: 2.5 Day's Weighted Avg. Air Void: 2.8

Min.Mat Density Reqrd: 92 Use Laboratory Method 1810

Lot		Core #	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp. G	Density % of Gmm	Bulk Sp. G used	Lot Avg. Density (% of Gmm)	Mat Pay Factor "A"	Total Pay Factor AxBxC	Tons Represent	Incentive Disincentive
1	Contr. QC	1.1		2065.3	C	2273.1	213.4	2067.6	1168.7	2059.7	0.3	2.291	91.8	2.291	92.6	1.00		492.7	$0.00
	Contr. QC	1.2		2392.4	D	2615.0	224.7	2395.6	1371.2	2390.3	0.3	2.333	93.4	2.333					
	Agency QA	1.1C		2099.6		2110.7	14.5	2102.4	1183.1	2096.2	0.3	2.280	91.3						
	Agency QA	1.2C		2354.9		2364.2	14.3	2357.3	1346.9	2349.9	0.2	2.326	93.2	2.312	= Avg. Gmb				
2	Contr. QC	2.1		1995.2	A	2204.1	212.1	2000.0	1123.1	1992.0	0.5	2.272	91.0	2.272	92.4	1.00		492.7	$0.00
	Contr. QC	2.2		2244.6	B	2451.0	209.7	2246.5	1290.4	2241.3	0.2	2.344	93.9	2.344					
	Agency QA	2.1C		1958.1		1970.1	14.6	1962.2	1107.4	1955.5	0.5	2.288	91.6						
	Agency QA	2.2C		2250.9		2264.7	15.1	2252.7	1293.0	2249.6	0.2	2.344	93.9	2.308	= Avg.Gmb				
3	Contr. QC	3.1		2623.7	Q	3042.6	425.7	2626.8	1493.1	2616.9	0.3	2.308	92.4	2.308	92.6	1.00		492.7	$0.00
	Contr. QC	3.2		2239.7	F	2575.6	342.3	2243.2	1279.1	2233.3	0.4	2.316	92.8	2.316					
	Agency QA	3.1C	2.25	2570.7	G	2581.8	14.6	2573.6	1459.6	2567.2	0.3	2.304	92.3						
	Agency QA	3.2C	2.00	2229.3	H	2240.1	14.3	2232.4	1270.7	2225.8	0.3	2.314	92.7	2.312	= Avg. Gmb				

Longitudinal Joint Density Cores

Min. Confined LJD Required: 90.5 Min. Unconfined LJD Required: 89.1

Assoc. Mat Core		Core #	Joint Type	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp.G	Density (% of Gmm)	Bulk Sp. G used	Lot Avg. Density % of Gmm	Edge Pay Factor B or C
1.1	Contr. QC	1.3L	Confined		2036.0	R	2460.7	434.7	2039.4	1145.3	2026.0	0.4	2.266	90.7	2.266	90.7	1.00
	Contr. QC	1.4R	Unconfined		2293.1	G1	2707.3	424.2	2297.9	1289.9	2283.1	0.5	2.265	90.7	2.265	90.7	1.00
	Agency QA	1.3LC			1959.6	L	1969.5	14.9	1966.8	1097.0	1954.6	0.8	2.247	90.0			
	Agency QA	1.4RC			2281.3	M	2290.2	15.0	2288.1	1277.3	2275.2	0.7	2.251	90.1			
			No Core														
			No Core														

Net Inc./Disinc.
$0.00

Daily Core Characteristics
Avg. Density 144.0
lb/yd³ in. 106.0

Info: 1% Reduced Density, No Incentive Payment

Notes:

QC By: RM
QA By: AT
Field Check By: Braun

Ver03Apr2015

Plant Mixed Asphalt Pavement (Mn/DOT Specification 2360) Density Incentive/Disincentive Worksheet

Specification Year 2015

S.A.P	230-106-002	Contractor	Anderson Brothers	MDR #	3A-2015-098	Bid Price ($/ton)	$52.00	Total Tons Produced: 770	Lots Required: 2
CR	Excelsior Rd	Engineer	Scott Hedlund	Plant:	Base 4	% Passing #8 Sieve:	54	Max. Density Tons: 770	Over-ride # of Lots:
Location	Baxter			Date Paved	9/2/2015	1% Reduced Prjct?	Yes	Max./Total Ratio: 1.00	Tons/Lot: 385.0
				Date Cored	9/3/2015	Long. Jnt. Density?	Yes		

SPNWB330B

Mix Design Type	SP (Gyratory)
Mix Course	NW (Non-Wearing)
Max. Aggr. Size	B (3/4 inch)
ESALS [Traffic Level]	1 to <3 (Level 3)
Air Voids	9%
Asphalt Binder Grade	B = PG 58-28
Shoulder?	No
Tons or Sq Yd In. Prjct?	Tons

Sample Number	303	304	305									
Sample Tons	90	271	595									
Tons Represented	271	324	175									
Density Tons	271	324	175									
Individual Air Voids	3.4	2.8	3.1									
Individual Gmm	2.503	2.5	2.504									
Moving Avg. Gmm	2.503	2.500	2.501									

Average Gmm ===> 2.502 Design Air Voids: 3.0 Min. Air Voids: 2.5 Day's Weighted Avg. Air Void: 3.1

Use Laboratory Method 1810

Min.Mat Density Reqrd: 92

Lot		Core #	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp. G	Density % of Gmm	Bulk Sp. G used	Lot Avg. Density (% of Gmm)	Mat Pay Factor "A"	Total Pay Factor AxBxC	Tons Represent	Incentive Disincentive
4	Contr. QC	4.1		2518.7	MV	2893.5	383.3	2523.4	1447.4	2510.2	0.4	2.333	93.2	2.333	92.4	1.00		385	$0.00
	Contr. QC	4.2		2217.4	X	2565.4	356.2	2220.8	1256.6	2209.2	0.4	2.291	91.6	2.291					
	Agency QA	4.1C	2.38	2519.0	A	2527.8	16.8	2522.3	1441.5	2511.0	0.3	2.323	92.8						
	Agency QA	4.2C	2.10	2238.4	B	2248.0	14.8	2242.0	1267.9	2233.2	0.4	2.293	91.6	2.312	= Avg. Gmb				
5	Contr. QC	5.1		2529.8	W	2892.9	367.8	2532.0	1453.1	2525.1	0.2	2.340	93.5	2.340	93.8	1.00	1.00	385	$0.00
	Contr. QC	5.2		2486.8	Z	2809.7	321.1	2489.1	1435.9	2482.6	0.2	2.357	94.2	2.357					
	Agency QA	5.1C	2.25	2465.0	C	2476.6	15.3	2468.2	1413.5	2461.3	0.3	2.334	93.3						
	Agency QA	5.2C	2.25	2444.6	D	2487.3	15.1	2446.4	1409.0	2472.2	0.2	2.383	95.2	2.348	= Avg.Gmb				

Longitudinal Joint Density Cores

Min. Confined LJD Required: 90.5 Min. Unconfined LJD Required: 89.1

Assoc. Mat Core		Core #	Joint Type	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp.G	Density (% of Gmm)	Bulk Sp. G used	Lot Avg. Density % of Gmm	Edge Pay Factor B or C
5.2	Contr. QC	5.3L	Confined		2345.4	P1	2759.5	424.3	2348.0	1336.8	2335.2	0.3	2.309	92.3	2.309	92.3	1.00
	Contr. QC	5.4R	Confined		2247.6	J	2727.9	489.4	2255.4	1258.3	2238.5	0.8	2.245	89.7	2.245	89.7	1.00
	Agency QA	5.3LC		2.25	2346.2	E	2359.0	15.4	2350.1	1332.5	2343.6	0.4	2.303	92.0			
	Agency QA	5.4RC		2.25	2283.9	P	2288.6	14.9	2293.5	1280.5	2273.7	0.9	2.245	89.7			
			No Core														
			No Core														

Net Inc./Disinc.
$0.00

Daily Core Characteristics

Avg. Density	145.2
lb/yd³ in.	108.9

Info: **1% Reduced Density, No Incentive Payment**

Notes:

QC By: RM
QA By: AT
Field Check By: Braun

Ver:03April2015

Plant Mixed Asphalt Pavement (Mn/DOT Specification 2360) Density Incentive/Disincentive Worksheet

Specification Year 2015

S.A.P	230-106-002	Contractor	Anderson Brothers	MDR #	3A-2015-051	Bid Price ($/ton)	$69.00	Total Tons Produced:	1264	Lots Required:	3
CSAH	Excelsior Rd	Engineer	Scott Hedlund	Plant:	Base 4	% Passing #8 Sieve:	55	Max. Density Tons:	1264	Over-ride # of Lots:	
Location	Baxter			Date Paved	9/2/2015	1% Reduced Prjct?	No	Max./Total Ratio:	1.00	Tons/Lot:	421.3
				Date Cored	9/3/2015	Long. Jnt. Density?	Yes				

SPWEA340C

Mix Design Type	SP (Gyratory)
Mix Course	WE (Wear)
Max. Aggr. Size	A (1/2 inch)
ESALS (Traffic Level)	1 to <3 (Level 3)
Air Voids	4%
Asphalt Binder Grade	C = PG 58-34
Shoulder?	No
Tons or Sq Yd in. Prjct?	Tons

Sample Number	313	314									
Sample Tons	88	518									
Tons Represented	518	746									
Density Tons	518	746									
Individual Air Voids	3.7	3.8									
Individual Gmm	2.506	2.501									
Moving Avg. Gmm	2.496	2.498									

Average Gmm ===> 2.498 Design Air Voids: 4.0 Min. Air Voids: 3.5 Day's Weighted Avg. Air Void: 3.8

Use Laboratory Method 1810

Min.Mat Density Reqrd: 92

Lot		Core #	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp. G	Density % of Gmm	Bulk Sp. G used	Lot Avg. Density (% of Gmm)	Mat Pay Factor "A"	Total Pay Factor AxBxC	Tons Represent	Incentive Disincentive
6	Contr. QC	6.1		2035.9	C	2245.1	213.8	2038.1	1160.6	2031.3	0.3	2.315	92.7	2.315	92.2	1.00		421.3	$0.00
	Contr. QC	6.2		1880.1	D	2101.2	225.0	1882.0	1064.2	1876.2	0.2	2.294	91.8	2.294					
	Agency QA	6.1C	1.75	2031.7	I	2042.7	14.6	2033.8	1156.8	2028.1	0.2	2.313	92.6						
	Agency QA	6.2C	1.75	1896.7	J	1909.6	15.1	1895.8	1073.6	1894.5	-0.1	2.304	92.2	2.304	= Avg. Gmb				
7	Contr. QC	7.1		2134.6	B	2344.8	212.2	2139.1	1191.5	2132.6	0.5	2.251	90.1	2.251	91.8	0.98		421.3	-$581.39
	Contr. QC	7.2		2029.3	A	2236.1	209.9	2031.4	1162.8	2026.2	0.2	2.333	93.4	2.333					
	Agency QA	7.1C	2.00	2176.7	K	2188.4	14.8	2179.9	1214.6	2173.6	0.3	2.252	90.2						
	Agency QA	7.2C	1.75	1957.3	L	1970.3	14.9	1959.0	1114.5	1955.4	0.2	2.315	92.7	2.292	= Avg.Gmb				
8	Contr. QC	8.1		2147.3	M	2461.7	320.1	2149.4	1219.9	2141.6	0.2	2.304	92.2	2.304	93.0	1.00	1.02	421.3	$584.30
	Contr. QC	8.2		1973.7	X1	2293.8	320.9	1974.9	1133.2	1972.9	0.1	2.344	93.8	2.344					
	Agency QA	8.1C	2.00	2130.9	M	2144.3	14.9	2133.9	1212.9	2129.4	0.3	2.312	92.6						
	Agency QA	8.2C	1.75	2000.9	N	2019.5	19.4	2002.3	1149.8	2000.1	0.2	2.346	93.9	2.324	= Avg. Gmb				

Longitudinal Joint Density Cores

Min. Confined LJD Required: 89.5 Min. Unconfined LJD Required: 88.1

Assoc. Mat Core		Core #	Joint Type	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp.G	Density (% of Gmm)	Bulk Sp. G used	Lot Avg. Density % of Gmm	Edge Pay Factor B or C
8.2	Contr. QC	8.3L	Unconfined		2016.0	R	2443.4	434.8	2018.6	1133.3	2008.6	0.3	2.269	90.8	2.269	90.8	1.01
	Contr. QC	8.4R	Unconfined		1815.4	G1	2236.6	424.2	1818.5	1014.6	1812.4	0.4	2.255	90.3	2.255	90.3	1.01
	Agency QA	8.3LC		1.75	1763.8	O	1774.7	14.6	1765.5	986.1	1760.1	0.2	2.258	90.4			
	Agency QA	8.4RC		1.75	1831.2	P	1843.2	14.3	1833.7	1020.6	1828.9	0.3	2.249	90.0			
			No Core														
			No Core														

Net Inc./Disinc.
$2.91

Daily Core Characteristics

Avg. Density	143.7
lb/yd³ in.	107.8

Info:

Notes:

QC By: _____
QA By: _____
Field Check By: _____

Ver03April2015

Plant Mixed Asphalt Pavement (Mn/DOT Specification 2360) Density Incentive/Disincentive Worksheet

Specification Year 2015

S.A.P 230-106-002 | Contractor: Anderson Brothers | MDR #: 3A-2015-051 | Bid Price ($/ton): $69.00 | Total Tons Produced: 1185 | Lots Required: 2

CSAH Excelsior Rd | Engineer: Scott Hedlund | Plant: Base 4 | % Passing #8 Sieve: 55 | Max. Density Tons: 766 | Over-ride # of Lots:

Location: Baxter | Date Paved: 9/3/2015 | 1% Reduced Prjct? No | Max./Total Ratio: 0.65 | Tons/Lot: 383.0

Date Cored: 9/4/2015 | Long. Jnt. Density? Yes

SPWEA340C

Mix Design Type	SP (Gyratory)
Mix Course	WE (Wear)
Max. Aggr. Size	A (1/2 inch)
ESALS [Traffic Level]	1 to < 3 [Level 3]
Air Voids	4%
Asphalt Binder Grade	C = PG 58-34
Shoulder?	No
Tons or Sq Yd in. Prjct?	Tons

Sample Number	315	316										
Sample Tons	112	791										
Tons Represented	791	394										
Density Tons	511	255										
Individual Air Voids	4.1	4.0										
Individual Gmm	2.503	2.501										
Moving Avg. Gmm	2.502	2.503										

Average Gmm ===> 2.503 | Design Air Voids: 4.0 | Min. Air Voids: 3.5 | Day's Weighted Avg. Air Void: 4.1

Min.Mat Density Reqrd: 92

Use Laboratory Method 1810

Lot		Core #	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp. G	Density % of Gmm	Bulk Sp. G used	Lot Avg. Density (% of Gmm)	Mat Pay Factor "A"	Total Pay Factor AxBxC	Tons Represent	Incentive Disincentive
9	Contr. QC	9.1		1748.0	D	1969.1	225.8	1750.6	989.0	1743.3	0.3	2.289	91.5	2.289	92.0	1.00	1.01	383	$264.27
	Contr. QC	9.2		2153.5	C	2364.4	213.7	2156.3	1228.2	2150.7	0.3	2.317	92.6	2.317					
	Agency QA	9.1C	1.63	1746.2		1759.8	14.8	1748.3	985.1	1745.0	0.3	2.286	91.3						
	Agency QA	9.2C	1.75	1872.7		1890.5	19.3	1874.7	1065.1	1871.2	0.2	2.311	92.3	2.303	= Avg. Gmb				
10	Contr. QC	10.1		1931.3	B	2141.8	211.9	1934.4	1101.4	1929.9	0.4	2.317	92.6	2.317	91.1	0.98		383	-$528.54
	Contr. QC	10.2		1814.1	A	2019.7	210.3	1818.4	1011.6	1809.4	0.5	2.243	89.6	2.243					
	Agency QA	10.1C	1.75	1880.1		1893.8	14.6	1882.0	1067.7	1879.2	0.2	2.308	92.2						
	Agency QA	10.2C	1.75	1799.0		1811.8	14.4	1802.7	999.1	1797.4	0.5	2.237	89.4	2.280	= Avg.Gmb				

Longitudinal Joint Density Cores

Min. Confined LJD Required: 89.5 | Min. Unconfined LJD Required: 88.1

Assoc Mat Core		Core #	Joint Type	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp.G	Density (% of Gmm)	Bulk Sp. G used	Lot Avg. Density % of Gmm	Edge Pay Factor B or C
9.1	Contr. QC	9.3L	Confined		1425.8		1842.5	422.8	1429.0	797.7	1419.7	0.5	2.249	89.9	2.249	89.9	1.00
	Contr. QC	9.4R	Confined		2032.1		2398.2	368.8	2035.6	1154.2	2029.4	0.4	2.302	92.0	2.302	92.0	1.01
	Agency QA	9.3LC		1.40	1405.3		1416.3	14.2	1408.8	782.0	1402.1	0.6	2.237	89.4			
	Agency QA	9.4RC		2.00	2031.3		2154.6	125.1	2034.3	1151.1	2029.5	0.3	2.298	91.8			
			No Core														
			No Core														

Net Inc./Disinc.
-$264.27

Daily Core Characteristics

Avg. Density	142.8
lb/yd³ in.	107.1

Info:

Notes:

QC By: _____

QA By: _____

Field Check By: _____

Ver:03April2015

Plant Mixed Asphalt Pavement (Mn/DOT Specification 2360) Density Incentive/Disincentive Worksheet

Specification Year 2015

S.A.P 230-106-002 | Contractor: Anderson Brothers | MDR # 3A-2015-051 | Bid Price ($/ton) $69.00 | Total Tons Produced: 1309 | Lots Required: 3

CSAH Excelsior | Engineer: Scott Hedlund | Plant: Base 4 | % Passing #8 Sieve: 55 | Max. Density Tons: 1309 | Over-ride # of Lots:

Location Baxter | Date Paved 9/21/2015 | 1% Reduced Prjct? No | Max./Total Ratio: 1.00 | Tons/Lot: 436.3

Date Cored 9/22/2015 | Long. Jnt. Density? Yes

SPWEA340C

Mix Design Type	SP (Gyratory)
Mix Course	WE (Wear)
Max. Aggr. Size	A (1/2 Inch)
ESALS [Traffic Level]	1 to < 3 [Level 3]
Air Voids	4%
Asphalt Binder Grade	C = PG-58-34
Shoulder?	No
Tons or Sq Yd In. Prjct?	Tons

Sample Number	321	322
Sample Tons	430	804
Tons Represented	804	505
Density Tons	804	505
Individual Air Voids	3.9	5.1
Individual Gmm	2.502	2.483
Moving Avg. Gmm	2.494	2.496

Average Gmm ===> 2.496 | Design Air Voids: 4.0 | Min. Air Voids: 3.5 | Day's Weighted Avg. Air Void: 4.4

Use Laboratory Method 1810

Min.Mat Density Reqrd: 92

Lot		Core #	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp. G	Density % of Gmm	Bulk Sp. G used	Lot Avg. Density (% of Gmm)	Mat Pay Factor "A"	Total Pay Factor AxBxC	Tons Represent	Incentive Disincentive
11	Contr. QC	11.1		2771.4	C	2969.1	214.0	2774.0	1572.1	2755.1	0.2	2.292	91.8	2.292	91.0	0.98		436.3	-$602.09
	Contr. QC	11.2		2431.2	D	2638.5	225.6	2434.4	1362.6	2412.9	0.3	2.251	90.2	2.251					
	Agency QA	11.1C	2.58	2818.4	I	2811.5	14.6	2820.8	1592.2	2796.9	0.2	2.276	91.2						
	Agency QA	11.2C	2.00	2014.1	J	2017.9	14.9	2016.2	1123.6	2003.0	0.2	2.244	89.9	2.272	= Avg. Gmb				
12	Contr. QC	12.1		1691.4	A	1892.9	210.0	1692.7	967.4	1682.9	0.2	2.320	92.9	2.320	92.0	1.00	1.00	436.3	$0.00
	Contr. QC	12.2		2075.4	B	2289.8	212.0	2078.7	1163.7	2077.8	0.4	2.271	91.0	2.271					
	Agency QA	12.1C	1.75	1858.5	K	1868.8	14.6	1860.2	1059.9	1854.2	0.2	2.317	92.8						
	Agency QA	12.2C	2.13	2240.6	L	2245.9	14.8	2242.7	1258.4	2231.1	0.2	2.267	90.8	2.296	= Avg.Gmb				
13	Contr. QC	13.1		2810.4	B1	3137.1	343.1	2811.9	1601.1	2794.0	0.1	2.308	92.5	2.308	92.5	1.00		436.3	$0.00
	Contr. QC	13.2		2183.4	P1	2594.4	421.3	2186.0	1243.9	2173.1	0.3	2.307	92.4	2.307					
	Agency QA	13.1C	2.75	2875.3	M	2872.7	14.7	2877.2	1635.2	2858.0	0.2	2.301	92.2						
	Agency QA	13.2C	2.00	2072.7	N	2082.8	19.7	2074.3	1176.3	2063.1	0.2	2.297	92.0	2.308	= Avg. Gmb				

Longitudinal Joint Density Cores

Min. Confined LJD Required: 89.5 | Min. Unconfined LJD Required: 88.1

Assoc. Mat Core		Core #	Joint Type	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp.G	Density (% of Gmm)	Bulk Sp. G used	Lot Avg. Density % of Gmm	Edge Pay Factor B or C
12.2	Contr. QC	12.3L	Confined		2138.9	*	2558.2	439.9	2142.1	1196.8	2118.3	0.4	2.241	89.8	2.241	89.8	1.00
	Contr. QC	12.4R	Confined		2480.8	P	2822.1	360.3	2483.9	1406.7	2461.8	0.3	2.285	91.5	2.285	91.5	1.00
	Agency QA	12.3LC		2.00	2058.0	O	2053.9	14.6	2060.8	1149.7	2039.3	0.3	2.238	89.7			
	Agency QA	12.4RC		2.50	2583.0	P	2581.9	14.3	2587.5	1456.2	2567.6	0.4	2.270	90.9			
			No Core														
			No Core														

Net Inc./Disinc.
-$602.09

Info:

Bulk Core Characteristics

Avg. Density	142.8
lb/yd² in.	107.1

Notes:

QC By: RM
QA By: AT
Field Check By: Braun

Ver:03April2015

Plant Mixed Asphalt Pavement (Mn/DOT Specification 2360) Density Incentive/Disincentive Worksheet

Specification Year 2015

S.A.P 230-106-002 Contractor Anderson Brothers MDR # 3A-2015-051 Bid Price ($/ton) $69.00 Total Tons Produced: 1560 Lots Required: 3

CSAH Excelsior Engineer Scott Hedlund Plant: Base 4 % Passing #8 Sieve: 55 Max. Density Tons: 1560 Over-ride # of Lots:

Location Baxter Date Paved 9/22/2015 1% Reduced Prjct? No Max./Total Ratio: 1.00 Tons/Lot: 520.0

Date Cored 9/23/2015 Long. Jnt. Density? Yes

SPWEA340C

Mix Design Type	SP (Gyratory)
Mix Course	WE (Wear)
Max. Aggr. Size	A (1/2 inch)
ESALS [Traffic Level]	1 to < 3 [Level 3]
Air Voids	4%
Asphalt Binder Grade	C = PG 58-34
Shoulder?	No
Tons or Sq Yd In. Prjct?	Tons

Sample Number	323	324										
Sample Tons	130	747										
Tons Represented	747	813										
Density Tons	747	813										
Individual Air Voids	4.4	3.7										
Individual Gmm	2.493	2.503										
Moving Avg. Gmm	2.491	2.495										

Average Gmm ===> 2.495 Design Air Voids: 4.0 Min. Air Voids: 3.5 Day's Weighted Avg. Air Void: 4.0

Min.Mat Density Reqrd: 92 Use Laboratory Method 1810

Lot		Core #	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp. G	Density % of Gmm	Bulk Sp. G used	Lot Avg. Density (% of Gmm)	Mat Pay Factor "A"	Total Pay Factor AxBxC	Tons Represent	Incentive Disincentive
14	Contr. QC	14.1		1977.0	C	2187.7	214.4	1979.1	1132.1	1973.3	0.2	2.330	93.4	2.330	93.2	1.02		520	$717.60
	Contr. QC	14.2		1745.5	D	1965.2	225.7	1747.5	998.1	1739.5	0.3	2.321	93.0	2.321					
	Agency QA	14.1C	1.75	1960.1		1974.5	16.3	1962.3	1117.1	1958.2	0.3	2.317	92.9						
	Agency QA	14.2C	1.50	1754.9		1766.5	14.7	1757.2	1003.8	1751.8	0.3	2.325	93.2	2.326	= Avg. Gmb				
15	Contr. QC	15.1		1606.0	A	1807.4	210.0	1608.9	907.7	1597.4	0.4	2.278	91.3	2.278	90.4	0.91		520	-$3,229.20
	Contr. QC	15.2		1512.9	B	1712.9	212.4	1517.0	845.1	1500.5	0.6	2.233	89.5	2.233					
	Agency QA	15.1C	1.50	1700.9		1706.4	15.3	1704.4	956.5	1691.1	0.5	2.261	90.6						
	Agency QA	15.2C	1.50	1743.4		1746.1	15.1	1746.5	975.7	1731.0	0.4	2.246	90.0	2.256	= Avg.Gmb				
16	Contr. QC	16.1		2160.8	B1	2499.1	343.1	2162.9	1232.5	2156.0	0.2	2.317	92.9	2.317	93.3	1.02	1.04	520	$1,449.55
	Contr. QC	16.2		2143.5	P1	2560.1	421.0	2145.9	1230.7	2139.1	0.3	2.337	93.7	2.337					
	Agency QA	16.1C	2.00	2123.5		2136.1	15.5	2125.2	1210.9	2120.6	0.2	2.319	92.9						
	Agency QA	16.2C	2.00	2211.5		2223.5	14.9	2213.2	1263.8	2208.6	0.2	2.326	93.2	2.327	= Avg. Gmb				

Longitudinal Joint Density Cores

Min. Confined LID Required: 89.5 Min. Unconfined LID Required: 88.1

Assoc. Mat Core		Core #	Joint Type	Core Thickness (inches)	Air Dry (g)	Pan ID	Core + Pan (g)	Pan (g)	SSD (g)	Immersed (g)	Dry Weight (g)	% water absorbed	Gmb/ Bulk Sp.G	Density (% of Gmm)	Bulk Sp. G used	Lot Avg. Density % of Gmm	Edge Pay Factor B or C
16.2	Contr. QC	16.3L	Confined		2353.7	*	2781.2	439.4	2357.8	1330.2	2341.8	0.4	2.279	91.3	2.279	91.3	1.00
	Contr. QC	16.4R	Unconfined		2220.0	P	2568.9	360.0	2223.6	1255.0	2208.9	0.4	2.281	91.4	2.281	91.4	1.02
	Agency QA	16.3LC		2.25	2337.6		2343.6	14.6	2341.1	1317.3	2329.0	0.3	2.275	91.2			
	Agency QA	16.4RC		2.00	2044.2		2053.5	14.2	2046.8	1149.4	2039.3	0.3	2.272	91.1			
			No Core														
			No Core														

Net Inc./Disinc.
-$1,062.05

Daily Core Characteristics

Avg. Density	143.5
lb/yd² in.	107.6

Info:

Notes:

QC By: RM
QA By: Aaron Tast (Braun)
Field Check By: Braun

PARTIAL PAYMENT ESTIMATE
NUMBER 4

Name of Contractor:	R.L. Larson Excavating, Inc. 2255 12th Street SE St Cloud, MN 56304		
Name of Owner:	City of Baxter PO Box 2626 Baxter, MN 56425		
Date of Completion: **Original:** See Agreement **Revised:**	**Amount of Contract:** **Original:** $1,530,029.37 **Revised:**		**Dates of Estimate:** **From:** 11/18/15 **To:** 1/25/16

Description of Project:

2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS
MUNICIPAL PROJECT NUMBERS 4083, 4105 AND 4107
BAXTER, MN

ITEM NO.	ITEM DESCRIPTION	CONTRACT ITEMS				THIS PERIOD		TOTAL TO DATE	
		QTY.	UNIT	UNIT PRICE	AMOUNT	QTY.	AMOUNT	QTY.	AMOUNT
BASE BID									
2021.501	MOBILIZATION	1	LUMP SUM	$70,000.00	$70,000.00			1	$70,000.00
2101.501	CLEARING	0.52	ACRE	$5,000.00	$2,600.00			0.65	$3,250.00
2101.502	CLEARING	58	TREE	$150.00	$8,700.00			66	$9,900.00
2101.506	GRUBBING	0.52	ACRE	$5,000.00	$2,600.00			0.65	$3,250.00
2101.507	GRUBBING	58	TREE	$150.00	$8,700.00			62	$9,300.00
2104.501	REMOVE SEWER PIPE (STORM)	22	LIN FT	$10.00	$220.00			67	$670.00
2104.501	REMOVE WATER SERVICE PIPE	20	LIN FT	$10.00	$200.00			30	$300.00
2104.501	REMOVE CURB AND GUTTER	76	LIN FT	$5.00	$380.00			187	$935.00
2104.505	REMOVE BITUMINOUS PAVEMENT	16266	SQ YD	$1.80	$29,278.80			16271	$29,287.80
2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	49	SQ YD	$6.00	$294.00			172	$1,032.00
2104.509	REMOVE CONCRETE APRON	1	EACH	$50.00	$50.00			1	$50.00
2104.509	REMOVE CATCH BASIN	1	EACH	$100.00	$100.00			1	$100.00
2104.509	REMOVE SIGN TYPE C	19	EACH	$25.00	$475.00	2	$50.00	15	$375.00
2104.509	REMOVE VALVE BOX	2	EACH	$200.00	$400.00			2	$400.00
2104.509	REMOVE CURB STOP & BOX	3	EACH	$300.00	$900.00			3	$900.00
2104.509	REMOVE DELINEATOR	5	EACH	$25.00	$125.00			4	$100.00
2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	441	LIN FT	$5.00	$2,205.00	10	$50.00	37	$185.00
2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	330	LIN FT	$3.00	$990.00			782	$2,346.00
2104.521	SALVAGE FENCE	357	LIN FT	$10.00	$3,570.00			97	$970.00
2104.523	SALVAGE SIGN	20	EACH	$25.00	$500.00			20	$500.00
2104.523	SALVAGE HYDRANT & VALVE	2	EACH	$425.00	$850.00			2	$850.00
2104.523	SALVAGE PIPE APRON	2	EACH	$100.00	$200.00			2	$200.00
2105.501	COMMON EXCAVATION (P)	7512	CU YD	$10.00	$75,120.00			8847	$88,470.00
2105.505	MUCK EXCAVATION	1000	CU YD	$10.00	$10,000.00			1000	$10,000.00
2105.522	COMMON BORROW (CV)	7191	CU YD	$9.40	$67,595.40			6951	$65,339.40
2105.601	DEWATERING	0.95	LUMP SUM	$62,000.00	$58,900.00	0.05	$3,100.00	1	$62,000.00
2118.501	AGGREGATE SURFACING CLASS 5	26	TON	$20.00	$520.00				
2123.501	COMMON LABORERS	30	HOUR	$85.00	$2,550.00				
2123.603	MOTOR GRADER	20	HOUR	$170.00	$3,400.00				
2123.610	STREET SWEEPER (WITH PICKUP BROOM)	32	HOUR	$100.00	$3,200.00			11	$1,100.00
2130.501	WATER	100	M GALLON	$30.00	$3,000.00				
2211.501	AGGREGATE BASE CLASS 5	173	TON	$20.00	$3,460.00				
2211.503	AGGREGATE BASE (CV) CLASS 5 (P)	4304	CU YD	$17.00	$73,168.00			4079	$69,343.00
2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	5421	TON	$55.00	$298,155.00			4488	$246,840.00
2501.514	18" RC PIPE CULVERT	112	LIN FT	$34.50	$3,864.00			128	$4,416.00
2501.515	12" RC PIPE APRON	5	EACH	$400.00	$2,000.00			5	$2,000.00
2501.515	18" RC PIPE APRON	4	EACH	$475.00	$1,900.00			4	$1,900.00
2501.673	INSTALL PIPE APRON	2	EACH	$150.00	$300.00			2	$300.00
2503.541	12" RC PIPE SEWER DES 3006 CL V	1203	LIN FT	$28.00	$33,684.00			1158	$32,424.00
2503.541	15" RC PIPE SEWER DES 3006 CL V	768	LIN FT	$30.00	$23,040.00			617	$18,510.00
2503.541	18" RC PIPE SEWER DES 3006 CL III	678	LIN FT	$32.00	$21,696.00			760	$24,320.00
2503.602	CONNECT TO EXISTING SANITARY SEWER	1	EACH	$900.00	$900.00			1	$900.00
2503.602	CONNECT TO EXISTING MANHOLES (SAN)	1	EACH	$2,400.00	$2,400.00			1	$2,400.00
2504.602	ADJUST VALVE BOX	2	EACH	$200.00	$400.00			1	$200.00
2504.602	CONNECT TO EXISTING SEWER SERVICE	3	EACH	$450.00	$1,350.00			4	$1,800.00
2504.602	CONNECT TO EXISTING WATER SERVICE	6	EACH	$510.00	$3,060.00			2	$1,020.00
2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - MAINLINE	2770	LIN FT	$1.25	$3,462.50	2778	$3,472.50	2778	$3,472.50
2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - SERVICE	778	LIN FT	$1.25	$972.50	1019	$1,273.75	1019	$1,273.75
2504.602	CONNECT TO EXISTING WATER MAIN	2	EACH	$950.00	$1,900.00			4	$3,800.00
2506.501	CONST DRAINAGE STRUCTURE DESIGN SD-48	55.13	LIN FT	$425.00	$23,430.25			51.63	$21,942.75
2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	32.71	LIN FT	$250.00	$8,177.50			32.71	$8,177.50
2506.516	CASTING ASSEMBLY	20	EACH	$750.00	$15,000.00			20	$15,000.00
2506.522	ADJUST FRAME AND RING CASTING	9	EACH	$350.00	$3,150.00			9	$3,150.00
2506.602	CONNECT INTO EXISTING STORM SEWER	1	EACH	$500.00	$500.00			1	$500.00
2506.602	CONSTRUCT CONTROL STRUCTURE A	1	EACH	$2,800.00	$2,800.00			0.75	$2,100.00
2511.501	RANDOM RIPRAP CLASS III	61.4	CU YD	$65.00	$3,991.00			33	$2,145.00
2511.515	GEOTEXTILE FILTER TYPE IV	227	SQ YD	$2.00	$454.00			116	$232.00
2531.501	CONCRETE CURB AND GUTTER DESIGN B624	7110	LIN FT	$15.00	$106,650.00			7456	$111,840.00
2531.503	CONCRETE MEDIAN	93	SQ YD	$75.00	$6,975.00			107	$8,025.00
2531.507	6" CONCRETE DRIVEWAY PAVEMENT	183	SQ YD	$55.00	$10,065.00			308	$16,940.00
2531.507	8" CONCRETE DRIVEWAY PAVEMENT	135	SQ YD	$60.00	$8,100.00			160	$9,600.00
2531.604	8" CONCRETE VALLEY GUTTER	114	SQ YD	$66.00	$7,524.00			121.1	$7,992.60
2531.618	TRUNCATED DOMES	164	SQ FT	$40.00	$6,560.00			206	$8,240.00
2540.602	MAIL BOX SUPPORT	15	EACH	$125.00	$1,875.00	15	$1,875.00	15	$1,875.00
2540.602	TEMPORARY POSTAL SERVICE	15	EACH	$100.00	$1,500.00			15	$1,500.00
2557.603	INSTALL FENCE	347	LIN FT	$20.00	$6,940.00				
2563.601	TRAFFIC CONTROL	1	LUMP SUM	$8,000.00	$8,000.00			0.95	$7,600.00
2564.602	INSTALL SIGN	20	EACH	$80.00	$1,600.00	20	$1,600.00	20	$1,600.00
2564.602	INSTALL SIGN PANEL TYPE C	13	EACH	$105.00	$1,365.00	60	$6,300.00	60	$6,300.00
2564.602	FURNISH TYPE C SIGN	22	EACH	$150.00	$3,300.00	60	$9,000.00	60	$9,000.00
2573.502	SILT FENCE, TYPE MS	2222	LIN FT	$2.50	$5,555.00			2255	$5,637.50
2573.530	STORM DRAIN INLET PROTECTION	23	EACH	$225.00	$5,175.00			13	$2,925.00
2573.535	STABILIZED CONSTRUCTION EXIT	8	EACH	$600.00	$4,800.00			6	$3,600.00
2573.550	EROSION CONTROL SUPERVISOR	1	LUMP SUM	$1,500.00	$1,500.00			0.625	$937.50
2573.602	CULVERT END CONTROLS	2	EACH	$250.00	$500.00				
2574.508	FERTILIZER TYPE 1	693	POUND	$1.00	$693.00	150	$150.00	800	$800.00
2574.525	COMMON TOPSOIL BORROW	2452	CU YD	$0.01	$24.52			2291	$22.91
2575.501	SEEDING	6.5	ACRE	$800.00	$5,200.00	0.7	$560.00	3.3	$2,640.00
2575.502	SEED MIXTURE 22-111	163	POUND	$4.00	$652.00			180	$720.00
2575.502	SEED MIXTURE 25-131	732	POUND	$3.00	$2,196.00	210	$630.00	1010	$3,030.00
2575.502	SEED MIXTURE 33-361	14	POUND	$60.00	$840.00			17.5	$1,050.00
2575.505	SODDING TYPE LAWN	9935	SQ YD	$4.50	$44,707.50	3687	$16,591.50	8047	$36,211.50
2575.511	MULCH MATERIAL TYPE 3	8	TON	$425.00	$3,400.00				

2575.519	DISK ANCHORING	4.1	ACRE	$200.00	$820.00				
2575.523	EROSION CONTROL BLANKETS CATEGORY 3	4954	SQ YD	$2.00	$9,908.00			1785	$3,570.00
2575.562	HYDRAULIC MATRIX TYPE MULCH	3180	POUND	$1.30	$4,134.00	2907	$3,779.10	6107	$7,939.10
2582.501	PAVEMENT MESSAGE-PAINT	13	EACH	$50.00	$650.00	1	$50.00	13	$650.00
2582.502	4" SOLID LINE WHITE-PAINT	715	LIN FT	$0.30	$214.50			417	$125.10
2582.502	8" SOLID LINE WHITE-PAINT	7465	LIN FT	$0.34	$2,538.10			3014	$1,024.76
2582.502	4" SOLID LINE YELLOW-PAINT	1628	LIN FT	$0.30	$488.40			231	$69.30
2582.502	12" SOLID LINE YELLOW-PAINT	137	LIN FT	$2.50	$342.50	35	$87.50	139	$347.50
2582.502	4" BROKEN LINE YELLOW-PAINT	815	LIN FT	$0.30	$244.50			230	$69.00
2582.502	4" DOUBLE SOLID LINE YELLOW-PAINT	2276	LIN FT	$0.60	$1,365.60			1717	$1,030.20
2600.4D	INSULATION (4' x 8' x 2" THICK)	879.2	SQ YD	$20.00	$17,584.00			2071.3	$41,426.00
2611.4A	6" PVC WATERMAIN PIPE	108	LIN FT	$20.00	$2,160.00			114	$2,280.00
2611.4A	8" PVC WATERMAIN PIPE	186	LIN FT	$22.00	$4,092.00			314	$6,908.00
2611.4A	10" PVC WATERMAIN PIPE	1384	LIN FT	$25.00	$34,600.00			1383	$34,575.00
2611.4A	12" PVC WATERMAIN PIPE	1191	LIN FT	$28.50	$33,943.50			1259	$35,881.50
2611.4A	1" POLYETHYLENE SERVICE PIPE	48	LIN FT	$13.00	$624.00			20	$260.00
2611.4A	1.5" POLYETHYLENE SERVICE PIPE	634	LIN FT	$13.00	$8,242.00			935	$12,155.00
2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	5	EACH	$1,150.00	$5,750.00			6	$6,900.00
2611.4B	8" GATE VALVE & BOX w/ ADAPTOR	2	EACH	$1,575.00	$3,150.00			4	$6,300.00
2611.4B	10" GATE VALVE & BOX w/ ADAPTOR	3	EACH	$2,400.00	$7,200.00			3	$7,200.00
2611.4B	12"BUTTERFLY VALVE & BOX w/ ADAPTOR	1	EACH	$2,000.00	$2,000.00			2	$4,000.00
2611.4B	VALVE OPERATOR EXTENSION	9	EACH	$140.00	$1,260.00				
2611.4C	1.5" CORPORATION STOP & SADDLE	18	EACH	$655.00	$11,790.00			24	$15,720.00
2611.4D	1" CURB STOP & BOX	3	EACH	$635.00	$1,905.00			1	$635.00
2611.4D	1.5" CURB STOP & BOX	18	EACH	$760.00	$13,680.00			24	$18,240.00
2611.4E	HYDRANT	5	EACH	$4,050.00	$20,250.00			5	$20,250.00
2611.4G	INSTALL HYDRANT & VALVE	2	EACH	$1,440.00	$2,880.00			2	$2,880.00
2611.4I	DUCTILE IRON WATERMAIN FITTINGS	3675	POUND	$1.75	$6,431.25			5140	$8,995.00
2611.4J	HYDRANT EXTENSION (12")	1	EACH	$585.00	$585.00	1	$585.00	2	$1,170.00
2611.4J	HYDRANT EXTENSION (18")	1	EACH	$700.00	$700.00				
2611.4J	HYDRANT EXTENSION (30")	1	EACH	$875.00	$875.00			1	$875.00
2611.4J	GATE VALVE BOX & ADAPTOR	2	EACH	$435.00	$870.00			2	$870.00
2621.4A	8" PVC SEWER PIPE (SDR 26)	979	LIN FT	$24.50	$23,985.50			980	$24,010.00
2621.4A	10" PVC SEWER PIPE (SDR 26)	1791	LIN FT	$27.00	$48,357.00			1795	$48,465.00
2621.4B	SANITARY SEWER MANHOLE, MnDOT DESIGN 4007C	10	EACH	$2,200.00	$22,000.00			10	$22,000.00
2621.4B1	MANHOLE EXCESS DEPTH	14.95	LIN FT	$100.00	$1,495.00			14.95	$1,495.00
2621.4F	4" PVC SERVICE PIPE (SCH 40)	24	LIN FT	$80.00	$1,920.00			38	$3,040.00
2621.4F	6" PVC SERVICE PIPE (SCH 40)	802	LIN FT	$15.00	$12,030.00			998	$14,970.00
2621.4G	8" X 6" PVC WYE	7	EACH	$570.00	$3,990.00			11	$6,270.00
2621.4G	10" X 6" PVC WYE	11	EACH	$690.00	$7,590.00			13	$8,970.00
ALTERNATE BID A									
2101.501	CLEARING	0.05	ACRE	$15,000.00	$750.00			0.075	$1,125.00
2101.508	GRUBBING	0.05	ACRE	$15,000.00	$750.00			0.075	$1,125.00
2105.601	DEWATERING	0.05	LUMP SUM	$70,000.00	$3,500.00			0.05	$3,500.00
2123.501	COMMON LABORERS	5	HOUR	$85.00	$425.00				
2123.503	MOTOR GRADER	5	HOUR	$160.00	$800.00				
2573.502	SILT FENCE, TYPE MS	50	LIN FT	$2.50	$125.00				
2574.508	FERTILIZER TYPE 1	27	POUND	$1.00	$27.00				
2574.525	COMMON TOPSOIL BORROW	49	CU YD	$20.00	$980.00				
2575.501	SEEDING	0.1	ACRE	$800.00	$80.00				
2575.502	SEED MIXTURE 25-131	27	POUND	$3.00	$81.00				
2575.505	SODDING TYPE LAWN	116	SQ YD	$4.50	$522.00				
2575.562	HYDRAULIC MATRIX TYPE MULCH	142	POUND	$8.00	$1,136.00				
2600.4D	INSULATION (4' x 8' x 2" THICK)	6.3	SQ YD	$20.00	$126.00			3.5	$70.00
2611.4A	6" PVC WATERMAIN PIPE	6	LIN FT	$47.00	$282.00			7	$329.00
2611.4A	8" PVC WATERMAIN PIPE	175	LIN FT	$25.00	$4,375.00			116	$2,900.00
2611.4A	8" PE WATERMAIN PIPE - DIRECTIONAL DRILL	865	LIN FT	$53.00	$45,845.00			922	$48,866.00
2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	1	EACH	$1,200.00	$1,200.00			1	$1,200.00
2611.4E	HYDRANT	1	EACH	$4,100.00	$4,100.00			1	$4,100.00
2611.4I	DUCTILE IRON WATERMAIN FITTINGS	615	POUND	$2.35	$1,445.25			785	$1,844.75
-	8" WET TAP	1	EACH	$4,300.00	$4,300.00			1	$4,300.00
TOTAL:					$1,530,029.37		$49,154.35		$1,516,948.92

	THIS PERIOD	TOTAL TO DATE
AMOUNT EARNED	$49,154.35	$1,516,948.92
AMOUNT RETAINED	$4,279.56	$112,334.49
RETAINAGE RELEASED		
PREVIOUS PAYMENTS		$1,359,739.64
AMOUNT DUE	$44,874.79	$44,874.79

Estimated Percentage Completed: 99.1%

CONTRACTOR'S CERTIFICATION:
The undersigned Contractor certifies that to the best of their knowledge, information and belief the work covered by this payment estimate has been completed in accordance with the contract documents, that all amounts have been paid by the Contractor for work for which previous payment estimates were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR : R.L. LARSON EXCAVATING, INC.

BY: _____

Date: 1-26-16

ENGINEER'S CERTIFICATION:
The undersigned endorses that to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the contract documents.

ENGINEER: WIDSETH SMITH NOLTING

BY: _____
Aric Welch, P.E.

Date: _____

APPROVED BY CITY OF BAXTER:

BY: _____
Kelly Steele, Assistant City Administrator / City Clerk

Date: _____

RECOMMENDED FOR APPROVAL BY CITY OF BAXTER - UTILITIES COMMISSION

BY: _____

Date: _____

APPROVED BY CITY OF BAXTER:

BY: _____
Darrel Olson, Mayor

Date: _____

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	DELLWOOD DRIVE AND NOVOTNY ROAD, MUNICIPAL IMPROVEMENT 4063					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
BASE BID										
1	2021.501	MOBILIZATION	LUMP SUM	$70,000.00	0.55	$38,500.00			0.55	$38,500.00
2	2101.501	CLEARING	ACRE	$3,000.00	0.12	$600.00			0.10	$500.00
3	2101.502	CLEARING	TREE	$150.00	58	$8,700.00			51	$7,650.00
4	2101.505	GRUBBING	ACRE	$5,000.00	0.12	$600.00			0.10	$500.00
5	2101.507	GRUBBING	TREE	$150.00	58	$8,700.00			44	$6,600.00
6	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	$10.00	22	$220.00			22	$220.00
7	2104.501	REMOVE WATER SERVICE PIPE	LIN FT	$10.00						
8	2104.501	REMOVE CURB AND GUTTER	LIN FT	$5.00	78	$390.00			89	$445.00
9	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	$1.80	8410	$15,138.00			8410	$15,138.00
10	2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	$6.00					6	$36.00
11	2104.509	REMOVE CONCRETE APRON	EACH	$50.00	1	$50.00			1	$50.00
12	2104.509	REMOVE CATCH BASIN	EACH	$100.00	1	$100.00			1	$100.00
13	2104.509	REMOVE SIGN TYPE C	EACH	$25.00	6	$150.00	2	$50.00	4	$100.00
14	2104.509	REMOVE VALVE BOX	EACH	$200.00						
15	2104.509	REMOVE CURB STOP & BOX	EACH	$300.00						
16	2104.509	REMOVE DELINEATOR	EACH	$25.00						
17	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	$5.00			10	$50.00	10	$50.00
18	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	$3.00	258	$504.00			325	$975.00
19	2104.521	SALVAGE FENCE	LIN FT	$10.00	257	$2,570.00				
20	2104.523	SALVAGE SIGN	EACH	$25.00	10	$250.00			10	$250.00
21	2104.523	SALVAGE HYDRANT & VALVE	EACH	$425.00						
22	2104.523	SALVAGE PIPE APRON	EACH	$100.00						
23	2105.501	COMMON EXCAVATION (P)	CU YD	$10.00	1670	$16,700.00			1670	$16,700.00
24	2105.505	MUCK EXCAVATION	CU YD	$10.00						
25	2105.522	COMMON BORROW (CV)	CU YD	$9.40	2420	$22,748.00			2150	$20,492.00
26	2105.601	DEWATERING	LUMP SUM	$82,000.00	0.85	$52,700.00	0.05	$3,100.00	0.85	$52,700.00
27	2118.501	AGGREGATE SURFACING CLASS 5	TON	$20.00	26	$520.00				
28	2123.501	COMMON LABORERS	HOUR	$85.00	20	$1,700.00				
29	2123.503	MOTOR GRADER	HOUR	$170.00	20	$3,400.00				
30	2123.619	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$100.00	20	$2,000.00			5	$500.00
31	2130.501	WATER	M GALLON	$30.00	100	$3,000.00				
32	2211.501	AGGREGATE BASE CLASS 5	TON	$20.00	173	$3,460.00				
33	2211.503	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	$17.00	1723	$29,291.00			1723	$29,291.00
34	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	$65.00	2483	$138,565.00			1224	$67,320.00
35	2501.514	18" RC PIPE CULVERT	LIN FT	$34.50						
36	2501.515	12" RC PIPE APRON	EACH	$400.00	3	$1,200.00			3	$1,200.00
37	2501.515	18" RC PIPE APRON	EACH	$475.00						
38	2501.573	INSTALL PIPE APRON	EACH	$150.00						
39	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	$38.00	484	$13,832.00			498	$13,888.00
40	2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT	$30.00	355	$11,550.00			277	$8,310.00
41	2503.541	18" RC PIPE SEWER DES 3006 CL III	LIN FT	$32.00	331	$10,592.00			381	$12,192.00
42	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	$900.00	1	$900.00			1	$900.00
43	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	$2,400.00	1	$2,400.00			1	$2,400.00
44	2504.602	ADJUST VALVE BOX	EACH	$200.00						
45	2504.602	CONNECT TO EXISTING SEWER SERVICE	EACH	$450.00						
46	2504.602	CONNECT TO EXISTING WATER SERVICE	EACH	$510.00						
47	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - MAINLINE	LIN FT	$1.25	2549	$3,186.25	2557	$3,196.25	2557	$3,196.25
48	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - SERVICE	LIN FT	$1.25	896	$872.50	893	$1,116.25	893	$1,116.25
49	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	$950.00	2	$1,900.00			2	$1,900.00
50	2506.501	CONST DRAINAGE STRUCTURE DESIGN SD-48	LIN FT	$425.00	27.49	$11,679.50			23.96	$10,183.00
51	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	$250.00						
52	2506.518	CASTING ASSEMBLY	EACH	$750.00	7	$5,250.00			7	$5,250.00
53	2506.522	ADJUST FRAME AND RING CASTING	EACH	$350.00	0					
54	2506.602	CONNECT INTO EXISTING STORM SEWER	EACH	$500.00	1	$500.00			1	$500.00
55	2506.602	CONSTRUCT CONTROL STRUCTURE A	EACH	$2,500.00						
56	2511.501	RANDOM RIPRAP CLASS III	CU YD	$65.00	4.4	$286.00				
57	2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD	$2.00	9	$18.00				
58	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	$15.00	2838	$42,570.00			3083	$46,245.00
59	2531.503	CONCRETE MEDIAN	SQ YD	$75.00					7	$525.00
60	2531.507	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$55.00					23	$1,265.00
61	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$60.00	125	$7,500.00			151	$9,060.00
62	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	$65.00						
63	2531.618	TRUNCATED DOMES	SQ FT	$40.00						
64	2540.602	MAIL BOX SUPPORT	EACH	$125.00	13	$1,625.00	13	$1,625.00	13	$1,625.00
65	2540.602	TEMPORARY POSTAL SERVICE	EACH	$100.00	13	$1,300.00			13	$1,300.00
66	2557.603	INSTALL FENCE	LIN FT	$20.00	257	$5,140.00				
67	2563.601	TRAFFIC CONTROL	LUMP SUM	$8,000.00	0.55	$4,400.00			0.50	$4,000.00
68	2564.602	INSTALL SIGN	EACH	$80.00	10	$800.00	10	$800.00	10	$800.00
69	2564.602	INSTALL SIGN PANEL TYPE C	EACH	$105.00			18	$1,890.00	18	$1,890.00
70	2564.602	FURNISH TYPE C SIGN	EACH	$150.00	9	$1,350.00	18	$2,700.00	18	$2,700.00
71	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50	1070	$2,675.00			1050	$2,625.00
72	2573.530	STORM DRAIN INLET PROTECTION	EACH	$225.00	10	$2,250.00				
73	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	$600.00	3	$1,800.00			3	$1,800.00
74	2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM	$1,900.00	0.55	$825.00			0.275	$412.50
75	2573.602	CULVERT END CONTROLS	EACH	$250.00	2	$500.00				
76	2574.508	FERTILIZER TYPE 1	POUND	$1.00	244	$244.00	150	$150.00	150	$150.00
77	2574.525	COMMON TOPSOIL BORROW	CU YD	$0.01	1105	$11.05			885	$8.85
78	2575.501	SEEDING	ACRE	$800.00	2.8	$2,240.00	0.7	$560.00	0.7	$560.00
79	2575.502	SEED MIXTURE 22-111	POUND	$4.00	79	$316.00				
80	2575.502	SEED MIXTURE 25-131	POUND	$3.00	325	$975.00	210	$630.00	210	$630.00
81	2575.502	SEED MIXTURE 33-361	POUND	$60.00						
82	2575.505	SODDING TYPE LAWN	SQ YD	$4.50	5575	$25,087.50	3687	$16,591.50	3687	$16,591.50
83	2575.511	MULCH MATERIAL TYPE 3	TON	$425.00	4	$1,700.00				
84	2575.519	DISK ANCHORING	ACRE	$200.00	2	$400.00				
85	2575.525	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	$2.00	2613	$5,226.00				
86	2575.552	HYDRAULIC MATRIX TYPE MULCH	POUND	$1.30	569	$739.70	2907	$3,779.10	2907	$3,779.10
87	2582.501	PAVEMENT MESSAGES-PAINT	EACH	$50.00	1	$50.00				
88	2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	$0.30	135	$40.50				
89	2582.502	8" SOLID LINE WHITE-PAINT	LIN FT	$0.34	4305	$1,464.04				
90	2582.502	4" SOLID LINE YELLOW-PAINT	LIN FT	$0.30	628	$188.00				
91	2582.502	12" SOLID LINE YELLOW-PAINT	LIN FT	$2.50	65	$162.50				
92	2582.502	4" BROKEN LINE YELLOW-PAINT	LIN FT	$0.30	410	$123.00				
93	2582.502	4" DOUBLE SOLID LINE YELLOW-PAINT	LIN FT	$0.60	960	$576.00				
94	2600.40	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00	854.3	$17,086.00			2043.3	$40,866.00
95	2611.4A	6" PVC WATERMAIN PIPE	LIN FT	$20.00	56	$1,790.00			114	$2,280.00
96	2611.4A	8" PVC WATERMAIN PIPE	LIN FT	$22.00	188	$4,092.00			185	$4,070.00
97	2611.4A	12" PVC WATERMAIN PIPE	LIN FT	$25.00	1364	$34,600.00			1383	$34,575.00
98	2611.4A	12" PVC WATERMAIN PIPE	LIN FT	$28.50	1191	$33,943.50			1188	$33,858.00
99	2611.4A	1" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00						
100	2611.4A	1.5" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00	554	$7,202.00			853	$11,089.00
101	2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,150.00	5	$5,750.00			8	$9,900.00
102	2611.4B	8" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,575.00	2	$3,150.00			2	$3,150.00
103	2611.4B	10" GATE VALVE & BOX w/ ADAPTOR	EACH	$2,400.00	3	$7,200.00			3	$7,200.00
104	2611.4B	12"BUTTERFLY VALVE & BOX w/ ADAPTOR	EACH	$2,000.00	1	$2,000.00			2	$4,000.00
105	2611.4B	VALVE OPERATOR EXTENSION	EACH	$140.00	9	$1,260.00				
106	2611.4C	1.5" CORPORATION STOP & SADDLE	EACH	$655.00	16	$10,480.00			22	$14,410.00
107	2611.4D	1" CURB STOP & BOX	EACH	$655.00						
108	2611.4D	1.5" CURB STOP & BOX	EACH	$760.00	16	$12,160.00			22	$16,720.00
109	2611.4E	HYDRANT	EACH	$4,050.00	5	$20,250.00			5	$20,250.00
110	2611.4G	INSTALL HYDRANT & VALVE	EACH	$1,440.00						
111	2611.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$1.75	3678	$6,431.25			4025	$7,043.75
112	2611.4J	HYDRANT EXTENSION (12")	EACH	$585.00	1	$585.00	1	$585.00	1	$585.00
113	2611.4J	HYDRANT EXTENSION (18")	EACH	$700.00	1	$700.00				
114	2611.4J	HYDRANT EXTENSION (30")	EACH	$875.00						
115	2611.4J	GATE VALVE BOX & ADAPTOR	EACH	$435.00						
116	2621.4A	6" PVC SEWER PIPE (SDR 26)	LIN FT	$24.50	758	$18,571.00			762	$18,669.00
117	2621.4A	12" PVC SEWER PIPE (SDR 26)	LIN FT	$27.00	1791	$48,357.00			1795	$48,465.00
118	2621.4B	SANITARY SEWER MANHOLE, MnDOT DESIGN 4007C	EACH	$2,200.00	9	$19,800.00			9	$19,800.00
119	2621.4B1	MANHOLE EXCESS DEPTH	LIN FT	$100.00	10.95	$1,095.00			10.95	$1,095.00
120	2621.4F	4" PVC SERVICE PIPE (SCH 40)	LIN FT	$80.00						
121	2621.4F	6" PVC SERVICE PIPE (SCH 40)	LIN FT	$15.00	698	$10,470.00			893	$13,395.00
122	2621.4G	6" X 6" PVC WYE	EACH	$570.00	5	$2,850.00			9	$5,130.00
123	2621.4G	10" X 8" PVC WYE	EACH	$690.00	11	$7,590.00			13	$8,970.00

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	DELLWOOD DRIVE AND NOVOTNY ROAD, MUNICIPAL IMPROVEMENT 4063					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
ALTERNATE BID A										
1A	2101.501	CLEARING	ACRE	$15,000.00	0.05	$750.00			0.075	$1,125.00
2A	2101.506	GRUBBING	ACRE	$15,000.00	0.05	$750.00			0.075	$1,125.00
3A	2105.501	DEWATERING	LUMP SUM	$70,000.00	0.05	$3,500.00			0.05	$3,500.00
4A	2123.501	COMMON LABORERS	HOUR	$65.00	5	$325.00				
5A	2123.503	MOTOR GRADER	HOUR	$160.00	5	$800.00				
6A	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50	50	$125.00				
7A	2574.508	FERTILIZER TYPE 1	POUND	$1.00	27	$27.00				
8A	2574.528	COMMON TOPSOIL BORROW	CU YD	$20.00	49	$980.00				
9A	2575.501	SEEDING	ACRE	$600.00	0.1	$60.00				
10A	2575.502	SEED MIXTURE 25-131	POUND	$3.00	27	$81.00				
11A	2575.505	SODDING TYPE LAWN	SQ YD	$4.50	116	$522.00				
12A	2575.562	HYDRAULIC MATRIX TYPE MULCH	POUND	$3.00	149	$1,136.00				
13A	2600.40	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00	6.3	$126.00			3.5	$70.00
14A	2611.4A	6" PVC WATERMAIN PIPE	LIN FT	$47.00	8	$282.00			7	$329.00
15A	2611.4A	8" PVC WATERMAIN PIPE	LIN FT	$25.00	175	$4,375.00			116	$2,900.00
16A	2611.4A	8" PE WATERMAIN PIPE - DIRECTIONAL DRILL	LIN FT	$83.00	555	$46,065.00			222	$18,426.00
17A	2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,200.00	1	$1,200.00			1	$1,200.00
18A	2611.4E	HYDRANT	EACH	$4,100.00	1	$4,100.00			1	$4,100.00
19A	2611.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$2.35	615	$1,445.25			785	$1,844.75
20A	-	8" WET TAP	EACH	$4,300.00	1	$4,300.00			1	$4,300.00
TOTALS:						$873,509.54		$36,623.10		$807,138.75
AMOUNT RETAINED:					10% OF AMOUNT EARNED TO DATE:			$3,662.31		$80,713.88
RETAINAGE RELEASED										
PREVIOUS PAYMENTS										$693,282.28
AMOUNT DUE:								$33,140.79		$33,140.79

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AN
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	INGLEWOOD DRIVE, MUNICIPAL IMPROVEMENT 4105					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
BASE BID										
1	2021.501	MOBILIZATION	LUMP SUM	$70,000.00	0.4	$28,000.00			0.40	$28,000.00
2	2101.501	CLEARING	ACRE	$5,000.00	0.2	$1,000.00			0.35	$1,750.00
3	2101.502	CLEARING	TREE	$150.00					14	$2,100.00
4	2101.506	GRUBBING	ACRE	$5,000.00	0.2	$1,000.00			0.35	$1,750.00
5	2101.507	GRUBBING	TREE	$150.00					17	$2,550.00
6	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	$10.00					45	$450.00
7	2104.501	REMOVE WATER SERVICE PIPE	LIN FT	$10.00	20	$200.00			30	$300.00
8	2104.501	REMOVE CURB AND GUTTER	LIN FT	$5.00					93	$465.00
9	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	$1.80	7636	$13,744.80			7636	$13,744.80
10	2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	$6.00	49	$294.00			168	$968.00
11	2104.509	REMOVE CONCRETE APRON	EACH	$50.00						
12	2104.509	REMOVE CATCH BASIN	EACH	$100.00						
13	2104.509	REMOVE SIGN TYPE C	EACH	$25.00	13	$325.00			11	$275.00
14	2104.509	REMOVE VALVE BOX	EACH	$200.00	2	$400.00			2	$400.00
15	2104.509	REMOVE CURB STOP & BOX	EACH	$300.00	3	$900.00			3	$900.00
16	2104.509	REMOVE DELINEATOR	EACH	$25.00	5	$125.00			4	$100.00
17	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	$5.00	441	$2,205.00			27	$135.00
18	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	$3.00	26	$78.00			421	$1,263.00
19	2104.521	SALVAGE FENCE	LIN FT	$10.00	100	$1,000.00			87	$870.00
20	2104.523	SALVAGE SIGN	EACH	$25.00	10	$250.00			10	$250.00
21	2104.523	SALVAGE HYDRANT & VALVE	EACH	$425.00	2	$850.00			2	$850.00
22	2104.523	SALVAGE PIPE APRON	EACH	$100.00	2	$200.00			2	$200.00
23	2105.501	COMMON EXCAVATION (P)	CU YD	$10.00	5241	$52,410.00			5241	$52,410.00
24	2105.505	MUCK EXCAVATION	CU YD	$10.00	1000	$10,000.00			1000	$10,000.00
25	2105.522	COMMON BORROW (CV)	CU YD	$9.40	4771	$44,847.40			4771	$44,847.40
26	2105.601	DEWATERING	LUMP SUM	$82,000.00	0.15	$9,300.00			0.15	$9,300.00
27	2118.501	AGGREGATE SURFACING CLASS 5	TON	$20.00						
28	2123.501	COMMON LABORERS	HOUR	$85.00	10	$850.00				
29	2123.505	MOTOR GRADER	HOUR	$170.00						
30	2123.810	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$100.00	10	$1,000.00			5	$500.00
31	2130.501	WATER	M GALLON	$30.00						
32	2211.501	AGGREGATE BASE CLASS 5	TON	$20.00						
33	2211.505	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	$17.00	2249	$38,233.00			2004	$34,408.00
34	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	$55.00	2475	$136,125.00			2751	$151,305.00
36	2501.514	16" RC PIPE CULVERT	LIN FT	$34.50	112	$3,864.00			128	$4,416.00
36	2501.515	12" RC PIPE APRON	EACH	$400.00	2	$800.00			2	$800.00
37	2501.515	18" RC PIPE APRON	EACH	$475.00	4	$1,900.00			4	$1,900.00
38	2501.573	INSTALL PIPE APRON	EACH	$150.00	2	$300.00			2	$300.00
39	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	$28.00	709	$19,852.00			692	$18,536.00
40	2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT	$30.00	383	$11,490.00			340	$10,200.00
41	2503.541	18" RC PIPE SEWER DES 3006 CL III	LIN FT	$32.00	347	$11,104.00			379	$12,128.00
42	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	$600.00						
43	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	$2,400.00						
44	2504.602	ADJUST VALVE BOX	EACH	$200.00	2	$400.00			1	$200.00
45	2504.602	CONNECT TO EXISTING SEWER SERVICE	EACH	$450.00	3	$1,350.00			4	$1,800.00
46	2504.602	CONNECT TO EXISTING WATER SERVICE	EACH	$510.00	8	$3,060.00			2	$1,020.00
47	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - MAINLINE	LIN FT	$1.25						
48	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - SERVICE	LIN FT	$1.25			38	$47.50	38	$47.50
49	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	$950.00					2	$1,900.00
50	2506.501	CONST DRAINAGE STRUCTURE DESIGN 60-48	LIN FT	$425.00	37.67	$11,739.75			27.67	$11,758.75
51	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4025	LIN FT	$250.00	32.71	$8,177.50			32.71	$8,177.50
52	2506.516	CASTING ASSEMBLY	EACH	$750.00	13	$9,750.00			13	$9,750.00
53	2506.522	ADJUST FRAME AND RING CASTING	EACH	$350.00	8	$2,800.00			8	$2,800.00
54	2506.602	CONNECT INTO EXISTING STORM SEWER	EACH	$500.00						
55	2506.602	CONSTRUCT CONTROL STRUCTURE A	EACH	$2,800.00	1	$2,800.00			0.75	$2,100.00
56	2511.501	RANDOM RIPRAP CLASS III	CU YD	$65.00	57	$3,705.00			33	$2,145.00
57	2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD	$2.00	218	$436.00			116	$232.00
58	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	$15.00	4272	$64,080.00			4363	$65,445.00
59	2531.503	CONCRETE MEDIAN	SQ YD	$75.00	93	$6,975.00			100	$7,500.00
60	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$55.00	183	$10,065.00			285	$15,675.00
61	2531.507	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$60.00	10	$600.00			9	$540.00
62	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	$65.00	114	$7,524.00			121.1	$7,992.60
63	2531.618	TRUNCATED DOMES	SQ FT	$40.00	164	$6,560.00			209	$8,360.00
64	2540.602	MAIL BOX SUPPORT	EACH	$125.00	3	$350.00	2	$250.00	2	$250.00
65	2540.602	TEMPORARY POSTAL SERVICE	EACH	$100.00	2	$200.00			2	$200.00
66	2557.603	INSTALL FENCE	LIN FT	$29.00	90	$1,500.00				
67	2563.601	TRAFFIC CONTROL	LUMP SUM	$6,000.00	0.4	$3,200.00			0.40	$3,200.00
68	2564.603	INSTALL SIGN	EACH	$60.00	10	$600.00	10	$600.00	10	$600.00
69	2564.602	INSTALL SIGN PANEL TYPE C	EACH	$105.00	13	$1,365.00	42	$4,410.00	42	$4,410.00
70	2564.602	FURNISH TYPE C SIGN	EACH	$150.00	13	$1,950.00	42	$6,300.00	42	$6,300.00
71	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50	1152	$2,880.00			1205	$3,012.50
72	2573.530	STORM DRAIN INLET PROTECTION	EACH	$225.00	13	$2,925.00			13	$2,925.00
73	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	$800.00	4	$2,400.00			3	$1,800.00
74	2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM	$1,500.00	0.4	$600.00			0.3	$450.00
75	2573.602	CULVERT END CONTROLS	EACH	$350.00						
76	2574.508	FERTILIZER TYPE 1	POUND	$1.00	399	$399.00			450	$450.00
77	2574.525	COMMON TOPSOIL BORROW	CU YD	$0.01	1148	$11.48			1160	$11.60
78	2575.501	SEEDING	ACRE	$800.00	3.5	$2,840.00			3.1	$1,680.00
79	2575.502	SEED MIXTURE 22-111	POUND	$4.00	84	$336.00			180	$720.00
80	2575.502	SEED MIXTURE 25-131	POUND	$3.00	287	$861.00			500	$1,500.00
81	2575.502	SEED MIXTURE 33-361	POUND	$60.00	14	$840.00			17.5	$1,050.00
82	2575.505	SODDING TYPE LAWN	SQ YD	$4.50	4360	$19,620.00			4380	$19,620.00
83	2575.511	MULCH MATERIAL TYPE 3	TON	$425.00	4	$1,700.00				
84	2575.519	DISK ANCHORING	ACRE	$200.00	2.1	$420.00				
85	2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	$2.00	2341	$4,682.00			1765	$3,530.00
86	2575.582	HYDRAULIC MATRIX TYPE MULCH	POUND	$1.30	1771	$2,302.30			1350	$1,650.00
87	2582.501	PAVEMENT MESSAGE-PAINT	EACH	$50.00	12	$600.00	1	$50.00	13	$650.00
88	2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	$0.30	580	$174.00			417	$125.10
89	2582.502	8" SOLID LINE WHITE-PAINT	LIN FT	$0.34	3159	$1,074.06			3014	$1,024.76
90	2582.502	4" SOLID LINE YELLOW-PAINT	LIN FT	$0.30	1008	$302.40			231	$69.30
91	2582.502	12" SOLID LINE YELLOW-PAINT	LIN FT	$2.50	72	$180.00	35	$87.50	139	$347.50
92	2582.502	4" BROKEN LINE YELLOW-PAINT	LIN FT	$0.30	356	$106.80			180	$54.00
93	2582.502	4" DOUBLE SOLID LINE YELLOW-PAINT	LIN FT	$0.60	1318	$790.80			1717	$1,030.20
94	2600.403	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00	25	$500.00			29	$580.00
95	2611.4A	6" PVC WATERMAIN PIPE	LIN FT	$20.00	20	$400.00				
96	2611.4A	8" PVC WATERMAIN PIPE	LIN FT	$22.00					129	$2,838.00
97	2611.4A	10" PVC WATERMAIN PIPE	LIN FT	$25.00						
98	2611.4A	12" PVC WATERMAIN PIPE	LIN FT	$28.50					71	$2,023.50
99	2611.4A	1" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00	45	$624.00			20	$260.00
100	2611.4A	1.5" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00						
101	2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,150.00						
102	2611.4B	8" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,575.00					2	$3,150.00
103	2611.4B	10" GATE VALVE & BOX w/ ADAPTOR	EACH	$2,400.00						
104	2611.4B	12"BUTTERFLY VALVE & BOX w/ ADAPTOR	EACH	$2,300.00						
105	2611.4B	VALVE OPERATOR EXTENSION	EACH	$140.00						
106	2611.4C	1.5" CORPORATION STOP & SADDLE	EACH	$685.00						
107	2611.4D	1" CURB STOP & BOX	EACH	$635.00	3	$1,905.00			3	$1,905.00
108	2611.4D	1.5" CURB STOP & BOX	EACH	$760.00						
109	2611.4E	HYDRANT	EACH	$4,050.00						
110	2611.4G	INSTALL HYDRANT & VALVE	EACH	$1,440.00	2	$2,880.00			2	$2,880.00
111	2611.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$1.75					1113	$1,951.25
112	2611.4J	HYDRANT EXTENSION (12")	EACH	$585.00					1	$585.00
113	2611.4J	HYDRANT EXTENSION (18")	EACH	$700.00						
114	2611.4J	HYDRANT EXTENSION (30")	EACH	$875.00	1	$875.00			1	$875.00
115	2611.4J	GATE VALVE BOX & ADAPTOR	EACH	$435.00	2	$870.00			2	$870.00
116	2621.4A	8" PVC SEWER PIPE (SDR 35)	LIN FT	$24.50						
117	2621.4A	12" PVC SEWER PIPE (SDR 35)	LIN FT	$27.00						
118	2621.4B	SANITARY SEWER MANHOLE, MnDOT DESIGN 4007C	EACH	$2,300.00						
119	2621.4B1	MANHOLE EXCESS DEPTH	LIN FT	$100.00						
120	2621.4F	4" PVC SERVICE PIPE (SCH 40)	LIN FT	$80.00	24	$1,920.00			38	$3,040.00
121	2621.4F	6" PVC SERVICE PIPE (SCH 40)	LIN FT	$15.00						
122	2621.4G	6" X 6" PVC WYE	EACH	$570.00						
123	2621.4G	10" X 6" PVC WYE	EACH	$690.00						

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AN
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	INGLEWOOD DRIVE, MUNICIPAL IMPROVEMENT 4105					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
ALTERNATE BID A:										
1A	2101.501	CLEARING	ACRE	$15,000.00						
2A	2101.506	GRUBBING	ACRE	$15,000.00						
3A	2105.501	DEWATERING	LUMP SUM	$70,000.00						
4A	2123.501	COMMON LABORERS	HOUR	$55.00						
5A	2123.503	MOTOR GRADER	HOUR	$180.00						
6A	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50						
7A	2574.506	FERTILIZER TYPE 1	POUND	$1.00						
8A	2574.525	COMMON TOPSOIL BORROW	CU YD	$30.00						
9A	2575.501	SEEDING	ACRE	$800.00						
10A	2575.502	SEED MIXTURE 25-131	POUND	$3.00						
11A	2575.505	SODDING TYPE LAWN	SQ YD	$4.50						
12A	2575.562	HYDRAULIC MATRIX TYPE MULCH	POUND	$5.00						
13A	2900.43	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00						
14A	2511.4A	6" PVC WATERMAIN PIPE	LIN FT	$47.00						
15A	2511.4A	8" PVC WATERMAIN PIPE	LIN FT	$25.00						
16A	2511.4A	8" PE WATERMAIN PIPE - DIRECTIONAL DRILL	LIN FT	$53.00						
17A	2511.4B	6" GATE VALVE & BOX W ADAPTOR	EACH	$1,230.00						
18A	2511.4E	HYDRANT	EACH	$4,100.00						
19A	2511.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$2.35						
20A	-	8" WET TAP	EACH	$4,300.00						
TOTALS:						$598,036.07		$11,945.00		$632,416.26
AMOUNT RETAINED:					5% OF AMOUNT EARNED TO DATE:			$597.25		$31,620.81
RETAINAGE RELEASED										$589,447.70
PREVIOUS PAYMENTS										$11,347.75
AMOUNT DUE:								$11,347.75		

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AN
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	INDEPENDENCE ROAD, MUNICIPAL IMPROVEMENT 4107					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
BASE BID										
1	2021.501	MOBILIZATION	LUMP SUM	$70,000.00	0.05	$3,500.00			0.05	$3,500.00
2	2101.501	CLEARING	ACRE	$5,000.00	0.2	$1,000.00			0.20	$1,000.00
3	2101.502	CLEARING	TREE	$150.00					1	$150.00
4	2101.506	GRUBBING	ACRE	$5,000.00	0.2	$1,000.00			0.20	$1,000.00
5	2101.507	GRUBBING	TREE	$150.00					1	$150.00
6	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	$10.00						
7	2104.501	REMOVE WATER SERVICE PIPE	LIN FT	$10.00						
8	2104.501	REMOVE CURB AND GUTTER	LIN FT	$3.00						
9	2104.506	REMOVE BITUMINOUS PAVEMENT	SQ YD	$1.80	220	$396.00			225	$405.00
10	2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	$6.00						
11	2104.509	REMOVE CONCRETE APRON	EACH	$50.00						
12	2104.509	REMOVE CATCH BASIN	EACH	$100.00						
13	2104.509	REMOVE SIGN TYPE C	EACH	$25.00						
14	2104.509	REMOVE VALVE BOX	EACH	$200.00						
15	2104.509	REMOVE CURB STOP & BOX	EACH	$300.00						
16	2104.509	REMOVE DELINEATOR	EACH	$25.00						
17	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	$5.00						
18	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	$3.00	36	$108.00			36	$108.00
19	2104.521	SALVAGE FENCE	LIN FT	$10.00						
20	2104.523	SALVAGE SIGN	EACH	$25.00						
21	2104.523	SALVAGE HYDRANT & VALVE	EACH	$425.00						
22	2104.523	SALVAGE PIPE APRON	EACH	$100.00						
23	2105.501	COMMON EXCAVATION (P)	CU YD	$10.00	801	$8,010.00			1736	$17,360.00
24	2105.505	MUCK EXCAVATION	CU YD	$10.00						
25	2105.522	COMMON BORROW (CV)	CU YD	$9.40						
26	2105.601	DEWATERING	LUMP SUM	$62,000.00						
27	2118.501	AGGREGATE SURFACING CLASS 5	TON	$20.00						
28	2123.501	COMMON LABORERS	HOUR	$65.00						
29	2123.503	MOTOR GRADER	HOUR	$170.00						
30	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$100.00	2	$200.00			1	$100.00
31	2130.501	WATER	M GALLON	$30.00						
32	2211.501	AGGREGATE BASE CLASS 5	TON	$20.00						
33	2211.503	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	$17.00	332	$5,644.00			332	$5,644.00
34	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	$55.00	463	$25,465.00			513	$28,215.00
35	2501.514	18" RC PIPE CULVERT	LIN FT	$34.50						
36	2501.515	12" RC PIPE APRON	EACH	$400.00						
37	2501.515	18" RC PIPE APRON	EACH	$475.00						
38	2501.573	INSTALL PIPE APRON	EACH	$150.00						
39	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	$26.00						
40	2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT	$30.00						
41	2503.541	18" RC PIPE SEWER DES 3006 CL III	LIN FT	$32.00						
42	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	$800.00						
43	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	$2,400.00						
44	2504.602	ADJUST VALVE BOX	EACH	$200.00						
45	2504.602	CONNECT TO EXISTING SEWER SERVICE	EACH	$450.00						
46	2504.602	CONNECT TO EXISTING WATER SERVICE	EACH	$510.00						
47	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - MAINLINE	LIN FT	$1.25	221	$276.25	221	$276.25	221	$276.25
48	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - SERVICE	LIN FT	$1.25	80	$100.00	88	$110.00	88	$110.00
49	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	$850.00						
50	2506.501	CONST DRAINAGE STRUCTURE DESIGN 30-48	LIN FT	$425.00						
51	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	$250.00						
52	2506.516	CASTING ASSEMBLY	EACH	$750.00						
53	2506.522	ADJUST FRAME AND RING CASTING	EACH	$350.00	1	$350.00			1	$350.00
54	2506.602	CONNECT INTO EXISTING STORM SEWER	EACH	$500.00						
55	2506.602	CONSTRUCT CONTROL STRUCTURE A	EACH	$2,800.00						
56	2511.501	RANDOM RIPRAP CLASS III	CU YD	$65.00						
57	2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD	$2.00						
58	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	$15.00						
59	2531.503	CONCRETE MEDIAN	SQ YD	$75.00						
60	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$55.00						
61	2531.507	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$60.00						
62	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	$66.00						
63	2531.615	TRUNCATED DOMES	SQ FT	$40.00						
64	2540.602	MAIL BOX SUPPORT	EACH	$125.00						
65	2540.602	TEMPORARY POSTAL SERVICE	EACH	$100.00						
66	2557.609	INSTALL FENCE	LIN FT	$20.00						
67	2563.601	TRAFFIC CONTROL	LUMP SUM	$8,000.00	0.05	$400.00			0.05	$400.00
68	2564.602	INSTALL SIGN	EACH	$80.00						
69	2564.602	INSTALL SIGN PANEL TYPE C	EACH	$105.00						
70	2564.602	FURNISH TYPE C SIGN	EACH	$150.00						
71	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50						
72	2573.550	STORM DRAIN INLET PROTECTION	EACH	$225.00						
73	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	$600.00	1	$600.00				
74	2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM	$1,500.00	0.05	$75.00			0.05	$75.00
75	2573.602	CULVERT END CONTROLS	EACH	$250.00						
76	2574.508	FERTILIZER TYPE 1	POUND	$1.00	80	$80.00			200	$200.00
77	2574.525	COMMON TOPSOIL BORROW	CU YD	$9.01	201	$2.01			388	$2.88
78	2575.501	SEEDING	ACRE	$800.00	0.4	$320.00			0.5	$400.00
79	2575.502	SEED MIXTURE 22-111	POUND	$4.00						
80	2575.502	SEED MIXTURE 25-131	POUND	$3.00	120	$360.00			300	$900.00
81	2575.502	SEED MIXTURE 33-381	POUND	$80.00						
82	2575.505	SODDING TYPE LAWN	SQ YD	$4.50						
83	2575.511	MULCH MATERIAL TYPE 3	TON	$425.00						
84	2575.518	DISK ANCHORING	ACRE	$200.00						
85	2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	$2.00						
86	2575.582	HYDRAULIC MATRIX TYPE MULCH	POUND	$1.30	840	$1,092.00			1900	$2,470.00
87	2582.501	PAVEMENT MESSAGE-PAINT	EACH	$50.00						
88	2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	$0.30						
89	2582.502	8" SOLID LINE WHITE-PAINT	LIN FT	$0.34						
90	2582.502	4" SOLID LINE YELLOW-PAINT	LIN FT	$0.30						
91	2582.502	12" SOLID LINE YELLOW-PAINT	LIN FT	$2.50						
92	2582.502	4" BROKEN LINE YELLOW-PAINT	LIN FT	$0.30	70	$21.00			50	$15.00
93	2582.502	4" DOUBLE SOLID LINE YELLOW-PAINT	LIN FT	$0.60						
94	2800.4D	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00						
95	2611.4A	6" PVC WATERMAIN PIPE	LIN FT	$20.00						
96	2611.4A	8" PVC WATERMAIN PIPE	LIN FT	$22.00						
97	2611.4A	10" PVC WATERMAIN PIPE	LIN FT	$25.00						
98	2611.4A	12" PVC WATERMAIN PIPE	LIN FT	$28.50						
99	2611.4A	1" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00						
100	2611.4A	1.5" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00	80	$1,040.00			83	$1,079.00
101	2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,150.00						
102	2611.4B	8" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,575.00						
103	2611.4B	10" GATE VALVE & BOX w/ ADAPTOR	EACH	$2,400.00						
104	2611.4B	12"BUTTERFLY VALVE & BOX w/ ADAPTOR	EACH	$2,200.00						
105	2611.4B	VALVE OPERATOR EXTENSION	EACH	$140.00						
106	2611.4C	1.5" CORPORATION STOP & SADDLE	EACH	$655.00	2	$1,310.00			2	$1,310.00
107	2611.4D	1" CURB STOP & BOX	EACH	$635.00						
108	2611.4D	1.5" CURB STOP & BOX	EACH	$760.00	2	$1,520.00			2	$1,520.00
109	2611.4E	HYDRANT	EACH	$4,050.00						
110	2611.4G	INSTALL HYDRANT & VALVE	EACH	$1,440.00						
111	2611.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$1.75						
112	2611.4J	HYDRANT EXTENSION (12")	EACH	$585.00						
113	2611.4J	HYDRANT EXTENSION (18")	EACH	$700.00						
114	2611.4J	HYDRANT EXTENSION (30")	EACH	$875.00						
115	2611.4J	GATE VALVE BOX & ADAPTOR	EACH	$455.00						
116	2621.4A	8" PVC SEWER PIPE (SDR 35)	LIN FT	$24.50	221	$5,414.50			218	$5,341.00
117	2621.4A	10" PVC SEWER PIPE (SDR 26)	LIN FT	$27.00						
118	2621.4B	SANITARY SEWER MANHOLE, MnDOT DESIGN 4007C	EACH	$2,200.00	1	$2,200.00			1	$2,200.00
119	2621.4B1	MANHOLE EXCESS DEPTH	LIN FT	$100.00	4	$400.00			4	$400.00
120	2621.4F	4" PVC SERVICE PIPE (SCH 40)	LIN FT	$50.00						
121	2621.4F	6" PVC SERVICE PIPE (SCH 40)	LIN FT	$55.00	104	$1,580.00			105	$1,575.00
122	2621.4G	6" X 6" PVC WYE	EACH	$570.00	2	$1,140.00			2	$1,140.00
123	2621.4G	10" X 6" PVC WYE	EACH	$850.00						

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AN
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	INDEPENDENCE ROAD, MUNICIPAL IMPROVEMENT 4107					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
ALTERNATE BID A										
1A	2101.501	CLEARING	ACRE	$15,000.00						
2A	2101.508	GRUBBING	ACRE	$15,000.00						
3A	2105.601	DEWATERING	LUMP SUM	$70,000.00						
4A	2123.501	COMMON LABORERS	HOUR	$55.00						
5A	2123.503	MOTOR GRADER	HOUR	$150.00						
6A	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50						
7A	2574.508	FERTILIZER TYPE 1	POUND	$1.00						
8A	2574.525	COMMON TOPSOIL BORROW	CU YD	$20.00						
9A	2575.501	SEEDING	ACRE	$800.00						
10A	2575.502	SEED MIXTURE 25-131	POUND	$3.00						
11A	2575.505	SODDING TYPE LAWN	SQ YD	$4.50						
12A	2575.562	HYDRAULIC MATRIX TYPE MULCH	POUND	$5.00						
13A	2900.4D	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00						
14A	2811.4A	6" PVC WATERMAIN PIPE	LIN FT	$47.00						
15A	2811.4A	8" PVC WATERMAIN PIPE	LIN FT	$25.00						
16A	2811.4A	8" PE WATERMAIN PIPE - DIRECTIONAL DRILL	LIN FT	$53.00						
17A	2811.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,200.00						
18A	2811.4E	HYDRANT	EACH	$4,100.00						
19A	2811.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$2.35						
20A	-	6" WET TAP	EACH	$4,300.00						
TOTALS:						$61,583.78		$386.25		$77,395.91
AMOUNT RETAINED:										$77,009.66
RETAINAGE RELEASED										$386.25
PREVIOUS PAYMENTS								$386.25		
AMOUNT DUE:										

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AN
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	TOTALS: CONTRACT QUANTITY	CONTRACT AMOUNT	THIS PERIOD QUANTITY	THIS PERIOD AMOUNT	TOTAL TO DATE QUANTITY	TOTAL TO DATE AMOUNT
BASE BID										
1	2021.501	MOBILIZATION	LUMP SUM	$70,000.00	1	$70,000.00			1	$70,000.00
2	2101.501	CLEARING	ACRE	$5,000.00	0.52	$2,600.00			0.65	$3,250.00
3	2101.502	CLEARING	TREE	$150.00	58	$8,700.00			66	$9,900.00
4	2101.506	GRUBBING	ACRE	$5,000.00	0.52	$2,600.00			0.65	$3,250.00
5	2101.507	GRUBBING	TREE	$150.00	58	$8,700.00			62	$9,300.00
6	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	$10.00	22	$220.00			67	$670.00
7	2104.501	REMOVE WATER SERVICE PIPE	LIN FT	$10.00	20	$200.00			30	$300.00
8	2104.501	REMOVE CURB AND GUTTER	LIN FT	$5.00	76	$380.00			187	$935.00
9	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	$1.80	16266	$29,278.80			16271	$29,287.80
10	2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	$6.00	49	$294.00			172	$1,032.00
11	2104.509	REMOVE CONCRETE APRON	EACH	$50.00	1	$50.00			1	$50.00
12	2104.509	REMOVE CATCH BASIN	EACH	$100.00	1	$100.00			1	$100.00
13	2104.509	REMOVE SIGN TYPE C	EACH	$25.00	19	$475.00	2	$50.00	15	$375.00
14	2104.509	REMOVE VALVE BOX	EACH	$200.00	2	$400.00			2	$400.00
15	2104.509	REMOVE CURB STOP & BOX	EACH	$300.00	3	$900.00			3	$900.00
16	2104.509	REMOVE DELINEATOR	EACH	$25.00	5	$125.00			4	$100.00
17	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	$5.00	441	$2,205.00	10	$50.00	37	$185.00
18	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	$3.00	330	$990.00			782	$2,346.00
19	2104.521	SALVAGE FENCE	LIN FT	$10.00	357	$3,570.00			87	$870.00
20	2104.523	SALVAGE SIGN	EACH	$25.00	20	$500.00			20	$500.00
21	2104.523	SALVAGE HYDRANT & VALVE	EACH	$425.00	2	$850.00			2	$850.00
22	2104.523	SALVAGE PIPE APRON	EACH	$100.00	2	$200.00			2	$200.00
23	2105.501	COMMON EXCAVATION (P)	CU YD	$10.00	7512	$75,120.00			8647	$86,470.00
24	2105.505	MUCK EXCAVATION	CU YD	$10.00	1000	$10,000.00			1000	$10,000.00
25	2105.522	COMMON BORROW (CV)	CU YD	$9.40	7191	$67,595.40			6951	$65,339.40
26	2105.601	DEWATERING	LUMP SUM	$62,000.00	1	$62,000.00	0.05	$3,100.00	1	$62,000.00
27	2118.501	AGGREGATE SURFACING CLASS 5	TON	$20.00	26	$520.00				
28	2123.501	COMMON LABORERS	HOUR	$85.00	30	$2,550.00				
29	2123.503	MOTOR GRADER	HOUR	$170.00	20	$3,400.00				
30	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$100.00	32	$3,200.00			11	$1,100.00
31	2130.501	WATER	M GALLON	$30.00	100	$3,000.00				
32	2211.501	AGGREGATE BASE CLASS 5	TON	$20.00	173	$3,460.00				
33	2211.503	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	$17.00	4304	$73,168.00			4079	$69,343.00
34	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	$55.00	5421	$298,155.00			4488	$246,840.00
35	2501.514	18" RC PIPE CULVERT	LIN FT	$34.50	112	$3,864.00			128	$4,416.00
36	2501.515	12" RC PIPE APRON	EACH	$400.00	5	$2,000.00			5	$2,000.00
37	2501.515	18" RC PIPE APRON	EACH	$475.00	4	$1,900.00			4	$1,900.00
38	2501.573	INSTALL PIPE APRON	EACH	$150.00	2	$300.00			2	$300.00
39	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	$28.00	1203	$33,684.00			1158	$32,424.00
40	2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT	$30.00	768	$23,040.00			617	$18,510.00
41	2503.541	18" RC PIPE SEWER DES 3006 CL III	LIN FT	$32.00	678	$21,696.00			760	$24,320.00
42	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	$900.00	1	$900.00			1	$900.00
43	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	$2,400.00	1	$2,400.00			1	$2,400.00
44	2504.602	ADJUST VALVE BOX	EACH	$200.00	2	$400.00			1	$200.00
45	2504.602	CONNECT TO EXISTING SEWER SERVICE	EACH	$450.00	3	$1,350.00			4	$1,800.00
46	2504.602	CONNECT TO EXISTING WATER SERVICE	EACH	$510.00	6	$3,060.00			2	$1,020.00
47	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - MAINLINE	LIN FT	$1.25	2770	$3,462.50	2778	$3,472.50	2778	$3,472.50
48	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER - SERVICE	LIN FT	$1.25	778	$972.50	1019	$1,273.75	1019	$1,273.75
49	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	$950.00	2	$1,900.00			4	$3,800.00
50	2506.501	CONST DRAINAGE STRUCTURE DESIGN SD-48	LIN FT	$425.00	55.13	$23,430.25			51.63	$21,942.75
51	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	$250.00	32.71	$8,177.50			32.71	$8,177.50
52	2506.516	CASTING ASSEMBLY	EACH	$750.00	20	$15,000.00			20	$15,000.00
53	2506.522	ADJUST FRAME AND RING CASTING	EACH	$350.00	9	$3,150.00			9	$3,150.00
54	2506.602	CONNECT INTO EXISTING STORM SEWER	EACH	$500.00	1	$500.00			1	$500.00
55	2506.602	CONSTRUCT CONTROL STRUCTURE A	EACH	$2,800.00	1	$2,800.00			0.75	$2,100.00
56	2511.501	RANDOM RIPRAP CLASS III	CU YD	$65.00	61.4	$3,991.00			33	$2,145.00
57	2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD	$2.00	227	$454.00			116	$232.00
58	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	$15.00	7110	$106,650.00			7456	$111,840.00
59	2531.503	CONCRETE MEDIAN	SQ YD	$75.00	93	$6,975.00			107	$8,025.00
60	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$55.00	183	$10,065.00			308	$16,940.00
61	2531.507	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	$60.00	135	$8,100.00			160	$9,600.00
62	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	$66.00	114	$7,524.00			121.1	$7,992.60
63	2531.618	TRUNCATED DOMES	SQ FT	$40.00	164	$6,560.00			206	$8,240.00
64	2540.602	MAIL BOX SUPPORT	EACH	$125.00	15	$1,875.00	15	$1,875.00	15	$1,875.00
65	2540.602	TEMPORARY POSTAL SERVICE	EACH	$100.00	15	$1,500.00			15	$1,500.00
66	2557.603	INSTALL FENCE	LIN FT	$20.00	347	$6,940.00				
67	2563.601	TRAFFIC CONTROL	LUMP SUM	$8,000.00	1	$8,000.00			0.95	$7,600.00
68	2564.602	INSTALL SIGN	EACH	$80.00	20	$1,600.00	20	$1,600.00	20	$1,600.00
69	2564.602	INSTALL SIGN PANEL TYPE C	EACH	$105.00	13	$1,365.00	60	$6,300.00	60	$6,300.00
70	2564.602	FURNISH TYPE C SIGN	EACH	$150.00	22	$3,300.00	60	$9,000.00	60	$9,000.00
71	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50	2222	$5,555.00			2255	$5,637.50
72	2573.530	STORM DRAIN INLET PROTECTION	EACH	$225.00	23	$5,175.00			13	$2,925.00
73	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	$600.00	8	$4,800.00			6	$3,600.00
74	2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM	$1,500.00	1	$1,500.00			0.625	$937.50
75	2573.602	CULVERT END CONTROLS	EACH	$250.00	2	$500.00				
76	2574.508	FERTILIZER TYPE 1	POUND	$1.00	693	$693.00	150	$150.00	800	$800.00
77	2574.525	COMMON TOPSOIL BORROW	CU YD	$0.01	2452	$24.52			2281	$22.81
78	2575.501	SEEDING	ACRE	$800.00	6.5	$5,200.00	0.7	$560.00	3.3	$2,640.00
79	2575.502	SEED MIXTURE 22-111	POUND	$4.00	163	$652.00			180	$720.00
80	2575.502	SEED MIXTURE 25-131	POUND	$3.00	732	$2,196.00	210	$630.00	1010	$3,030.00
81	2575.502	SEED MIXTURE 33-261	POUND	$60.00	14	$840.00			17.5	$1,050.00
82	2575.505	SODDING TYPE LAWN	SQ YD	$4.50	9935	$44,707.50	3687	$16,591.50	8047	$36,211.50
83	2575.511	MULCH MATERIAL TYPE 3	TON	$425.00	8	$3,400.00				
84	2575.519	DISK ANCHORING	ACRE	$200.00	4.1	$820.00				
85	2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	$2.00	4954	$9,908.00			1765	$3,530.00
86	2575.562	HYDRAULIC MATRIX TYPE MULCH	POUND	$1.30	3180	$4,134.00	2907	$3,779.10	6107	$7,939.10
87	2582.501	PAVEMENT MESSAGE-PAINT	EACH	$50.00	13	$650.00	1	$50.00	13	$650.00
88	2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	$0.30	715	$214.50			417	$125.10
89	2582.502	8" SOLID LINE WHITE-PAINT	LIN FT	$0.34	7465	$2,538.10			3014	$1,024.76
90	2582.502	4" SOLID LINE YELLOW-PAINT	LIN FT	$0.30	1628	$488.40			231	$69.30
91	2582.502	12" SOLID LINE YELLOW-PAINT	LIN FT	$2.50	137	$342.50	35	$87.50	139	$347.50
92	2582.502	4" BROKEN LINE YELLOW-PAINT	LIN FT	$0.30	816	$244.80			230	$69.00
93	2582.502	4" DOUBLE SOLID LINE YELLOW-PAINT	LIN FT	$0.60	2276	$1,365.60			1717	$1,030.20
94	2600.4D	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00	879.2	$17,584.00			2071.3	$41,426.00
95	2611.4A	6" PVC WATERMAIN PIPE	LIN FT	$20.00	108	$2,160.00			114	$2,280.00
96	2611.4A	8" PVC WATERMAIN PIPE	LIN FT	$22.00	186	$4,092.00			314	$6,908.00
97	2611.4A	10" PVC WATERMAIN PIPE	LIN FT	$25.00	1384	$34,600.00			1383	$34,575.00
98	2611.4A	12" PVC WATERMAIN PIPE	LIN FT	$28.50	1191	$33,943.50			1259	$35,881.50
99	2611.4A	1" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00	48	$624.00			20	$260.00
100	2611.4A	1.5" POLYETHYLENE SERVICE PIPE	LIN FT	$13.00	634	$8,242.00			935	$12,155.00
101	2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,150.00	5	$5,750.00			6	$6,900.00
102	2611.4B	8" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,575.00	2	$3,150.00			4	$6,300.00
103	2611.4B	10" GATE VALVE & BOX w/ ADAPTOR	EACH	$2,400.00	3	$7,200.00			3	$7,200.00
104	2611.4B	12" BUTTERFLY VALVE & BOX w/ ADAPTOR	EACH	$2,000.00	1	$2,000.00			2	$4,000.00
105	2611.4B	VALVE OPERATOR EXTENSION	EACH	$140.00	9	$1,260.00				
106	2611.4C	1.5" CORPORATION STOP & SADDLE	EACH	$655.00	18	$11,790.00			24	$15,720.00
107	2611.4D	1" CURB STOP & BOX	EACH	$635.00	3	$1,905.00			1	$635.00
108	2611.4D	1.5" CURB STOP & BOX	EACH	$760.00	18	$13,680.00			24	$18,240.00
109	2611.4E	HYDRANT	EACH	$4,050.00	5	$20,250.00			5	$20,250.00
110	2611.4G	INSTALL HYDRANT & VALVE	EACH	$1,440.00	2	$2,880.00			2	$2,880.00
111	2611.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	$1.75	3675	$6,431.25			5140	$8,995.00
112	2611.4J	HYDRANT EXTENSION (12")	EACH	$585.00	1	$585.00	1	$585.00	2	$1,170.00
113	2611.4J	HYDRANT EXTENSION (18")	EACH	$700.00	1	$700.00				
114	2611.4J	HYDRANT EXTENSION (30")	EACH	$875.00	1	$875.00			1	$875.00
115	2611.4J	GATE VALVE BOX & ADAPTOR	EACH	$435.00	2	$870.00			2	$870.00
116	2621.4A	8" PVC SEWER PIPE (SDR 26)	LIN FT	$24.50	979	$23,985.50			980	$24,010.00
117	2621.4A	10" PVC SEWER PIPE (SDR 26)	LIN FT	$27.00	1791	$48,357.00			1795	$48,465.00
118	2621.4B	SANITARY SEWER MANHOLE, MnDOT DESIGN 4007C	EACH	$2,200.00	10	$22,000.00			10	$22,000.00
119	2621.4B1	MANHOLE EXCESS DEPTH	LIN FT	$100.00	14.95	$1,495.00			14.95	$1,495.00
120	2621.4F	4" PVC SERVICE PIPE (SCH 40)	LIN FT	$80.00	24	$1,920.00			38	$3,040.00
121	2621.4F	6" PVC SERVICE PIPE (SCH 40)	LIN FT	$15.00	802	$12,030.00			998	$14,970.00
122	2621.4G	8" X 6" PVC WYE	EACH	$570.00	7	$3,990.00			11	$6,270.00
123	2621.4G	10" X 6" PVC WYE	EACH	$690.00	11	$7,590.00			13	$8,970.00

PARTIAL PAY ESTIMATE 4 - ATTACHMENT A
2015 DELLWOOD DRIVE, NOVOTNY ROAD, INGLEWOOD DRIVE AN
MUNICIPAL PROJECT NUMBERS 4063, 4105 AND 4107
Monday, January 25, 2016

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	TOTALS					
					CONTRACT		THIS PERIOD		TOTAL TO DATE	
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
ALTERNATE BID A										
1A	2101.501	CLEARING	ACRE	$15,000.00	0.05	$750.00			0.075	$1,125.00
2A	2101.506	GRUBBING	ACRE	$15,000.00	0.05	$750.00			0.075	$1,125.00
3A	2105.601	DEWATERING	LUMP SUM	$70,000.00	0.05	$3,500.00			0.05	$3,500.00
4A	2123.501	COMMON LABORERS	HOUR	$85.00	5	$425.00				
5A	2123.503	MOTOR GRADER	HOUR	$160.00	5	$800.00				
6A	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.50	50	$125.00				
7A	2574.508	FERTILIZER TYPE 1	POUND	$1.00	27	$27.00				
8A	2574.525	COMMON TOPSOIL BORROW	CU YD	$20.00	49	$980.00				
9A	2575.501	SEEDING	ACRE	$600.00	0.1	$60.00				
10A	2575.502	SEED MIXTURE 25-151	POUND	$3.00	27	$81.00				
11A	2575.505	SODDING TYPE LAWN	SQ YD	$4.50	115	$522.00				
12A	2575.502	HYDRAULIC MATRIX TYPE MULCH	POUND	$6.00	142	$1,136.00				
13A	2900.4D	INSULATION (4' x 8' x 2" THICK)	SQ YD	$20.00	6.3	$126.00			3.5	$70.00
14A	2511.4A	6" PVC WATERMAIN PIPE	LIN FT	$47.00	9	$282.00			7	$329.00
15A	2511.4A	8" PVC WATERMAIN PIPE	LIN FT	$25.00	175	$4,375.00			116	$2,900.00
16A	2511.4A	8" PE WATERMAIN PIPE - DIRECTIONAL DRILL	LIN FT	$53.00	865	$45,845.00			922	$48,866.00
17A	2511.49	6" GATE VALVE & BOX w/ ADAPTOR	EACH	$1,200.00	1	$1,200.00			1	$1,200.00
18A	2511.4F	HYDRANT	EACH	$4,100.00	1	$4,100.00			1	$4,100.00
19A	2511.40	DUCTILE IRON WATERMAIN FITTINGS	POUND	$2.35	615	$1,445.25			785	$1,844.75
20A	-	8" WET TAP	EACH	$4,300.00	1	$4,300.00			1	$4,300.00
						$1,533,129.37		$49,154.35		$1,516,948.92
TOTALS:								$4,279.56		$112,334.49
AMOUNT RETAINED:								$0.00		
RETAINAGE RELEASED:										$1,359,739.64
PREVIOUS PAYMENTS:								$44,874.79		$44,874.79
AMOUNT DUE:										

WIDSETH SMITH NOLTING

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WidsethSmithNolting.com

20-YEAR MAINTENANCE PLAN UPDATE (2016 – 2036)

FOR

SANITARY SEWER LIFT STATIONS

January 2016

CITY OF

BAXTER, MINNESOTA

WSN No. 0102B0315.003

Introduction

The City of Baxter operates and maintains 23 sanitary sewer lift stations as part the City's overall sanitary sewer collection system. In 2008 the City Council approved and adopted a 20-Year Sanitary Sewer Lift Station Maintenance Plan. Lift station components wear out or became aged and are difficult to replace due to the continual changes and advancements in electronics and controls. The maintenance plan provides the City with a tool to plan, budget, and prioritize future improvements.

Implementation of the plan began in 2011. A summary of the projects completed or under contract include the following:

- Lift Station No. 3 – 2011
- Lift Station No. 1 – 2011
- Lift Station No. 4 – 2012
- Lift Station No. 5 – 2012
- Lift Station No. 6 – 2013
- Lift Station No. 9 – 2014
- Lift Station No. 7 – 2015
- Lift Station No. 8 – 2016

The attached information represents an update to the original maintenance plan. Unit prices have been updated to reflect actual costs associated with improvements from the four previous lift station reconstruction projects and the Lift Station 20-Year Maintenance Budget has been updated to reflect anticipated costs from 2016 through 2036.

Unit Costs

Reconstruction costs at each lift station location will vary depending on field conditions and arrangement of components. Improvements and unit costs A through K on the attached Cost Summary Worksheet were identified as work that will likely need to be addressed at lift stations over the next 20 years. Costs for each lift station can be customized by selecting appropriate improvements from the provided unit cost list.

Original unit prices were set based on lift station maintenance history and information provided by Quality Flow. Unit costs have since been updated to reflect historic costs from the previous four lift station reconstruction projects.

Maintenance Budget

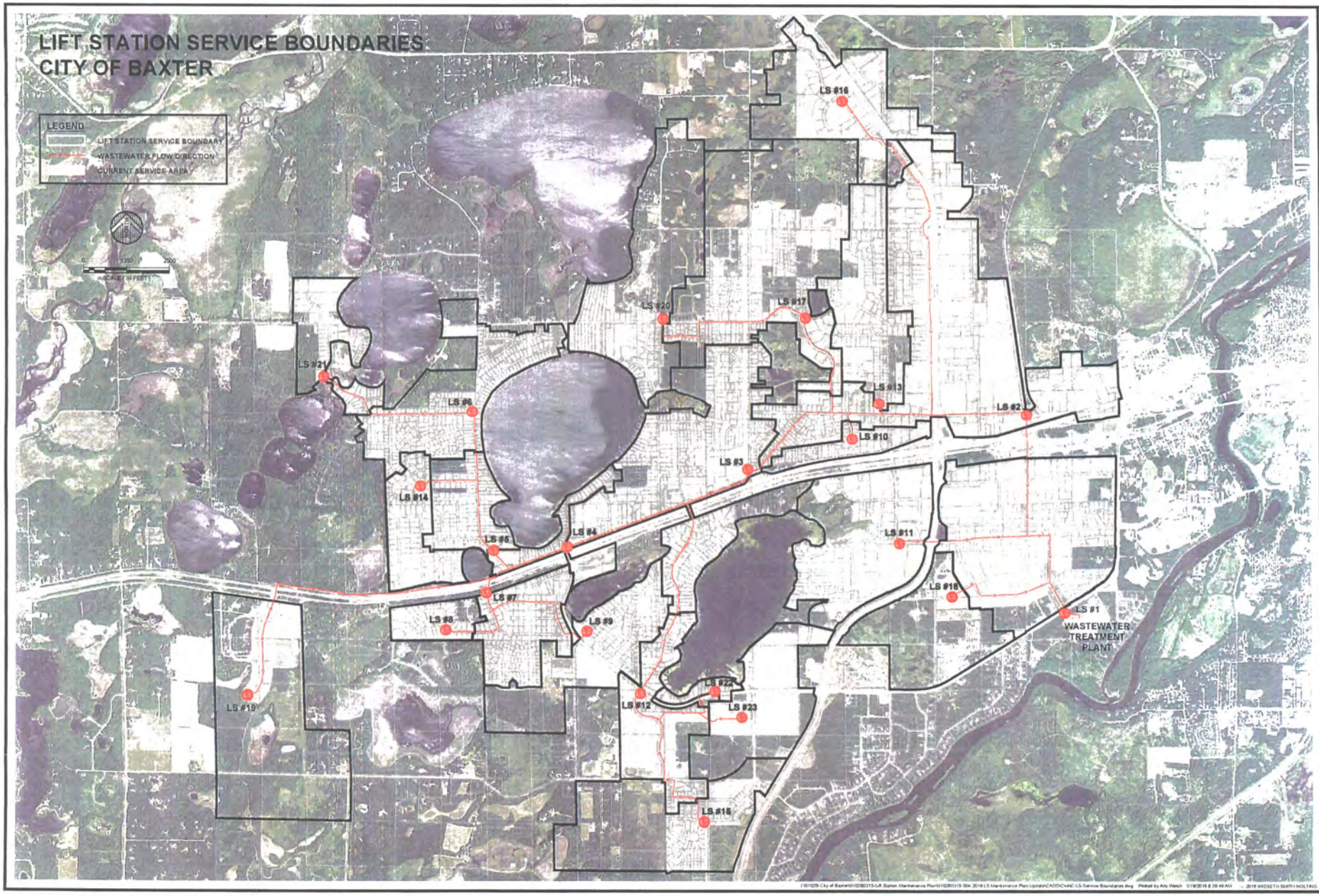
The Maintenance Budget estimates maintenance and replacement costs over the next twenty year period from 2016 to 2036. Yearly costs vary depending on planned lift station replacement and maintenance items. Estimated costs for the next five year period are as follows:

- 2016 $163,000
- 2017 $187,000
- 2018 $146,000
- 2019 $151,000
- 2020 $133,000

The average yearly maintenance cost over the next twenty year period is estimated at $133,024. The maximum and minimum estimated yearly costs are $187.000 and $60,500 respectively.

Attachments:

1. Lift Station Location Map
2. Lift Station Cost Summary Worksheet
3. Lift Station 20-Year Maintenance Budget


LIFT STATION SERVICE BOUNDARIES
CITY OF BAXTER
LEGEND
LIFT STATION SERVICE BOUNDARY
WASTEWATER FLOW DIRECTION
CURRENT SERVICE AREA
SCALE (IN FEET)
LS #1
WASTEWATER TREATMENT PLANT
LS #2
LS #3
LS #4
LS #5
LS #6
LS #7
LS #8
LS #9
LS #10
LS #11
LS #12
LS #13
LS #14
LS #15
LS #16
LS #17
LS #18
LS #19
LS #20
LS #21
LS #22
LS #23
WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental
LIFT STATION MAINTENANCE PLAN
CITY OF BAXTER
BAXTER, MINNESOTA
LIFT STATION SERVICE BOUNDARY
SHEET NO.
####

LIFT STATION COST SUMMARY WORKSHEET (2016 COSTS)

Item	Description	
A	Base Lift Station Upgrade Stainless Steel 36" x 48" control panel with LC 150 controller with pressure transducer and floats 5HP KSB 80-200 pumps with Type F impeller Pump rail and base elbow replacement By-pass pumping, mobilization, clean-up Wet well water blast, vacuum, spot repairs Precast cover replacement with aluminum hatch Discharge piping, cleaning and coatings TOTAL - Item A	$110,000.00
B	Construct new upstream manhole. Includes dewatering, temporary by-pass and restoration.	$20,000.00
C	Replace check valves (2) in valve vault	$5,000.00
D	Replace isolation valves (2) in valve vault	$4,000.00
E	Replace valve vault cover and aluminum hatch	$5,000.00
F	Complete valve vault replacement with by-pass piping system	$30,000.00
G	Replacement of low flow pumps (2 pumps) (LS 2)	$13,000.00
H	Replacement of high flow pumps (2 pumps) (LS 1 and LS 2)	$24,000.00
I	Duplex pump replacement (2 pumps)	$13,000.00
J	Duplex pump replacement (2 pumps) (LS 1)	$32,000.00
K	Control Panel Replacement	$32,500.00

LIFT STATION 20-YEAR MAINTENANCE BUDGET
BAXTER, MINNESOTA
WSN 010280315.000
01/18/16

Lift Station Number	Location	Original Construction Date	Pump #1 Install / Rebuild	Pump #2 Install / Rebuild	Control Panel Latest Refit	2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026	
						Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost
1	CSAH #48 near treatment plant	1980	2011	2011	2011											J	$ 32,000										
2	Excelsior Road & Cypress Drive	1980	2007	2007	2001			H	$ 24,000	G	$ 13,000																
	Lift Station 1 & 2 General Maintenance						$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000
3	Inglewood Drive & Fairview Road	1989	2011	2011	2011											I	$ 13,000										
4	Fairview Road and Maplewood Drive	1989	2012	2012	2012													I	$ 13,000								
5	Memorywood Drive north of City Hall	1989	2012	2012	2012													I	$ 13,000								
6	Memorywood Drive and Cedar Scenic Road	1989	2009	2009	2013							I	$ 13,000														
7	West end of Cedardale Lane	1991	2015	2015	2015																			I	$ 13,000		
8	Brentwood Drive and Briarwood Lane	1991	1991	1991	1991	A,F	$ 140,000																			I	$ 13,000
9	Mountain Ash Drive near Treatment Plant #2	1992	2014	2014	2014																	I	$ 13,000				
10	Flintwood Drive	1998	1998	1998	1998			A,F	$ 140,000																		
11	Glory Road and Elder Drive	1998	1999	1999	1999					A	$ 110,000																
12	Knollwood Drive and CSAH #48	2001	2007	2007	2001							A,E	$ 115,000														
13	Forest Drive	2001	2001	2001	2001									A	$ 110,000												
14	Meredith Drive	2003	2003	2003	2003											A	$ 110,000										
15	Jasperwood Drive and Marble Road	2003	2003	2003	2003													A	$ 110,000								
16	Edgewood Drive and Lake Forest Road	2004	2004	2004	2004															A	$ 110,000						
17	Grand Oaks Drive and Clearwater Road	2004	2004	2004	2004																	A	$ 110,000				
18	Hastings Road	2005	2005	2005	2005																			A	$ 110,000		
19	Potlatch	2006	2006	2006	2006																					A	$ 110,000
20	Clearwater Road and Kimberlee Drive	2006	2006	2006	2006																						
21	Cedar Scenic Road west of Olivewood Drive	2007	2007	2007	2007																						
22	CSAH #48 between Knollwood Drive and Ironwood Drive	2008	2008	2008	2008																						
23	Mapleton Road and Crow Wing Power Substation	2015	2015	2015	2015																			I	$ 13,000		
	Lift Station 3-22 General Maintenance						$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000
					Annual Cost		$ 163,000		$ 187,000		$ 146,000		$ 151,000		$ 133,000		$ 178,000		$ 159,000		$ 133,000		$ 146,000		$ 159,000		$ 146,000

	2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		20 YEAR TOTAL
Lift Station Number	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	COST
1									J,K	$ 64,500											$ 96,500
2	G,H,K	$ 69,500																			$ 106,500
		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000	$ 42,000
3									I,K	$ 45,500											$ 58,500
4											I,K	$ 45,500									$ 58,500
5											I,K	$ 45,500									$ 58,500
6					I	$ 13,000							K	$ 32,500							$ 58,500
7																	I,K	$ 45,500			$ 58,500
8																			I,K	$ 45,500	$ 198,500
9															I,K	$ 45,500					$ 58,500
10	I	$ 13,000																			$ 153,000
11			I	$ 13,000																	$ 123,000
12					I	$ 13,000															$ 128,000
13							I	$ 13,000													$ 123,000
14									I	$ 13,000											$ 123,000
15											I	$ 13,000									$ 123,000
16													I	$ 13,000							$ 123,000
17															I	$ 13,000					$ 123,000
18																	I	$ 13,000			$ 123,000
19																			I	$ 13,000	$ 123,000
20			A	$ 110,000																	$ 110,000
21					A	$ 110,000															$ 110,000
22							A	$ 110,000													$ 110,000
23																	I	$ 13,000			$ 26,000
		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000		$ 21,000							$ 378,000
		$ 105,500		$ 146,000		$ 159,000		$ 146,000		$ 146,000		$ 127,000		$ 68,500		$ 60,500		$ 73,500		$ 60,500	$ 2,793,500

AVERAGE YEARLY COST: $ 133,024

MAXIMUM YEARLY COST: $ 187,000

MINIMUM YEARLY COST: $ 60,500

Trevor Walter

From: Luke Wehseler <Luke.Wehseler@crowwing.us>
Sent: Wednesday, January 27, 2016 10:54 AM
To: Trevor Walter
Cc: Rob Hall
Subject: CSAH 48 Update
Attachments: L-Walter future plans.docx

Hello Trevor,

I just wanted to touch base with you on the CSAH 48 Project. We are still moving forward with a 2017 construction date.

With this project we will include:

1.) The ADA improvements at CSAH 48 and Knollwood Drive
2.) Storm Water improvements along Rush Lake. (we will work with the TEP/DNR to see what a feasible solution there is for these four outlets discharging directly into Rush Lake)

Some of the short term questions for the City of Baxter was:

1.) Railroad silent crossing improvements?
2.) Traffic Movement/Studies to determine intersections along CSAH 48.

If the City of Baxter would like to combine their internal flow traffic study with how they connect to CSAH 48 and the ICE report for the proposed intersection locations used on CSAH 48, the County would be willing to move forward with the City to cost share on this traffic study. Originally stated in the letter, the County would just do a separate ICE report after the City conducted the traffic study.

Please let me know if you have any updates related to this project.

Thanks,

Luke L. Wehseler, P.E.
Senior Engineer
Highway Department
16589 County Road 142
Brainerd, MN 56401

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Fax: (218) 824-1111
www.crowwing.us

CROW WING COUNTY MINNESOTA

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Our Mission: Serve well. Deliver value. Drive results.
Our Values: Be responsible. Treat people right. Build a better future.

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CROW WING
COUNTY
MINNESOTA

November 5, 2015

City of Baxter
C/o Public Works Director
P.O. Box 2626
13190 Memorywood Drive
Baxter, MN 56425

RE: 2017 County Highway Project
CSAH 48 – SAP 018-648-013

Dear Mr. Walter,

I thank you for taking time and sitting down with the Crow Wing County Highway Department about the CSAH 48 Corridor. Our meeting on November 2 was productive in laying out the urgency of the projects. Listed below is a summary of what was discussed and action items to move forward with.

Short Term Priorities implemented with the 2017 CSAH 48 Project.

1.) RAILROAD CROSSING ON CSAH 48

The City of Baxter requests to have the existing RR crossing of CSAH 48 upgraded to a silent RR crossing. This improvement would also implement building a separated trail connection from TH 210 to Foley Road. The County is open to having the City of Baxter move forward with this work on CSAH 48. The County will stop the pavement rehabilitation at Foley Road. Foley Road to TH 210 will be completed under the City of Baxter's silent crossing project.

If the plan and permits can be completed by December of 2016, we will be able to insert the plan into the entire contract to be bid in February of 2017. The County would contribute the pavement replacement cost in this area. All other associated items would be 100% city cost.

2.) ADA IMPROVEMNTS AT CSAH 48 AND KNOLLWODD DRIVE

ADA improvements will be completed as part of the 2017 CSAH 48 Project. All ramps will be made ADA accessible with audible count down signalization. Per the Crow Wing County Highway Department Cost share policy, the associated upgrades to this intersection will be shared 50/50.

At this point the County does not see the cost/benefit of removing the signals and installing a roundabout at this location.

Luke L. Wehseler
Sr. Engineer
Highway Department
16589 County Road 142
Brainerd, MN 56401

3.) STORM WATER IMPROVEMENTS ALONG RUSH LAKE

The City of Baxter would like to see storm water improvements to Rush Lake. Currently, CSAH 48 has three outlets that flow directly into Rush Lake. The County understands the City's concern and will take this opportunity in the 2017 CSAH 48 project to address storm water. Currently a wetland delineation is being conducted. When conceptual options are designed the County will coordinate the final treatment with the City of Baxter.

At this point a typical grading/pond/berm treatment would be covered by the County under the project cost. This would address one or two of the three outlets. If a more complex treatment is requested by the City a cost sharing agreement may need to be implemented.

4.) TRAFFIC STUDIES

The City of Baxter has indicated a number of new intersections on CSAH 48 between TH 371 and College Drive. The earliest intersection could be as soon as 2018 for the Cypress Drive Extension. The County would like to determine the best intersection type and location on CSAH 48 in this area.

The connections in this area with the internal network along CSAH 48 can go a number of ways. This area is from the Mississippi River on the south to TH 371 on the west to College Drive on the North to CSAH 48 on the east. Before the County can determine the type of intersection to use on CSAH 48, the City should have an involved traffic study conducted with public involvement to determine the most effective way to address access on CSAH 48. The study will be used to determine the location of future locations and which existing access points can be closed/consolidated. This is imperative to ensure CSAH 48 continues to function safely as a major collector in the area.

Once this study is conducted for the city roads in this area, the County would share in the cost 50/50 for the Intersection Control Evaluation (ICE) Report for each intersection location along CSAH 48 in this area to determine which type of intersection is used.

When the traffic study and ICE Report are complete, we can analyze if there are any special treatments needed on the 2017 CSAH 48 Project to address the future development. The traffic study and ICE Report will also be beneficial to proactively respond to developer requests/growth in this area.

Medium Term Priorities implemented in the next 3-7 years.

5.) CYPRESS DRIVE EXTENTION INTO CSAH 48

As stated previously, the City of Baxter could expect the Cypress Drive Project as early as 2018. After the traffic study and ICE Report are completed the project would be allowed to connect to CSAH 48. As a City initiated project, the City would have to bear the entire cost of this intersection until it is implemented in the Highway Department's five year plan. Once a cost is agreed upon for sharing in the intersection cost, the County would place that in year five of the Highway Department's five year budget. For example, if this cost is known by January of 2016, the money would be allocated for 2021. It would be at this time the City of Baxter would receive its cost share reimbursement. This is the same process recently used on the Isle Drive/CSAH 48 intersection.

Long Term Priorities possibly implemented in the future.

6.) TURN BACK/RE-ALIGNMENT OF CSAH 48 WEST OF ISLE DRIVE

The long term outlook for CSAH 48 west of Isle Drive is for the City of Baxter to take jurisdiction over the existing route. In turn, the County would route the new CSAH 48 along CR 170 and connect to Camp Jim Road or TH 210 through Timberwood Drive. This turn back could also possibly include realigning the CSAH 48 intersection with TH 210 to Memorywood Drive. These projects are currently in the concept stage. This will continue to be a concept until a driver initiates a need to move this concept further towards reality. The 2017 CSAH 48 Project will not take into account or design anything special from this concept.

To coordinate budgets and cost sharing the Crow Wing County Highway Department always plans five years out. We understand some items are reactive to urgent development needs; however, every attempt is made to adhere to this plan that we promise to the public. Once a project starts to develop which has cost sharing potential to the County Road system we encourage you to feel free to contact us.

We thank you for disclosing all of the possibilities of impacts to CSAH 48. We will continue to coordinate with the City on the short term priorities. We will also keep in mind the City's long term priorities as further development is made on those projects. If you any have questions or concerns regarding this correspondence, please contact me at 218.824.1110 or e-mail at luke.wehseler@crowwing.us.

Sincerely,

Luke Wehseler
Project Manager

WIDSETH SMITH NOLTING

Baxter/Brainerd
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidsethSmithNolting.com

January 26, 2016

Mayor and City Council
City of Baxter
P.O. Box 2626
Baxter, MN 56425

RE: Agreement for Professional Engineering Services
CSAH 48 (Highland Scenic Road) Railway Crossing Improvements
Feasibility Study
Baxter, MN

Dear Mayor and City Council:

In response to staff request, we are pleased to submit a proposal to prepare a feasibility study for the CSAH 48 (Highland Scenic Drive) railway crossing improvement project. It is our understanding the County initiated the project by proposing a mill and overlay in 2017. The City then responded with requests for improvements that were not included in the original scope of the project. The County reviewed that City's response and requested a meeting. As a result of the meeting, it was determined the County would stop the mill and overlay project at Foley Road and allow the City to develop the project (with the additional City requested improvements) from Foley Road to TH 210.

We understand the project will consist of the following improvements:

- Silent railroad crossing improvements
- Coordination with BNSF Railway
- Coordination with MnDOT Rail Office
- Separated trail improvements from TH 210 to Foley Road
- Urban roadway improvements with storm sewer

If our understanding of the project is not correct, please contact us immediately so we can modify this proposal.

Our proposed scope of services is as follows:

Feasibility Study

WSN proposes to complete a feasibility study to lay out the proposed improvements, calculate associated costs and lay out project implementation/cost share. Specific items included in the proposal include:

- Research of existing documents and record drawings
- Preparation of preliminary study exhibits and geometric layout
- Coordination with BNSF Railway and MnDOT Rail Office
- Estimated preliminary quantities.
- Preparation of preliminary cost estimates and cost share.
- Preparation of draft feasibility study that includes a review of existing conditions, proposed improvements, estimated project costs, project implementation and discussion of conclusions and recommendations.

- Review preliminary study with City staff, Utilities Commission and Council.
- Prepare final study based on City review comments.

WSN proposes to perform the services described above on an hourly basis, in accordance with the attached fee schedule, for the Not To Exceed amount of $6,300. We propose to have the study completed within 60 days following receipt of the notice to proceed. If you are in agreement with our proposed scope of services, please sign and return one copy of this letter to us as our authorization to proceed.

We realize this is an important project to the City and for that reason, we welcome the opportunity to sit down with you and your staff to go over this proposal and review the approach and work tasks we have listed. If necessary, we will revise the proposal to better conform to the needs of the City for this project.

We thank you for giving us the opportunity to submit this proposal and look forward to working with City staff to make this proposed project a reality.

Sincerely,

Aric Welch, P.E.

Proposed by Widseth Smith Nolting

Aric Welch, Vice President

Kevin B. Wernberg, Executive Vice President

Approved as to form and content by the Baxter City Attorney

J. Brad Person *Date*

Accepted by the City of Baxter: The above proposal and previously submitted General Provisions of Professional Services Agreement are satisfactory and WSN is authorized to do the work as specified. Payment will be made monthly in accordance with the terms on the fee schedule.

Date *Date*

WIDSETH SMITH NOLTING

2016 FEE SCHEDULE

CLASSIFICATION	HOURLY RATE
Engineer/Architect/Surveyor/Scientist/Wetland Specialist/Geographer	
Level I	$ 92.00
Level II	$110.00
Level III	$135.00
Level IV	$145.00
Level V	$160.00
Technician	
Level I	$ 60.00
Level II	$ 74.00
Level III	$ 90.00
Level IV	$107.00
Level V	$112.00
Computer Systems Specialist	$120.00
Senior Funding Specialist	$ 105.00
Marketing Specialist	$ 95.00
Funding Specialist	$ 75.00
Administrative Assistant	$ 53.00

OTHER EXPENSES	RATE
Mileage (Federal Standard Rate) *subject to change*	$0.56/mile
Meals/Lodging	Cost
Stakes & Expendable Materials	Cost
Waste Water Sampler	$40.00/Day
ISCO Flow Recorder	$60.00/Day
Photoionization Detection Meter	$80.00/Day
Explosimeter	$50.00/Day
Product Recovery Equipment	$35.00/Day
Survey-Grade GPS (Global Positioning System)	$75.00/Hour
Mapping GPS (Global Positioning System)	$150.00/Day
Soil Drilling Rig	$35.00/Hour
Groundwater Sampling Equipment	$75.00/Day
Subcontractors	Cost Plus 10%

Reproduction Costs	RATE
Black & White Copies: 8 ½ x 11	$0.10
Black & White Copies: 11 x 17	$0.50
Black & White Copies: 24 x 36	$3.00
Color Copies: 8 ½ x 11	$2.00
Color Copies: 11 x 17	$4.00
Color Copies: 24 x 36	$12.00
Color Plots: 42 x 48	$22.00

All Accounts due and payable within 30 days of billing. A finance charge is computed on a periodic rate of 1% per month which is an annual percentage rate of 12% on any previous balance not paid within 30 days.

These rates are effective for only the year indicated and are subject to yearly adjustments which reflect equitable changes in the various components.

WIDSETH SMITH NOLTING

Engineering | Architecture | Surveying | Environmental

General Provisions of Professional Services Agreement

These General Provisions are intended to be used in conjunction with a letter-type Agreement or a Request for Services between Widseth Smith Nolting, a Minnesota Corporation, hereinafter referred to as WSN, and a CLIENT, wherein the CLIENT engages WSN to provide certain Architectural, and/or Engineering services on a Project.

As used herein, the term "this Agreement" refers to (1) the WSN Proposal Letter which becomes the Letter Agreement upon its acceptance by the Client, (2) these General Provisions and (3) any attached Exhibits, as if they were part of one and the same document. With respect to the order of precedence, any attached Exhibits shall govern over these General Provisions and the Letter Agreement shall govern over any attached Exhibits and these General Provisions. These documents supersede all prior communications and constitute the entire Agreement between the parties. Amendments to this Agreement must be in writing and signed by both CLIENT and WSN.

ARTICLE 1. PERIOD OF SERVICE

The term of this Agreement for the performance of services hereunder shall be as set forth in the Letter Agreement. In this regard, any lump sum or estimated maximum payment amounts set forth in the Letter Agreement have been established in anticipation of an orderly and continuous progress of the Project in accordance with the schedule set forth in the Letter Agreement or any Exhibits attached thereto. WSN shall be entitled to an equitable adjustment to its fee should there be an interruption of services, or amendment to the schedule.

ARTICLE 2. SCOPE OF SERVICES

The scope of services covered by this Agreement shall be as set forth in the Letter Agreement or a Request for Services. Such scope of services shall be adequately described in order that both the CLIENT and WSN have an understanding of the expected work to be performed.

If WSN is of the opinion that any work they have been directed to perform is beyond the Scope of this Agreement, or that the level of effort required significantly exceeds that estimated due to changed conditions and thereby constitutes extra work, they shall notify the CLIENT of that fact. Extra work, additional compensation for same, and extension of time for completion shall be covered by a revision to the Letter Agreement or Request for Services and entered into by both parties.

ARTICLE 3. COMPENSATION TO WSN

A. Compensation to WSN for services described in this Agreement shall be on a Lump Sum basis, Percentage of Construction, and/or Hourly Rate basis as designated in the Letter Agreement and as hereinafter described.

1. A Lump Sum method of payment for WSN's services shall apply to all or parts of a work scope where WSN's tasks can be readily defined and/or where the level of effort required to accomplish such tasks can be estimated with a reasonable degree of accuracy. The CLIENT shall make monthly payments to WSN within 30 days of date of invoice based on an estimated percentage of completion of WSN's services.

2. A Percentage of Construction or an Hourly Rate method of payment of WSN's services shall apply to all or parts of a work scope where WSN's tasks cannot be readily defined and/or where the level of effort required to accomplish such tasks cannot be estimated with any reasonable degree of accuracy. Under an Hourly Rate method of payment WSN shall be paid for the actual hours worked on the Project by WSN technical personnel times an hourly billing rate established for each employee. Hourly billing rates shall include compensation for all salary costs, payroll burden, general, and administrative overhead and professional fee. In a Percentage of Construction method of payment, final compensation will be based on actual bids if the project is bid and WSN's estimate to the CLIENT if the project is not bid. A rate schedule shall be furnished by WSN to CLIENT upon which to base periodic payments to WSN.

3. In addition to the foregoing, WSN shall be reimbursed for items and services as set forth in the Letter Agreement or Fee Schedule and the following Direct Expenses when incurred in the performance of the work:

   (a) Travel and subsistence.
   (b) Specialized computer services or programs.
   (c) Outside professional and technical services with cost defined as the amount billed WSN.
   (d) Identifiable reproduction and reprographic costs.
   (e) Other expenses for items such as permit application fees, license fees, or other additional items and services whether or not specifically identified in the Letter Agreement or Fee Schedule.

4. The CLIENT shall make monthly payments to WSN within 30 days of date of invoice based on computations made in accordance with the above charges for services provided and expenses incurred to date, accompanied by supporting evidence as available.

B. The CLIENT will pay the balance stated on the invoice unless CLIENT notifies WSN in writing of the particular item that is alleged to be incorrect within 15 days from the date of invoice, in which case, only the disputed item will remain undue until resolved by the parties. All accounts unpaid after 30 days from the date of original invoice shall be subject to a service charge of 1 % per month, or the maximum amount authorized by law, whichever is less. WSN shall be entitled to recover all reasonable costs and disbursements, including reasonable attorneys fees, incurred in connection with collecting amount owed by CLIENT. In addition, WSN may, after giving seven days written notice to the CLIENT, suspend services and withhold deliverables under this Agreement until WSN has been paid in full for all amounts then due for services, expenses and charges. CLIENT agrees that WSN shall not be responsible for any claim for delay or other consequential damages arising from suspension of services hereunder. Upon payment in full by Client and WSN's resumption of services, the time for performance of WSN's services shall be equitably adjusted to account for the period of suspension and other reasonable time necessary to resume performance.

ARTICLE 4. ABANDONMENT, CHANGE OF PLAN AND TERMINATION

Either Party has the right to terminate this Agreement upon seven days written notice. In addition, the CLIENT may at any time, reduce the scope of this Agreement. Such reduction in scope shall be set forth in a written notice from the CLIENT to WSN. In the event of unresolved dispute over change in scope or changed conditions, this Agreement may also be terminated upon seven days written notice as provided above.

In the event of termination, and upon payment in full for all work performed and expenses incurred to the date of termination, documents that are identified as deliverables under the Letter Agreement whether finished or unfinished shall be made available by WSN to the CLIENT pursuant to Article 5, and there shall be no further payment obligation of the CLIENT to WSN under this Agreement except for payment of an amount for WSN's anticipated profit on the value of the services not performed by WSN and computed in accordance with the provisions of Article 3 and the Letter Agreement.

In the event of a reduction in scope of the Project work, WSN shall be paid for the work performed and expenses incurred on the Project work thus reduced and for any completed and abandoned work, for which payment has not been made, computed in accordance with the provisions of Article 3 and the Letter Agreement.

ARTICLE 5. DISPOSITION OF PLANS, REPORTS AND OTHER DATA

All reports, plans, specifications, field data and notes and other documents, including all documents on electronic media, prepared by WSN or its consultants are Instruments of Service and shall remain the property of WSN or its consultants, respectively. WSN and its subconsultants retain all common law, statutory and other reserved rights, including, without limitation, copyright. WSN and its subconsultants maintain the right to determine if production will be made, and allowable format for production, of any electronic media or data to CLIENT or any third-party. Upon payment in full of monies due pursuant to the Agreement, WSN shall make hard copies available to the CLIENT, of all documents that are identified as deliverables under the Letter Agreement. If the documents have not been finished (including, but not limited to, completion of final quality control), then WSN shall have no liability for any claims expenses or damages that may arise out of items that could have been corrected during completion/quality control. Any Instruments of Service provided are not intended or represented to be suitable for reuse by the CLIENT or others on extensions of the Project or any other project. Any modification or reuse without written verification or adaptation by WSN for the specific purpose intended will be at CLIENT's sole risk and without liability or legal exposure to WSN. CLIENT shall indemnify, defend and hold harmless WSN from any and all suits or claims of third parties arising out of use of unfinished documents, or modification or reuse of finished documents, which is not specifically verified, adapted, or authorized in writing by WSN. This indemnity shall survive the termination of this Agreement.

Should WSN choose to deliver to CLIENT documents in electronic form, CLIENT acknowledges that differences may exist between any electronic files delivered and the printed hard-copy. Copies of documents that may be relied upon by CLIENT are limited to the printed hard-copies that are signed and/or sealed by WSN. Files in electronic form are only for convenience of CLIENT. Any conclusion or information obtained or derived from such electronic documents will be at user's sole risk. CLIENT acknowledges that the useful life of some forms of electronic media may be limited because of deterioration of the media or obsolescence of the computer hardware and/or software systems. Therefore, WSN makes no representation that such media will be fully usable beyond 30 days from date of delivery to CLIENT.

ARTICLE 6. CLIENT'S ACCEPTANCE BY PURCHASE ORDER OR OTHER MEANS

In lieu of or in addition to signing the acceptance blank on the Letter Agreement, the CLIENT may accept this Agreement by permitting WSN to commence work on the project or by issuing a purchase order signed by a duly authorized representative. Such purchase order shall incorporate by reference the terms and conditions of this Agreement. In the event of a conflict between the terms and conditions of this Agreement and those contained in the CLIENT's purchase order, the terms and conditions of this Agreement shall govern. Notwithstanding any purchase order provisions to the contrary, no warrantees, express or implied, are made by WSN.

ARTICLE 7. CLIENT'S RESPONSIBILITIES

A. To permit WSN to perform the services required hereunder, the CLIENT shall supply, in proper time and sequence, the following at no expense to WSN:

1. Provide all program, budget, or other necessary information regarding its requirements as necessary for orderly progress of the work.

2. Designate in writing, a person to act as CLIENT's representative with respect to the services to be rendered under this Agreement. Such person shall have authority to transmit instructions, receive instructions, receive information, interpret and define CLIENT's policies with respect to WSN's services.

3. Furnish, as required for performance of WSN's services (except to the extent provided otherwise in the Letter Agreement or any Exhibits attached hereto), data prepared by or services of others, including without limitation, core borings, probes and subsurface explorations, hydrographic and geohydrologic surveys, laboratory tests and inspections of samples, materials and equipment; appropriate professional interpretations of all of the foregoing; environmental assessment and impact statements; property, boundary easement, right-of-way, topographic and utility surveys; property descriptions; zoning, deed and other land use restriction; and other special data not covered in the Letter Agreement or any Exhibits attached hereto.

4. Provide access to, and make all provisions for WSN to enter upon publicly or privately owned property as required to perform the work.

5. Act as liaison with other agencies or involved parties to carry out necessary coordination and negotiations; furnish approvals and permits from all governmental authorities having jurisdiction over the Project and such approvals and consents from others as may be necessary for completion of the Project.

6. Examine all reports, sketches, drawings, specifications and other documents prepared and presented by WSN, obtain advice of an attorney, insurance counselor or others as CLIENT deems necessary for such examination and render in writing, decisions pertaining thereto within a reasonable time so as not to delay the services of WSN.

7. Give prompt written notice to WSN whenever CLIENT observes or otherwise becomes aware of any development that affects the scope of timing of WSN's services or any defect in the work of Construction Contractor(s), Consultants or WSN.

8. Initiate action, where appropriate, to identify and investigate the nature and extent of asbestos and/or pollution in the Project and to abate and/or remove the same as may be required by federal, state or local statute, ordinance, code, rule, or regulation now existing or hereinafter enacted or amended. For purposes of this Agreement, "pollution" and "pollutant" shall mean any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, alkalis, chemicals and hazardous or toxic waste. Hazardous or toxic waste means any substance, waste pollutant or contaminant now or hereafter included within such terms under any federal, state or local statute, ordinance, code, rule or regulation now existing or hereinafter enacted or amended. Waste further includes materials to be recycled, reconditioned or reclaimed.

   If WSN encounters, or reasonably suspects that it has encountered, asbestos or pollution in the Project, WSN shall cease activity on the Project and promptly notify the CLIENT, who shall proceed as set forth above. Unless otherwise specifically provided in the Letter Agreement, the services to be provided by WSN do not include identification of asbestos or pollution, and WSN has no duty to identify or attempt to identify the same within the area of the Project.

   With respect to the foregoing, CLIENT acknowledges and agrees that WSN is not a user, handler, generator, operator, treater, storer, transporter or disposer of asbestos or pollution which may be encountered by WSN on the Project. It is further understood and agreed that services WSN will undertake for CLIENT may be uninsurable obligations involving the presence or potential presence of asbestos or pollution. Therefore, CLIENT agrees, except (1) such liability as may arise out of WSN's sole negligence in the performance of services under this Agreement or (2) to the extent of insurance coverage available for the claim, to hold harmless, indemnify and defend WSN and WSN's officers, subcontractor(s), employees and agents from and against any and all claims, lawsuits, damages, liability and costs, including, but not limited to, costs of defense, arising out of or in any way connected with the presence, discharge, release, or escape of asbestos or pollution. This indemnification is intended to apply only to existing conditions and not to conditions caused or created by WSN. This indemnification shall survive the termination of this Agreement.

9. Provide such accounting, independent cost estimating and insurance counseling services as may be required for the Project, such legal services as CLIENT may require or WSN may reasonably request with regard to legal issues pertaining to the Project including any that may be raised by Contractor(s), such auditing service as CLIENT may require to ascertain how or for what purpose any Contractor has used the moneys paid under the construction contract, and such inspection services as CLIENT may require to ascertain that Contractor(s) are complying with any law, rule, regulation, ordinance, code or order applicable to their furnishing and performing the work.

10. Provide "record" drawings and specifications for all existing physical features, structures, equipment, utilities, or facilities which are pertinent to the Project, to the extent available.

11. Provide other services, materials, or data as may be set forth in the Letter Agreement or any Exhibits attached hereto.

B. WSN may use any CLIENT provided information in performing its services. WSN shall be entitled to rely on the accuracy and completeness of information furnished by the CLIENT. If WSN finds that any information furnished by the CLIENT is in error or is inadequate for its purpose, WSN shall endeavor to notify the CLIENT. However, WSN shall not be held responsible for any errors or omissions that may arise as a result of erroneous or incomplete information provided by CLIENT.

ARTICLE 8. OPINIONS OF COST

Opinions of probable project cost, construction cost, financial evaluations, feasibility studies, economic analyses of alternate solutions and utilitarian considerations of operations and maintenance costs provided for in the Letter Agreement or any Exhibits attached hereto are to be made on the basis of WSN's experience and qualifications and represent WSN's judgment as an experienced design professional. It is recognized, however, that WSN does not have control over the cost of labor, material, equipment or services furnished by others or over market conditions or contractors' methods of determining their prices, and that any evaluation of any facility to be constructed, or acquired, or work to be performed on the basis of WSN's cost opinions must, of necessity, be speculative until completion of construction or acquisition. Accordingly, WSN does not guarantee that proposals, bids or actual costs will not substantially vary from opinions, evaluations or studies submitted by WSN to CLIENT hereunder.

ARTICLE 9. CONSTRUCTION PHASE SERVICES

CLIENT acknowledges that it is customary for the architect or engineer who is responsible for the preparation and furnishing of Drawings and Specifications and other construction-related documents to be employed to provide professional services during the Bidding and Construction Phases of the Project, (1) to interpret and clarify the documentation so furnished and to modify the same as circumstances revealed during bidding and construction may dictate, (2) in connection with acceptance of substitute or equal items of materials and equipment proposed by bidders and Contractor(s), (3) in connection with approval of shop drawings and sample submittals, and (4) as a result of and in response to WSN's detecting in advance of performance of affected work inconsistencies or irregularities in such documentation. CLIENT agrees that if WSN is not employed to provide such professional services during the Bidding (if the work is put out for bids) and the Construction Phases of the Project, WSN will not be responsible for, and CLIENT shall indemnify and hold WSN, its officers, consultant(s), subcontractor(s), employees and agents harmless from, all claims, damages, losses and expenses including attorneys' fees arising out of, or resulting from, any interpretation, clarification, substitution acceptance, shop drawing or sample approval or modification of such documentation issued or carried out by CLIENT or others. Nothing contained in this paragraph shall be construed to release WSN, its officers, consultant(s), subcontractor(s), employees and agents from liability for failure to perform in accordance with professional standards any duty or responsibility which WSN has undertaken or assumed under this Agreement.

ARTICLE 10. REVIEW OF SHOP DRAWINGS AND SUBMITTALS

WSN may review and approve or take other appropriate action on the contractor's submittals or shop drawings for the limited purpose of checking for general conformance with information given and design concept expressed in the Contract Documents. Review and/or approval of submittals is not conducted for the purpose of determining accuracy and completeness of other details or for substantiating instructions for installation or performance of equipment or systems, all of which remain the exclusive responsibility of the contractor. WSN's review and/or approval shall not constitute approval of safety precautions, or any construction means, methods, techniques, sequences or procedures. WSN's approval of a specific item shall not indicate approval of an assembly of which the item is a component. WSN's review and/or approval shall not relieve contractor for any deviations from the requirements of the contract documents nor from the responsibility for errors or omissions on items such as sizes, dimensions, quantities, colors, or locations. Contractor shall remain solely responsible for compliance with any manufacturer requirements and recommendations.

ARTICLE 11. REVIEW OF PAY APPLICATIONS

If included in the scope of services, any review or certification of any pay applications, or certificates of completion shall be based upon WSN's observation of the Work and on the data comprising the contractor's application for payment, and shall indicate that to the best of WSN's knowledge, information and belief, the quantity and quality of the Work is in general conformance with the Contract Documents. The issuance of a certificate for payment or substantial completion is not a representation that WSN has made exhaustive or continuous inspections, reviewed construction means and methods, verified any back-up data provided by the contractor, or ascertained how or for what purpose the contractor has used money previously paid by CLIENT.

ARTICLE 12. REQUESTS FOR INFORMATION (RFI)
If included in the scope of services, WSN will provide, with reasonable promptness, written responses to requests from any contractor for clarification, interpretation or information on the requirements of the Contract Documents. If Contractor's RFI's are, in WSN's professional opinion, for information readily apparent from reasonable observation of field conditions or review of the Contract Documents, or are reasonably inferable therefrom, WSN shall be entitled to compensation for Additional Services for WSN's time in responding to such requests. CLIENT may wish to make the Contractor responsible to the CLIENT for all such charges for additional services as described in this article.

ARTICLE 13. CONSTRUCTION OBSERVATION
If included in the scope of services, WSN will make site visits as specified in the scope of services in order to observe the progress of the Work completed. Such site visits and observations are not intended to be an exhaustive check or detailed inspection, but rather are to allow WSN to become generally familiar with the Work. WSN shall keep CLIENT informed about the progress of the Work and shall advise the CLIENT about observed deficiencies in the Work. WSN shall not supervise, direct or have control over any Contractor's work, nor have any responsibility for the construction means, methods, techniques, sequences or procedures selected by the Contractor nor for the Contractor's safety precautions or programs in connection with the Work. These rights and responsibilities are solely those of the Contractor. WSN shall not be responsible for any acts or omissions of any Contractor and shall not be responsible for any Contractor's failure to perform the Work in accordance with the Contract Documents or any applicable laws, codes, regulations, or industry standards.

If construction observation services are not included in the scope of services, CLIENT assumes all responsibility for interpretation of the Contract Documents and for construction observation, and the CLIENT waives any claims against WSN that are connected with the performance of such services.

ARTICLE 14. BETTERMENT
If, due to WSN's negligence, a required item or component of the Project is omitted from the construction documents, WSN shall not be responsible for paying the cost required to add such item or component to the extent that such item or component would have been required and included in the original construction documents. In no event, will WSN be responsible for any cost or expense that provides betterment or upgrades or enhances the value of the Project.

ARTICLE 15. CERTIFICATIONS, GUARANTEES AND WARRANTIES
WSN shall not be required to sign any documents, no matter by who requested, that would result in WSN having to certify, guarantee or warrant the existence of conditions whose existence WSN cannot ascertain. CLIENT agrees not to make resolution of any dispute with WSN or payment of any amount due to WSN in any way contingent upon WSN signing such certification.

ARTICLE 16. CONTINGENCY FUND
CLIENT and WSN agree that certain increased costs and changes may be required because of possible omissions, ambiguities or inconsistencies in the plans and specifications prepared by WSN, and therefore, that the final construction cost of the Project may exceed the bids, contract amount or estimated construction cost. CLIENT agrees to set aside a reserve in the amount of 5% of the Project construct costs as a contingency to be used, as required, to pay for any such increased costs and changes. CLIENT further agrees to make no claim by way of direct or third-party action against WSN with respect to any increased costs within the contingency because of such changes or because of any claims made by any Contractor relating to such changes.

ARTICLE 17. INSURANCE
WSN shall procure and maintain insurance for protection from claims against it under workers' compensation acts, claims for damages because of bodily injury including personal injury, sickness or disease or death of any and all employees or of any person other than such employees, and from claims against it for damages because of injury to or destruction of property including loss of use resulting therefrom.

Also, WSN shall procure and maintain professional liability insurance for protection from claims arising out of performance of professional services caused by any negligent act, error, or omission for which WSN is legally liable.

Certificates of insurance will be provided to the CLIENT upon request.

ARTICLE 18. ASSIGNMENT
Neither Party to this Agreement shall transfer, sublet or assign any rights or duties under or interest in this Agreement, including but not limited to monies that are due or monies that may be due, without the prior written consent of the other party. Subcontracting to subconsultants, normally contemplated by WSN as a generally accepted business practice, shall not be considered an assignment for purposes of this Agreement.

ARTICLE 19. NO THIRD-PARTY BENEFICIARIES
Nothing contained in this Agreement shall create a contractual relationship or a cause of action by a third-party against either WSN or CLIENT. WSN's services pursuant to this Agreement are being performed solely for the CLIENT's benefit, and no other party or entity shall have any claim against WSN because of this Agreement.

ARTICLE 20. CORPORATE PROTECTION
It is intended by the parties to this Agreement that WSN's services in connection with the Project shall not subject WSN's individual employees, officers or directors to any personal legal exposure for the risks associated with this Project. Therefore, and notwithstanding anything to the contrary, CLIENT agrees that as the CLIENT's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted only against WSN, a Minnesota corporation, and not against any of WSN's individual employees, officers or directors.

ARTICLE 21. CONTROLLING LAW
This Agreement is to be governed by the laws of the State of Minnesota.

ARTICLE 22. ASSIGNMENT OF RISK
In recognition of the relative risks and benefits of the project to both the CLIENT and WSN, the risks have been allocated such that the CLIENT agrees, to the fullest extent permitted by law, to limit the liability of WSN, employees of WSN and sub-consultants, to the CLIENT and to all construction contractors, subcontractors, agents and assigns on the project for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, so that total aggregate liability of WSN, employees of WSN and sub-consultants, to all those named shall not exceed $1,000,000 on this project. Such claims and causes include, but are not limited to negligence, professional errors or omissions, strict liability, breach of contract or warranty.

ARTICLE 23. NON-DISCRIMINATION
WSN will comply with the provisions of applicable federal, state and local statutes, ordinances and regulations pertaining to human rights and non-discrimination.

ARTICLE 24. SEVERABILITY
Any provision or portion thereof in this Agreement which is held to be void or unenforceable under any law shall be deemed stricken and all remaining provisions shall continue to be valid and binding between CLIENT and WSN. All limits of liability and indemnities contained in the Agreement shall survive the completion or termination of the Agreement.

ARTICLE 25. PRE-LIEN NOTICE
Pursuant to the Agreement WSN will be performing services in connection with improvements of real property and may contract with subconsultants or subcontractors as appropriate to furnish labor, skill and/or materials in the performance of the work. Accordingly, CLIENT is entitled under Minnesota law to the following Notice:

(a) Any person or company supplying labor or materials for this improvement to your property may file a lien against your property if that person or company is not paid for its contributions.

(b) Under Minnesota law, you have the right to pay persons who supplied labor or materials for this improvement directly and deduct this amount from our contract price, or withhold the amounts due from us until 120 days after completion of the improvement unless we give you a lien waiver signed by persons who supplied any labor or materials for the improvement and who gave you timely notice.

WIDSETH SMITH NOLTING

Baxter/Brainerd
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidsethSmithNolting.com

January 26, 2016

Trevor Walter
Public Works Director/City Engineer
City of Baxter
P.O. Box 2626
Baxter, MN 56425

RE: Proposal for Engineering Services
Long-Range Utility Mapping Update
Baxter, MN

Dear Mr. Walter:

Thank you for the opportunity to submit our proposal for updating the City of Baxter long-range utility extension map. The current map was last updated in 2007 and numerous modifications are necessary. Our proposal includes the following anticipated tasks:

- Incorporate existing sanitary sewer and water mains that have been installed since the 2007 update. A partial list of completed projects would include: Isle Drive Extension, North Inglewood Drive Improvements, Novotny / Dellwood Improvements, Independence Road, Falcon Drive, Woida / Wildflower / Franklin, Baxter Town Center Improvements, and the South Perch Lake Improvements.

- Incorporate information from new or updated feasibility studies or reviews that have been completed since the 2007 update. A partial list of these studies include: Eagle Drive Area, North Forestview Drive, North Perch Lake, Northeast Baxter Area, Excelsior / Fairview / Dellwood Intersection and the long range water study.

- Incorporate private development project information that have been completed since the 2007 update. Examples of these would include Costco and JC Penney. We would need to work with City staff to obtain a list of these types of projects and obtain the data relative to utility work.

- Revise the existing sanitary sewer and water distribution service boundaries based on the completed projects.

- Review and update (as needed) all future water and sewer extensions shown on the map. This would involve checking all proposed pipe sizes, elevations, and bury depths based on currently available elevations from aerial topography.

- Preparation of a new water distribution and sanitary sewer long-range utility extension maps for use by the City.

WIDSETH SMITH NOLTING

23-

WSN proposes to perform the services described on an hourly basis for the **Not To Exceed amount of $9,500**. We will keep City staff informed of the project status and engineering budget on a regular basis. We propose to have all work and submittals completed within 60 days after receipt of the signed agreement.

If you are in agreement with our proposed scope of services, please sign and return one copy of this letter to us as our authorization to proceed.

We realize this is an important project to the City and welcome the opportunity to sit down with you and your staff to go over this proposal and review the approach and work tasks we have listed. If necessary, we will revise the proposal to better conform to the needs of the City for this project. We thank you for giving us the opportunity to submit this proposal and look forward to working with City staff to make this proposed project a reality.

Sincerely,

Aric Welch, P.E.

Proposed by Widseth Smith Nolting

Aric Welch, Vice President

Kevin B. Wernberg, Executive Vice President

Approved as to form and content by the Baxter City Attorney

J. Brad Person *Date*

Accepted by the City of Baxter: The above proposal and previously submitted General Provisions of Professional Services Agreement are satisfactory and WSN is authorized to do the work as specified. Payment will be made monthly in accordance with the terms on the fee schedule.

Date *Date*

WIDSETH SMITH NOLTING

2016 FEE SCHEDULE

CLASSIFICATION	HOURLY RATE
Engineer/Architect/Surveyor/Scientist/Wetland Specialist/Geographer	
Level I	$ 92.00
Level II	$110.00
Level III	$135.00
Level IV	$145.00
Level V	$160.00
Technician	
Level I	$ 60.00
Level II	$ 74.00
Level III	$ 90.00
Level IV	$107.00
Level V	$112.00
Computer Systems Specialist	$120.00
Senior Funding Specialist	$ 105.00
Marketing Specialist	$ 95.00
Funding Specialist	$ 75.00
Administrative Assistant	$ 53.00

OTHER EXPENSES	RATE
Mileage (Federal Standard Rate) *subject to change*	$0.56/mile
Meals/Lodging	Cost
Stakes & Expendable Materials	Cost
Waste Water Sampler	$40.00/Day
ISCO Flow Recorder	$60.00/Day
Photoionization Detection Meter	$80.00/Day
Explosimeter	$50.00/Day
Product Recovery Equipment	$35.00/Day
Survey-Grade GPS (Global Positioning System)	$75.00/Hour
Mapping GPS (Global Positioning System)	$150.00/Day
Soil Drilling Rig	$35.00/Hour
Groundwater Sampling Equipment	$75.00/Day
Subcontractors	Cost Plus 10%

Reproduction Costs	RATE
Black & White Copies: 8 ½ x 11	$0.10
Black & White Copies: 11 x 17	$0.50
Black & White Copies: 24 x 36	$3.00
Color Copies: 8 ½ x 11	$2.00
Color Copies: 11 x 17	$4.00
Color Copies: 24 x 36	$12.00
Color Plots: 42 x 48	$22.00

All Accounts due and payable within 30 days of billing. A finance charge is computed on a periodic rate of 1% per month which is an annual percentage rate of 12% on any previous balance not paid within 30 days.

These rates are effective for only the year indicated and are subject to yearly adjustments which reflect equitable changes in the various components.

WIDSETH SMITH NOLTING

Engineering | Architecture | Surveying | Environmental

General Provisions of Professional Services Agreement

These General Provisions are intended to be used in conjunction with a letter-type Agreement or a Request for Services between Widseth Smith Nolting, a Minnesota Corporation, hereinafter referred to as WSN, and a CLIENT, wherein the CLIENT engages WSN to provide certain Architectural, and/or Engineering services on a Project.

As used herein, the term "this Agreement" refers to (1) the WSN Proposal Letter which becomes the Letter Agreement upon its acceptance by the Client, (2) these General Provisions and (3) any attached Exhibits, as if they were part of one and the same document. With respect to the order of precedence, any attached Exhibits shall govern over these General Provisions, and the Letter Agreement shall govern over any attached Exhibits and these General Provisions. These documents supersede all prior communications and constitute the entire Agreement between the parties. Amendments to this Agreement must be in writing and signed by both CLIENT and WSN.

ARTICLE 1. PERIOD OF SERVICE

The term of this Agreement for the performance of services hereunder shall be as set forth in the Letter Agreement. In this regard, any lump sum or estimated maximum payment amounts set forth in the Letter Agreement have been established in anticipation of an orderly and continuous progress of the Project in accordance with the schedule set forth in the Letter Agreement or any Exhibits attached thereto. WSN shall be entitled to an equitable adjustment to its fee should there be an interruption of services, or amendment to the schedule.

ARTICLE 2. SCOPE OF SERVICES

The scope of services covered by this Agreement shall be as set forth in the Letter Agreement or a Request for Services. Such scope of services shall be adequately described in order that both the CLIENT and WSN have an understanding of the expected work to be performed.

If WSN is of the opinion that any work they have been directed to perform is beyond the Scope of this Agreement, or that the level of effort required significantly exceeds that estimated due to changed conditions and thereby constitutes extra work, they shall notify the CLIENT of that fact. Extra work, additional compensation for same, and extension of time for completion shall be covered by a revision to the Letter Agreement or Request for Services and entered into by both parties.

ARTICLE 3. COMPENSATION TO WSN

A. Compensation to WSN for services described in this Agreement shall be on a Lump Sum basis, Percentage of Construction, and/or Hourly Rate basis as designated in the Letter Agreement and as hereinafter described.

1. A Lump Sum method of payment for WSN's services shall apply to all or parts of a work scope where WSN's tasks can be readily defined and/or where the level of effort required to accomplish such tasks can be estimated with a reasonable degree of accuracy. The CLIENT shall make monthly payments to WSN within 30 days of date of invoice based on an estimated percentage of completion of WSN's services.

2. A Percentage of Construction or an Hourly Rate method of payment of WSN's services shall apply to all or parts of a work scope where WSN's tasks cannot be readily defined and/or where the level of effort required to accomplish such tasks cannot be estimated with any reasonable degree of accuracy. Under an Hourly Rate method of payment. WSN shall be paid for the actual hours worked on the Project by WSN technical personnel times an hourly billing rate established for each employee. Hourly billing rates shall include compensation for all salary costs, payroll burden, general, and administrative overhead and professional fee. In a Percentage of Construction method of payment, final compensation will be based on actual bids if the project is bid and WSN's estimate to the CLIENT if the project is not bid. A rate schedule shall be furnished by WSN to CLIENT upon which to base periodic payments to WSN.

3. In addition to the foregoing, WSN shall be reimbursed for items and services as set forth in the Letter Agreement or Fee Schedule and the following Direct Expenses when incurred in the performance of the work:

   (a) Travel and subsistence.
   (b) Specialized computer services or programs.
   (c) Outside professional and technical services with cost defined as the amount billed WSN.
   (d) Identifiable reproduction and reprographic costs.
   (e) Other expenses for items such as permit application fees, license fees, or other additional items and services whether or not specifically identified in the Letter Agreement or Fee Schedule.

4. The CLIENT shall make monthly payments to WSN within 30 days of date of invoice based on computations made in accordance with the above charges for services provided and expenses incurred to date, accompanied by supporting evidence as available.

B. The CLIENT will pay the balance stated on the invoice unless CLIENT notifies WSN in writing of the particular item that is alleged to be incorrect within 15 days from the date of invoice, in which case, only the disputed item will remain undue until resolved by the parties. All accounts unpaid after 30 days from the date of original invoice shall be subject to a service charge of 1 % per month, or the maximum amount authorized by law, whichever is less. WSN shall be entitled to recover all reasonable costs and disbursements, including reasonable attorneys fees, incurred in connection with collecting amount owed by CLIENT. In addition, WSN may, after giving seven days written notice to the CLIENT, suspend services and withhold deliverables under this Agreement until WSN has been paid in full for all amounts then due for services, expenses and charges. CLIENT agrees that WSN shall not be responsible for any claim for delay or other consequential damages arising from suspension of services hereunder. Upon payment in full by Client and WSN's resumption of services, the time for performance of WSN's services shall be equitably adjusted to account for the period of suspension and other reasonable time necessary to resume performance.

ARTICLE 4. ABANDONMENT, CHANGE OF PLAN AND TERMINATION

Either Party has the right to terminate this Agreement upon seven days written notice. In addition, the CLIENT may at any time, reduce the scope of this Agreement. Such reduction in scope shall be set forth in a written notice from the CLIENT to WSN. In the event of unresolved dispute over change in scope or changed conditions, this Agreement may also be terminated upon seven days written notice as provided above.

In the event of termination, and upon payment in full for all work performed and expenses incurred to the date of termination, documents that are identified as deliverables under the Letter Agreement whether finished or unfinished shall be made available by WSN to the CLIENT pursuant to Article 5, and there shall be no further payment obligation of the CLIENT to WSN under this Agreement except for payment of an amount for WSN's anticipated profit on the value of the services not performed by WSN and computed in accordance with the provisions of Article 3 and the Letter Agreement.

In the event of a reduction in scope of the Project work, WSN shall be paid for the work performed and expenses incurred on the Project work thus reduced and for any completed and abandoned work, for which payment has not been made, computed in accordance with the provisions of Article 3 and the Letter Agreement.

ARTICLE 5. DISPOSITION OF PLANS, REPORTS AND OTHER DATA

All reports, plans, specifications, field data and notes and other documents, including all documents on electronic media, prepared by WSN or its consultants are Instruments of Service and shall remain the property of WSN or its consultants, respectively. WSN and its subconsultants retain all common law, statutory and other reserved rights, including, without limitation, copyright. WSN and its subconsultants maintain the right to determine if production will be made, and allowable format for production, of any electronic media or data to CLIENT or any third-party. Upon payment in full of monies due pursuant to the Agreement, WSN shall make hard copies available to the CLIENT, of all documents that are identified as deliverables under the Letter Agreement. If the documents have not been finished (including, but not limited to, completion of final quality control), then WSN shall have no liability for any claims expenses or damages that may arise out of items that could have been corrected during completion/quality control. Any Instruments of Service provided are not intended or represented to be suitable for reuse by the CLIENT or others on extensions of the Project or any other project. Any modification or reuse without written verification or adaptation by WSN for the specific purpose intended will be at CLIENT's sole risk and without liability or legal exposure to WSN. CLIENT shall indemnify, defend and hold harmless WSN from any and all suits or claims of third parties arising out of use of unfinished documents, or modification or reuse of finished documents, which is not specifically verified, adapted, or authorized in writing by WSN. This indemnity shall survive the termination of this Agreement.

Should WSN choose to deliver to CLIENT documents in electronic form, CLIENT acknowledges that differences may exist between any electronic files delivered and the printed hard-copy. Copies of documents that may be relied upon by CLIENT are limited to the printed hard-copies that are signed and/or sealed by WSN. Files in electronic form are only for convenience of CLIENT. Any conclusion or information obtained or derived from such electronic documents will be at user's sole risk. CLIENT acknowledges that the useful life of some forms of electronic media may be limited because of deterioration of the media or obsolescence of the computer hardware and/or software systems. Therefore, WSN makes no representation that such media will be fully usable beyond 30 days from date of delivery to CLIENT.

ARTICLE 6. CLIENT'S ACCEPTANCE BY PURCHASE ORDER OR OTHER MEANS

In lieu of or in addition to signing the acceptance blank on the Letter Agreement, the CLIENT may accept this Agreement by permitting WSN to commence work on the project or by issuing a purchase order signed by a duly authorized representative. Such purchase order shall incorporate by reference the terms and conditions of this Agreement. In the event of a conflict between the terms and conditions of this Agreement and those contained in the CLIENT's purchase order, the terms and conditions of this Agreement shall govern. Notwithstanding any purchase order provisions to the contrary, no warrantees, express or implied, are made by WSN.

ARTICLE 7. CLIENT'S RESPONSIBILITIES

A. To permit WSN to perform the services required hereunder, the CLIENT shall supply, in proper time and sequence, the following at no expense to WSN:

1. Provide all program, budget, or other necessary information regarding its requirements as necessary for orderly progress of the work.

2. Designate in writing, a person to act as CLIENT's representative with respect to the services to be rendered under this Agreement. Such person shall have authority to transmit instructions, receive instructions, receive information, interpret and define CLIENT's policies with respect to WSN's services.

3. Furnish, as required for performance of WSN's services (except to the extent provided otherwise in the Letter Agreement or any Exhibits attached hereto), data prepared by or services of others, including without limitation, core borings, probes and subsurface explorations, hydrographic and geohydrologic surveys, laboratory tests and inspections of samples, materials and equipment; appropriate professional interpretations of all of the foregoing; environmental assessment and impact statements; property, boundary easement, right-of-way, topographic and utility surveys; property descriptions; zoning, deed and other land use restriction; and other special data not covered in the Letter Agreement or any Exhibits attached hereto.

4. Provide access to, and make all provisions for WSN to enter upon publicly or privately owned property as required to perform the work.

5. Act as liaison with other agencies or involved parties to carry out necessary coordination and negotiations; furnish approvals and permits from all governmental authorities having jurisdiction over the Project and such approvals and consents from others as may be necessary for completion of the Project.

6. Examine all reports, sketches, drawings, specifications and other documents prepared and presented by WSN, obtain advice of an attorney, insurance counselor or others as CLIENT deems necessary for such examination and render in writing, decisions pertaining thereto within a reasonable time so as not to delay the services of WSN.

7. Give prompt written notice to WSN whenever CLIENT observes or otherwise becomes aware of any development that affects the scope of timing of WSN's services or any defect in the work of Construction Contractor(s), Consultants or WSN.

8. Initiate action, where appropriate, to identify and investigate the nature and extent of asbestos and/or pollution in the Project and to abate and/or remove the same as may be required by federal, state or local statute, ordinance, code, rule, or regulation now existing or hereinafter enacted or amended. For purposes of this Agreement, "pollution" and "pollutant" shall mean any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, alkalis, chemicals and hazardous or toxic waste. Hazardous or toxic waste means any substance, waste pollutant or contaminant now or hereafter included within such terms under any federal, state or local statute, ordinance, code, rule or regulation now existing or hereinafter enacted or amended. Waste further includes materials to be recycled, reconditioned or reclaimed.

   If WSN encounters, or reasonably suspects that it has encountered, asbestos or pollution in the Project, WSN shall cease activity on the Project and promptly notify the CLIENT, who shall proceed as set forth above. Unless otherwise specifically provided in the Letter Agreement, the services to be provided by WSN do not include identification of asbestos or pollution, and WSN has no duty to identify or attempt to identify the same within the area of the Project.

   With respect to the foregoing, CLIENT acknowledges and agrees that WSN is not a user, handler, generator, operator, treater, storer, transporter or disposer of asbestos or pollution which may be encountered by WSN on the Project. It is further understood and agreed that services WSN will undertake for CLIENT may be uninsurable obligations involving the presence or potential presence of asbestos or pollution. Therefore, CLIENT agrees, except (1) such liability as may arise out of WSN's sole negligence in the performance of services under this Agreement or (2) to the extent of insurance coverage available for the claim, to hold harmless, indemnify and defend WSN and WSN's officers, subcontractor(s), employees and agents from and against any and all claims, lawsuits, damages, liability and costs, including, but not limited to, costs of defense, arising out of or in any way connected with the presence, discharge, release, or escape of asbestos or pollution. This indemnification is intended to apply only to existing conditions and not to conditions caused or created by WSN. This indemnification shall survive the termination of this Agreement.

9. Provide such accounting, independent cost estimating and insurance counseling services as may be required for the Project, such legal services as CLIENT may require or WSN may reasonably request with regard to legal issues pertaining to the Project including any that may be raised by Contractor(s), such auditing service as CLIENT may require to ascertain how or for what purpose any Contractor has used the moneys paid under the construction contract, and such inspection services as CLIENT may require to ascertain that Contractor(s) are complying with any law, rule, regulation, ordinance, code or order applicable to their furnishing and performing the work.

10. Provide "record" drawings and specifications for all existing physical features, structures, equipment, utilities, or facilities which are pertinent to the Project, to the extent available.

11. Provide other services, materials, or data as may be set forth in the Letter Agreement or any Exhibits attached hereto.

B. WSN may use any CLIENT provided information in performing its services. WSN shall be entitled to rely on the accuracy and completeness of information furnished by the CLIENT. If WSN finds that any information furnished by the CLIENT is in error or is inadequate for its purpose, WSN shall endeavor to notify the CLIENT. However, WSN shall not be held responsible for any errors or omissions that may arise as a result of erroneous or incomplete information provided by CLIENT.

ARTICLE 8. OPINIONS OF COST

Opinions of probable project cost, construction cost, financial evaluations, feasibility studies, economic analyses of alternate solutions and utilitarian considerations of operations and maintenance costs provided for in the Letter Agreement or any Exhibits attached hereto are to be made on the basis of WSN's experience and qualifications and represent WSN's judgment as an experienced design professional. It is recognized, however, that WSN does not have control over the cost of labor, material, equipment or services furnished by others or over market conditions or contractors' methods of determining their prices, and that any evaluation of any facility to be constructed, or acquired, or work to be performed on the basis of WSN's cost opinions must, of necessity, be speculative until completion of construction or acquisition. Accordingly, WSN does not guarantee that proposals, bids or actual costs will not substantially vary from opinions, evaluations or studies submitted by WSN to CLIENT hereunder.

ARTICLE 9. CONSTRUCTION PHASE SERVICES

CLIENT acknowledges that it is customary for the architect or engineer who is responsible for the preparation and furnishing of Drawings and Specifications and other construction-related documents to be employed to provide professional services during the Bidding and Construction Phases of the Project, (1) to interpret and clarify the documentation so furnished and to modify the same as circumstances revealed during bidding and construction may dictate, (2) in connection with acceptance of substitute or equal items of materials and equipment proposed by bidders and Contractor(s), (3) in connection with approval of shop drawings and sample submittals, and (4) as a result of and in response to WSN's detecting in advance of performance of affected work inconsistencies or irregularities in such documentation. CLIENT agrees that if WSN is not employed to provide such professional services during the Bidding (if the work is put out for bids) and the Construction Phases of the Project, WSN will not be responsible for, and CLIENT shall indemnify and hold WSN, its officers, consultant(s), subcontractor(s), employees and agents harmless from, all claims, damages, losses and expenses including attorneys' fees arising out of, or resulting from, any interpretation, clarification, substitution acceptance, shop drawing or sample approval or modification of such documentation issued or carried out by CLIENT or others. Nothing contained in this paragraph shall be construed to release WSN, its officers, consultant(s), subcontractor(s), employees and agents from liability for failure to perform in accordance with professional standards any duty or responsibility which WSN has undertaken or assumed under this Agreement.

ARTICLE 10. REVIEW OF SHOP DRAWINGS AND SUBMITTALS

WSN may review and approve or take other appropriate action on the contractor's submittals or shop drawings for the limited purpose of checking for general conformance with information given and design concept expressed in the Contract Documents. Review and/or approval of submittals is not conducted for the purpose of determining accuracy and completeness of other details or for substantiating instructions for installation or performance of equipment or systems, all of which remain the exclusive responsibility of the contractor. WSN's review and/or approval shall not constitute approval of safety precautions, or any construction means, methods, techniques, sequences or procedures. WSN's approval of a specific item shall not indicate approval of an assembly of which the item is a component. WSN's review and/or approval shall not relieve contractor for any deviations from the requirements of the contract documents nor from the responsibility for errors or omissions on items such as sizes, dimensions, quantities, colors, or locations. Contractor shall remain solely responsible for compliance with any manufacturer requirements and recommendations.

ARTICLE 11. REVIEW OF PAY APPLICATIONS

If included in the scope of services, any review or certification of any pay applications, or certificates of completion shall be based upon WSN's observation of the Work and on the data comprising the contractor's application for payment, and shall indicate that to the best of WSN's knowledge, information and belief, the quantity and quality of the Work is in general conformance with the Contract Documents. The issuance of a certificate for payment or substantial completion is not a representation that WSN has made exhaustive or continuous inspections, reviewed construction means and methods, verified any back-up data provided by the contractor, or ascertained how or for what purpose the contractor has used money previously paid by CLIENT.

ARTICLE 12. REQUESTS FOR INFORMATION (RFI)
If included in the scope of services, WSN will provide, with reasonable promptness, written responses to requests from any contractor for clarification, interpretation or information on the requirements of the Contract Documents. If Contractor's RFI's are, in WSN's professional opinion, for information readily apparent from reasonable observation of field conditions or review of the Contract Documents, or are reasonably inferable therefrom, WSN shall be entitled to compensation for Additional Services for WSN's time in responding to such requests. CLIENT may wish to make the Contractor responsible to the CLIENT for all such charges for additional services as described in this article.

ARTICLE 13. CONSTRUCTION OBSERVATION
If included in the scope of services, WSN will make site visits as specified in the scope of services in order to observe the progress of the Work completed. Such site visits and observations are not intended to be an exhaustive check or detailed inspection, but rather are to allow WSN to become generally familiar with the Work. WSN shall keep CLIENT informed about the progress of the Work and shall advise the CLIENT about observed deficiencies in the Work. WSN shall not supervise, direct or have control over any Contractor's work, nor have any responsibility for the construction means, methods, techniques, sequences or procedures selected by the Contractor nor for the Contractor's safety precautions or programs in connection with the Work. These rights and responsibilities are solely those of the Contractor. WSN shall not be responsible for any acts or omissions of any Contractor and shall not be responsible for any Contractor's failure to perform the Work in accordance with the Contract Documents or any applicable laws, codes, regulations, or industry standards.

If construction observation services are not included in the scope of services, CLIENT assumes all responsibility for interpretation of the Contract Documents and for construction observation, and the CLIENT waives any claims against WSN that are connected with the performance of such services.

ARTICLE 14. BETTERMENT
If, due to WSN's negligence, a required item or component of the Project is omitted from the construction documents, WSN shall not be responsible for paying the cost required to add such item or component to the extent that such item or component would have been required and included in the original construction documents. In no event, will WSN be responsible for any cost or expense that provides betterment or upgrades or enhances the value of the Project.

ARTICLE 15. CERTIFICATIONS, GUARANTEES AND WARRANTIES
WSN shall not be required to sign any documents, no matter by who requested, that would result in WSN having to certify, guarantee or warrant the existence of conditions whose existence WSN cannot ascertain. CLIENT agrees not to make resolution of any dispute with WSN or payment of any amount due to WSN in any way contingent upon WSN signing such certification.

ARTICLE 16. CONTINGENCY FUND
CLIENT and WSN agree that certain increased costs and changes may be required because of possible omissions, ambiguities or inconsistencies in the plans and specifications prepared by WSN, and therefore, that the final construction cost of the Project may exceed the bids, contract amount or estimated construction cost. CLIENT agrees to set aside a reserve in the amount of 5% of the Project construct costs as a contingency to be used, as required, to pay for any such increased costs and changes. CLIENT further agrees to make no claim by way of direct or third-party action against WSN with respect to any increased costs within the contingency because of such changes or because of any claims made by any Contractor relating to such changes.

ARTICLE 17. INSURANCE
WSN shall procure and maintain insurance for protection from claims against it under workers' compensation acts, claims for damages because of bodily injury including personal injury, sickness or disease or death of any and all employees or of any person other than such employees, and from claims against it for damages because of injury to or destruction of property including loss of use resulting therefrom.

Also, WSN shall procure and maintain professional liability insurance for protection from claims arising out of performance of professional services caused by any negligent act, error, or omission for which WSN is legally liable.

Certificates of insurance will be provided to the CLIENT upon request.

ARTICLE 18. ASSIGNMENT
Neither Party to this Agreement shall transfer, sublet or assign any rights or duties under or interest in this Agreement, including but not limited to monies that are due or monies that may be due, without the prior written consent of the other party. Subcontracting to subconsultants, normally contemplated by WSN as a generally accepted business practice, shall not be considered an assignment for purposes of this Agreement.

ARTICLE 19. NO THIRD-PARTY BENEFICIARIES
Nothing contained in this Agreement shall create a contractual relationship or a cause of action by a third-party against either WSN or CLIENT. WSN's services pursuant to this Agreement are being performed solely for the CLIENT's benefit, and no other party or entity shall have any claim against WSN because of this Agreement.

ARTICLE 20. CORPORATE PROTECTION
It is intended by the parties to this Agreement that WSN's services in connection with the Project shall not subject WSN's individual employees, officers or directors to any personal legal exposure for the risks associated with this Project. Therefore, and notwithstanding anything to the contrary, CLIENT agrees that as the CLIENT's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted only against WSN, a Minnesota corporation, and not against any of WSN's individual employees, officers or directors.

ARTICLE 21. CONTROLLING LAW
This Agreement is to be governed by the laws of the State of Minnesota.

ARTICLE 22. ASSIGNMENT OF RISK
In recognition of the relative risks and benefits of the project to both the CLIENT and WSN, the risks have been allocated such that the CLIENT agrees, to the fullest extent permitted by law, to limit the liability of WSN, employees of WSN and sub-consultants, to the CLIENT and to all construction contractors, subcontractors, agents and assigns on the project for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, so that total aggregate liability of WSN employees of WSN and sub-consultants, to all those named shall not exceed $1,000,000 on this project. Such claims and causes include, but are not limited to negligence, professional errors or omissions, strict liability, breach of contract or warranty.

ARTICLE 23. NON-DISCRIMINATION
WSN will comply with the provisions of applicable federal, state and local statutes, ordinances and regulations pertaining to human rights and non-discrimination.

ARTICLE 24. SEVERABILITY
Any provision or portion thereof in this Agreement which is held to be void or unenforceable under any law shall be deemed stricken and all remaining provisions shall continue to be valid and binding between CLIENT and WSN. All limits of liability and indemnities contained in the Agreement shall survive the completion or termination of the Agreement.

ARTICLE 25. PRE-LIEN NOTICE
Pursuant to the Agreement WSN will be performing services in connection with improvements of real property and may contract with subconsultants or subcontractors as appropriate to furnish labor, skill and/or materials in the performance of the work. Accordingly, CLIENT is entitled under Minnesota law to the following Notice:

(a) Any person or company supplying labor or materials for this improvement to your property may file a lien against your property if that person or company is not paid for its contributions.

(b) Under Minnesota law, you have the right to pay persons who supplied labor or materials for this improvement directly and deduct this amount from our contract price, or withhold the amounts due from us until 120 days after completion of the improvement unless we give you a lien waiver signed by persons who supplied any labor or materials for the improvement and who gave you timely notice.

WIDSETH SMITH NOLTING

Brainerd/Baxter
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidsethSmithNolting.com

January 18, 2016

Trevor Walter - Director of Public Works / City Engineer
City of Baxter
P.O. Box 2626
Baxter, MN 56425

Re: Yearend 2015 Road Status Update - MSAS Mileage Certification

Dear Mr. Walter:

We have reviewed roadwork completed during 2015 and updated the City map and worksheets to reflect the changes. The following is a summary of the changes for your review.

STATE-AID ROUTES

- ✓ Updated MSAS Route 105 (Clearwater Road) to reflect the full depth reclamation improvements made this year as part of the "2015 Mill and Overlay" project. The total mileage length did not change.

- ✓ Updated MSAS Route 106 (Excelsior Road) to reflect improvements made this year as part of the "2015 Excelsior Road Improvements" project. The total length decreased by 17 feet as a result of the re-alignment, but the mileage did not change. Since the roadway was re-aligned and reconstructed, we have lengthened segment 050, and eliminated 060 and 070. These changes will be made when the Needs are updated.

- ✓ Updated MSAS Route 107 (Inglewood Drive) to reflect improvements made this year as part of the "2015 Inglewood Drive Improvements" project. The Total length increased only by 29 feet but rounding will result in the addition of 0.01 miles to the MSAS system. **We did not make this change at this time and will update the Needs this year and make the change on the Certificate of Mileage for year-end 2016.**

- ✓ Updated MSAS Route 114 (Novotny Road) to reflect improvements made this year as part of the "2015 Dellwood Drive and Novotny Road Improvements" project. Total mileage length did not change.

- ✓ Updated MSAS Route 115 (Edgewood Drive) to reflect the full depth reclamation improvements made this year as part of the "2015 Mill and Overlay" project. The total mileage length did not change.

- ✓ Updated MSAS Route 116 (Dellwood Drive) segment 070 to reflect improvements made this year as part of the "2015 Dellwood Drive and Novotny Road Improvements" project. With the intersection of Novotny Road moving north, the total length increased by 44 feet and rounding will result in the addition of 0.01 miles to the MSAS system. **We did not make this change at this time and will update the Needs this year and make the change on the Certificate of**

Mileage for year-end 2016. Segments 030 and 040 were updated to reflect the full depth reclamation improvements made this year as part of the "2015 Mill and Overlay" project and segment 060 was updated to include sealcoating activities.

- ✓ **Modifications did not change the State-Aid mileage. The two minor changes noted above that would have resulted in changes to the MSAS system mileage will be added to the Needs this year and incorporated into the Certificate of Mileage for year-end 2016.**

- ✓ **We also contacted State-Aid regarding termini points for State-Aid and local routes. Our question related to ¾ intersection where the roadway does not connect to lanes in both directions. Since ¾ intersection are not common for most cities, we wanted to confirm where termini points should be calculated. State-Aid staff confirmed termini points for all routes should be calculated to the mid-point between lanes. This will result in some State-Aid route distances being modified slightly and could result in mileage modifications. We will make these changes as part of the Needs this year, for incorporation into the Certificate of Mileage at the end of 2016.**

LOCAL IMPROVED BITUMINOUS ROUTES

- ✓ Updated Audubon Way to reflect extension of the termini point to the center of the lanes.
- ✓ Updated Baxter Drive length to reflect extension of the termini point to the center of the lanes.
- ✓ Added sealcoating as a maintenance activity to segments of Berrywood Drive.
- ✓ Updated Briarwood Lane from gravel to bituminous as constructed with the "2015 Briarwood Lane Improvements" project.
- ✓ Added sealcoating as a maintenance activity to Camdon Road.
- ✓ Added sealcoating as a maintenance activity to segments of Cedar Scenic Road.
- ✓ Added sealcoating as a maintenance activity to segments of Cherrywood Drive.
- ✓ Updated lengths of Conservation Drive to match revised centerline location of Excelsior Road done as part of the "2015 Excelsior Road Improvements" project.
- ✓ Added sealcoating as a maintenance activity to Cottage Grove Drive and Cottage Grove Terrace.
- ✓ Updated Dellwood Drive between Novotny Road and CSAH 49 (north City Limits) to reflect changes done as part of the "2015 Dellwood Drive and Novotny Road Improvements" project.
- ✓ Added sealcoating as a maintenance activity to segments of Dogwood Drive.
- ✓ Updated segments of Edgewood Drive to reflect the full-depth reclamation activates done as part of the "2015 Mill and Overlay" project.
- ✓ Updated a segment of Edgewood Drive to reflect extension of the termini point to the center of the lanes.

- ✓ Added sealcoating as a maintenance activity to segments of Edgewood Drive.
- ✓ Updated segments of Elder Drive to reflect the full-depth reclamation activates done as part of the "2015 Mill and Overlay" project.
- ✓ Updated a segment of Elder Drive to reflect extension of the termini point to the center of the lanes.
- ✓ Updated Fairview Road on the east side of Inglewood Drive to reflect changes done as part of the "2015 Inglewood Drive Improvements" project.
- ✓ Updated segments of Fairview Road to reflect the full-depth reclamation activates done as part of the "2015 Mill and Overlay" project.
- ✓ Updated segments of Foley Road to reflect the full-depth reclamation activates done as part of the "2015 Mill and Overlay" project.
- ✓ Updated a segment of Glory Road to reflect extension of the termini point to the center of the lanes.
- ✓ Lengthened Independence Road to reflect changes done as part of the "2015 Independence Road Improvements" project.

  Added sealcoating as a maintenance activity to segments of Industrial Park Road.
- ✓ Updated Inglewood Drive north of Woida Road to reflect changed done as part of the "2015 Inglewood North Improvements" project, constructed by Crow Wing County.
- ✓ Added Isle Court to reflect changes done as part of the "2015 Isle Drive Extension and Isle Drive Court Improvements" project.
- ✓ Updated Isle Drive from the clinic to CSAH 48 to reflect construction of the roadway done as part of the "2015 Isle Drive Extension and Isle Drive Court Improvements" project.
- ✓ Added sealcoating as a maintenance activity to segments of Isle Drive.
- ✓ Updated Joler Road length to match revised centerline location of Briarwood Lane constructed as part of the "2015 Briarwood Lane Improvements" project.
- ✓ Updated a segment of Knollwood Drive North to reflect extension of the termini point to the center of the lanes.
- ✓ Updated a segment of Lake Forest Road to reflect extension of the termini point to the center of the lanes.
- ✓ Updated a segment of Meredith Drive to reflect extension of the termini point to the center of the lanes
- ✓ Added sealcoating as a maintenance activity to Northwoods Drive.
- ✓ Updated a segment of Novotny Road to reflect extension of the termini point to the center of the lanes.

- ✓ Updated Timberwood Drive Road length to reflect extension of the termini point to the center of the lanes.
- ✓ **Modifications subtracted 0.33 miles from the gravel surfaced routes and added 2.14 miles to the bituminous surfaced routes for an overall increase of 1.81 miles to the local improved mileage.**

LOCAL NON–EXISTING ROUTES

- ✓ Removed Isle Drive Extension since roadway was constructed as part of the "2015 Isle Drive Extension and Isle Drive Court Improvements" project.
- ✓ Updated length of Mile Lake Drive to reflect extension of the termini point to the center of the lanes.
- ✓ **Modification removed 0.80 miles of non-existing local routes.**

PRIVATE ROUTES

- ✓ Removed Highland Scenic Court since access was replaced by Isle Court as part of the "2015 Isle Drive Extension and Isle Drive Court Improvements" project.
- ✓ **Modification removed 0.14 miles of existing private routes.**

COUNTY ROUTES

- ✓ Updated Ironwood Drive (CR 170), south of CSAH 48 to reflect changes done as part of the "2015 Isle Drive Extension and Isle Drive Court Improvements" project. Also renamed this section of roadway to Mapleton Road.
- ✓ Increased length of CSAH 77, west of TH 371, to reflect changes to the City Limits.
- ✓ Updated length of CSAH 49, east of TH 371, to reflect extension of the termini point to the center of the lanes.
- ✓ **Modification added 0.13 miles to the existing CSAH system and added 0.01 miles to the existing County (non CSAH) routes.**

TRUNK HIGHWAY ROUTES

- ✓ Updated TH 371 distances based on City Limit modifications, current aerial photography and center of lane locations.
- ✓ Updated TH 210 distances based on current aerial photography and center of lane locations.
- ✓ **Modification added 0.05 miles to the existing Trunk Highway system.**

Based on the above we modified the City worksheets and map and submitted the "2016 Annual Certificate of Mileage" to Mn/DOT. The following is a summary of our actions:

- Increased the Trunk Highway mileage 0.05 miles.
- Increased the CSAH mileage 0.13 miles.
- Increased the County Road (non CSAH) mileage 0.01 miles.
- Increased the Local Improved roadway mileage (bituminous and gravel) by 1.81 miles.
- Did not change the Local MSAS (State-Aid) roadway mileage.
- Decreased the Local Non-Existing roadway mileage by 0.80 miles.
- Decreased the Private (not City maintained) roadway mileage by 0.14 miles.
- Based on the above information, the maximum allowable MSAS roadway mileage in Baxter is 17.62 miles. Currently the City has 17.06 miles designated, resulting in 0.56 mile of non-designated eligible mileage in 2016.

Please note, we have also updated the roadway worksheet by adding a "Maintained" column. Data in this column lists any seal coating, mill /overlay or full-depth reclamation activities that were done during the year. For purposes of the worksheet and map, we assumed full-depth reclamation and mill / overlay work were considered improvements. Seal coating was considered only maintenance and did not change the last year improved.

We will forward electronic versions of the following information for your use:

- ✓ Copy of the "2015 Annual Certificate of Mileage"
- ✓ Worksheets listing all roadway miles with changed items listed in red
- ✓ Year-end roadway drawing

If you have any questions or concerns, please call.

Sincerely,

Widseth Smith Nolting & Associates, Inc.

Kevin Wernberg, PE

WIDSETH SMITH NOLTING

Brainerd/Baxter
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218.829.2517
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WidsethSmithNolting.com

MEMO

Date: December 30, 2015
To: **Trevor Walters, City of Baxter**
From: Brian Ross
Cc: Aric Welch
Project Name: Holiday Station Store Contamination
Project No.: 102B0000.038
Subject: **Contamination Risks**

The Holiday Station Store petroleum release site, MPCA Leak No. 18101, at Excelsior Road and State Highway 371 was discovered on July 27, 2010. The release was apparently of gasoline from piping near the tanks. The release was called into the MPCA shortly after discovery and MPCA has been requiring investigation and cleanup following their guidance documents for petroleum releases.

Holiday has a consultant, Antea Group, involved and they have completed soil borings and monitoring wells at the site starting in December 2010. They submitted a free product recovery report in December 2012, an investigation report in May 2014, a focused investigation work plan in September of 2014, and, most recently, a focused investigation report to MPCA in September 2015. In talking with Christine Tufts of Antea, she indicated that the free product no longer remains and there is very limited contamination discharging into the stormwater ditch along Highway 371. The MPCA's main concern at this point is the long term effect of the contamination on the water supply line from the City of Baxter water main to the Holiday store because it is PVC and extends along the edge of the contamination area. PVC water lines in contact with petroleum, especially gasoline, can soften PVC lines and the contamination can set up a concentration gradient resulting in contamination getting into the water in the lines.

The City requested we provide information on the risks from contamination to: 1) the municipal water mains; 2) the municipal sewer lines; and 3) the ditch and stormwater system that goes across Highway 371 and under the Mills Fleet Farm facility.

The risk to the City of Baxter watermain in the store area is minimal. A watermain extends north-south along the east side of the Holiday Station store property. In talking with Doug Schultz, he indicates this line is ductile iron pipe (DIP). The DIP watermain is in the contamination plume, but is not at risk for contamination leaking into the water because it is metal and it is a pressurized line. Special care would need to be taken if the line was depressurized for repair so that contamination would not get into the main. If a repair is needed within the contamination plume, any excavated contaminated soil would need to be removed and treated in accordance with MPCA petroleum-contaminated soil requirements. Regarding other watermains in the area, Doug indicated that there is possibly a PVC watermain extending from near the south drive entrance to the store, west along Excelsior to Edgewood Drive southwest of the store. This watermain is outside the plume extent, and therefore, is not at risk from the contamination even if it is a PVC watermain.

The municipal sanitary sewer lines could be at risk for vapor impacts if free product leaked into the sewer. Being that free product is no longer present, the risk of vapor impacts is small; furthermore, Antea has completed vapor surveys of the manholes in the area as required by MPCA and have not found any explosive vapors. It is possible that dissolved phase petroleum could seep into the sewer lines if line infiltration is a problem, but the dissolved phase does not present a vapor risk and can be treated by the Brainerd Public Utilities wastewater treatment plant.

A potential remedy to the contamination affecting the water supply line for the store, which is reportedly PVC, is to replace the plastic water line with a copper line. To do this, the excavation

area will need to be dewatered. Belair Excavating has contacted the City to determine what the limits are for discharging to the municipal sanitary sewer for the contaminated water from dewatering. The limits would be dependent on what Brainerd PUC can treat at their plant and Brainerd PUC in communication with the MPCA can decide on this limit. It is likely the dewatering water would need to be aerated before discharge into the sanitary sewer to reduce the levels of dissolved petroleum constituents for wastewater treatment. The levels of dissolved phase petroleum compounds satisfactory for treatment in the wastewater treatment plant should not generate any problems in the City of Baxter's municipal sewer lines or lift stations.

The contamination discharging into the ditch along Highway 371 adjacent to the property has been monitored by Antea and MPCA has reviewed the results. Because the free product has been addressed and is not being found in the monitoring wells, the water discharging into the ditch would have some dissolved phase petroleum. The amount of groundwater with dissolved phase petroleum discharging to the ditch would be small and again would not be at a level that would generate petroleum vapors in the storm sewer lines. The risks for vapors in the storm sewer lines would be low and have been monitored by Holiday's consultants and reviewed by MPCA.

In summary, the release is now over five years old and has been investigated and monitored by Holiday and their consultant. Product removal from the monitoring wells has been completed and free product does not remain in significant amounts. MPCA has monitored the results of the investigation and is requiring a plan to address the long term concerns with the dissolved phase contamination and the PVC water supply line. The risks to the City of Baxter infrastructure have been addressed during the investigation process and we believe the risks are currently low for the impacts to the City's infrastructure.

If you have questions or need clarifications about the above information, please give me a call at 218-316-3628.

Total Gals
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
18,920,000
14,240,000
14,808,000
18,126,000
14,133,000
18,907,000
18,171,000
18,606,000
17,149,000
15,785,000
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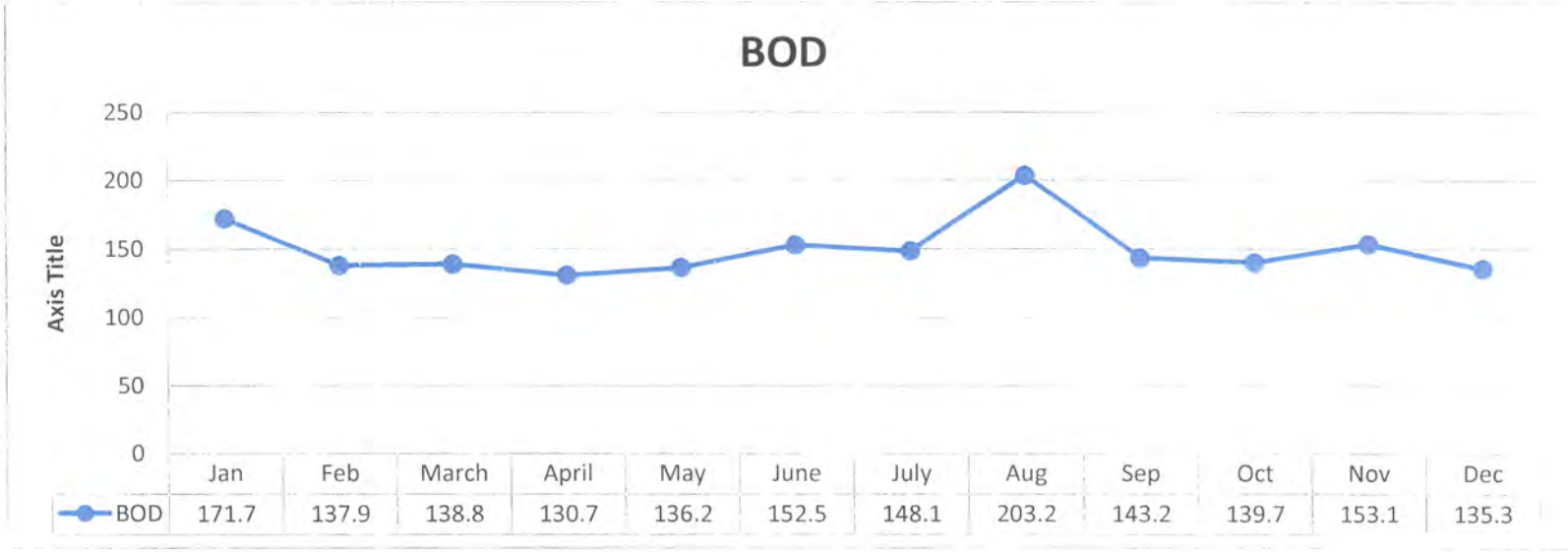
15,060,000
Jan
Feb
March
April
May
June
July
Aug
Sep
Oct
Nov
Dec
Total Gals


BOD
250
200
150
100
50
0
Axis Title
Jan Feb March April May June July Aug Sep Oct Nov Dec
BOD 171.7 137.9 138.8 130.7 136.2 152.5 148.1 203.2 143.2 139.7 153.1 135.3

BRAINERD PUBLIC UTILITIES
8027 Highland Scenic Road • P.O. Box 373 • Brainerd, Minnesota 56401-0373
COMMISSION SECRETARY Business Office 218-829-2846 FAX 218-829-0301
SUPERINTENDENT OF UTILITIES Repair Service Operations 218-829-2809 FAX 218-829-2808
INTERNET WEB SITE www.bpu.org

BRAINERD PUBLIC UTILITIES
WASTEWATER TREATMENT CHARGES FOR THE
CITY OF BAXTER
for
December 2015

Baxter Monthly Flow and Loading Data

Number of days in billing period	28
Total flow for period (gallons)	15,060,000
Average Daily Flow (MGD)	0.538
CBOD (mg/L)	135.3
TSS (mg/L)	244.6
TP (mg/L)	5.5

I. Base Charges

Base Capital Charge	$0.00
Base Operating Charge	31,438.60
Subtotal for Period	**$31,438.60**

II. Excess Charges

Excess Capital Charge	$0.00
Excess Operating Charges	
Excess Flow	0.00
Excess Loading	0.00
Excess Strength	0.00
Subtotal for Period	**$0.00**

III. Base and Excess Charge Adjustments
('True up' from previous year based on actual Operating Costs)

Operating Charges Previously Billed	$0.00
True-up Charges (Credit) for 2014	0.00
Excess Capital Charge Adjustment	0.00
Excess Operating Charge Adjustments	
Excess Flow Adjustment	0.00
Excess Loading Adjustment	0.00
Excess Strength Adjustment	0.00
Subtotal for Period	**$0.00**
Total for Period	**$31,438.60**

Monthly Input Data
for
December 2015

Current Month	December
Year	2015
Number of days in billing period	28

Flow

	Brainerd	Baxter	Total
Total flow for period (gallons)	39,840,000	15,060,000	54,900,000
Average Daily Flow (MGD)	1.423	0.538	1.961

Loading

	Brainerd				Baxter			
Measurement Number	CBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TM (ng/L)	CBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TM (ng/L)
1	75			0	195			0
2	69				104			
3	114				90			
4	127	254			216	366		
5	99	168			104	134		
6	72	142	3.31		101	144	5.86	
7	159	342			118	294		
8	172	228			135	148		
9	110	255	4.28		93	148	5.20	
10	114	192			273	600		
11	159	340			111	166		
12	162	356			83	130		
13		234				316		
14								
15								
16								
17								
18								
19								
20								
Average Daily Loadings (conc.)	119	251	3.8	-	135	245	5.5	-
Average Daily Loadings (lbs/d)	1,417	2,982	45	-	607	1,098	25	-
Average Daily Loadings (mg/d)	-	-	-	-	-	-	-	-

Most Recent Twelve Months Input Data

Brainerd Most Recent Twelve Months Data

	Jan-15	Feb-15	Mar-15	Apr-15	Apr-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Average	mg/L
Flow (MGD)	1.324	1.237	1.252	1.199	1.549	1.665	1.434	1.330	1.337	1.292	1.352	1.423	1.366	
CBOD (lbs/d)	1,269	1,346	1,280	1,286	1,385	1,391	1,284	1,141	1,464	1,610	1,254	1,417	1,344	118
TSS (lbs/d)	2,585	2,477	2,262	2,321	2,709	4,025	3,218	2,790	5,024	4,403	2,365	2,982	3,097	272
TP (lbs/d)	46	49	47	44	53	86	57	47	63	52	49	45		

Baxter Most Recent Twelve Months Data

	Jan-15	Feb-15	Mar-15	Apr-15	Apr-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15		
Flow (MGD)	0.541	0.491	0.548	0.604	0.471	0.610	0.586	0.581	0.572	0.544	0.521	0.538	0.551	
CBOD (lbs/d)	774	565	635	659	535	776	724	986	683	634	665	607	687	150
TSS (lbs/d)	938	677	976	1,198	855	1,287	1,367	1,393	1,294	1,190	903	1,098	1,098	239
TP (lbs/d)	28	20	21	27	24	36	30	28	27	26	25	25		

Base Charge Calculations

for

December 2015

Base Capital Charge Calculations

(Based on the estimated Phase I capital costs, actual costs will be dependent upon interest rates, construction bids, etc.)

Capital Cost: $0

PFA Interest Rate: 3.233%

Repayment Period (years) 20

	Weight	Brainerd Allocation		Baxter Allocation		Subtotals
	(%)	(%)	($)	(%)	($)	($)
Flow	30%	66.67%	$0	33.33%	$0	$0
CBOD	30%	66.67%	$0	33.33%	$0	$0
TSS	30%	66.67%	$0	33.33%	$0	$0
TP	10%	66.67%	$0	33.33%	$0	$0
		Totals	$0		$0	$0

	Brainerd	Baxter
Monthly Charges	**$0.00**	**$0.00**

Base Operating Charge Calculations

Brainerd

Current Month Flow and Loading Data

Average Daily Flow (MGD)		1.423
CBOD (mg/L)		119.3
TSS (mg/L)		251.1
TP (mg/L)		3.8

Current Month Operating Charge

	Base Unit Cost		Mass	Monthly Cost
	($)	Units	(lbs/day)	($)
Flow	$0.596	1000 gal	NA	$23,747
CBOD	$0.576	lb CBOD	1,417	$22,870
TSS	$0.287	lb TSS	2,982	$23,925
TP	$5.545	lb TP	45	$6,997
			Subtotal	**$77,538.35**

Baxter

Current Month Flow and Loading Data

Average Daily Flow (MGD)		0.538
CBOD (mg/L)		135.3
TSS (mg/L)		244.6
TP (mg/L)		5.5

Current Month Operating Charge

	Base Unit Cost		Mass	Monthly Cost
	($)	Units	(lbs/day)	($)
Flow	$0.596	1000 gal	NA	$8,977
CBOD	$0.576	lb CBOD	607	$9,798
TSS	$0.287	lb TSS	1,098	$8,810
TP	$5.545	lb TP	25	$3,854
			Subtotal	**$31,438.60**

Memo

To: Gordon Heitke, City of Baxter

From: Nick Anhut and Rebecca Kurtz, Ehlers

Date: December 31, 2015

Subject: Gas and Electric Franchise Fee Structure Update

The City requested that Ehlers provide information on steps and best practices for implementing gas and electric franchise fees and propose a fee structure to fund a portion of the City's street maintenance and street lighting programs. Similar to past iterations, this memo is intended to revisit an overview of the process and provide an update on the proposed franchise fee structure, potential revenues, and impacts.

Why Establish a Franchise Fee?

Cities in Minnesota charge franchise fees to utility service providers as an alternative means to raise revenues for the City's general fund or for a specific project. This authority is granted under Minnesota Statutes 216B.36. Franchise fees have become a more common and desirable alternative to taxes for funding street maintenance in the absence of other funding mechanisms. Currently over 65 cities in Minnesota have implemented franchise fees to assist with raising revenues. The franchise fees are usually a fixed amount charged per month in most communities, but in some cases they are based on a percentage of gross revenues or at a rate per kilowatt hour or therm. The fees may also factor in the provider's pricing tiers. Generally, fees will vary by type of customer – whether it be residential or commercial – and they may be capped per customer.

There are several benefits to establishing franchise fees:

- Not subject to loss of revenue as a result of State budget issues.
- Reliable and stable source of revenue irrespective of economic conditions and State budgets.
- Growth in revenues is proportional to the growth in business activity and population.
- New residents immediately begin contributing to the cost of city services. There is approximately a 2-year lag between a new building being built and the city realizing the tax benefit.
- Tax-exempt properties, including State, county and school facilities along with churches and other non-profits, contribute their respective share to the revenue stream.
- Opportunity to balance the financial obligations between payer classes (commercial and residential) without being based on property valuation.

While there are several benefits, we recognize that there are also disadvantages:

- May be viewed as another form of taxes.
- May be perceived as a means of generating new revenues without annual notification and approval, as with taxes.
- May be unpopular with certain property or user classes.
- May be strongly opposed by non-profits that do not believe their benefits equal their costs.
- May need to be adjusted periodically for inflationary and other factors.

Implementation Process

We have communicated with the four utility providers in the Baxter area regarding the process of implementing a franchise fee. Each franchise agreement should be reviewed by legal counsel to ensure the proper enabling language is included which permits such a fee to be charged. When the ability to charge the fee is established, the City must adopt an ordinance for each service provider enacting the fee. The ordinance will contain the terms of the fees imposed, along with setting effective and expiration dates. It is our understanding that the City has worked with legal counsel, and an ordinance is being drafted.

The state regulated providers (Northern States Power - Xcel and CenterPoint Energy) request that the City send a certified copy of the council action to pass the ordinance 90 days in advance of the first fee collection. These providers must furnish a 60 day notice to the Minnesota Public Utilities Commission of the intention to change fees collected. Both Xcel and Centerpoint have model ordinances that they can provide the City as well. Crow Wing Power and Brainerd Public Utilities have a less stringent process for implementing the franchise fee.

Fees are collected on a monthly basis from service provider customers. Service providers then remit said fees to the City. For the larger providers, this typically occurs on a quarterly basis. Both Crow Wing Power and Brainerd Public Utilities identified that the remittance could be monthly, but there may be a 60-day lag between collection and remittance. Both local providers will need to undergo changes to their billing and collections procedures to accommodate the fees.

Utility Classifications

Each service provider has unique customer classifications to differentiate pricing for residential and various commercial entities. Each charges monthly fixed fees by customer type as well as usage rates.

Of the gas utility providers, CenterPoint's commercial customers are classified by annual usage measured in therms. Within the City of Baxter, CenterPoint's commercial customers are split between classifications as small or large commercial and industrial users. Average monthly billing for small commercial users is between $150 and $160 per customer , and the average large user bill is above $850.

Xcel differs in that it subdivides its commercial customers by annual usage and by peak demand per day. Xcel historically also offers separate pricing for small, medium, and large interruptible service rates for select users in Baxter users who agree to reduce utilization during peak system demands. The average commercial, non-demand user bill is between $285 and $300.

Schools, churches, hospitals, and other similar institutions are classified as commercial.

Of the electricity providers, Brainerd Public Utilities has separate charges for residential, small commercial standard, small commercial demand, and large commercial. Average monthly bills for small commercial are just under $100, with small commercial demand above $1,200 and large commercial in excess of $19,000. Crow Wing Power is establishing a new structure for its customers in 2016: differentiating usage rates for small and large commercial users by levels of demand. Average monthly bills are reported at just over $200 for small commercial and over $5,000 for large commercial.

Proposed Fee Structure

In Minnesota most franchise fees, while fixed, are still initially developed from a percent of the utilities' gross revenues which are primarily achieved through energy consumption. Fixed fees are generally preferable to both cities and their utility providers because they will not change monthly based on energy price and usage fluctuations, only by the number of customer accounts. In some instances, these fixed

fees are then applied across all users. However, most cities use a tiered approach because residential, commercial and industrial customers' consumptions vary greatly; making it difficult to implement a flat fee with equitable impact.

The projected franchise fees discussed with the City in past iterations uses a tiered rate structure for commercial users, which is common in Minnesota. Average monthly gross revenue information for each utility provider and customer classification was reviewed to come up with a structure that delivered close to a targeted 2% of gross revenues, alleviate disparities because of differences in the utility providers' customer classifications, and attain the targeted revenue requirement for the street maintenance program.

The four-tiered system has been updated in the following charts show the proposed franchise fee structure for electric and gas customers using new information for 2015:

City Proposed Model - Revised account information 12/10/2015

Electric - Brainerd Public Utilities and Crow Wing Power				Pavement Mgmt.		Street Lighting		
Customer Class	BPU	CWP	Combined	Estimated Annual Revenues	Monthly Flat Fee	Estimated Annual Revenues	Monthly Flat Fee	Total Monthly Flat Fee
Residential	265	3638	3903	$93,672	$2.00	$46,836	$1.00	$3.00
Small Commercial	86	470	556	$46,704	$7.00	$40,032	$6.00	$13.00
Commercial-Demand	87	0	87	$29,232	$28.00	$10,440	$10.00	$38.00
Large Commercial	2	78	80	$110,400	$115.00	$17,280	$18.00	$133.00
Total	**440**	**4186**	**4626**	**$280,008**		**$114,588**		

Natural Gas - CenterPoint Energy and Xcel Energy				Pavement Mgmt.	
Customer Class	CPE	Xcel	Combined	Estimated Annual Revenues	Monthly Flat Fee
Residential	1618	1107	2725	$65,400	$2.00
Small Commercial-Non-Demand	59	257	316	$26,544	$7.00
Large Commercial-Non-Demand	67	0	67	$17,688	$22.00
Commercial-Demand/Interruptible	0	3	3	$2,340	$65.00
Total	**1744**	**1367**	**3111**	**$111,972**	

Total Gas & Electric	**$391,980**
Total Street Lighting	**$114,588**
Total Estimated Annual Revenue	**$506,568**

We will be at the work session on January 5th to further discuss the city's process and address any questions.

Water Treatment Plant Evaluation

Naeem Qureshi
Yoko Nomura

Progressive Consulting Engineers

Water Treatment Plant

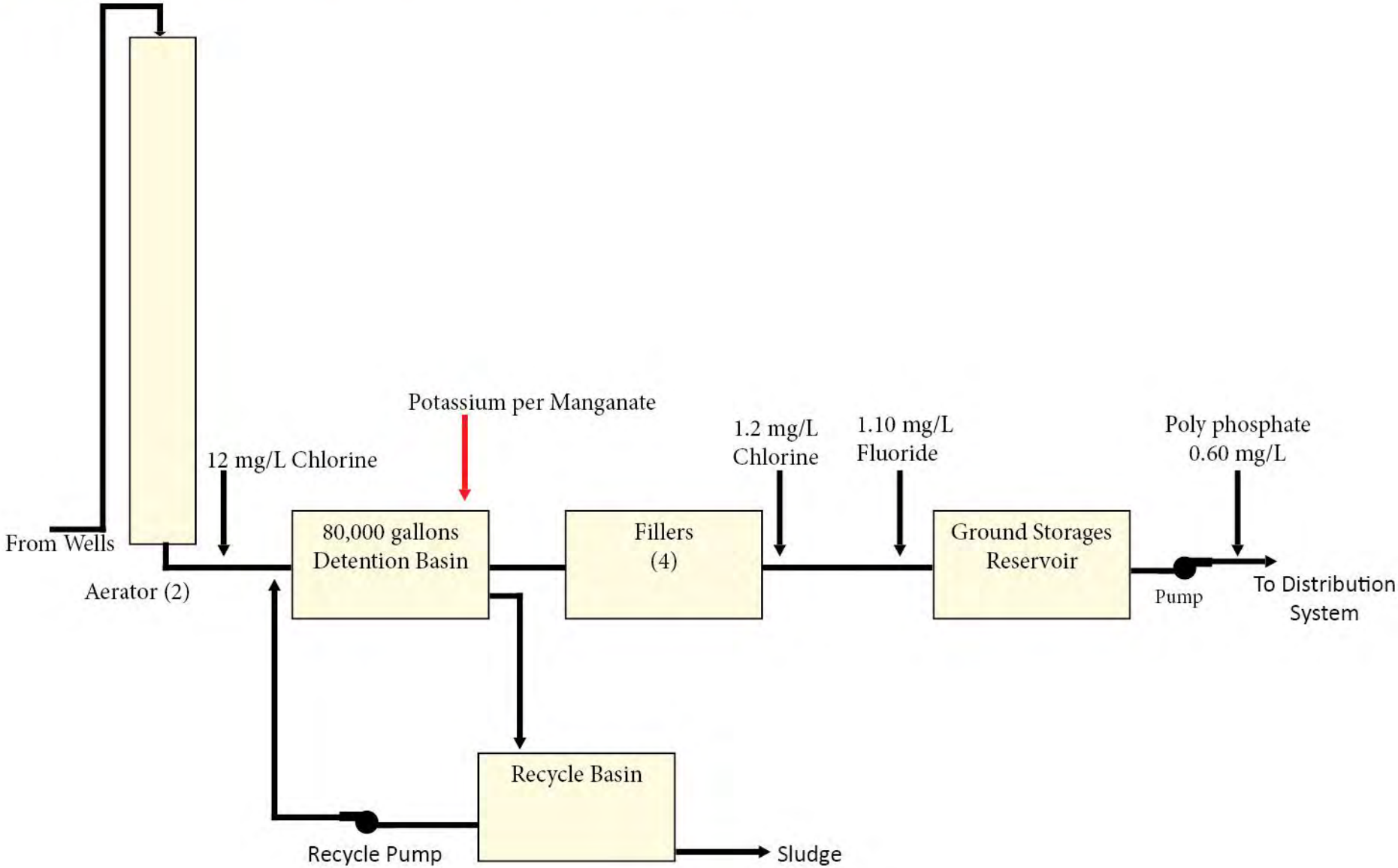
- Constructed 2007
- Design Capacity 5 million gallons per day
- Actual Capacity 3.2 million gallon per day

Plant Evaluation Authorized 2015

Plant produces excellent water quality

	Baxter	Standard
Iron (mg/L)	0.05	0.30
Manganese (mg/L)	<0.05	0.05

Treatment Process



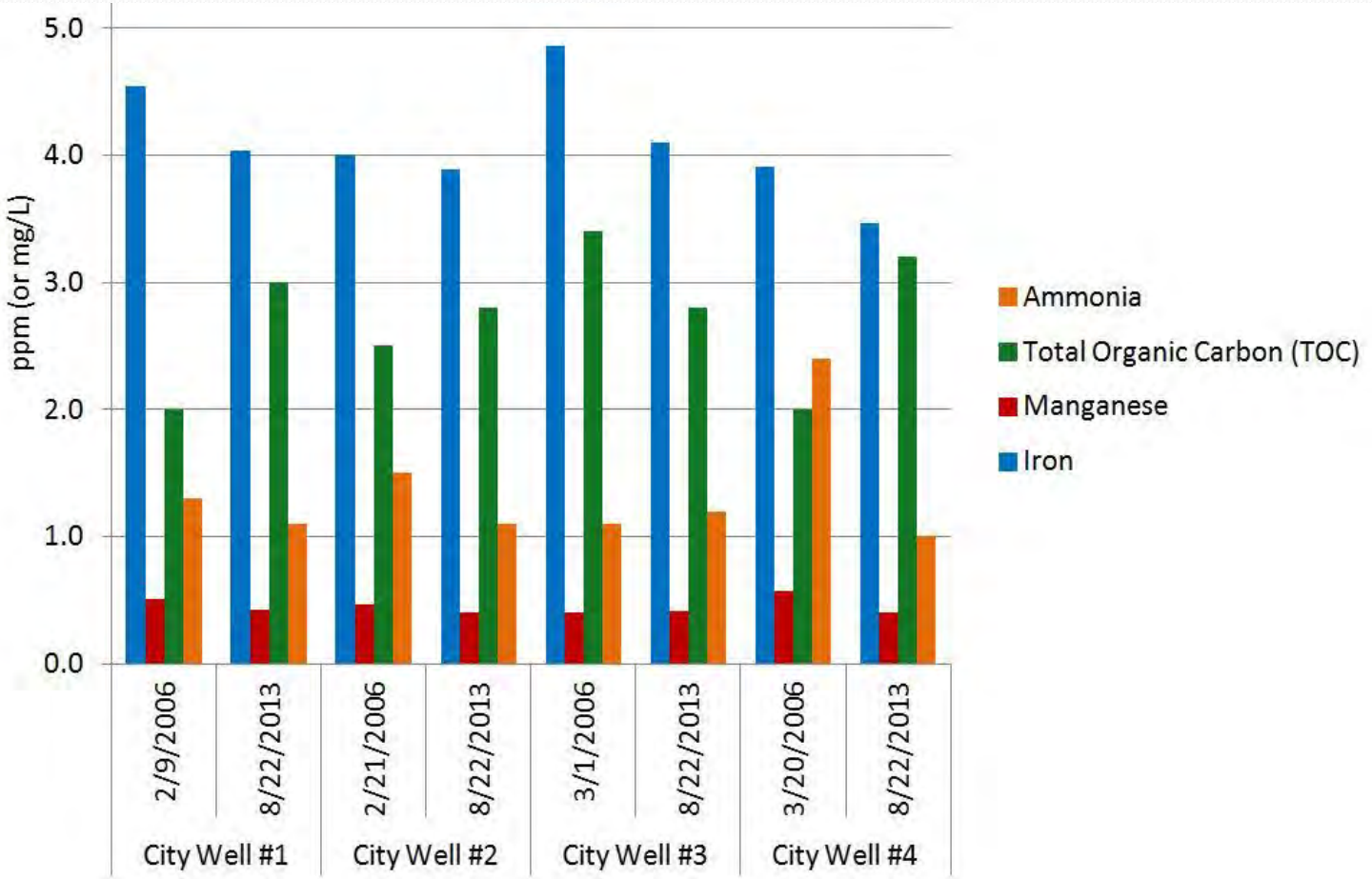
Raw Water Quality

Well ID	Sample Date	Unit	Total Organic Carbon (TOC)	Ammonia	Iron	Manganese
City Well #1	2/9/2006	ppm (or mg/L)	2.0	1.3	4.54	0.505
	8/22/2013	ppm (or mg/L)	**3.0**	1.1	4.04	0.425
City Well #2	2/21/2006	ppm (or mg/L)	2.5	1.5	4.00	0.466
	8/22/2013	ppm (or mg/L)	**2.8**	1.1	3.89	0.403
City Well #3	3/1/2006	ppm (or mg/L)	3.4	1.1	4.86	0.402
	8/22/2013	ppm (or mg/L)	2.8	**1.2**	4.10	**0.413**
City Well #4	3/20/2006	ppm (or mg/L)	2.0	2.4	3.91	0.572
	8/22/2013	ppm (or mg/L)	**3.2**	1.0	3.47	0.407

Bold shows increasing numbers

Well water is tough to treat

Raw Water Quality



Well water is tough to treat

Process Train Test Results

Parameter	Units	PLANT INFLUENT (RAW WATER)	AERATOR EFFLUENT	DETENTION TANK EFFLUENT	FILTER EFFLUENT	PLANT EFFLUENT
Alkalinity, Total as CaCO3	mg/L	174	172	168	163	164
Field pH	s.u.	7.4	7.5	7.1	7.3	7.4
Iron	mg/L	4.09	4.46	4.01	<0.05	0.05
Iron, Dissolved	mg/L	NA*	.44	3.980**	<0.05	0.05
Manganese	mg/L	0.441	0.495	0.432	<0.006	<0.005
Manganese, Dissolved	mg/L	NA*	0.426	0.416	<0.50	<0.50
Nitrogen, Ammonia	mg/L	1.1	1.1	0.059	0.040	<0.040
Total Hardness by 2340B	mg/L	171	180	172	180	177
Total Organic Carbon	mg/L	2.7	2.7	2.5	2.5	2.5

NA* Analysis not applicable.
**Iron Dissolved was retested and showed levels of 398 ug/L

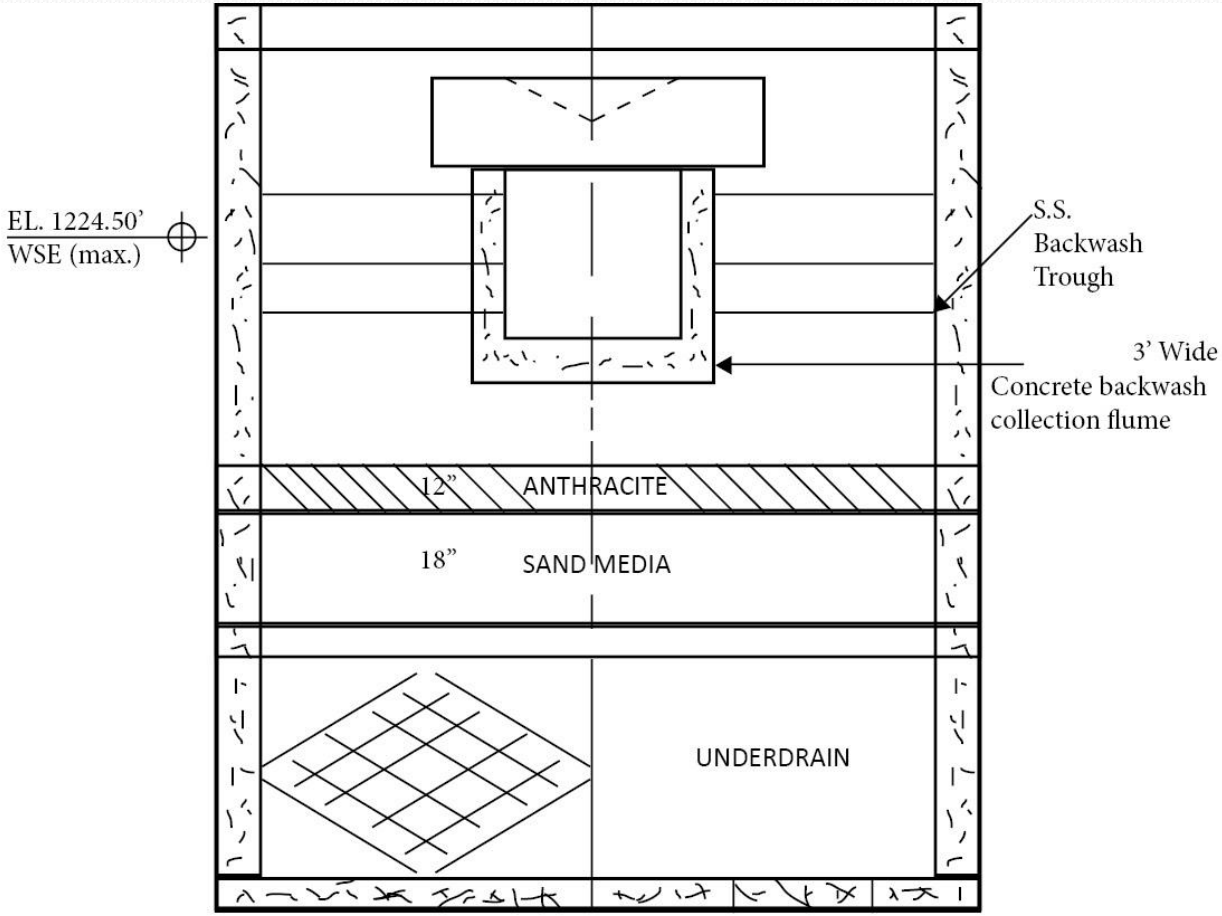
Plant Evaluation Steps

1. Sampling of Water Quality throughout the process
2. Visual inspection of Air Scour and Backwash
3. Freeboard measurements
4. Backwash rate
5. Bed Expansion
6. Floc analysis
7. Backwash turbidity analysis
8. Bed fluidization
9. Box excavation
10. Polymers testing

Findings

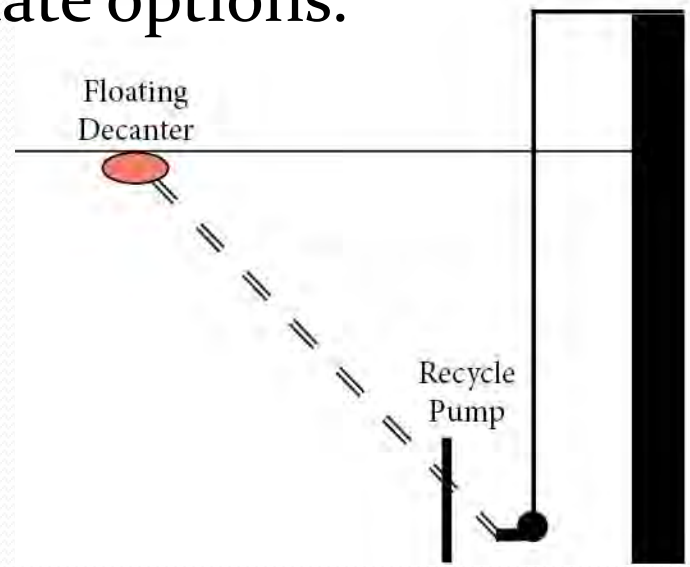
1. Well water quality is difficult to treat.
2. Total Organic Carbon > 2mg/L.
   a) Complexes the iron and manganese.
3. Simul air/water media is not getting clean.
   a) Flume impedes backwash.
4. Solids removal is minimal in detention basin.
5. Recycle pump sends solids to the detention basin.
6. Removing solids from detention basin is difficult.
7. Reduce loading on the filter to improve filter output.
8. Feeding polymer will help aggregate solids.

Flume design prevents simultaneous air/water backwash



Improving Plant Output Options

1. A floating decanter in the recycle basin.
2. Add polymer to improve settling in the detention basin.
3. Replace existing troughs.
4. Conduct a pilot study to evaluate options.
5. Install plate settlers.
6. Install garnet in the filters.
7. Install a Densa Deg Clarifier.



2016 Improvements

Install a Floating Decanter in the Recycle Basin	Cost
Capital	$20,000
Engineering	$5,000
Total	$25,000

Enhance Settling in Detention Tank by adding polymer	Cost
Capital	$30,000
Engineering	$12,000
Total	$42,000

2017 Improvements

Replace Existing Flume	Cost
Capital	$200,000
Engineering	$50,000
Total	$250,000

Pilot Plant Study	Cost
Equipment Rental	$18,000
Engineering	$15,000
Densa Deg Study	$3,500
Total	$36,500

2017 Recommendation Improvements – cont.

Install Plate Settlers and Sludge Removal System	Cost
Capital	$550,000
Engineering	$100,000
Total	$650,000

Implement Pilot Plant Recommendation add Densa Deg Clarifier	Cost
Capital	$1.2-1.8 million
Engineering	$200,000
Total	$1.4-2.0 million

QUESTIONS?

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Water Treatment Plant Evaluation

Technical Memorandum

Performed and Written by
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for
Baxter Utilities Commission
January 2016

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TECHNICAL MEMORANDUM

Water Treatment Plant Evaluation for City of Baxter

January 2016

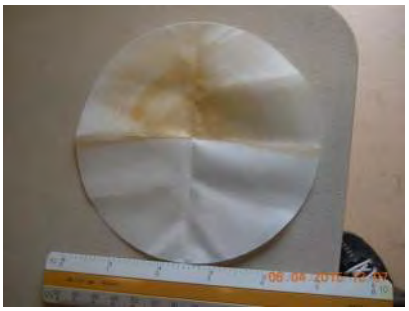
Section 1: Introduction

The City of Baxter constructed a 5 million gallons a day (MGD) iron and manganese removal plant, which went online in 2007. The treatment process train included forced draft aeration, addition of chlorine followed by potassium permanganate, detention and filtration. During the initial stages, episodes of pink water in the plant effluent resulted in stopping the use of potassium permanganate and the plant now adds only chlorine to catalytically remove manganese through manganese greensand filters. The manganese greensand is charged every six month by potassium permanganate. The backwash flumes were designed for simultaneous air/water backwash to clean the filters. However the 3 feet wide concrete flume in the middle of the filter impedes the even distribution of air resulting in media loss. The City now uses air/water backwash until the water reaches the lip of the flumes followed by water wash only. This backwash procedure is less effective in cleaning the filters than simultaneous air/water backwash. The filters are experiencing early breakthrough after only 14-16 hours of filter run resulting in reduced plant capacity of about 3.2 million gallons a day. The city is growing and will soon need the total design plant capacity of 5 MGD to meet the demands. The City retained PCE to evaluate the plant and recommend steps to attaining the 5 MGD design capacity.

Naeem Qureshi from Progressive Consulting Engineers, Inc. (PCE) visited the Water Treatment Plant on June 2 2015. Naeem met with Kevin Cassady, Steve Karels and Curt Paulson to conduct a filter evaluation on Filter No. 4. The plant evaluation continued on June 3, 2015 with the assistance of the utility staff. Naeem went back to the plant on Tuesday July 22, 2015 to verify the connections of the drains in the detention basin and to redo parts of the evaluation as the controls on Filter 4 were malfunctioning during the initial testing as the recently installed transducer was not calibrated.

Water Quality

Wells No. 1, 2, 3 and 4 serve the Water Plant. Table 1 and Graph 1 show the water quality of each of the four wells for tests taken in 2013 and 2006. Being a ground water supply, the raw water quality is quite consistent. The data shows that the concentration of Total Organic Carbon has increased in the raw water from Wells No. 1, 2 and 4. Ammonia has decreased in all the wells except Well 3. Iron levels have decreased in all the wells and Manganese levels decreased in Wells No. 1, 2 and 4. Total Organic Carbon levels above 2 ppm have been shown to complex the iron and manganese producing colloidal particles less than 1 micron. These particles tend to breakthrough the filter at low headloss.



Samples of the water throughout the treatment process were taken and analyzed in April 2015. Wells No. 1 and 3 were operating during the time of the sampling. The test results are shown in Table 2. During the first visit to the plant, the detention basin effluent was retested for dissolved iron by filtering the sample flume a through 0.45 micron filter and testing the effluent. The test results showed a dissolved iron concentration of 398 ug/L in contrast to the April 29, 2015 Lab Report (Table 2) result of 3980 ug/L.

TABLE 1: Well Water Quality Data

Well ID	Sample Date	Unit	Total Organic Carbon (TOC)	Ammonia	Iron	Manganese
City Well #1	2/9/2006	ppm (or mg/L)	2.0	1.3	4.54	0.505
	8/22/2013	ppm (or mg/L)	**3.0**	1.1	4.04	0.425
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City Well #4	3/20/2006	ppm (or mg/L)	2.0	2.4	3.91	0.572
	8/22/2013	ppm (or mg/L)	**3.2**	1.0	3.47	0.407

Bold shows increasing numbers

Graph 1: Well Water Quality Data

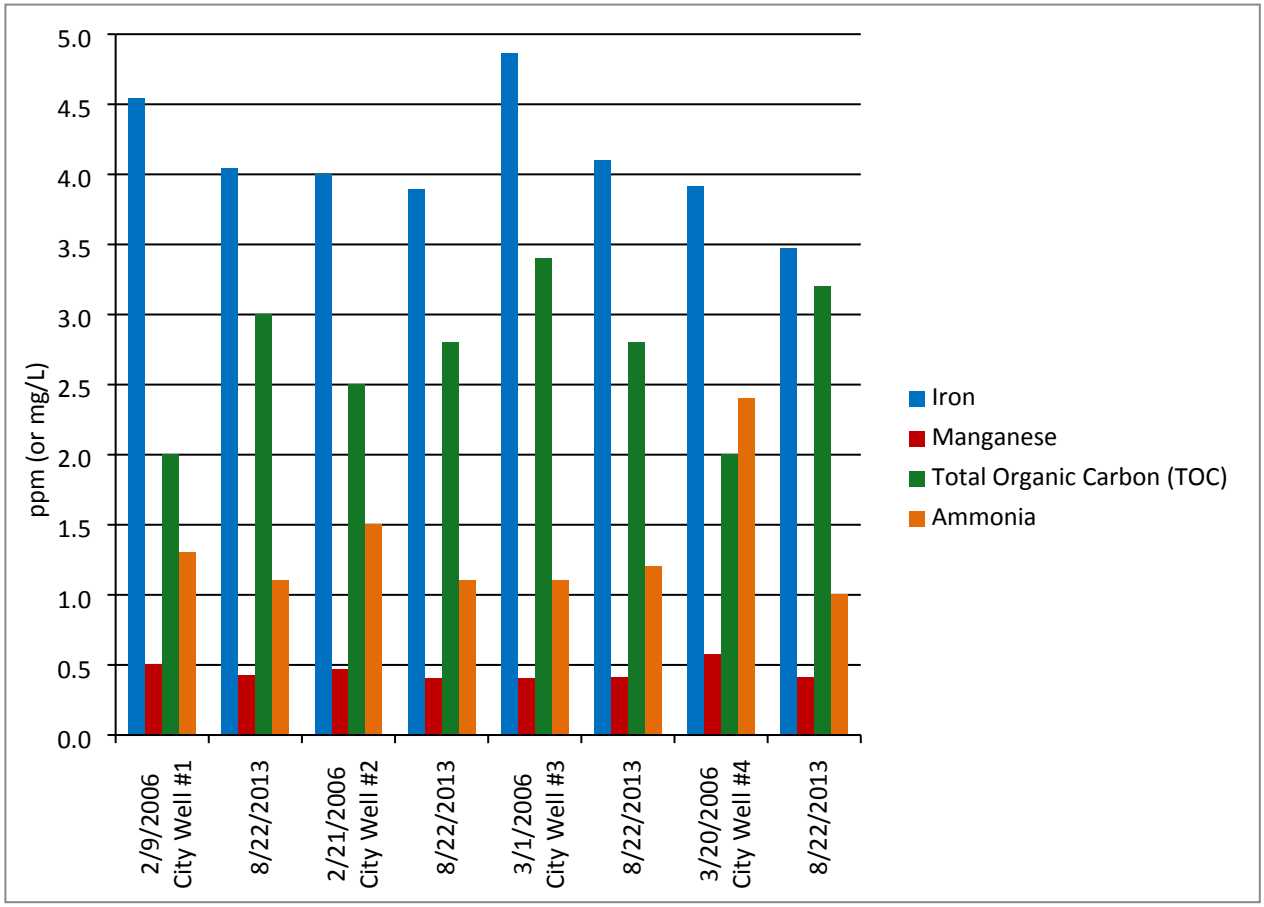


TABLE 2: Sample Test Results from the Laboratory Report dated April 29, 2015

Parameter	Units	PLANT INFLUENT (RAW WATER)	AERATOR EFFLUENT	DETENTION TANK EFFLUENT	FILTER EFFLUENT	PLANT EFFLUENT
Alkalinity, Total as CaCO3	mg/L	174	172	168	163	164
Field pH	s.u.	7.4	7.5	7.1	7.3	7.4
Iron	ug/L	4090	4460	4010	<50.0	<50.0
Iron, Dissolved	ug/L	NA*	439	3980**	<50.0	<50.0
Manganese	ug/L	441	495	432	0.61	<0.50
Manganese, Dissolved	ug/L	NA*	426	416	<0.50	<0.50
Nitrogen, Ammonia	mg/L	1.1	1.1	0.059	0.040	<0.040
Total Hardness by 2340B	ug/L	171000	180000	172000	180000	177000
Total Organic Carbon	mg/L	2.7	2.7	2.5	2.5	2.5

NA* Analysis not applicable.
**Iron Dissolved was retested and showed levels of 398 ug/L

Process

The treatment process consists of forced draft aeration in two aerators. A chlorine dosage of 11.9 mg/l is added to the aerator effluent to neutralize the 1.1 mg/l of ammonia and to oxidize the iron and manganese. The water then enters the 80,000 gallon detention basin, which provides about 30-minute detention time at 5 MGD design capacity. The detention basin is baffled to prevent short circuiting. There are two small drains each at the beginning and the end of the detention basin and the floor has a very limited slope and is essentially level. The detention basin is not designed for the sludge removal. The drains in the detention basin empty into the recycle basin for eventual removal and disposal of sludge. The detention basin effluent is collected by a flume and is conveyed through a 20 inch pipe, to the filters. The free fall of the water from the weirs to the filters may cause the floc to break up

The plant has four gravity filters 24'x12' in size constructed primarily to remove suspended solids. The filter area of each filter is 288 square feet. The media consists of 12 inches of anthracite and 18 inches of manganese greensand plus. The filters are equipped with media retaining flumes designed for simultaneous air/water backwash. The filters have Leopold underdrains with an Integrated Media Support (IMS) cap. A 3-feet wide concrete flume runs the length of the filter trapping the air resulting in air bursts and loss of media during simultaneous air/water backwash. The filtered water is then treated with chlorine to the desired chlorine residual and with fluoride to comply with drinking water regulations before it is conveyed to the clear well. High service pumps supply the finished water to the distribution system.

Table 3 details the depth of each type of media in the filter.

TABLE 3: Depth and Type of Media

Media	Depth	Effective Size
Anthracite	18 inches	0.9 mm
Manganese Green Sand	12 inches	0.3 - 0.35 mm

Filter No. 4 was chosen for filter evaluation. Filter No. 4 backwash starts with shutting the influent valve allowing the water to filter to the clearwell until the water level in the filter is about 2.5 feet below the lip of the flumes. The air/water backwash starts and continues for 6 minutes at 3 standard cu. ft /min/sq. ft rate until the water reaches the lip of the flumes. After the air/water backwash the air is purged from the filter followed by a water only backwash which lasts for 7 minutes at 10-13 gallon /min/sq. ft. The filters are backwashed about every 14-16 hours at about 1.5 gpm/sq. feet loading rate. The filter runs would be much shorter at the design rate of 3 gpm/sq. feet. The backwash water is conveyed to a backwash recycle basin from which the water is recycled to the head of the plant.

Section 2: Visual Inspection of Air Scour & Backwash

The air/water scour was visually observed as uniform and vigorous. This indicates that the air/water scour system is performing adequately.

Visual inspection of the filter bed before and after backwash is one method to determine if there is uniform backwash. The media surface in a properly performing filter backwash is normally uniform (or flat) after the backwash. A non-uniform surface is an indication of non-uniform distribution of the flow by the under drain.

During the filter evaluation, it was observed that the media bed in the filters was uniform both before and after backwashing. This indicates that the under drains are performing properly.

Section 3: Freeboard Measurement

The periodic backwashing of media results in the washing away of some of the fines in the media. The distance between the bed surface and the top of the flumes was measured and compared with the design freeboard dimension. The change in freeboard determines how much media has been lost over a period of time. The measurements are also used to confirm the visual inspection of the filter beds that they are all uniform.

To measure the freeboard, the filters were drained below the media level. The drawings show an original freeboard of 67-3/8". Freeboard measurements were taken by placing a level on the flume and then measuring the distance from the top of the level to the top of the media. The level height was 2-3/4".

The results from this process at various locations within Filters 1, 2, 3 and 4 are shown in Table 4. Detailed measurements are detailed in the Appendix.

TABLE 4: Freeboard

Filter No.	Design	Max.	Min.	Variation	Media Loss	Average Loss
1	67 3/8"	69 1/2”	69"	1/2"	1 5/8” - 2 1/8"	(1 5/8" + 2 1/8")/2 = 1 7/8”
2	67 3/8"	70 1/4”	69 3/4”	1/2"	2 3/8” - 3 1/8"	(2 3/8" + 3 1/8")/2 = 2 3/4”
3	67 3/8"	70”	69”	1”	1 5/8” - 2 5/8"	(1 5/8" + 2 5/8")/2 = 2 1/8”
4	67 3/8"	70 1/2”	71”	1/2"	3 5/8” - 4 1/8"	(3 5/8" + 4 1/8")/2 = 3 7/8”

As shown in the Table 4, there were variations in freeboard measurements of only up to 1”. This is within an industry accepted range. The visual inspection discussed in the previous section was confirmed that the beds of all filters were uniform.

The media depth has decreased 1 7/8-3 7/8 inches, from the design depth, since the construction of the plant approximately 7 years ago. The average media loss calculation in Filters No. 1 through 4 is shown in Table 5. Table 5 shows that Filter 4 has lost the most media. In addition in 2010, 24 cubic feet of media was added in each filter (96 cu. ft. total). The total volume of media in all the four filters is 2,880 cubic feet (4x288 sq. ft. x 30”). The total media loss of 351 (255+96) cubic feet from all the four filters is about 12%, which is considered excessive for only about 7 years of operation. The cause of this excessive media loss is malfunctioning of the air/water simultaneous backwash. During an air/water backwash air is trapped by the flume and burps carrying media into the flume resulting in media loss

TABLE 5: Media Loss Calculation

Filter No.	AREA (sq. ft.)	LOSS (in)	VOLUME (cub. ft.)
1	288	1 7/8”	45
2	288	2 3/4”	66
3	288	2 1/8”	51
4	288	3 7/8”	93
Total	---	---	255

Section 4: Backwash Rate

The Plant has a backwash flow meter. During backwash the meter showed that the maximum backwash flow rate is 2,995 gpm.

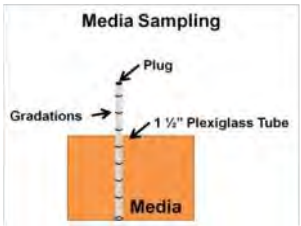
Area of Filter: 288 sq. ft.
Backwash Flow Rate: 2,955 gpm

Backwash Rate / Sq. Ft: $\frac{2{,}995 \text{ gpm}}{288 \text{ sq. ft}}$ = 10.4 gpm/sq. ft.

To properly fluidize a filter bed the backwash rate should be greater than 10 gpm/sq. ft. for the 0.30-0.35 mm manganese greensand sand and 9 gpm/sq. ft. for anthracite. The Great Lakes – Upper Mississippi River Board Recommended Standards for Water Works (Ten State Standards) recommends backwashing filters at a minimum of 15 gpm/sq. ft. When air scouring accompanies the backwashing, the rate can be lower. Based on the calculation, the backwashing rate in Filter No. 4 is 10.4 gpm/sq. ft, which is adequate.

Section 5: Bed Expansion

The air scour for Filter No. 4 was terminated after a 6 minute normal air/water simultaneous wash period and the bed expansion tool was anchored so that the bottom of the tool was at the top of the media. The filter was then backwashed normally. The tallest pipe, which had media in it, was at the 7 inch level of the tool indicating that the bed expansion was 7 inches. The American Water Works Association (AWWA) recommends that to properly clean media the bed expansion should be between 25-35% of total media depth. The original installed depth was 30" and measured about 28" on average because of media loss. The minimum bed expansion, based on the 25-35% bed expansion rule, for a 28" bed depth should be 7 – 9.8 inches. These results indicate that the backwash rate is adequate.



Section 6: Core Samples

Filter No. 4 was drained before and after backwashing and a coring tool was used to collect a filter media sample of the filter bed. Upon inspecting the media from the core samples, it was noted that the media appeared to be normal before and after backwashing. No mud ball formation was noticed.

Section 7: Media Floc Retention Analysis

To quantify how effective the backwash is in cleaning the filter media bed or how much material the filter media is accumulating, a media floc retention analysis was conducted. A 50-gram sample from the core sample of the media was taken

of the filter. A sample was collected both before and after backwashing at the top, middle and bottom depth ranges.

The standard procedures for filter floc retention analysis were then followed. The test involves placing 50 grams of the media sample in a 500 milliliters (mL) Erlenmeyer flask, adding 100 mL of clean water, completing 30 seconds of agitation, and decanting the water into a bottle. This procedure was completed five times for each media sample. All the decanted water was then combined agitated, and the turbidity of the resulting solution was measured and multiplied by 2 and reported as the floc retention turbidity. The resulting data is listed in Table 3.

TABLE 6: Floc Retention Analysis Results

	Core Sample	Media Depth (inches)	Floc Retention - Turbidity (NTU)	
			Before Backwash	*After Backwash*
Filter No. 4	Top	0"-5"	324	1,000
	Middle	10"-12"	151	145
	Bottom	26"-28"	717	901

During the filtration process, particles suspended in the filtered water are removed largely through entrapment within the filter media. As more and more water passes through the filter, the suspended particles accumulate within the media, reaching levels that lead to one of two detrimental events. Either they can cause headloss within the filter to reach excessively high levels (8 to 10 feet of hydraulic head) or they can be pushed through the filter, resulting in increased turbidity in the bottom media. In extreme cases it can cause a breakthrough. The head loss in the filter prior to backwash is shown in Table 7. Between 4.0 – 4.4 psi is the maximum allowed filter headloss to prevent breakthrough. To meet this criteria City of Baxter standard backwashing of the filter is necessary when this headloss is reached.

TABLE 7: Terminal Filter Headloss Before Backwash

Filter No.	Headloss
1	4.4 psi
2	4.0 psi
3	4.2 psi
4	4.4 psi

In the first core sample taken before the backwash, the bottom sample showed very high turbidity. This indicates that particulate matter has penetrated through the filter and is on the verge of breakthrough. The core sample taken after the backwash shows that the particulate matter reaches the top of the media and is not removed completely during the backwash. The filters were designed for simultaneous air/water backwash. The filters are now being backwashed by a freeboard simul-wash step wherein complete removal of particulate matter does not occur and the filter media is not being adequately cleaned.

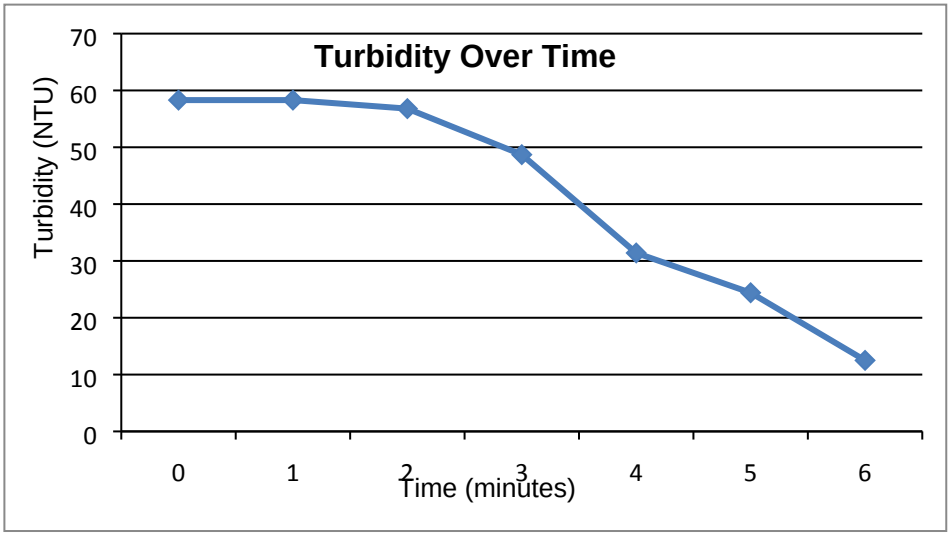
In order to maximize the use of a given filter, the filter needs to be backwashed at a sufficient rate to remove these entrapped particles from the media. During backwash, as the wash water flows upwards through the filter, it lifts the media causing the bed to expand and attain a fluidized state. The bed expansion and fluidization permits entrapped particles to be released and flushed upward and out of the media into the wash water flumes. During backwash, these particles should be removed from the media. The existing backwashing process is not adequately removing particles and they have been accumulating in the filter.

Section 8: Backwash Turbidity Analysis

A complete backwash was performed on Filter No. 4. During the backwash process, samples of the backwash water were collected every minute from the overflow flume at the side of the filter. The turbidity of each sample was measured with a turbidity meter. The results are listed in Table 8.

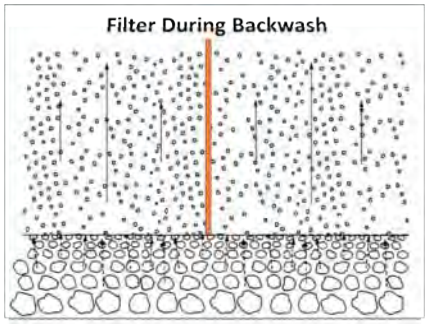
TABLE 8: Backwash Turbidity Analysis Results

	Filter No. 4
	Turbidity *(NTU)*
0	58.3
1	58.3
2	56.8
3	48.7
4	31.4
5	24.4
6	12.5



AWWA Standards recommend that the backwash be terminated when the backwash water turbidity is between 15 and 25 NTUs. A typical backwash turbidity profile will start with high turbidity (typically over 100 NTU) in the first few minutes and decrease steadily throughout the backwash. The backwash turbidity profile will level out when terminal backwash turbidity is reached. In Filter No. 4, the turbidity started out at very low level of 58.3 NTU. It decreased rapidly down to about 12.5 NTU in 6 minutes This low turbidity in backwash water indicates that the filter media is not being cleaned and particle matter trapped in the filters is not been flushed out of the system. This agrees with the floc analysis results. The floc analysis shows that the filter after backwash has a large amount of particulate matter in the upper layers of the media. The backwash process used seems to be unable carry this particulate matter out of the filter and into the backwash flumes. This is due to the fact that the simultaneous air/water backwash is not operated according to the design.

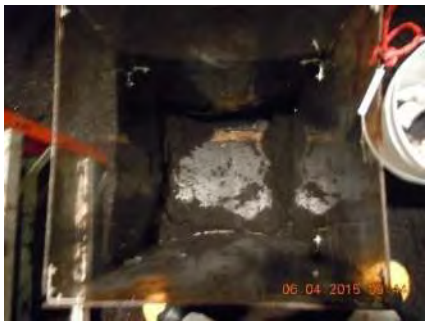
Section 9: Bed Fluidization



During water backwash, a probe was used to determine the bed fluidization which is when the upward velocity of water is counter balanced by the weight of the media. During bed fluidization, the probe should not experience any resistance until it reaches the IMS cap. If a portion of the underdrain is clogged, the probe will encounter some resistance in penetrating the media.

The probe test showed that the media was fluidizing in most areas of the filter. One area of the filter showed some resistance as discussed in the following section.

Section 10: Box Excavation



Excavation inside a trench box was completed to get down to the IMS cap in an area suspected of clogged underdrains and to verify accuracy of the result of filter fluidization. The excavation continued until the IMS cap was exposed. The exposed IMS cap did not indicate any clogging and was in good condition.

Section 11: Polymers

The filters are backwashed when the filter headloss is between 4.0 - 4.4 psi. City's experience has shown that if the filter continues to operate beyond this headloss breakthrough occurs resulting in consumer complaints. As the filter run was terminated because of headloss, a jar test was conducted to determine if feeding an anion polymer could increase the filters run time. The jar test was conducted by Mark Oberhelm from Hawkins Chemicals on July 8th, 2015. The results are included in the appendix. The results show that feeding about 0.25 ppm of Aqua Hawk 6527, an organic low molecular weight coagulant, will help aggregate the particular matter.

In June 2009 the City added a high molecular weight polymer to the detention basin effluent. The unit filter run volume did increase to 2403 gallons with filter runs increasing to 28.5 hours. However, the feeding system continued to plug and required constant attention. Also the polymer was being carried through with the backwash effluent into the backwash recovery basin and preventing the settling of the particulate matter and as a result the sludge was coming back to the filter influent. The feeding of the polymer was ultimately abandoned.

Section 12: Findings/Conclusions

Discussion

The raw water quality serving the Baxter water plant is poor with high iron, manganese, total organic carbon and ammonia. Water quality test conducted during the treatment process shows that the aerator is very effective in oxidizing the iron. The removal of iron and manganese in the detention basin is negligible reducing iron from 4,460 ug/L to 4,010 ug/L and manganese from 495 ug/L to 430 ug/l. Chlorine is very effective in neutralizing almost all of the ammonia. The TOC reduced only from 2.7 mg/L to 2.5 mg/L in the detention basin and remains unchanged from the detention basin effluent to the plant effluent. TOC levels of over 2.0 mg/L have been shown to cause complexing of iron and manganese forming colloidal particles of less than 1 micron. These particles tend to pass through the filter causing breakthrough. The filter runs are 14-16 hours at about 1.5 gpm/sq. feet loading rate and would be about half at the design loading rate of 3 gpm/sq. feet ..

During the annual cleaning of the detention basin, samples of the sludge were taken from the four compartments of the detention basin and analyzed. The results are shown in Table 9.

TABLE 9: Concentration of Iron and Manganese in Detention Basin Sludge

Constituent	Unit	Compartment			
		1	***2***	***3***	***4***
Iron	(mg/kg)	136,000	401,000	246,000	399,000
Manganese	(mg/kg)	1,180	39,500	3,390	38,900

The results show that most of the removal of iron and manganese is occurring in compartment 2 and 4. This is expected as the oxidation process occurs later in the detention stage.

The floc analysis of the filter media shows that the backwash is ineffective in removing the particulate matter lodged in the interstitial pore spaces of the media. The original design of simultaneous air/water backwash, which is effective in removing the particulate matter cannot be used, because of media loss due to the non-uniform distribution of air. The non-uniform distribution of air is caused by the 3-foot wide flume in the middle of the filter, which occupies about 25% of the filter area.

The filters are loaded with about 4,010 ug/l of iron and 432 ug/L of manganese. With this level of particulate matter in the water and complexed iron and manganese, filter runs and plant output will not substantially improve unless loading on the filters of iron and manganese is reduced. It is therefore essential that the particulate load on the filter be reduced by aggregating and removing the particulate matter prior to the water going to the filters. This can occur in the detention basin or a new solids contact unit. Bench scale jar testing has shown that adding low molecular weight anion organic polymer would produce the best result in aggregating and settling of the solids. However, the settling basin was not designed to remove solids and essentially has a flat floor with two small drains. The two drains flow to the recycle basin with any sludge from the detention basin being handled by the recycle basin sludge pump. Major modification to the detention basin will be needed. To enhance settling the baffle walls in the detention basin will need to be removed and a plate settler installed. The drains will need to be modified to remove the accumulated sludge. A possible layout and costs of those modifications are included in the conclusions and the appendix of this report.

Aggregating and removing the particulate matter in the detention basin will have the added advantage of co- precipitating and removing TOC. The TOC levels may be reduced to below 2.0 mg/L thus preventing the complexing of iron and manganese, which will result in longer filter runs and higher plant production.

Another option would be to build a new solids contact unit and intercept the flow from the detention basin and direct it to a new solids contact unit prior to discharge to the filters. The effluent from the new solid contact unit may need to be pumped to the filters.

The recycle basin currently recycles the flow after the solids have a chance to settle. One way to ensure that the recycle water has the least solids is to install a floating decanter, which always draws water from the top. This would reduce the loading on the filter to some extent.

The option for improving the filter backwash would require the removal of the existing concrete flumes and installing a 24' long flume in each filter. The flumes will be designed for simultaneous air/water backwash.

The plant is designed to facilitate adding 2 more filters. Although two new filters could be added to increase plant capacity, this will still not provide the 5 MGD design capacity.

One option to improve the filter run is to add garnet to the filters. The effective size of the garnet is 0.2-0.25 mm and it will provide a much denser filter with the enhanced ability of preventing early breakthrough. However the filters have an IMS cap and in order to prevent the fines from penetrating the cap a 2" course layer of garnet will be necessary. Garnet has a specific gravity of 4 and is much heavier than greensand. Garnet would remain mostly at the bottom of the filter as is necessary for preventing breakthrough.

Conclusions:

1. The raw water quality serving the plant is difficult to treat due to high levels of iron, manganese, TOC and ammonia.
2. The level of TOC is above 2.5 mg/L and TOC seems to complex the iron and manganese, which is resulting in early breakthrough.
3. The particulate loading of iron and manganese on the filter is very high and has to be reduced to improve the filter run length.
4. Simultaneous Air/Water backwash is not working properly and the filter media is not getting adequately cleaned during backwash.
5. There is minimal removal of iron and manganese in the detention basin
6. Jar testing has shown that a low molecular anionic organic polymer can aggregate the particulate matter.
7. The filter runs of 14-16 hours at about 1.5 gpm/sq. feet loading rate would reduce to about 10 hours at the design loading rate of 3 gpm/sq. feet.

Options for Detention Basin Improvement

1. Remove the baffles in the detention basin and install a plate settler and Skier sludge removal system. Modify the drains. Opinion of Probable Cost: $650,000
2. Install a decanter to backwash pump along with guide channel to recycle cleanest backwash water. Opinion of Probable Cost: $25,000

3. Install a solid contact/ DensaDeg high rate clarifier. This will require extending the building and construction of a pumping station. Opinion of Probable Cost: $1.2 – $1.8 million

Options for Filter Improvement

1. Remove existing flumes and the 36" wide gullet and replace them with 24' long simultaneous/air water backwash flumes. Opinion of Probable Cost: $250,000
2. Install 2 inch garnet support gravel and 2 inch garnet media to the filters. Raise the exiting flumes about 3 inches. Opinion of Probable Cost: $150,000 including engineering cost

   NOTE: These opinion of probable cost may vary by 25%. A feasibility study will have to be completed for more accurate cost estimates.

Recommendations:

<u>2016</u>

1. Install a floating decanter and connect it to the recycle pump suction. Opinion of Probable Cost: $20,000 Engineering Cost: $5,000

2. Inject polymer upstream of the detention basin to improve its performance. Opinion of probable cost: $ 30,000 Engineering Cost: $12,000 Chemical Cost: $600/month

<u>2017</u>

1. Replace existing flumes Opinion of Probable Cost: $200,000 Engineering Cost: $50,000

2. Complete a pilot plant study to evaluate the various options. This will include a pilot plant study and sending 55 gallons of water to the DensaDeg supplier to evaluate the settling and particulate removal in a DensaDeg clarifier. It is assumed that the City staff would run the pilot with assistance from PCE staff, which will prepare the pilot study protocol and review the results daily. PCE staff will operate the pilot plant for a day during startup and will make adjustments in testing procedures after reviewing the results every morning. At the end of the study PCE staff will prepare a report and recommendations.
   Opinion of Probable cost:

Pilot rental	$18,000
PCE Staff time	$15,000
Optional - DesaDeg Study	$3,500

3. Implement Pilot Study recommendation

a) Install plate settlers in the detention basin along with a sludge removal system. Opinion of Probable Cost $550,000. Engineering $100,000

b) Expand the building and construct a DensaDeg clarifier and connecting Piping and pumps. Opinion of Probable Cost: $1.2-$1.8 million Engineering Cost: $200,000

c) Add Garnet gravel and garnet media to the filters Opinion of probable cost $150,000

APPENDIX

Appendix Contents

- **WesTec Proposal for Detention Basin by Vessco August 3, 2015**
- **Jar Testing Report by Hawkins July 8 2015**
- **Detention Basin Sample Tests by PACE Analytical April 30, 2015**
- **New US Filter Flume Design by Vessco**
- **Cost Estimate Emails from Treatment Resources Inc. June 19 & June 22, 2015**
- **Infilco DENSADEG High Rate Clarifier & Thickener Budget Proposal June 18, 2015**
- **Infilco Technical Data Sheet for DensaDeg Pilot Plant**
- **Headloss and Freeboard Measurement Emails from Curt Paulson June 19 & July 14, 2015**

Baxter WTP

Represented by

Brian DeWolf

Vessco, Inc.

Chanhassen, Minnesota

(952) 941-2678

bdewolf@vessco.com

Furnished by

Brett Boissevain

bboissevain@westech-inc.com

1530306

Monday, August 03, 2015

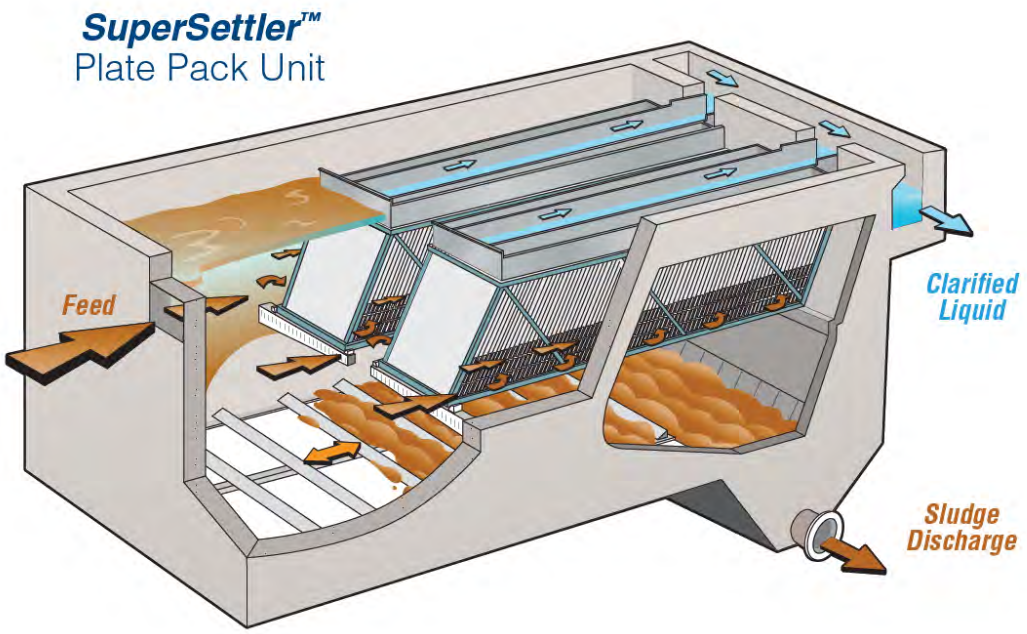
Item A: SuperSettler™ Plate Pack WesTech Model Number: PSP88

General Scope of Supply

Description	Unit	Dimension/Capacity
Number of Clarifiers	each	8
Application		Surface Water Clarification
Total Flow Rate	gpm	3472
Flow Rate per Unit	gpm	434
Assumed Plate Surface Area	ft^2	947
Plate Efficiency	%	100
Projected Loading Rate	gpm/ft^2	0.46
Pate Spacing	in	2
Inclined Plate Angle	deg	55
Approximate Shipping Weight	lbs	34,000

Equipment Description

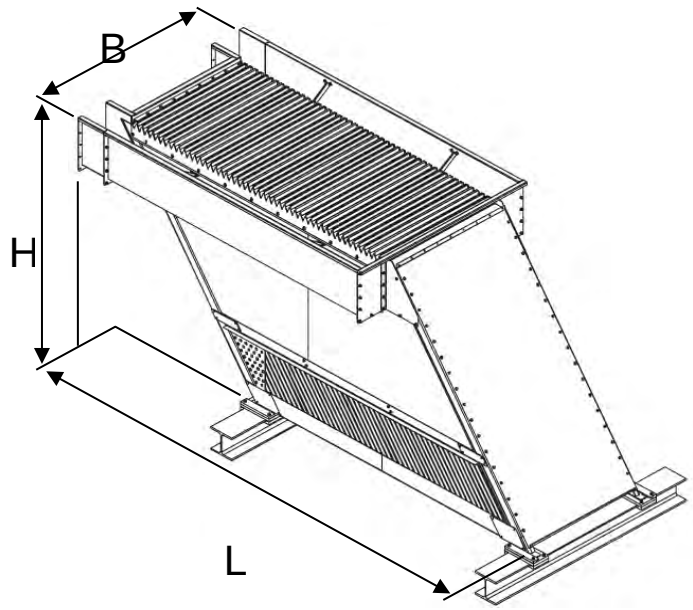
WesTech's SuperSettler plate pack units are an excellent pretreatment option prior to filtration. Utilizing inclined plates minimizes overall basin surface area for new installations and maximizes overall capacity of existing basin upgrades.



The SuperSettler's compact footprint is up to 1/10th the size of a conventional sedimentation basin.

WESTECH

Super Settler™ Dimensional Information			
Description	**Symbol**	**Dimension**	**Unit**
Overall Length	L	16’-6”	Feet, Inches
Overall Height	H	7’-9”	Feet, Inches
Width	B	6’-3”	Feet, Inches



Detailed Scope of Supply		
Item	**Description**	**Material**
Plates	Inclined plates	304SS
Launder	Two (2) effluent launders with adjustable v-notch weir plate	304SS
Support Beams	Plate pack support beams with anchors	304SS
Assembly Fasteners		304SS

Surface Preparation and Painting

Paint		
Coating Area	**Fabricated Steel MOC**	**Paint Type**
Submerged Coating	Stainless	None
Non-Submerged	Stainless	None

WESTECH

On-Site Service

WesTech Trips to the Site		
Number of Trips	**Number of Days**	**Includes**
2	3	Installation inspection, startup, instruction of plant personnel, and observation of torque testing

Clarification Comments

The installation of these plate packs will require the removal of the existing internal detention basin walls.

NOTE: ANY ITEM NOT LISTED ABOVE TO BE FURNISHED BY OTHERS.

ITEMS NOT BY WESTECH

Electrical wiring, conduit or electrical equipment, piping, valves, or fittings, lubricating oil or grease, shop or field painting, field welding, erection, detail shop fabrication drawings, performance testing, bonds, unloading, storage, concrete work, field service, (except as specifically noted).

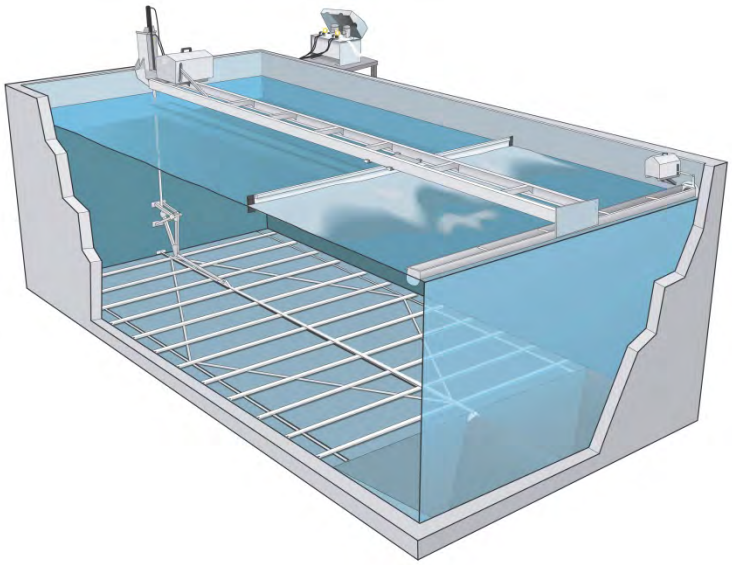
Item B: Zickert Shark™ WesTech Model Number: ZSEA

General Scope of Supply

Description	Unit	Dimension/Capacity
Number of Mechanisms	Each	1
Application		Surface Water
Basin Size	Feet	16’x51.33’
Number of Scrapers per Basin	Each	1
Number of Siphons per Basin	Each	1
Drive Type		Electric

Equipment Description

The ZICKERT Shark™ sludge scraper is specially designed for continuous sludge removal without disturbing the sludge blanket or interrupting the sedimentation process. Thousands of customers worldwide have seen the benefits of applying this system.



The ZICKERT Shark™ is designed for the efficient removal of surface scum without the excessive use of transport water.

WESTECH

Detailed Scope of Supply				
Item	Unit/Size	Quantity	Description	Material
Main Scrapers	ZS2012	1	Scraper mechanism with scraper profiles, push/pull rod, guide, and guide tubes	304SS
Motor		1	¾ HP	
Suction Header				304SS
Hydraulic Cylinder				
Link Arm			Connects drive to scraper mechanism	304SS
Flat Bars				
Glide Strips			Mounted to basin floor	UHMW
Anchor Bolts and Fasteners				304SS

Control Panel

Controls & Instrumentation		
Description	Type	Notes
Control Panel Type	NEMA 4X 304SS	For complete control of the scraper mechanism

On-Site Service

WesTech Trips to the Site		
Number of Trips	Number of Days	Includes
2	3	Installation inspection, startup, instruction of plant personnel, and observation of torque testing

Clarification Comments

The installation of these sludge removal mechanisms will require the removal of the existing internal detention basin walls.

NOTE: ANY ITEM NOT LISTED ABOVE TO BE FURNISHED BY OTHERS.

ITEMS NOT BY WESTECH

Electrical wiring, conduit or electrical equipment, piping, valves, or fittings, lubricating oil or grease, shop or field painting, field welding, erection, detail shop fabrication drawings, sludge blow down controls, performance testing, unloading, storage, concrete work, field service, (except as specifically noted).

WESTECH

Pricing

Proposal Name: Baxter WTP
Proposal Number: 1530306

1. Bidder's Contact Information

Company Name	WesTech Engineering, Inc.
Contact Name	Brett Boissevain
Phone	801.265.1000
Email	bboissevain@westech-inc.com
Address: Number/Street	3665 S West Temple
Address: City, State, Zip	Salt Lake City, UT 84115

2. Pricing

Currency		US Dollars
"A"	SuperSettler™ Plate Pack PSP88	$250,000
"B"	Zickert Shark™ ZSEA	$100,000
Field Service		
Daily Rate		$960.00

Prices do not include field service unless noted, but it is available at the daily rate plus expenses. The customer will be charged for a minimum of three days for time at the jobsite. Travel will be billed at the daily rate. Any canceled charges due to the customer's request will be added to the invoice. The greater of visa procurement time or a two week notice is required prior to trip departure date.

Taxes (sales, use, VAT, IVA, IGV, duties, fees, import, etc.)	Not Included

3. Payment Terms

Submittal Approval	15%
Release for Fabrication	35%
Net 30 days from Shipment	50%

4. Schedule

Submittals, after PO receipt	6 to 8 weeks
Ready to Ship, after Submittal approval	18 to 20 weeks

Terms & Conditions: This proposal, including all terms and conditions contained herein, shall become part of any resulting contract or purchase order. Changes to any terms and conditions, including but not limited to submittal and shipment days, payment terms, and escalation clause shall be negotiated at order placement, otherwise the proposal terms and conditions contained herein shall apply.

Paint: If your equipment has paint included in the price, please take note to the following. Primer paints are designed to provide only a minimal protection from the time of application (usually for a period not to exceed 30 days). Therefore, it is imperative that the finish coat be applied within 30 days of shipment on all shop primed surfaces. Without the protection of the final coatings, primer degradation may occur after this period, which in turn may require renewed surface preparation and coating. If it is impractical or impossible to coat primed surfaces within the suggested time frame, WesTech strongly recommends the supply of bare metal, with surface preparation and coating performed in the field. All field surface preparation, field paint, touch-up, and repair to shop painted surfaces are not by WesTech.

WESTECH

Hawkins, Inc.
2381 Rosegate
Roseville, MN 55113
Phone: (612) 331-6910
Fax: (612) 331-5304

Technical Service Report

Iron Filtration Study

Baxter Water Plant
Baxter, MN
Iron Filtration Study
By: Mark Oberhelman, Dan Paulson
Date: 7/8/15

I. Baxter Iron Filtration Study

II. Purpose: To improve iron loading on the filters.

III. Observations:

Water enters the plant after aeration and hyochlorite addition. The raw water has high iron, ammonia and VOC levels. After passing through a detention zone the water passes to the filters. The current level of iron in the water entering the filters was found to be 3.57 ppm as iron. A sample of water was taken from the beginning of the detention tank for testing. The first set of jars revealed high levels of off-gassing causing floc treated with anionic flocculants to float. This ruled out the possibility of using a high molecular weight flocculant and would also explain why they had failed in the past. Coagulation appears to be the only means of precipitating and settling iron particles ahead of the filters.

IV. Data

Baxter Iron Filtration Study				
Product	Jar 1	Jar 2	Jar 3	Jar 4
Aqua Hawk 9847	0.25 ppm			--
Aqua Hawk 6827		1.0 ppm		--
Aqua Hawk 6527			1.0 ppm	--
Observations	Floc floated	Settled	Best settling	Control

Aqua Hawk 6527 was determined to perform the best and was used for further testing.

An Affirmative Action Equal Opportunity Employer

Aqua Hawk 6527 Optimization				
Product	Jar 1	Jar 2	Jar 3	Jar 4
Aqua Hawk 6527	**0.25 ppm**	**0.5 ppm**	**0.75 ppm**	
Aqua Hawk 9847				**0.1 ppm**
Observations				**floated**
Iron level	**1.75**	**1.24**	**0.82**	**--**

Raw iron – 5.27

Filter influent iron – 3.57

V. Conclusion

High molecular weight flocculants will not work due to off-gassing in the detention zone. Aqua Hawk 6527 an organic low molecular weight coagulant performed the best and is recommended for trial. No dilution water is needed. We recommend a dosage of 0.75 ppm as product.

Jar 1 Aqua Hawk 9847@ 0.25 ppm floating floc

Jar 4 no treatment

Pace Analytical Services, Inc.
1700 Elm Street SE
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6388
www.pacelabs.com

April 30, 2015

Naeem Qureshi
Progressive Consulting Engineers
6120 Earle Brown Drive
Suite 629
Minneapolis, MN 55430

RE: Progressive Consulting Engineers - Baxter WTP
Pace Field P/N: 12-15-0389 - Pace Lab P/N: 10303002
PCE-Baxter Apr.2015 WTP Study *Revised Cover Letter

Dear Mr. Qureshi

Please find enclosed, the laboratory report and data summary table for our recent monitoring event at the Baxter Water Treatment Plant (WTP). The enclosed materials relate to the monitoring event conducted on April 15, 2015. The following documents are included with this submittal:

1. Cover Letter (revised to include Steve Karels last name and to correct truncated text)
2. Data Summary Table
3. Lab Report

Pace Analytical was contracted by Progressive Consulting Engineers to collect water samples from five sources at the City of Baxter WTP. Onsite direction was provided by the WTP facility representatives Steve Karels and Kevin Cassady.

Samples were collected directly into the laboratory sample bottles without the aid of a sampling device. Filtering for Dissolved Iron and Dissolve Manganese was conducted in the field using a 0.45 micron filter.

Thank you for the opportunity to serve Progressive Consulting Engineers. If you have any questions regarding this report, please contact me at your convenience.

Respectfully,

Brad Jacobson
Project Manager
(612) 607-6375

Enclosures

PCE-Baxter WTP Study
Sample Date: 4/15/15
Pace Lab Project No.: 10303002
Pace Field Project No.: 12-15-0389

Data Summary

Parameter	Units	PLANT INFLUENT (RAW WATER)	AERATOR EFFLUENT	DETENTION TANK EFFLUENT	FILTER EFFLUENT	PLANT EFFLUENT
Alkalinity, Total as CaCO3	mg/L	174	172	168	163	164
Field pH	s.u.	7.4	7.5	7.1	7.3	7.4
Iron	ug/L	4090	4460	4010	<50.0	<50.0
Iron, Dissolved	ug/L	NA*	439	3980	<50.0	<50.0
Manganese	ug/L	441	495	432	0.61	<0.50
Manganese, Dissolved	ug/L	NA*	426	416	<0.50	<0.50
Nitrogen, Ammonia	mg/L	1.1	1.1	0.059	0.040	<0.040
Total Hardness by 2340B	ug/L	171000	180000	172000	180000	177000
Total Organic Carbon	mg/L	2.7	2.7	2.5	2.5	2.5

NA* Analysis not requested

Report Date: 4/29/15 bgj

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 29, 2015

Mr. Brad Jacobson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 16, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Timothy Sandager for
Dennsa Mohamed
dennsa.mohamed@pacelabs.com
Project Manager

Enclosures

cc: Pace Analytical - Field, Pace Analytical Field Services
Ms. Ciara Ruikkie, Pace Analytical Minnesota

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #: UST-078
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

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Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10303002001	**PLANT INFLUENT (RAW WATER)**	Water	04/15/15 11:00	04/16/15 10:35
10303002002	**AERATOR EFFLUENT**	Water	04/15/15 11:05	04/16/15 10:35
10303002003	**DETENTION TANK EFFLUENT**	Water	04/15/15 11:20	04/16/15 10:35
10303002004	**FILTER EFFLUENT**	Water	04/15/15 11:30	04/16/15 10:35
10303002005	**PLANT EFFLUENT**	Water	04/15/15 11:40	04/16/15 10:35

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10303002001	**PLANT INFLUENT (RAW WATER)**	EPA 200.8	TT3	3	PASI-M
		SM 2320B	MW	1	PASI-M
		EPA 350.1	PH1	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10303002002	**AERATOR EFFLUENT**	EPA 200.8	TT3	3	PASI-M
		EPA 200.8	RJS	2	PASI-M
		SM 2320B	MW	1	PASI-M
		EPA 350.1	PH1	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10303002003	**DETENTION TANK EFFLUENT**	EPA 200.8	TT3	3	PASI-M
		EPA 200.8	RJS	2	PASI-M
		SM 2320B	MW	1	PASI-M
		EPA 350.1	PH1	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10303002004	**FILTER EFFLUENT**	EPA 200.8	TT3	3	PASI-M
		EPA 200.8	RJS	2	PASI-M
		SM 2320B	MW	1	PASI-M
		EPA 350.1	PH1	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10303002005	**PLANT EFFLUENT**	EPA 200.8	TT3	3	PASI-M
		EPA 200.8	RJS	2	PASI-M
		SM 2320B	MW	1	PASI-M
		EPA 350.1	PH1	1	PASI-M
		SM 5310C	KRV	1	PASI-V

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Sample: PLANT INFLUENT (RAW WATER) **Lab ID: 10303002001** Collected: 04/15/15 11:00 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Collected By	**DJA**			1		04/15/15 11:00		
Collected Date	**4/15/15**			1		04/15/15 11:00		
Collected Time	**11:00**			1		04/15/15 11:00		
Field pH	**7.4**		0.10	1		04/15/15 11:00		
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Iron	**4090**	ug/L	50.0	1	04/19/15 20:59	04/21/15 15:13	7439-89-6	
Manganese	**441**	ug/L	0.50	1	04/19/15 20:59	04/21/15 15:13	7439-96-5	
Total Hardness by 2340B	**171000**	ug/L	705	5	04/19/15 20:59	04/22/15 12:38		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**174**	mg/L	5.0	1		04/24/15 09:32		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**1.1**	mg/L	0.040	1		04/24/15 11:46	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.7**	mg/L	1.0	1		04/22/15 02:18	7440-44-0	

Sample: AERATOR EFFLUENT **Lab ID: 10303002002** Collected: 04/15/15 11:05 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Collected By	**DJA**			1		04/15/15 11:05		
Collected Date	**4/15/15**			1		04/15/15 11:05		
Collected Time	**11:05**			1		04/15/15 11:05		
Field pH	**7.5**		0.10	1		04/15/15 11:05		
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Iron	**4460**	ug/L	50.0	1	04/19/15 20:59	04/21/15 15:26	7439-89-6	
Manganese	**495**	ug/L	2.5	5	04/19/15 20:59	04/22/15 12:44	7439-96-5	
Total Hardness by 2340B	**180000**	ug/L	705	5	04/19/15 20:59	04/22/15 12:44		
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Iron, Dissolved	**439**	ug/L	50.0	1	04/20/15 21:06	04/22/15 17:03	7439-89-6	
Manganese, Dissolved	**426**	ug/L	0.50	1	04/20/15 21:06	04/22/15 17:03	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**172**	mg/L	5.0	1		04/24/15 09:35		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**1.1**	mg/L	0.040	1		04/24/15 11:48	7664-41-7	

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ANALYTICAL RESULTS

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Sample: AERATOR EFFLUENT **Lab ID: 10303002002** Collected: 04/15/15 11:05 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.7**	mg/L	1.0	1		04/22/15 03:24	7440-44-0	

Sample: DETENTION TANK EFFLUENT **Lab ID: 10303002003** Collected: 04/15/15 11:20 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Collected By	**DJA**			1		04/15/15 11:20		
Collected Date	**4/15/15**			1		04/15/15 11:20		
Collected Time	**11:20**			1		04/15/15 11:20		
Field pH	**7.1**		0.10	1		04/15/15 11:20		
200.8 MET ICPMS	Analytical Method: EPA 200.8	Preparation Method: EPA 200.8						
Iron	**4010**	ug/L	50.0	1	04/19/15 20:59	04/21/15 15:28	7439-89-6	
Manganese	**432**	ug/L	0.50	1	04/19/15 20:59	04/21/15 15:28	7439-96-5	
Total Hardness by 2340B	**172000**	ug/L	705	5	04/19/15 20:59	04/22/15 12:47		
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8	Preparation Method: EPA 200.8						
Iron, Dissolved	**3980**	ug/L	50.0	1	04/20/15 21:06	04/22/15 16:48	7439-89-6	
Manganese, Dissolved	**416**	ug/L	0.50	1	04/20/15 21:06	04/22/15 16:48	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**168**	mg/L	5.0	1		04/24/15 09:39		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.059**	mg/L	0.040	1		04/24/15 11:50	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.5**	mg/L	1.0	1		04/22/15 03:37	7440-44-0	

Sample: FILTER EFFLUENT **Lab ID: 10303002004** Collected: 04/15/15 11:30 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Collected By	**DJA**			1		04/15/15 11:30		
Collected Date	**4/15/15**			1		04/15/15 11:30		
Collected Time	**11.30**			1		04/15/15 11:30		
Field pH	**7.3**		0.10	1		04/15/15 11:30		
200.8 MET ICPMS	Analytical Method: EPA 200.8	Preparation Method: EPA 200.8						
Iron	ND	ug/L	50.0	1	04/19/15 20:59	04/21/15 15:31	7439-89-6	
Manganese	**0.61**	ug/L	0.50	1	04/19/15 20:59	04/21/15 15:31	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Sample: FILTER EFFLUENT **Lab ID: 10303002004** Collected: 04/15/15 11:30 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Total Hardness by 2340B	**180000**	ug/L	705	5	04/19/15 20:59	04/22/15 12:50		
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Iron, Dissolved	ND	ug/L	50.0	1	04/20/15 21:06	04/22/15 16:53	7439-89-6	
Manganese, Dissolved	ND	ug/L	0.50	1	04/20/15 21:06	04/22/15 16:53	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**163**	mg/L	5.0	1		04/24/15 09:42		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.040**	mg/L	0.040	1		04/24/15 11:50	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.5**	mg/L	1.0	1		04/22/15 03:50	7440-44-0	

Sample: PLANT EFFLUENT **Lab ID: 10303002005** Collected: 04/15/15 11:40 Received: 04/16/15 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Collected By	**DJA**			1		04/15/15 11:40		
Collected Date	**4/15/15**			1		04/15/15 11:40		
Collected Time	**11:40**			1		04/15/15 11:40		
Field pH	**7.4**		0.10	1		04/15/15 11:40		
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Iron	ND	ug/L	50.0	1	04/19/15 20:59	04/21/15 15:34	7439-89-6	
Manganese	ND	ug/L	0.50	1	04/19/15 20:59	04/21/15 15:34	7439-96-5	
Total Hardness by 2340B	**177000**	ug/L	705	5	04/19/15 20:59	04/22/15 12:52		
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Iron, Dissolved	ND	ug/L	50.0	1	04/20/15 21:06	04/22/15 16:58	7439-89-6	
Manganese, Dissolved	ND	ug/L	0.50	1	04/20/15 21:06	04/22/15 16:58	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**164**	mg/L	5.0	1		04/24/15 09:46		
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.040	1		04/24/15 11:52	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.5**	mg/L	1.0	1		04/22/15 04:04	7440-44-0	

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QUALITY CONTROL DATA

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

QC Batch: MPRP/53725 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

METHOD BLANK: 1942904 Matrix: Water
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	04/21/15 15:08	
Manganese	ug/L	ND	0.50	04/21/15 15:08	

LABORATORY CONTROL SAMPLE: 1942905

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	1000	1050	105	85-115	
Manganese	ug/L	80	84.8	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1942906 1942907

Parameter	Units	10303002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	4090	1000	1000	5120	5080	103	99	70-130	1	20	
Manganese	ug/L	441	80	80	536	532	118	113	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

QC Batch: MPRP/53750 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10303002002, 10303002003, 10303002004, 10303002005

METHOD BLANK: 1943161 Matrix: Water
Associated Lab Samples: 10303002002, 10303002003, 10303002004, 10303002005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	04/22/15 16:29	
Manganese, Dissolved	ug/L	ND	0.50	04/22/15 16:29	

LABORATORY CONTROL SAMPLE: 1943162

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	1000	1080	108	85-115	
Manganese, Dissolved	ug/L	80	81.2	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1943163 1943164

Parameter	Units	10303002002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Dissolved	ug/L	439	1000	1000	1490	1530	105	109	70-130	2	20	
Manganese, Dissolved	ug/L	426	80	80	496	510	88	106	70-130	3	20	

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QUALITY CONTROL DATA

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

QC Batch: WET/41427 — Analysis Method: SM 2320B
QC Batch Method: SM 2320B — Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

METHOD BLANK: 1947541 — Matrix: Water
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	04/24/15 09:13	

LABORATORY CONTROL SAMPLE & LCSD: 1947542 1947543

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	41.5	43.4	104	108	90-110	5	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1947544 1947545

Parameter	Units	1245756003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	342	40	40	386	388	112	117	80-120	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1947546 1947547

Parameter	Units	10303318001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	426	40	40	471	470	111	109	80-120	0	30	

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QUALITY CONTROL DATA

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

QC Batch: WETA/22556 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

METHOD BLANK: 1946692 Matrix: Water
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.040	04/24/15 11:37	

LABORATORY CONTROL SAMPLE: 1946693

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	1	1.0	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1946694 1946695

Parameter	Units	10303346002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.020	1	1	1.0	1.0	100	101	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1946696 1946697

Parameter	Units	10303339005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	1	1	1.1	1.1	103	103	90-110	0	20	

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QUALITY CONTROL DATA

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

QC Batch: WETA/11433 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C TOC
Associated Lab Samples: 10303002001, 10303002002, 10303002003, 10303002004, 10303002005

METHOD BLANK: 201594 Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	04/22/15 01:00	

LABORATORY CONTROL SAMPLE: 201595

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	26.0	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 201596 201597

Parameter	Units	10303002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	2.7	25	25	28.7	28.8	104	104	80-120	0	20	

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QUALIFIERS

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 15-0389 PCE-Baxter WTP STUDY
Pace Project No.: 10303002

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10303002001	**PLANT INFLUENT (RAW WATER)**		FLD/		
10303002002	**AERATOR EFFLUENT**		FLD/		
10303002003	**DETENTION TANK EFFLUENT**		FLD/		
10303002004	**FILTER EFFLUENT**		FLD/		
10303002005	**PLANT EFFLUENT**		FLD/		
10303002001	**PLANT INFLUENT (RAW WATER)**	EPA 200.8	MPRP/53725	EPA 200.8	ICPM/23873
10303002002	**AERATOR EFFLUENT**	EPA 200.8	MPRP/53725	EPA 200.8	ICPM/23873
10303002003	**DETENTION TANK EFFLUENT**	EPA 200.8	MPRP/53725	EPA 200.8	ICPM/23873
10303002004	**FILTER EFFLUENT**	EPA 200.8	MPRP/53725	EPA 200.8	ICPM/23873
10303002005	**PLANT EFFLUENT**	EPA 200.8	MPRP/53725	EPA 200.8	ICPM/23873
10303002002	**AERATOR EFFLUENT**	EPA 200.8	MPRP/53750	EPA 200.8	ICPM/23875
10303002003	**DETENTION TANK EFFLUENT**	EPA 200.8	MPRP/53750	EPA 200.8	ICPM/23875
10303002004	**FILTER EFFLUENT**	EPA 200.8	MPRP/53750	EPA 200.8	ICPM/23875
10303002005	**PLANT EFFLUENT**	EPA 200.8	MPRP/53750	EPA 200.8	ICPM/23875
10303002001	**PLANT INFLUENT (RAW WATER)**	SM 2320B	WET/41427		
10303002002	**AERATOR EFFLUENT**	SM 2320B	WET/41427		
10303002003	**DETENTION TANK EFFLUENT**	SM 2320B	WET/41427		
10303002004	**FILTER EFFLUENT**	SM 2320B	WET/41427		
10303002005	**PLANT EFFLUENT**	SM 2320B	WET/41427		
10303002001	**PLANT INFLUENT (RAW WATER)**	EPA 350.1	WETA/22556		
10303002002	**AERATOR EFFLUENT**	EPA 350.1	WETA/22556		
10303002003	**DETENTION TANK EFFLUENT**	EPA 350.1	WETA/22556		
10303002004	**FILTER EFFLUENT**	EPA 350.1	WETA/22556		
10303002005	**PLANT EFFLUENT**	EPA 350.1	WETA/22556		
10303002001	**PLANT INFLUENT (RAW WATER)**	SM 5310C	WETA/11433		
10303002002	**AERATOR EFFLUENT**	SM 5310C	WETA/11433		
10303002003	**DETENTION TANK EFFLUENT**	SM 5310C	WETA/11433		
10303002004	**FILTER EFFLUENT**	SM 5310C	WETA/11433		
10303002005	**PLANT EFFLUENT**	SM 5310C	WETA/11433		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1030307

Page: 1 of 1

Section A Required Client Information:

Company:	Progressive Consulting Engineer
Address:	c/o Pace Analytical
	Field Services
Email To:	Brad Jacobson
Phone:	Fax: 612-607-6388
Requested Due Date/TAT:	2 Weeks

Section B Required Project Information:

Report To:	Brad Jacobson
Copy To:	
Purchase Order No.:	Internal JE
Project Name:	12-15-0389
Project Number:	PCE-Baxter WTP Study

Section C Invoice Information:

Attention:	Ciara Ruikkie
Company Name:	Pace Field Services Division
Address:	1700 Elm Street, Ste. 200 Minneapolis, MN 55414
Pace Quote Reference:	Target
Pace Project Manager:	Dennsa Mohamed
Pace Profile #:	35117 Line #1

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☑ OTHER MCES

SITE LOCATION: ☐ GA ☐ IL ☐ IN ☐ MI ☐ NC ☐ OH ☐ SC ☐ WI ☐ OTHER

Section D Required Client Information

SAMPLE ID
One Character per box.
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
	WP
	AR
	OT
	TS

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE G=GRAB C=COMP	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Filtered (Y/N)	pH (field)	Fe-Total, Mn-Total	Fe-Dissolved	Mn-Dissolved	Total Hardness SM2340B	Alkalinity SM2320B	Nitrogen, Ammonia(350/1)	TOC-5310C	Residual Chlorine (Y/N)	Pace Project No. Lab I.D.
1	Plant Influent (Raw Water)	DW	G	---	---	4/15/15	1100		4	1	2	1							X	X			X	X	X	X		01
2	Aerator Effluent	DW	G	---	---	4/15/15	1105		5	1	2	2							X	X	X	X	X	X	X	X		02
3	Dentention Tank Effluent	DW	G	---	---	4/15/15	1120		5	1	2	2							X	X	X	X	X	X	X	X		03
4	Filter Effluent	DW	G	---	---	4/15/15	1130		5	1	2	2							X	X	X	X	X	X	X	X		04
5	Plant Effluent	DW	G	---	---	4/15/15	1140		5	1	2	2							X	X	X	X	X	X	X	X		05
6																												
7																												
8																												
9																												
10																												
11																												
12																												

DVR 4/15/15

Additional Comments:

pH Field Analyst/Date: DJA 4/15/15

	Result	Analysis Time
Plant Influent (Raw Water)	7.4 s.u.	1100
Aerator Effluent	7.5 s.u.	1105
Dentention Tank Effluent	7.1 s.u.	1120
Filter Effluent	7.3 s.u.	1130
Plant Effluent	7.4 s.u.	1140

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
David Anderson Pace	4/16/15	1035	PACE	4-16-15	1035

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM / DD / YY): 4/15/15

SAMPLE CONDITIONS	Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
	0.4	Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 23Feb2015 Page 1 of 1
	Document No.: **F-MN-L-213-rev.13**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: FSD

Project #: WO#: 10303002

10303002

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ B88A9130516413 ☑ B88A912167504 ☐ B88A0143310098 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.2 **Cooler Temp Corrected (°C):** 0.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 4-16-15 AA

USDA Regulated Soil (☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☑ Yes	☐ No	☐ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation have been checked?	☑ Yes	☐ No	☐ N/A	13. ☑ HNO_3 ☑ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☑ Yes	☐ No	☐ N/A	Sample # 1 1/1 1 1/1 2-5 2/2 2-5 1/1
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☑ Yes	☐ No	☐ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [signature] **Date:** 4/17/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Chain of Custody

WO# : 1245827

PM: HRZ Due Date: 04/30/15
CLIENT: PACE MPLS

cal®
s.com

Workorder: 10303002 **Workorder Name:** 12-15-0389 PCE-BAXTER WTP STUD **Owner Received Date:** 4/16/2015 **Results Requested By:** 4/30/2015

Report To

Dennsa Mohamed
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone (612)607-1700
Fax (612)607-6444

Subcontract To

Pace Analytical Virginia MN
315 Chestnut Street
Virginia, MN 55792
Phone (218)742-1042

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	TOC	LAB USE ONLY
1	PLANT INFLUENT (RAW	PS	4/15/2015 11:00	10303002001	Water	1	X	001
2	AERATOR EFFLUENT	PS	4/15/2015 11:05	10303002002	Water	1	X	002
3	DETENTION TANK EFFLUENT	PS	4/15/2015 11:20	10303002003	Water	1	X	003
4	FILTER EFFLUENT	PS	4/15/2015 11:30	10303002004	Water	1	X	004
5	PLANT EFFLUENT	PS	4/15/2015 11:40	10303002005	Water	1	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace MN	4/17/15 11:15	[illegible]	4/17/15 1735
2	[illegible]	4/17/15 2120	[illegible]	4/20/15 0800
3				

Comments

Cooler Temperature on Receipt 1.6 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 23Feb2015 Page 1 of 1
	Document No.: F-VM-C-001-Rev.09	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - MN

Project #: WO# : 1245827

1245827

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.6 **Cooler Temp Corrected °C:** 1.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 **Date and Initials of Person Examining Contents:** JPC 4/17/15

Comments: 4/20/15 STC

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☑ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

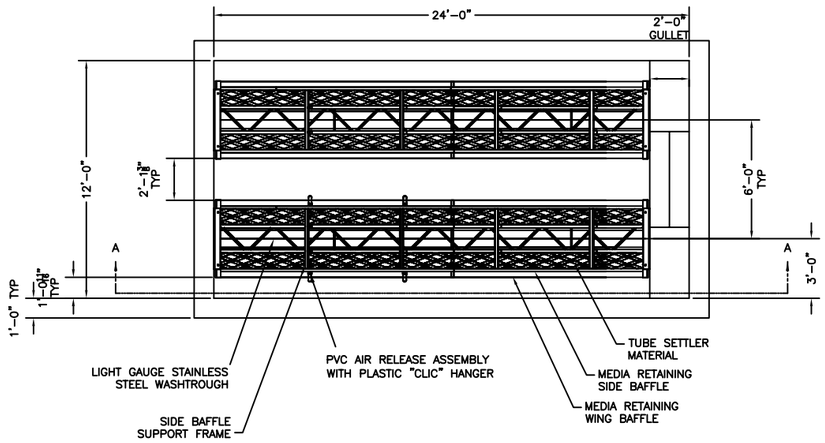
Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

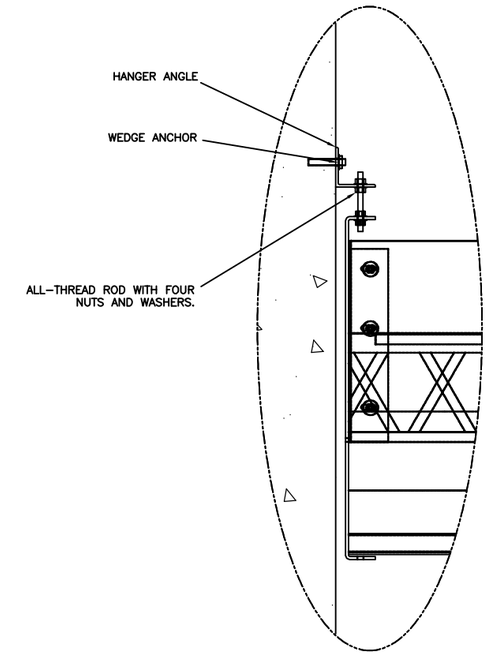
FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Melissa Woods **Date:** 4/21/15

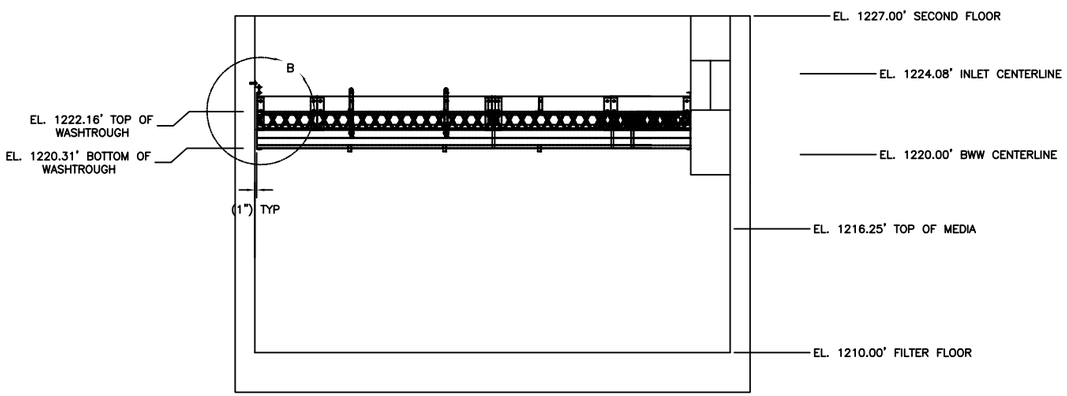
Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)



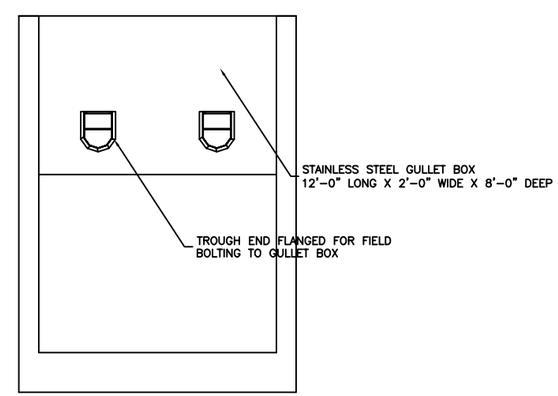
PLAN VIEW



VIEW B
SCALE: 1 $\frac{1}{2}$" = 1'-0"



SECTION A-A



SIDE ELEVATION VIEW

NOTES:
1. WASHTROUGHS FOR ONE CELL SHOWN. 4 CELLS REQUIRED.
2. CONCRETE BASIN, GROUT, AND WASHTROUGH INSTALLATION ARE NOT BY U.S. FILTER.
3. WASHTROUGH SHOULD BE LEVELED PER INSTALLATION INSTRUCTIONS PRIOR TO FINAL GROUTING INTO GULLET WALL.
4. WASHTROUGH, HANGER ANGLES, AND WEDGE ANCHORS SHALL BE TYPE 304 STAINLESS STEEL. ALL OTHER MOUNTING HARDWARE SHALL BE TYPE 18-8 STAINLESS STEEL COMMERCIAL FASTENERS.
5. DIMENSIONS SHOWN IN PARENTHESES ARE CONSIDERED REFERENCE DIMENSIONS WHICH MAY VARY DURING INSTALLATION TO PROVIDE A LEVEL WASHTROUGH.
6. AIR RELEASE PIPING AND MOUNTING HARDWARE IS SHOWN ON THE FIRST WASHTROUGH ASSEMBLY ONLY. EACH WASHTROUGH WILL HAVE THE SAME AIR RELEASE CONFIGURATION.
7. LOCATE HANGER ANGLE WITH SHOP MARKING TOWARDS WALL.

STD: BORDER-1101-22X34D | INTL REF: | BAR = 1" AT PLOT SCALE

REV	DESCRIPTION	DATE	DWN	CHKD	APVD	ECN

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DESIGNER	DATE	TITLE 12'-0" X 24'-0" FILTER CELL E.S.S.D. WASHTROUGH LAYOUT LOW PROFILE STYLE
GJP	2-2-06	
CHECKER	DATE	CLIENT
ENGINEER	DATE	
MANAGER	DATE	USFilter MEMCOR - GENERAL FILTER PRODUCTS AMES, IA (515) 232-4121 FAX (515) 232-2571
FILE:		
SCALE: 1/4" = 1'-0"		PROJECT / CODE / DRAWING / SHEET 1 OF 1 / REV 1

Naeem Qureshi

From: Todd Butz <tbutz@treatmentresources.com>
Sent: Friday, June 19, 2015 9:07 AM
To: Naeem Qureshi
Subject: Baxter, MN
Attachments: DensaDeg Budget Proposal - Baxter, MN.pdf

Good morning Naeem,

Following up on our discussion from last week:

1. In lieu of a full pilot study, Infilco could do lab testing to determine TOC removal that could be expected with the DensaDeg unit. They only need 10 gallons of water, and the cost is $3,500. Freight cost not included. They would write a full treat ability report including discussion on TOC removal.

2. I attached a proposal for the full-scale DensaDeg, which includes footprint and elevation drawings. The budget price is $590,000.

3. I'm still working on the budget cost for 2 additional filters and will forward to you when completed.

Feel free to call, or e-mail with any questions.

Thanks,
Todd

Todd Butz
Treatment Resources, Inc.
Direct: (612) 816-2230
Offering water and wastewater treatment solutions in MN, ND, and SD
www.treatmentresources.com

Naeem Qureshi

From: Todd Butz <tbutz@treatmentresources.com>
Sent: Monday, June 22, 2015 10:00 AM
To: Naeem Qureshi
Subject: Re: Baxter, MN

Good morning Naeem,

To determine the budget cost for additional gravity filters, I assumed the same size as existing; 12' W x 24' L (288 sf). In this case, the budget cost for filter components (underdrain block with media retaining cap, air wash piping, greensand plus media, anthracite media, combined air/water backwash troughs, engineering and start-up services) is $98,224 per filter. So for two additional filters, the budget cost is $196,448. Please note that valves, installation, concrete work, and sales tax are not included in this budget price.

If they want to consider retro-fitting the existing filters to remove the concrete trough that causes mal-distribution during backwash (preventing a prolonged combined air/water backwash), and install a single backwash trough running the length of the filter, the cost for a single 24' L combined air/water backwash trough to install into an existing filter, is $41,000. So the budget cost for 4 total would be $164,000. This budget price does not include demolition of existing concrete trough, or installation of new trough.

Please fee free to call, or e-mail with any questions.

Thank you,
Todd

Todd Butz
Treatment Resources, Inc.
Direct: (612) 816-2230
Offering water and wastewater treatment solutions in MN, ND, and SD
www.treatmentresources.com

On Jun 19, 2015, at 9:07 AM, Todd Butz wrote:

Good morning Naeem,

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1. In lieu of a full pilot study, Infilco could do lab testing to determine TOC removal that could be expected with the DensaDeg unit. They only need 10 gallons of water, and the cost is $3,500. Freight cost not included. They would write a full treat ability report including discussion on TOC removal.

2. I attached a proposal for the full-scale DensaDeg, which includes footprint and elevation drawings. The budget price is $590,000.

3. I'm still working on the budget cost for 2 additional filters and will forward to you when completed.

Feel free to call, or e-mail with any questions.

INFILCO
DEGREMONT INC.

DENSADEG®

HIGH-RATE CLARIFIER & THICKENER

BUDGET PROPOSAL

PROJECT: BAXTER WTP
ENGINEER: PCE
PROPOSAL#: 50157676.01
DATE: 6/18/2015

COMMITTED TOGETHER
TO WATER,
A SOURCE OF LIFE

REGIONAL BUSINESS MANAGER:
JOHN HUGHES
INFILCO DEGREMONT, INC.
7722 GLEN ROSE HIGHWAY
GRANBURY, TX 76048
PH: 817-262-9500
john.hughes@infilcodegremont.com

LOCAL REPRESENTATIVE:
TODD BUTZ
TREATMENT RESOURCES, INC.
11670 FOUNTAINS DRIVE, SUITE 200
MINNEAPOLIS, MN 55369
PH: 651-702-2692
TBUTZ@TREATMENTRESOURCES.COM

June 18, 2015

Attn: Nabbem Quereshi
PCE

Subject: DensaDeg® Preliminary Budget Proposal – 50157676.01

Dear Mr. Quereshi,

Thank you for considering Infilco Degremont's DensaDeg High Rate Clarifier and Thickener for your upcoming project. In accordance with your recent request, we are pleased to submit our preliminary proposal for the following:

One (1) DensaDeg High Rate Clarifier and Thickener for a total design flow of 5 MGD.

We have endeavored to provide complete information. If you have any questions or require additional information, please do not hesitate to contact myself or our local representative at your convenience. We look forward to further discussions with you concerning this project.

Sincerely,

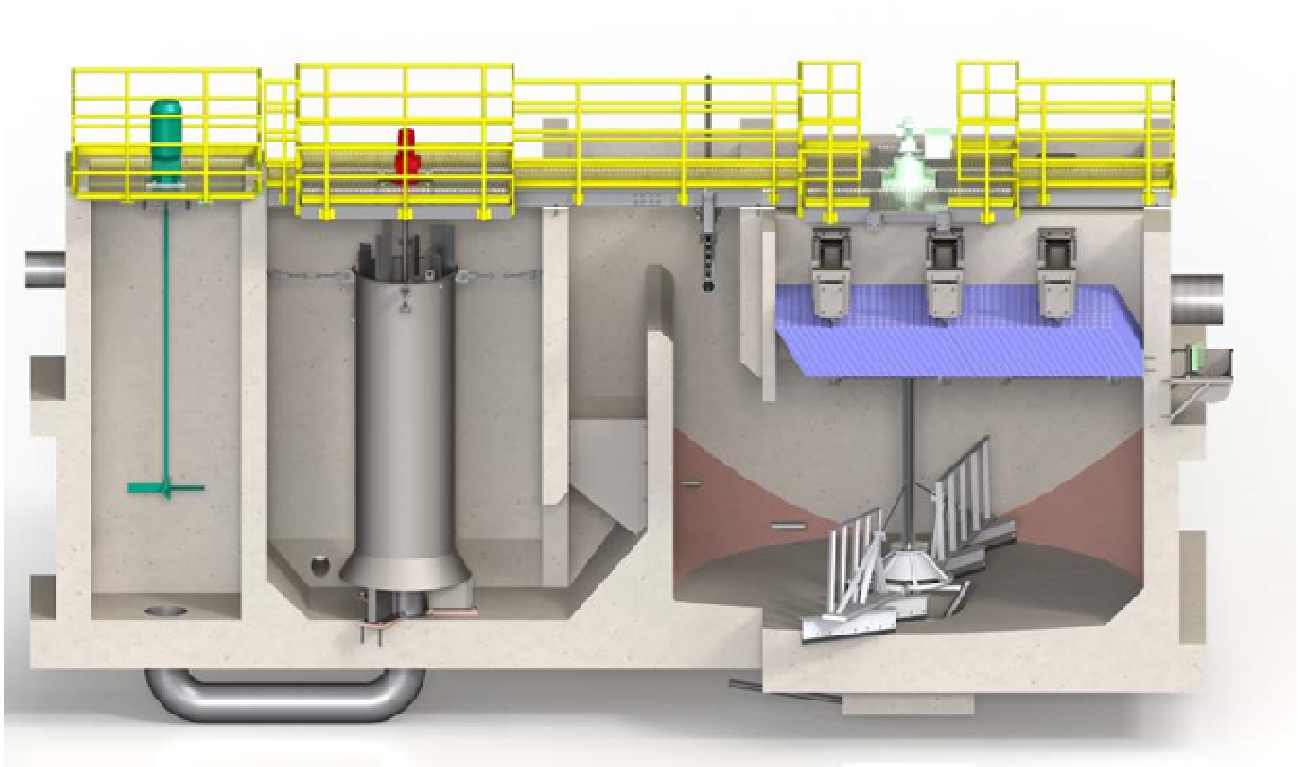
Patrick Daniel
Application Engineer – Separations Group
Infilco Degremont, Inc.

TABLE OF CONTENTS

- PROCESS DESCRIPTION
- DESIGN CONDITIONS
- SCOPE OF SUPPLY – BY IDI
- SCOPE OF SUPPLY – BY OTHERS
- PRELIMINARY DRAWINGS
- CONDITIONS OF SALE
- BUDGET PRICING
- BROCHURE

PROCESS DESCRIPTION

Raw water enters the system and is chemically altered for coagulation in a rapid mix tank. The water is then transferred into the reaction zone and introduced through the base of the reactor basin and discharged beneath an axial flow impeller. Inside this draft tube, polymer is injected through a distribution ring to aid in the flocculation and settling ability of the coagulated particles. Recycled solids are introduced in the inlet pipe to the reactor to aid in flocculation. The movement of the impeller provides sufficient energy for the mixing of the chemicals and raw water. It additionally acts as an axial flow pump by drawing previously formed solids, which settle external to the flume, into the base of the flume. This internal recycling of previously formed solids enhances the solids contact process and increases the speed of the reactions.



Next, the densely structured precipitate is transitioned from the reactor basin through a piston flocculation zone to the clarification and thickening zone. As the water flows under the baffle and upwards into the tubes, the solids downward momentum carries them to the bottom of the thickener basin. Here the solids are allowed to thicken with the aid of a slowly rotating scraper mechanism that pushes the sludge into a sludge hopper located at the bottom of the clarifier/thickener basin. The thickened sludge (2-4%) is periodically discharged from the hopper.

A part of the sludge inventory is recycled back to the reactor basin, thereby increasing the solids in the reactor and improving the performance of the process. Clarified water proceeds beneath the aforementioned baffle into the clarification zone. Additional solids removal is achieved by the use of tubes incorporated into the top of the clarification zone. Moving through the tubes, finished water is collected through a series of launders or laterals which discharge treated water into the effluent trough.

DESIGN CONDITIONS

SYSTEM DESIGN	
APPLICATION	Ground Water Clarification - Drinking Water
BASIN TYPE	Concrete
TOTAL DESIGN CAPACITY	5 MGD (788 m3/hr)
NO. OF UNITS	1
CLARIFIER LOADING RATE	7.4 gpm/ft2 (18.0 m/hr)
Concrete Estimate	312 yds3

INFLUENT WATER QUALITY†	
Alkalinity	174mg/L as $CaCo_3$
Iron	4.1 mg/L
Manganese	0.45 mg/L
pH	7
Temperature	Not Available ˚C/˚F
Nitrogen, Ammonia	1.1 mg/L
TOC	2.7 mg/L
Turbidity	Not Available NTU

†The proposed design is based on the above water quality information. Final influent water quality range must be defined for IDI to confirm the proposed design. Please consult IDI with any changes to the influent water quality

EQUIPMENT	HP	kW	Connected	Duty	Runtime/day	kW-hr/d
Rapid Mixer	5	4	1	1	24	89
Reactor Drive	15	11	1	1	24	268
Scraper Drive	1	0.4	1	1	24	9
Recycle Pumps	25	19	2	1	24	447
Sludge Pumps	25	19	1	1	1	19
					Est. Total Installed Power Consumption*	833

SCOPE OF SUPPLY - BY IDI

IDI proposes to furnish the following equipment:

Qty	Item	Description
1	Rapid Mixer	TEFC 480/3/60, 5-HP, Inverter Duty Motor, Wetted Parts MOC: 316SS, And 304 SS Anchor Bolts
1	Reactor Inner Draft Tube	Carbon Steel Draft Tube Assembly With 304 SS Anchor Bolts, And Carbon Steel Polymer Ring
1	Reactor Turbine and Mixer	Impeller MOC: Carbon Steel, TEFC 480/3/60, 15-HP, Inverter Duty Motor
1	Scraper	Scraper MOC: Carbon Steel, Anchor Bolts And Hardware, TEFC 480/3/60, 0.5-HP Severe Duty Motor
LOT	Tube Settling Modules	2' High Tubes - ABS Or Polystyrene, Supports MOC: Carbon Steel
LOT	Collection Troughs	FRP, V-Notch Weir Type With 304SS Anchor Bolts
1	Sampling System	Sample Sink MOC: 304SS, Sample Piping MOC: Sch 80 PVC, Ball Valves
1	Sludge Blowdown Valve	Pneumatic Operated Plug Valve
3	Recycle And Sludge Blowdown Pumps	Rotary Lobe Type Pump, TEFC, 480/3/60, 25-HP Inverter Duty Motor, With Isolation Valves, Pressure Gauges, And Associated Equipment. Skidded Pump Option: EXCLUDED
1	Instruments	Recycle Sludge Flowmeter
1	Control Panel	NEMA 4X, 304 SS Enclosure, Allen-Bradley PLC, Panelview HMI
1	Walkway	Spans Rapid Mix, Reactor, And Clarifier. Structural Supports: Carbon Steel, Grating: Aluminum, Two Rail Handrail: Aluminum, Kickplate: Aluminum
LOT	Surface Preparation & Paint	All Carbon Steel Components Shall Receive A SP-6 Or SP-10 Shop Blast And One Coat Of Shop Primer Prior To Shipment To The Jobsite.
15	Field Service	Days Of Service Shall Be Supplied For Construction Inspections, Start-Up, And Training In No More Than Three (3) Trips To The Jobsite.

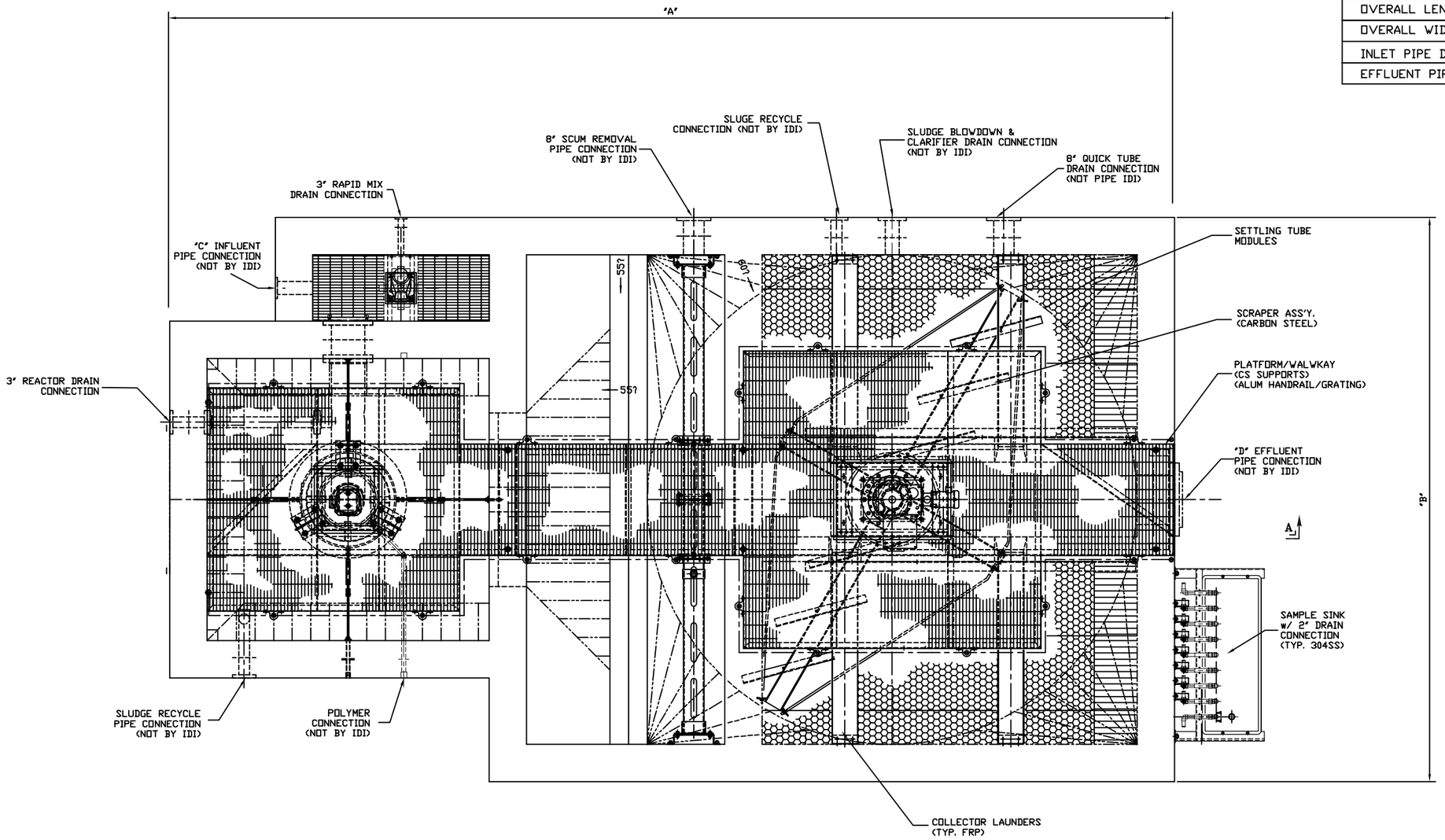
SCOPE OF SUPPLY – BY OTHERS

- Installation of any kind and unloading & placement of equipment
- All civil/concrete work on any kind
- All interconnecting piping
- All anchor bolts not specified herein
- All access stairs external to the DensaDeg unit
- All required chemicals and chemical feed systems
- All sludge blowdown equipment not mentioned herein
- Building or cover (if desired)
- All basin drains and drain valves
- Supply and installation of all electrical power and control wiring and conduit to the equipment served plus interconnections between the Infilco equipment as required, including wire, cable, junction boxes, fittings, conduit, cable trays, safety disconnect switches, circuit breakers, etc.
- Install and provide all motor control centers, motor starters, VFD's, field wiring, wireways, supports and transformers
- All embedded pipe sleeves
- All other necessary equipment and services not otherwise listed as specifically supplied by Infilco

PRELIMINARY DRAWINGS

Attached you will find preliminary layout(s) of the proposed system

GENERAL LEGEND	SYMBOL	VALUE	UNITS
OVERALL LENGTH	A	53.08	FT
OVERALL WIDTH	B	30	FT
INLET PIPE DIAMETER	C	18	IN
EFFLUENT PIPE DIAMETER	D	30	IN



PLAN VIEW

NOTES:

1. THIS DRAWING IS PRELIMINARY & NOT FOR CONSTRUCTION
2. DESIGN OF CONCRETE STRUCTURES IS BY OTHERS
3. DIMENSIONS ASSUME 12" THK. INTERNAL AND 15" THK. EXTERNAL WALLS.
4. ORIENTATION OF PIPE CONNECTONS TBD BY ENGINEER
5. SLUDGE RECYCLE & BLOWDOWN PUMPS TO BE LOCATED BY ENGINEER

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REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP	DATE

REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP	DATE
-	ORIGINAL ISSUE				
A					

PROJECT INFORMATION

Infilco Degremont, Inc.
Post Office Box 71390
Richmond, Virginia 23255-1390
(800) 446-1150

	BY	DATE
DRAWN		
CHECKED		
APP		
REF.		

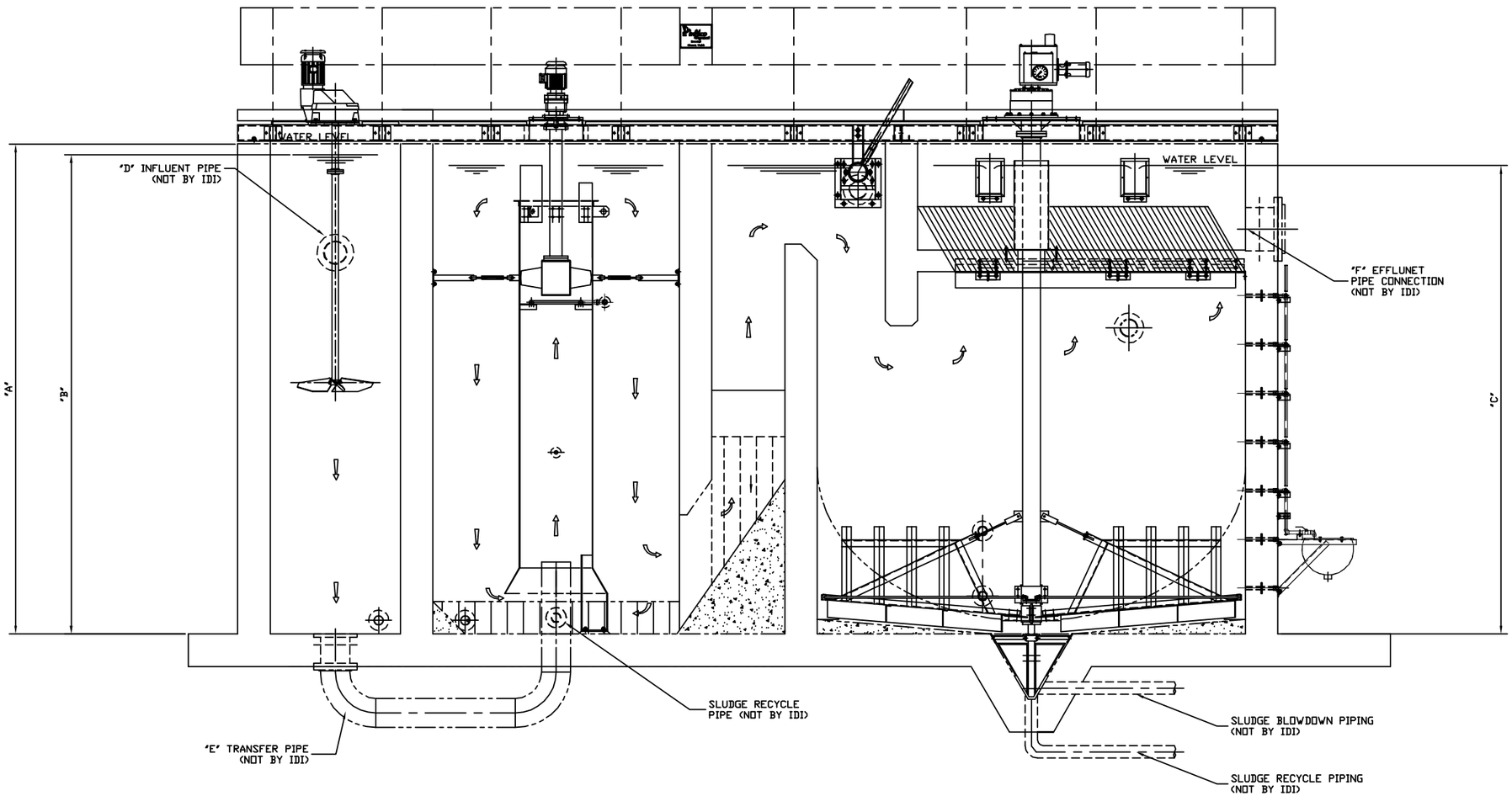
DO NOT SCALE

SCALE N.T.S.

GENERAL ARRANGEMENT
PLAN
DENSADEG

SIZE D | DWG. NO. -001 | REV. E

GENERAL LEGEND	SYMBOL	VALUE	UNITS
CLARIFIER HEIGHT	A	18.6	FT
RAPID MIX WATER LEVEL	B	17.6	FT
CLARIFIER WATER LEVEL	C	17.3	FT
INLET PIPE DIAMETER	D	18	IN
TRANSFER PIPE DIAMETER	E	24	IN
EFFLUENT PIPE DIAMETER	F	30	IN



SECTION VIEW

(Adjusted to show rapid mix clearly)

NOTES:

1. THIS DRAWING IS PRELIMINARY & NOT FOR CONSTRUCTION
2. DESIGN OF CONCRETE STRUCTURES IS BY OTHERS
3. DIMENSIONS ASSUME 12" THK. INTERNAL/EXTERNAL WALLS.
4. ORIENTATION OF PIPE CONNECTONS TBD BY ENGINEER

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–	ORIGINAL ISSUE				

PROJECT INFORMATION

Infilco Degremont, Inc.
Post Office Box 71390
Richmond, Virginia 23255-1390
(800) 446-1150

	BY	DATE
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CHECKED		
APP		

REF.

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SCALE N.T.S.

GENERAL ARRANGEMENT
SECTION
DENSADEG

SIZE D | DWG. NO. -002 | REV. E

CONDITIONS OF SALE

All pricing and scope is based on our standard terms & conditions, which can be provided upon request.

FREIGHT TERMS	
FOB	Jobsite

PAYMENT TERMS	
10%	Net Cash, Payable in sixty (60) days from date of submittal of initial drawings for approval
85%	Net Cash, Payable in progress payments sixty (60) days from dates of respective shipments of the Products
5%	Net Cash, Payable in sixty (60) days from Product installation and acceptance or Ninety (90) days after date of final Product delivery, whichever occurs first

BUDGET PRICING

ITEM	PRICING	
Scope of Supply – By IDI		REP TO ADVISE
Option Item A		N/A
Option Item B		N/A
	TOTAL BUDGET PRICE	**REP TO ADVISE**

Note: All pricing is exclusive of ALL taxes, tariffs and duties

INFILCO
DENSADEG®
CLARIFIER / SOFTENER

DRINKING WATER

The DensaDeg® Clarifier/Thickener is a high-rate solids contact clarifier which combines optimized flocculation, internal and external sludge recirculation, and plate settling in two conjoined vessels.

APPLICATIONS

- » **Clarification and Softening**
- » **Membrane/Filter Backwash**
- » **Thickening**
- » **Organics Removal**

MAIN FEATURES

- » High loading rate equals small footprint
- » Compact layout: Integration of clarification and thickening in a single system
- » Highly efficient use of chemicals
- » External sludge recirculation and high solids concentration reduces start-up time
- » Superior effluent quality
- » Thickener provides sludge storage and sludge thickening
- » Easily handles influent solids variations
- » No maintenance concerns related to abrasive wear by external ballast

DENSADEG® 2D CLARIFIER/THICKENER

The DensaDeg® Clarifier, Softener and Thickener is the water and wastewater industry's most robust, versatile process on the market. This high-rate system combines optimized flocculation, internal and external solids recirculation, thickening in two conjoined vessels to maximize hydraulic loading and treatment efficiencies. The proprietary blend of energy input and high volume solids recirculation reduces waste volumes and results in rapid settling operation and high quality treated water. The DensaDeg® process is proven in hundreds of installations on nearly all physical-chemical separation applications in the municipal drinking water, wastewater and industrial markets.

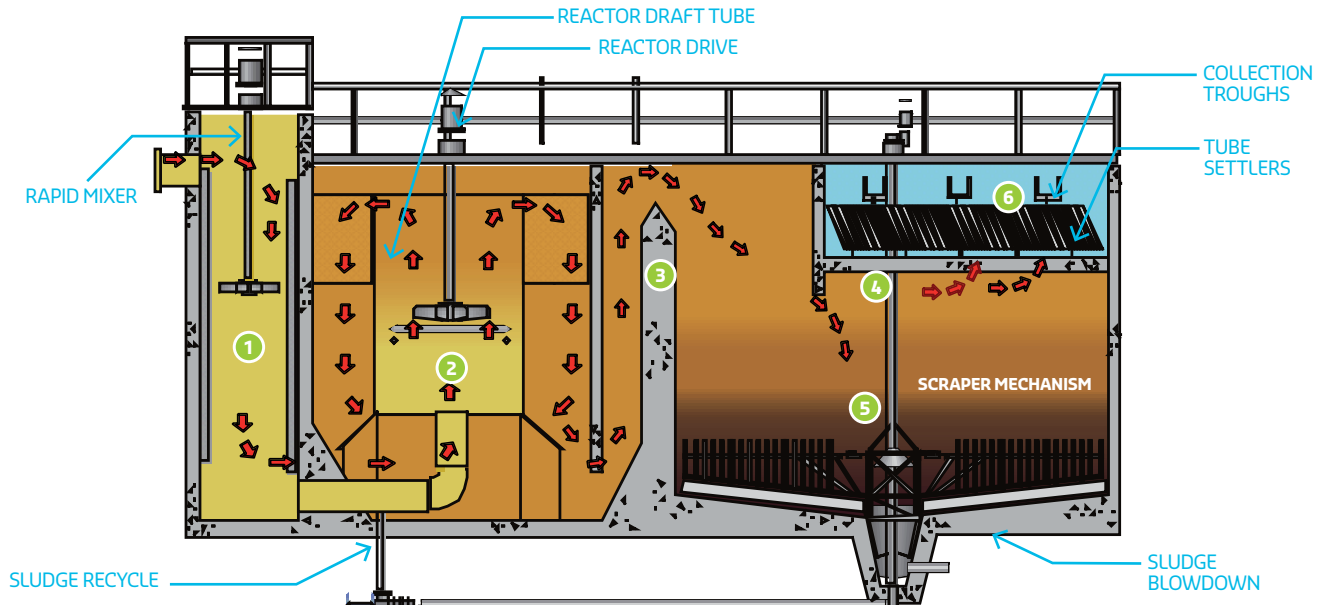
suez environnement

Degrémont

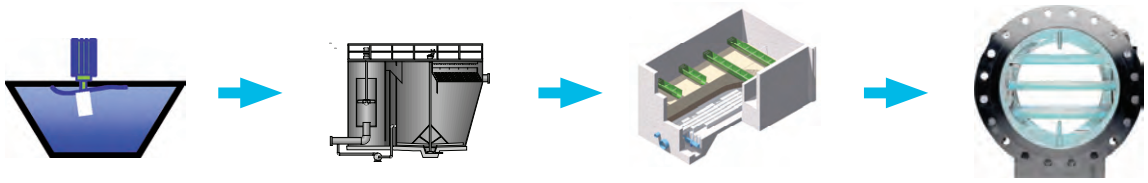
HOW IT WORKS

AN INTEGRATED THREE-STAGE PROCESS

1. **RAPID MIX STAGE:** Raw water flows into the rapid (flash) mix zone where a coagulant is added. Coagulation is the destabilization of colloidal particles, which facilitates their aggregation and is achieved by the injection of a coagulant such as alum or ferric chloride.
2. **REACTOR ZONE:** Coagulated water then flows into a second reactor zone for intense internal recirculation and mixing by an axial-flow turbine. Water and solids are recirculated in and out of a cylindrical draft tube, promoting solids contact and particle growth. A flocculating agent (polymer) is injected inside the reactor draft, together with thickened sludge recycled from the thickening zone. The recycled sludge accelerates the flocculation process and ensures the formation of dense floc particles of homogeneous size.
3. **TRANSITION ZONE:** The transition to the settling stage is accomplished through an up-flow piston zone. Additional flocculation takes place in this zone, as dense particulate transitions upward and over an internal weir wall.
4. **SETTLING & SEPARATION ZONE:** Flocculated solids enter the settling zone, over a submerged weir wall, where dense, suspended matter settles to the bottom of the clarifier. Clarified water is displaced upward from the downward moving slurry, through inclined tube settlers. The tube modules act as a polishing step for lighter, low density solids.
5. **SLUDGE DENSIFICATION & THICKENING:** Settled sludge is thickened progressively in the bottom of the clarifier through the use of a rotating scraper mechanism. A small portion of this thickened sludge is recycled to the reactor zone and the remainder is periodically blown down through an automatic blowdown valve.
6. **EFFLUENT COLLECTION:** Uniform collection of clarified water is accomplished in effluent launders above the settling tube assembly.



DENSADEG® DRINKING WATER TREATMENT LINE



PERFOMANCE ADVANTAGES

EXCELLENT EFFLUENT QUALITY
Combined solids recirculation and high reactor concentration optimize unit operation and overall treatment results.
Treated water turbidity is normally less than 1.0 NTU.
Tertiary phosphorous removal to less than 0.1 mg/l TP.

CONSTRUCTION ECONOMY
Integrated functions within a single unit require approximately 50% less space than conventional solids contact clarifiers.

ACCELERATED AND OPTIMAL CHEMICAL EFFICIENCY
Combined internal and external sludge recirculation and high reactor solids concentration reduce startup time and chemical usage and increase treatment rates.

THICKENED SLUDGE AND REDUCED WASTE VOLUME
Thickened solids from 2 to 10% and extremely low waste volume.

CONSISTENT, FLEXIBLE PERFORMANCE
Hydraulic loading management and high reactor solids enables operation over a broad range of flows and raw water characteristics.

LONG SERVICE LIFE
No abrasive material is added to the system so there is no wear on pumps, mixers, or scrapers.

TECHNICAL FEATURES

- » Loading Rates: 6.0 to 15.0 gpm/ft^2
- » Steel tank or concrete units available
- » Highly efficient use of chemicals
- » Flexible layout options - Customize to any size plan
- » Unit heights of 15 to 22 feet
- » 10 times less waste volume vs. ballasted systems
- » No additional thickening equipment required
- » Automatic control of start-up, shutdown and sludge systems
- » No abrasive ballast material to handle, dispose of or replace
- » Enhanced TOC removal with softening

DESIGN SPECIFICATIONS

DENSADEG®	SINGLE UNIT CAPACITY
	MGD
CONCRETE UNITS	1.0 to 22
STEEL TANK UNITS	0.15 to 15

DESIGN OPTIONS

- Concrete or Steel Tank construction
- Mechanism Internals: Painted carbon steel, stainless steel or special coatings

COMPLETE TREATMENT SOLUTIONS

Infilco Degremont offers an array of water, wastewater and industrial treatment solutions for any size client. Headworks, clarification, filtration, biological and disinfection systems are several of the product disciplines in our portfolio.

With a variety of filtration and clarification products in our SEPARATIONS department, Infilco engineers carefully evaluate each application to provide the most cost-effective and efficient treatment solution.

If you are interested in this product, check out some of the complementary products:

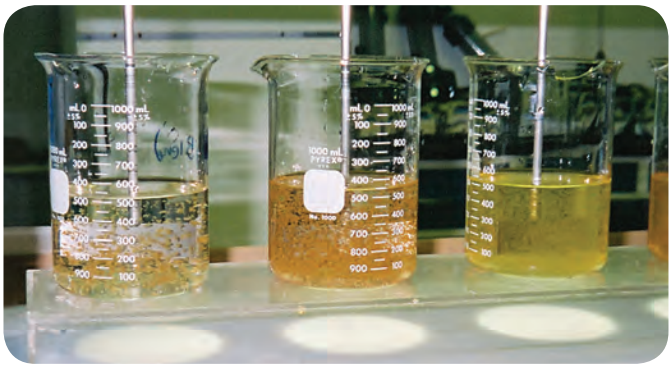
- Superpulsator® Clarifier
- AquaDAF® Clarifier
- Accelator® Clarifier/Softener
- Greenleaf Filter System
- Monoflor® Nozzle Underdrains
- ABW® Automatic Backwash Filter
- PulsaPAK® Package Clarifier/Filter System
- AquaPAK Package Clarifier/Filter System
- AccelaPAK® Package Clarifier-Softener/Filter

PILOTING SERVICES

Infilco offers pilot systems and services for the equipment in this brochure as well as many of our other product offerings. Pilot studies are a practical means of optimizing physical-chemical and biological process designs and offer the client several benefits, such as:

- Proof of system reliability
- Optimal design conditions for the full-scale system
- Raw water lab analysis
- Regulatory approval assistance

If you are interested in a pilot study for your system, please contact us for a proposal.



SERVICES - INFILCARE™

PART SALES

Infilco Degremont sells parts and components for most INFILCO brand equipment as well as parts for demineralizers, thickeners, nozzles, pressure filters, and valves. We offer reliable spare parts at competitive prices. We maintain records of previous installations to quickly identify your requirements. Many items are shipped directly from stock for quick delivery.

REBUILDS, RETROFITS AND UPGRADES

Infilco Degremont offers cost-effective rebuilds and upgrades for INFILCO provided systems, no matter what year they were built. If you are interested in an economical alternative to installing a whole new system, contact us for a proposal.

CONTACTS

WWW.DEGREMONT-TECHNOLOGIES.COM

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8007 Discovery Drive
Richmond, VA 23229-8605, USA
Tel: +1 804 756 7600
Fax: +1 804 756 7643
info-infilco@degtec.com

DEGRÉMONT LIMITÉE
1375, route Transcanadienne,
Bureau 400
Dorval (Qc) H9P 2W8, Canada
Tel: +1 514 683 1200
Fax: +1 514 683 1203
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INFILCO

CONTACT

WWW.DEGREMONT-TECHNOLOGIES.COM

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Richmond, VA 23229-8605
USA
Tel: +1 804 756 7600
Fax: +1 804 756 7643
info-infilco@degtec.com

Technical Data Sheet
DensaDeg® (100-200) Pilot Plant

PILOT DESCRIPTION:

A complete clarification system including chemical feeders, influent pumps, operational instruments and controls. The unit includes facilities to easily vary flow, recycle rate, blanket depth, blowdown frequency and duration and other process variables. This equipment is transported on a single drop trailer and requires a crane for loading/unloading at the pilot site.

PILOT DIMENSIONS:

- Skid dimensions:

  -11'-6" long, 8'-6" wide, and 22.0' high.

WEIGHT:

- 15,000 lbs. (shipping)
- 45,000 lbs. (operating)

ELECTRICAL REQUIREMENTS:

- 208-volts, 3-phase, 60 Hz, 60 amps

CONNECTIONS:

- Influent: 4" (flanged)
- Effluent: 6" (flanged)
- Sludge Blowdown: 2" (Slip/flanged)
- Drain: 3" (Slip/flanged)

ONLINE MEASUREMENTS:

Includes a data logger to record up to six (6) analog inputs:

- Flowrate
- Turbidity (2) – Raw, Effluent
- pH (2) – Raw, Effluent

PROCESS DATA:

Flow Rate (gpm)	Loading Rate (gpm/ft^2)	Retention Times				Total Retention Time (min)
		Rapid Mix (min)	Reactor (min)	Thickener (min)	Tubes (min)	
65	6.0	6.1	16.9	27.6	4.6	55.2
87	8.0	4.6	12.6	20.7	3.4	41.4
109	10.0	3.7	10.1	16.6	2.8	33.1
130	12.0	3.1	8.4	13.8	2.3	27.6
152	14.0	2.6	7.2	11.8	2.0	23.7
174	16.0	2.3	6.3	10.3	1.7	20.7
196	18.0	2.0	5.6	9.2	1.5	18.4

Yoko Nomura

From: Curt Paulson <CPaulson@baxtermn.gov>
Sent: Tuesday, July 14, 2015 11:13 AM
To: Naeem Qureshi
Cc: Kevin Cassady
Subject: RE: Baxter WTP April 15, 2015 Study - FNL Rpt

Headloss for each filter is as follows: Filter#1 is 4.4 psi-----Filter#2 is 4.0 psi----Filter#3 is 4.2 psi----Filter#4 is 4.4 psi....Also the max backwash rate is approximately 2995 gpm.

From: Naeem Qureshi [naeemqureshi@pce.com]
Sent: Tuesday, July 14, 2015 9:31 AM
To: Kevin Cassady
Cc: Curt Paulson; Trevor Walter; Yoko Nomura
Subject: RE: Baxter WTP April 15, 2015 Study - FNL Rpt

Kevin

Thank you for sending this information

We are working on the report. I plan to send a draft for your review in the next week or so. Please send me the headloss on each filter before backwash. Also I need the maximum backwash rate as shown by the backwash meter. Thanks for all the help.

Naeem

From: Kevin Cassady [mailto:KCassady@baxtermn.gov]
Sent: Friday, June 19, 2015 7:29 AM
To: Naeem Qureshi
Cc: Curt Paulson; Trevor Walter
Subject: RE: Baxter WTP April 15, 2015 Study - FNL Rpt

I had a chance to measure the media in the other (3) filters. The measurements are as follows. Again we measured to the top of the 4' level. It was the same level we used on filter #4.

1. Filter #1 69", 69", 69", 69 1/2", 69 ½"
2. Filter #2 69 ¾", 70", 70", 70", 70", 70 ¼"
3. Filter #3 69 3/8", 69 3/8", 70", 69 3/8", 69"

I am drying out the samples from the detention tank to send to Pace. Do they know that the samples are coming and what to test for?

From: Naeem Qureshi [mailto:naeemqureshi@pce.com]
Sent: Thursday, June 18, 2015 9:41 AM
To: Kevin Cassady; Trevor Walter
Cc: Yoko Nomura
Subject: Baxter WTP April 15, 2015 Study - FNL Rpt

I was at the AWWA Annual Conference in Anaheim, CA and had a chance to discuss the Baxter Plant with the experts in the field. I would like to do jar tests for:

1. Powdered activated Carbon

2. Anionic polymer

I am contacting Hawkins to arrange the tests and will contact Kevin. I do want to thank Kevin and Kurt for the excellent cooperation and help during my investigative work at the plant.

Naeem

From: Naeem Qureshi
Sent: Tuesday, May 12, 2015 2:00 PM
To: kevin.cassady@ci.baxter.mn.us; Trevor Walter (TWalter@baxtermn.gov)
Cc: 'Yoko Nomura'
Subject: Baxter WTP April 15, 2015 Study - FNL Rpt

I just want to update the status of our work on the project.

We reviewed the test results and asked Pace to verify one reading that did not look right. PACE has now confirmed the reading. We will start work on analyizing the data and will schedule a visit to the plant in the next week or so.

Naeem

From: Brad Jacobson [mailto:Brad.Jacobson@pacelabs.com]
Sent: Monday, May 11, 2015 10:36 AM
To: Yoko Nomura
Cc: Halverson, Tom; Naeem Qureshi
Subject: RE: Baxter WTP April 15, 2015 Study - FNL Rpt

Good morning Yoko,

The results of laboratory confirmation analysis for the detention tank effluent dissolved iron confirmed the original result of 3980 ug/L.

Please feel free to contact us should you have further questions.

Thanks.

Brad Jacobson
Water Department Manager
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612-607-6375
>>> Yoko Nomura <yokonomura@pce.com> 4/30/2015 3:03 PM >>>

Brad,

Thank you so much for providing us with the lab results.

We realized that the amount of dissolved iron in the detention tank effluent is high.

Is it possible to verify this number by testing the sample again if the lab still keep the sample?

Let us know what can be done. Thank you.

With Best Regards,

Yoko Nomura, E.I.T.

Project Engineer

PCE, Inc. | 6120 Earle Brown Drive, Suite 629, Brooklyn Center, MN 55430 | www.pce.com
(763) 560-9133 **Phone** | yokonomura@pce.com

From: Brad Jacobson [mailto:bjacobson@pacelabs.com]
Sent: Wednesday, April 29, 2015 4:44 PM
To: Naeem Qureshi; Yoko Nomura
Cc: Tom Halverson
Subject: Baxter WTP April 15, 2015 Study - FNL Rpt

Hi Naeem and Yoko,

Attached please find the final report package for the April 15, 2015 sampling from five sources at the Baxter WTP.

Should you have any questions, please feel free to contact us.

Thank you for the opportunity to assist you with this study.

Brad Jacobson
Water Department Manager
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612-607-6375

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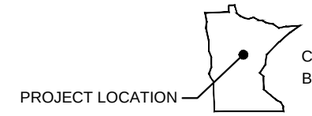
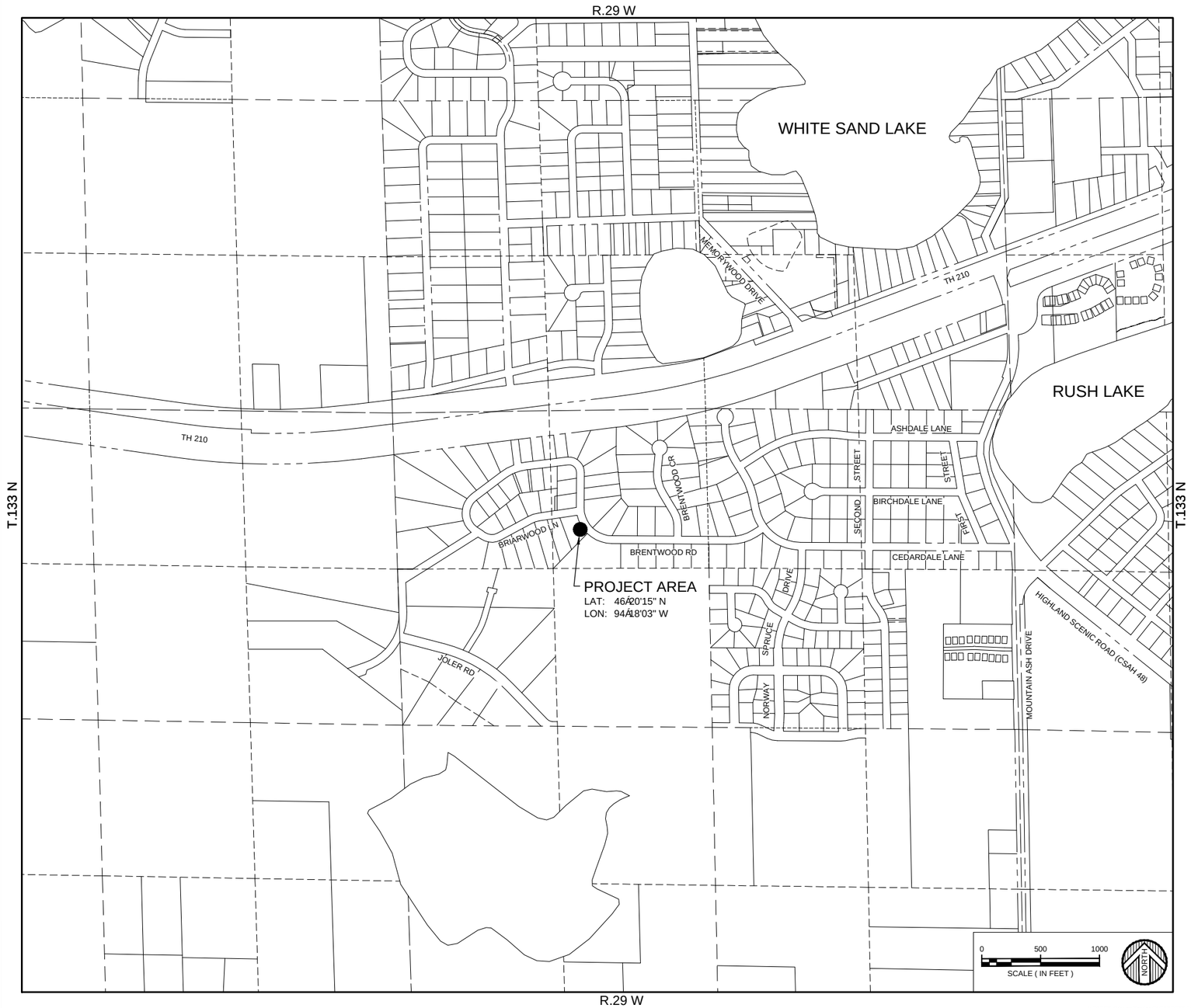
LIFT STATION NO. 8 RECONSTRUCTION

BAXTER, MINNESOTA





INDEX TO DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SITE PLAN - EXISTING CONDITIONS & DEMOLITION
3	SITE PLAN - PROPOSED IMPROVEMENTS
4	EXISTING PLAN VIEW - DEMOLITION
5	EXISTING SECTION VIEW - DEMOLITION
6	PROPOSED PLAN VIEW
7	PROPOSED SECTION VIEW

Preliminary
01/25/2016 4:40:52 PM

CITY OFFICIALS

MAYOR:	DARREL OLSON
CITY COUNCIL:	TODD HOLMAN MARK CROSS STEVE BARROWS QUINN NYSTROM
UTILITIES COMMISSION:	ROCK YLINIEMI - CHAIR DAVE FRANZEN SHAWN CROCHET DOUGLAS WOLF JACK CHRISTOFFERSON
CITY ADMINISTRATOR:	GORDON HEITKE
PUBLIC WORKS DIRECTOR / CITY ENGINEER:	TREVOR WALTER

APPROVALS

RECOMMENDED FOR APPROVAL _____
CITY CONSULTING ENGINEER DATE

RECOMMENDED FOR APPROVAL _____
PUBLIC WORKS DIRECTOR / CITY ENGINEER DATE

Engineering
Architecture
Surveying
Environmental
WIDSETH SMITH NOLTING
www.widseth.com

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

ERIC WELCH DATE: 01/05/2016 LIC. NO. 41863

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

TITLE SHEET

SHEET NO.
1

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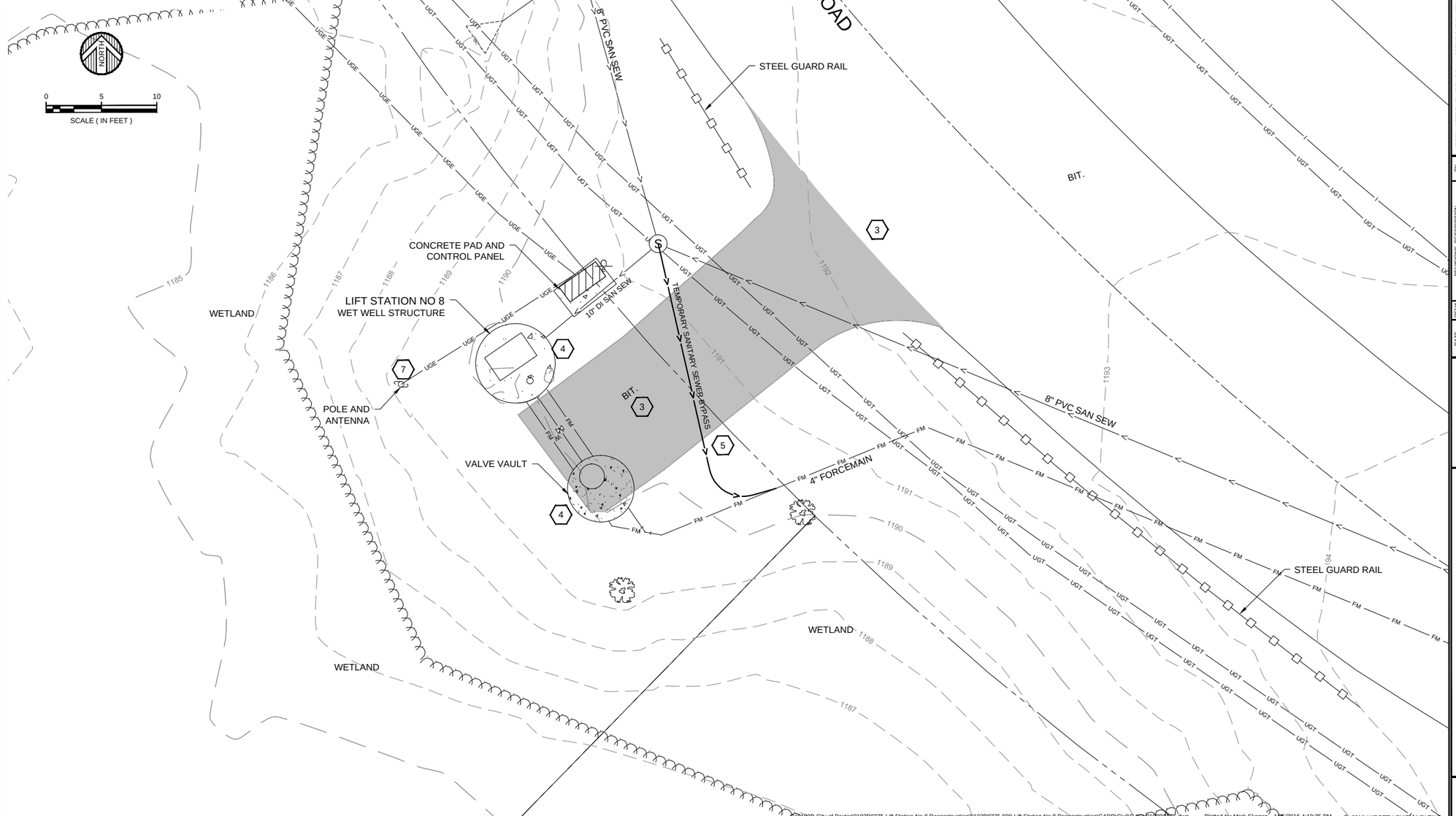
NOTES

1. UTILITIES SHOWN ON THE DRAWING ARE A UTILITY LEVEL D. UNDERGROUND UTILITY LOCATES ARE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATION OF UTILITY RELOCATIONS, IF NECESSARY, ARE THE RESPONSIBILITY OF THE CONTRACTOR.
2. SEDIMENT TRACKED ONTO CITY STREETS SHALL BE CLEANED UP AND REMOVED WITHIN 24-HOURS.
3. SAW CUT AND REMOVE EXISTING BITUMINOUS DRIVEWAY.
4. SEE SHEET 4 AND 5 FOR LIFT STATION AND VALVE VAULT REMOVALS.
5. INSTALL, MAINTAIN AND MONITOR TEMPORARY SANITARY SEWER BYPASS BETWEEN LIFT STATION AND EXISTING FORCEMAIN. CONTRACTOR SHALL SUBMIT PROPOSED BYPASS PLAN TO THE ENGINEER FOR REVIEW AT LEAST 24-HOURS IN ADVANCE OF BYPASS PUMPING OPERATIONS.
6. CONTRACTOR BYPASS PUMPING SYSTEM SHALL BE DESIGNED AND OPERATED TO MAINTAIN A MAXIMUM WASTEWATER ELEVATION OF 1184.00 AND 140 GPM MINIMUM PUMPING RATE. LIFT STATION NO. 9 AVERAGE DAILY FLOW = 40,000 GPD, EXISTING MANHOLE RIM ELEVATION = 1206.84, EXISTING 10" PVC OUTLET ELEVATION = 1184.42. EXISTING 4" FORCEMAIN LENGTH = 770', FORCEMAIN DISCHARGE ELEVATION = 1195.24.
7. REMOVE EXISTING POLE AND SALVAGE TELEMETRY CABLE AND ANTENNA.

LEGEND

BITUMINOUS REMOVAL

(1) DEMOLITION NOTE



WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

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ARIC WELCH

DATE: 01/05/2016 LIC. NO. 41863

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

SITE PLAN - EXISTING CONDITIONS & DEMOLITION

SHEET NO.
2

N:\0102B-City of Baxter\0102B0375-Lift Station No 8 Reconstruction\0102B0375.000-Lift Station No 8 Reconstruction\CADD\Civil\C-KRN-0102B0375.dwg Plotted by: Mark Skogen Jan 5, 2016 4:19:35 PM © 2016 WIDSETH SMITH NOLTING

NOTES

1. CONSTRUCT BITUMINOUS PAVEMENT WITH 5" CLASS 5 AGGREGATE BASE AND 2" SPWEB340C BITUMINOUS WEAR COURSE. EXISTING BIT EDGES SHALL BE SAW CUT AND TACK COATED PRIOR TO PAVING.
2. ADJUST VALVE BOX.
3. ALL DISTURBED AREAS (INCLUDING BITUMINOUS REMOVAL AREAS) SHALL BE RESTORED WITH 4" TOPSOIL, SEED MIXTURE 260 (400 LBS/ACRE), FERTILIZER TYPE I - 24-12-24 (200 LBS/ACRE) AND HYDRAULIC SOIL STABILIZER TYPE 8 (3500 LBS/ACRE).
4. SLOPES OF 4:1 OR GREATER SHALL BE RESTORED IN ACCORDANCE WITH NOTE 2 AND COVERED WITH EROSION CONTROL BLANKET CATEGORY 3.

LEGEND

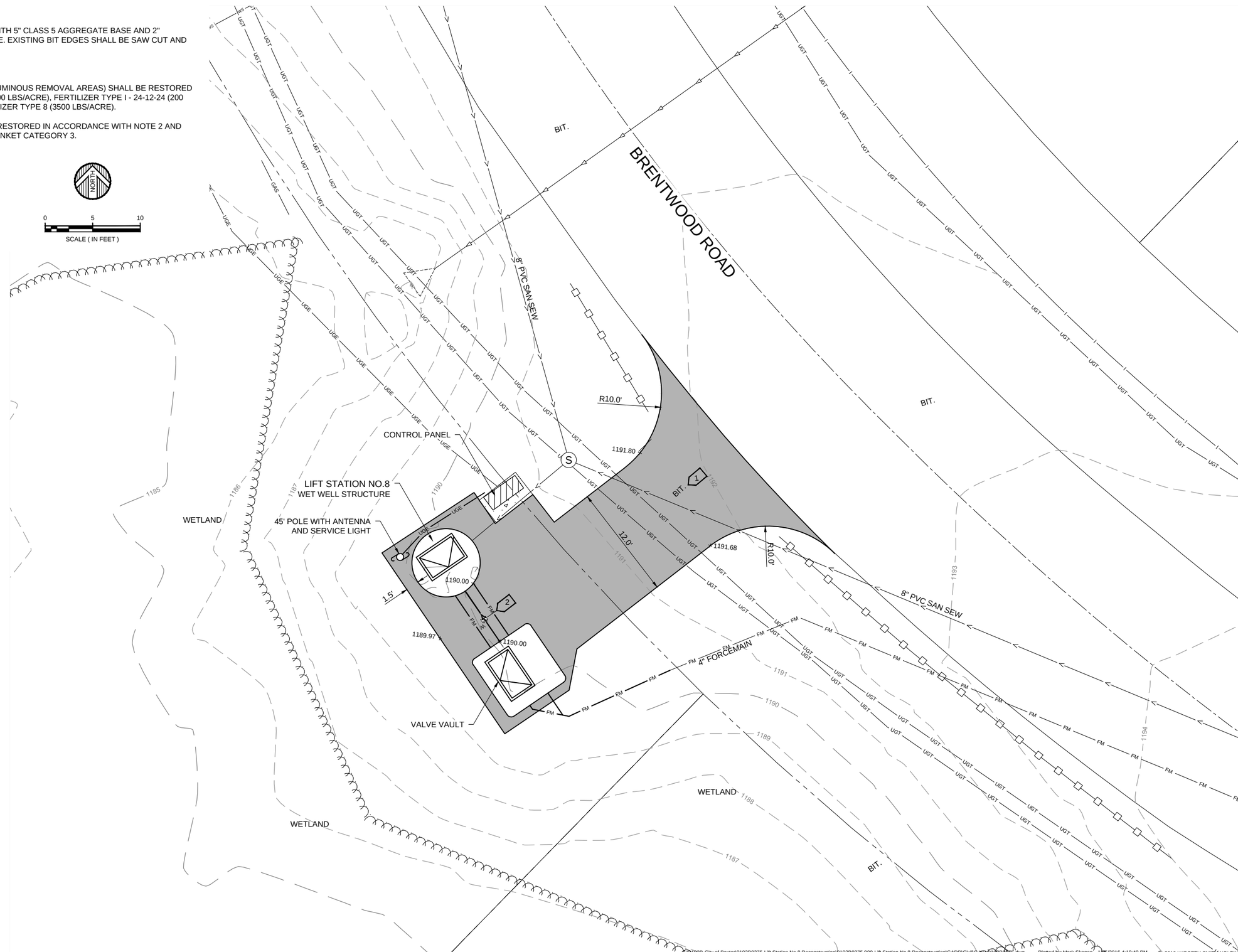
BITUMINOUS PAVEMENT

1 NUMBER NOTE

NORTH

0 5 10

SCALE (IN FEET)



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Engineering | Architecture | Surveying | Environmental

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ERIC WELCH DATE: 01/05/2016 LIC. NO. 41863

DATE	REV#	REVISIONS DESCRIPTION	BY

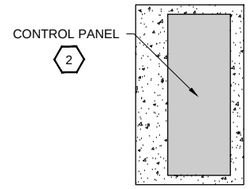
DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

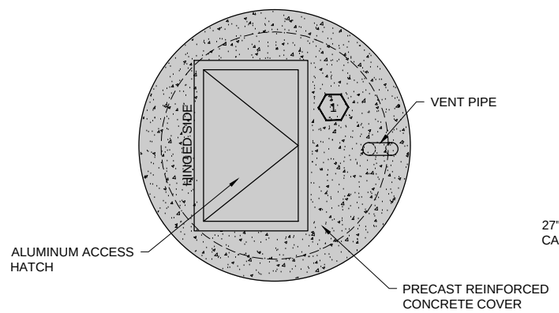
LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

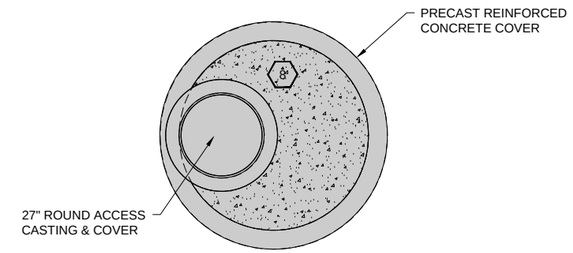
SITE PLAN - PROPOSED IMPROVEMENTS

SHEET NO.
3

N:\0102B-City of Baxter\0102B0375-Lift Station No 8 Reconstruction\0102B0375.000-Lift Station No 8 Reconstruction\CADD\Civil\C-KRN-0102B0375.dwg Plotted by: Mark Skogen Jan 5, 2016 4:19:40 PM © 2016 WIDSETH SMITH NOLTING

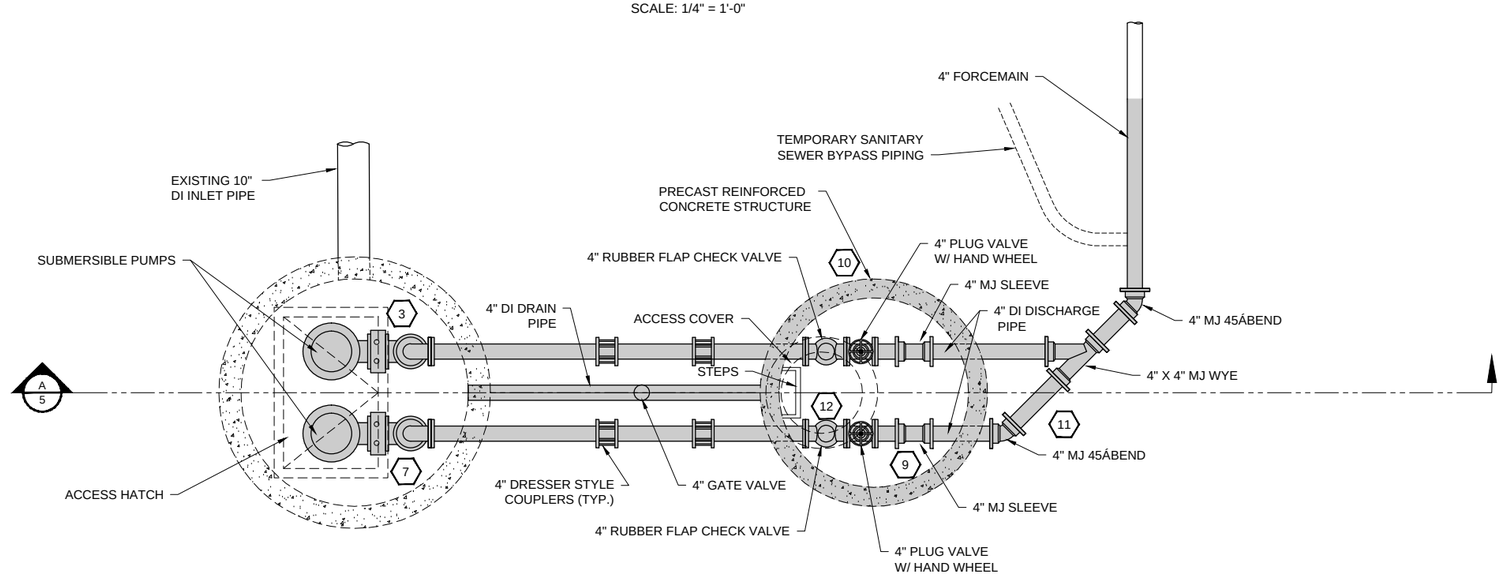






PLAN VIEW - TOP

SCALE: 1/4" = 1'-0"



PLAN VIEW - INSIDE STRUCTURE

SCALE: 1/4" = 1'-0"

LEGEND

DENOTES DEMOLITION

1 DEMOLITION NOTES (SEE SHEET 5)

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ARIC WELCH DATE: 01/05/2016 LIC. NO. 41983

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

EXISTING PLAN VIEW- DEMOLITION

SHEET NO.
4

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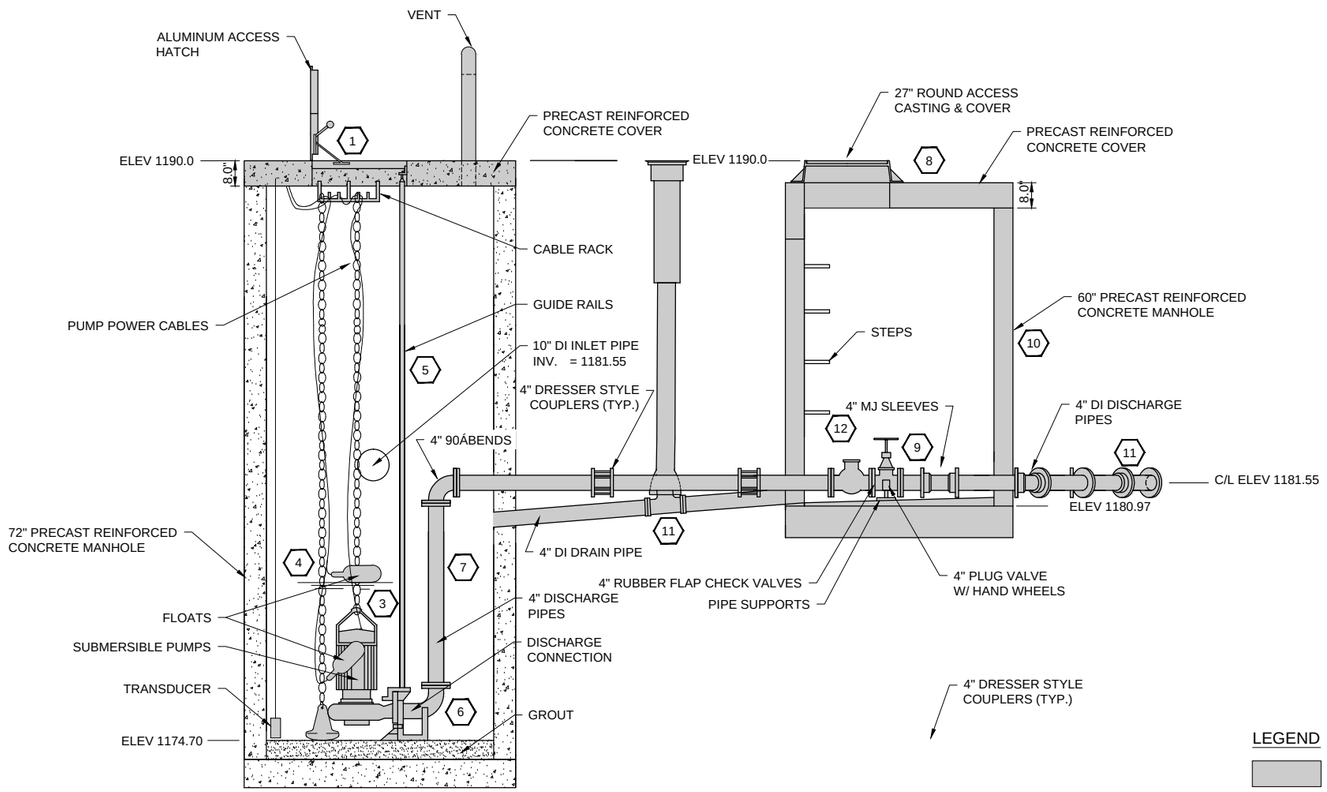

A
5

SECTION

SCALE: 1/4" = 1'-0"

LEGEND

DENOTES DEMOLITION

1 DEMOLITION NOTES

DEMOLITION NOTES

1. REMOVE AND DISPOSE OF EXISTING LIFT STATION COVER, ALUMINUM ACCESS HATCH AND VENT. EXCAVATE AROUND STRUCTURE AS REQUIRED.
2. REMOVE EXISTING CONTROL PANEL AND RELATED COMPONENTS AND SALVAGE TO OWNER.
3. REMOVE EXISTING SUBMERSIBLE PUMPS, POWER CABLES, LIFT CHAINS/CABLES, TRANSDUCER AND SALVAGE TO OWNER.
4. REMOVE AND DISPOSE OF EXISTING ANCHOR, CABLE AND FLOATS
5. REMOVE AND DISPOSE OF EXISTING GUIDE RAIL SYSTEM
6. REMOVE AND DISPOSE OF EXISTING BASE ELBOWS.
7. REMOVE AND DISPOSE OF EXISTING 4" DISCHARGE PIPING, 4" 90ÁBENDS AND PIPE SUPPORTS.
8. REMOVE AND DISPOSE OF EXISTING CONCRETE VALVE VAULT COVER AND SALVAGE CASTING TO OWNER.
9. REMOVE AND DISPOSE OF EXISTING 4" PLUG VALVES, 4" DISCHARGE PIPING, SLEEVES AND COUPLINGS.
10. REMOVE AND DISPOSE OF EXISTING 60" PRECAST CONCRETE MANHOLE AND BASE.
11. REMOVE AND DISPOSE OF EXISTING 4" FORCEMAIN AND MJ FITTINGS.
12. REMOVE EXISTING 4" RUBBER FLAP CHECK VALVES AND SALVAGE TO OWNER.
13. ELEVATIONS SHOWN ON THE PLAN ARE APPROXIMATE AND HAVE NOT BEEN FIELD VERIFIED.

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DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

EXISTING SECTION VIEW - DEMOLITION

SHEET NO.
5

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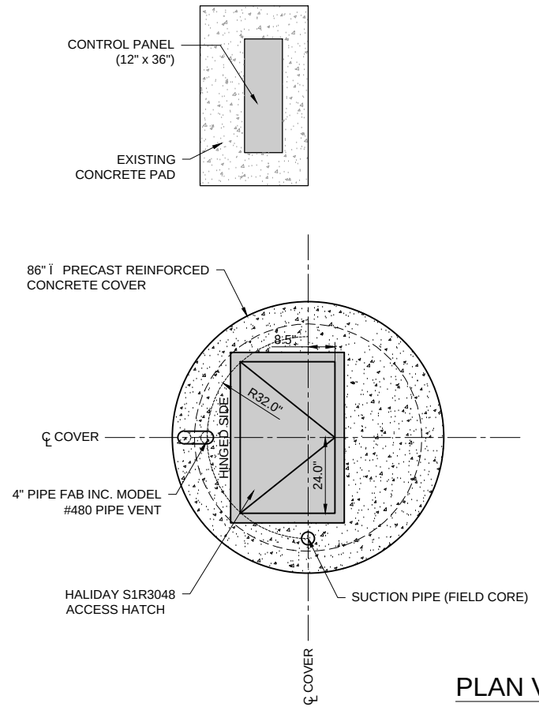
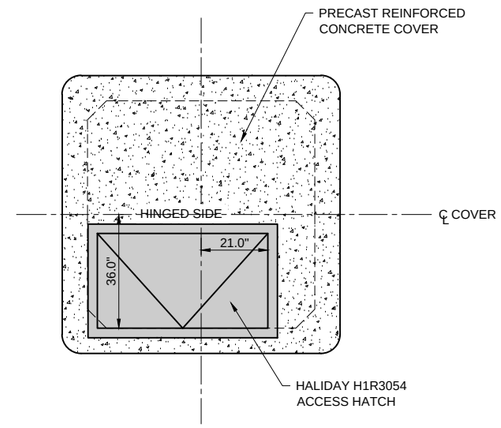
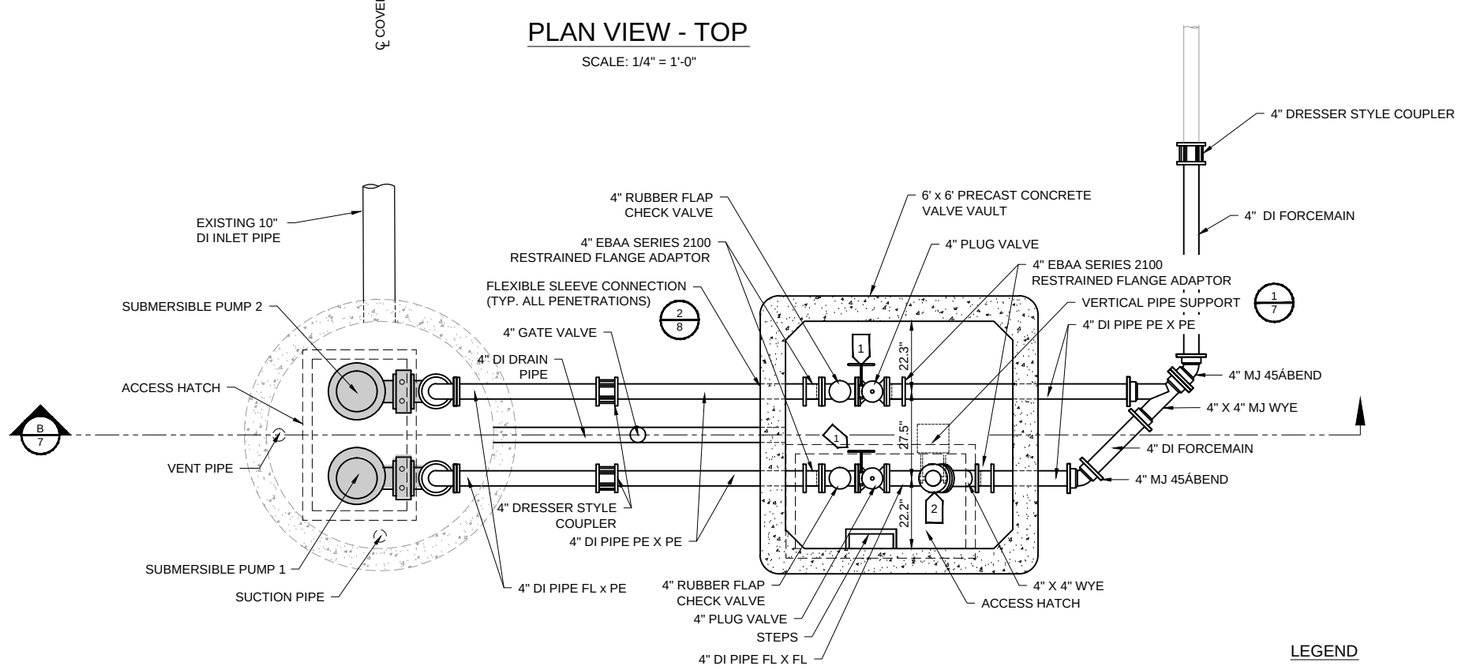


PLAN VIEW - TOP

SCALE: 1/4" = 1'-0"





PLAN VIEW - INSIDE STRUCTURE

SCALE: 1/4" = 1'-0"

LEGEND

ITEMS SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR

1 CONSTRUCTION NOTES (SEE SHEET 7)

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ARIC WELCH

DATE: 01/05/2016 LIC. NO. 41983

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

PROPOSED PLAN VIEW

SHEET NO.
6

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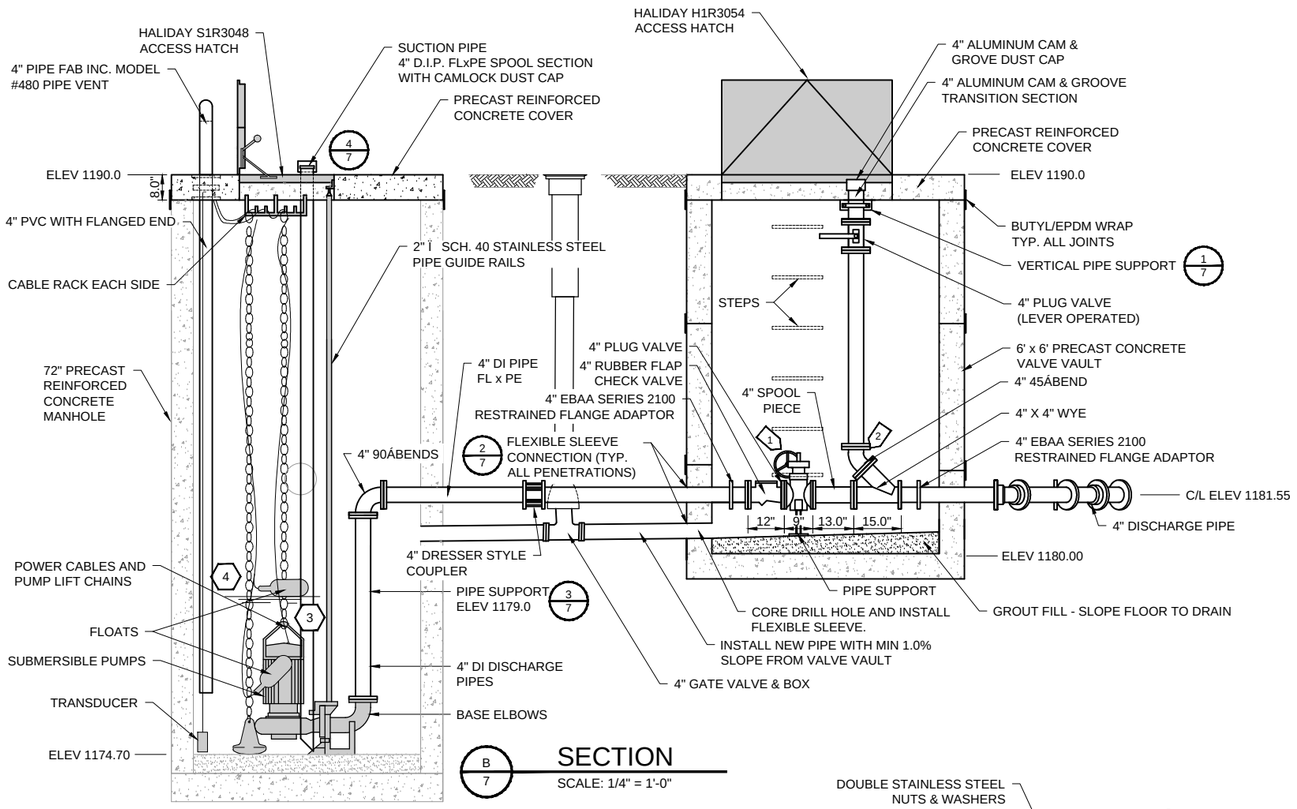


B/7 SECTION
SCALE: 1/4" = 1'-0"

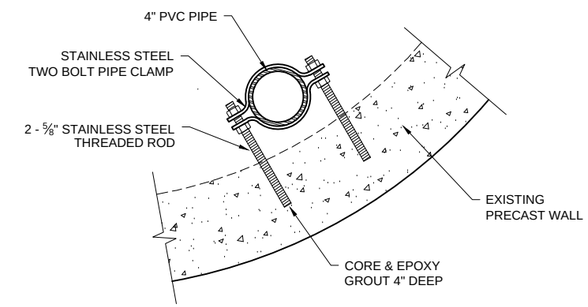
LEGEND

ITEMS SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR

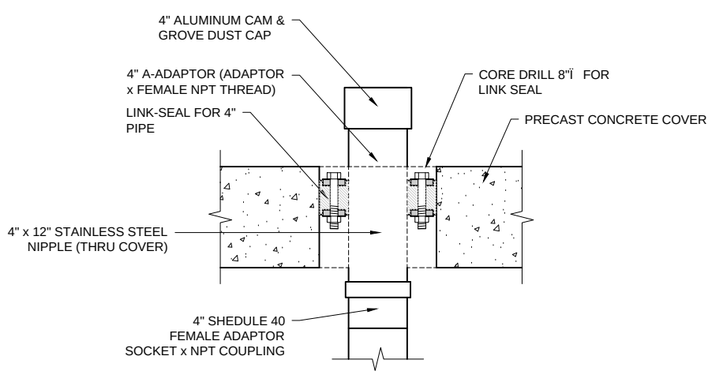
1 CONSTRUCTION NOTES

NOTES

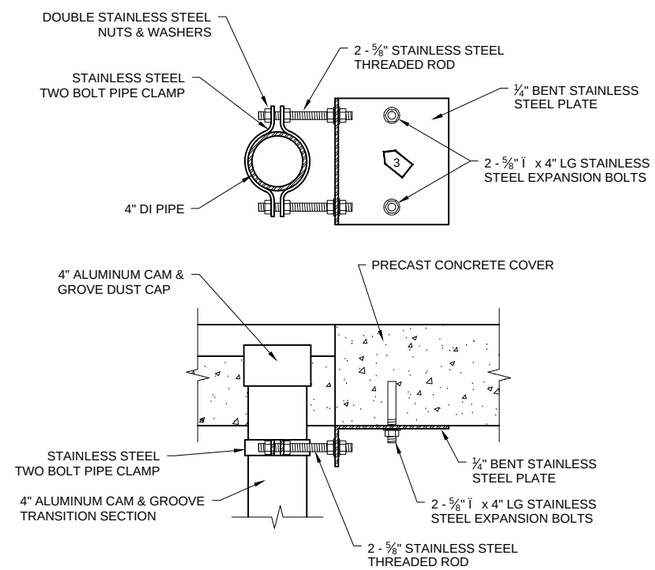
1. CONFIRM ORIENTATION OF PLUG VALVE HANDWHEELS DURING SHOP DRAWING REVIEW.
2. CONTRACTOR SHALL INSTALL NEW VALVES, PIPE AND FITTINGS TO ALIGN 4" BYPASS PIPE WITH ACCESS HATCH AS SHOWN. DIMENSIONS SHOWN MAY VARY DEPENDING ON SPECIFIC FITTINGS AND VALVES USED. CONTRACTOR SHALL SUBMIT DETAILED PIPE LAYOUTS TO ENGINEERING FOR REVIEW. HATCH LOCATION MAY NEED TO BE ADJUSTED DURING VALVE AND FITTING SUBMITTAL REVIEW.
3. COORDINATE AND VERIFY PLATE SIZE WITH CLAMP DIMENSIONS AND BYPASS PIPE LAYOUT.



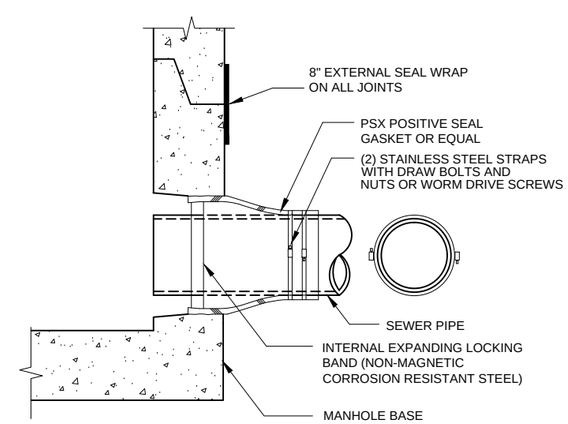
3/7 DETAIL
SCALE: 1" = 1'-0"



4/7 DETAIL
SCALE: 1" = 1'-0"



1/7 DETAIL
SCALE: 1" = 1'-0"



2/7 DETAIL
SCALE: 1" = 1'-0"

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ERIC WELCH
DATE: 01/05/2016 LIC. NO. 41983

DATE	REVISIONS DESCRIPTION	BY	REVW

DATE: JAN. 2016
SCALE: AS SHOWN
DRAWN BY: M.A.S.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0375

LIFT STATION NO. 8 RECONSTRUCTION
CITY OF BAXTER
BAXTER, MINNESOTA

PROPOSED SECTION VIEW

SHEET NO.
7

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Minnesota Department of Natural Resources
Operations Services Division
1601 Minnesota Drive
Brainerd, MN 56401
(218) 203-4387

January 25, 2016

Trevor Walter, P.E.
Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
Baxter, MN 56425

Dear Mr. Walter:

This is to follow-up/summarize our meeting November 3, 2015 with the City of Baxter and MNDOT concerning the inspection of the Paul Bunyan State Trail Bridge over Excelsior Road in Baxter, MNDOT Bridge Number 18529. History of events leading up to our meeting are:

- Bridge 18529 was built in 2008 with a cooperative agreement between the City of Baxter and the DNR.
- The City of Baxter was originally assigned the inspection responsibilities for this bridge by MNDOT.
- To the time of this meeting, no inspections had been done.
- MNDOT can lose federal bridge funding for noncompliant bridge inspections and is in the position to stop processing all state plan reviews and pay request approvals for the City of Baxter unless a bridge inspection is immediately planned.
- A copy of the cooperative agreement was sent to MNDOT Bridge Office on October 13, 2015 and the inspection responsibility for the bridge was then assigned to the DNR and the bridge was entered into their database.

Key decisions/items of discussions at the meeting are:

- It was agreed that the cooperative agreement provided the DNR ownership of the bridge and maintenance responsibility of the bridge. There was no specific language in this agreement that supports that the DNR is to have the inspection responsibility.
- It was agreed that the City of Baxter is the road authority.
- Per MS165.03 Subd 2.3:
    - *Subd. 2.Inspection and inventory responsibilities; rules; forms. (a) The commissioner of transportation will adopt the National Bridge Inspection Standards (NBIS) established by the Federal Highway Administration in Code of Federal Regulations, title 23, part 650, subpart C, or its successor documents, for structures meeting the NBIS definition of a bridge. The commissioner shall establish inspection and inventory standards for structures*

defined as bridges by section 165.01, subdivision 3.
(b) The commissioner of transportation shall adopt official inventory and bridge inspection report forms for use in making bridge inspections by the owners or highway authorities specified by this subdivision. Inspections must be made at regular intervals, not to exceed the intervals outlined in subdivision 1a, by the following owner or official:

(1) the commissioner of transportation for all bridges located wholly or partially within or over the right-of-way of a state trunk highway;

(2) the county highway engineer for all bridges located wholly or partially within or over the right-of-way of any county or town road, or any street within a municipality that does not have a city engineer regularly employed;

(3) the city engineer for all bridges located wholly or partially within or over the right-of-way of any street located within or along municipal limits;

- The urgent need to have this inspection performed this year was discussed. The City of Baxter does not have any qualified staff to perform this inspection and they don't have it budgeted to hire another party to do this work at this time.
- The DNR agreed to inspect the bridge this fall with their qualified staff and to provide this inspection information to MNDOT.
    - Paul Ouren and Danny Anderson performed this inspection November 5, 2015 and has submitted the approved report to MNDOT.
- It was agreed that the City of Baxter will be the Program Administrator of this bridge after this inspection cycle. That will allow them two years to plan for the next inspection.
- The DNR will request the Bridge Office to reassign this bridge to the City of Baxter and will simultaneously request that the bridge be placed on a 2 year inspection cycle rather than the 1 year cycle it is currently on. This will be done after MNDOT submits all the inspection information to the Federal Highway Administration, so after March of this year.

Thanks for meeting with us on this matter. Please let us know if you have any questions. I attached a copy of the initial inspection report for this bridge for your record file.

Sincerely,

Paul Ouren, P.E.

Enclosures: 2015 Bridge 18529 Inspection Report

cc: Kelvin Howieson, MNDOT Engineer, (meeting attendee)
Josh Doty, City of Baxter Community Development Director, (meeting attendee)
Wade Miller, MNDNR-Parks and Trails, Area Supervisor, (meeting attendee)
Kent Skaar, MNDNR-Parks and Trails, Senior Project Manager

2015 ROUTINE
BRIDGE INSPECTION REPORT

BRIDGE # 18529
PAUL BUNYAN TRAIL over EXCELSIOR RD

DISTRICT: District 3 **COUNTY: Crow Wing** **CITY/TOWNSHIP: Baxter**

Date(s) of Inspection: 11/05/2015
Equipment Used:

Owner: St. Park, Forest, or Res. Agency

Inspected By: Anderson, Danny; Ouren, Paul

Report Written By: Paul Ouren
Report Reviewed By: Paul Ouren
Final Report Date: 11/12/2015

MnDOT Bridge Office
3485 Hadley Avenue North
Oakdale, MN 55128

Table of Contents

SECTION	PAGE
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ROUTINE INSPECTION DATA	2
PICTURES	7

MnDOT Structure Inventory Report

Bridge ID: 18529 PAUL BUNYAN TRAIL **over** EXCELSIOR RD **Date:** 11/12/2015

GENERAL

Agency Br. No.
District District 3
Maint. Area **Crew**
County 018 - Crow Wing
City Baxter
Township
Desc. Loc. 0.4 MI E OF INT HWY
Sect., Twp., Range 5 - 133N - 28W
Latitude **Deg** 46 **Min** 21 **Sec** 18.69
Longitude **Deg** 94 **Min** 13 **Sec** 57.87
Custodian 11 - St. Park, Forest, or Res. Agency
Owner 11 - St. Park, Forest, or Res. Agency
BMU Agreement
Year Built 2007
MN Year Reconstructed
FHWA Year Reconstructed
MN Temporary Status
Bridge Plan Location 4 - MUNICIPAL
Date Opened to Traffic
On-Off System 0 - OFF
Legislative District 12A

STRUCTURE

Service On 3 - Pedestrian-bicycle
Service Under 1 - Highway, w/ or w/out ped.
Main Span Type
5 - Prestress or Precast 05 - Thru Girder
Main Span Detail
Appr. Span Type
Appr. Span Detail
Skew 0
Culvert Type
Barrel Length ft.
Cantilever ID

NUMBER OF SPANS

MAIN: 3 **APPR:** 0 **TOTAL:** 3
Main Span Length 121.5 ft.
Structure Length 347.5 ft.
Deck Width (Out-to-Out) 16.0 ft.
Deck Material 1 - Concrete Cast-in-Place
Wear Surf Type 1 - Monolithic Concrete (concu
Wear Surf Install Year 2007
Wear Course/Fill Depth 0.00 ft.
Deck Membrane 0 - None
Deck Rebars 1 - Epoxy Coated Reinforcing
Deck Rebars Install Year 2007
Structure Area (Out-to-Out) 6255 sq. ft.
Roadway Area (Curb-to-Curb) 5560 sq. ft.
Sidewalk Width **Lt** 0.00 ft. **Rt** 0.00 ft.
Curb Height **Lt** 0.00 ft. **Rt** 0.00 ft.
Rail Type **Lt** NN **Rt** NN

ROADWAY

Bridge Match ID (TIS)
Roadway O/U Key
Route Sys **Number**
Roadway Name or Description
Level of Service
Roadway Type 0 - Highway traffic not carried
Control Section (TH Only)
Reference Point
Detour Length mi
Lanes **On** **Under** 2
ADT **Year**
HCADT 0 **ADTT** 0 **%**
Functional Class

RDWY DIMENSIONS

If Divided	NB-EB	SB-WB
Roadway Width	ft.	ft.
Vertical Clearance	ft.	ft.
Max. Vert. Clear.	ft.	ft.
Horizontal Clear.	ft.	ft.
Lateral Clearance	ft.	ft.
Appr. Surface Width	ft.	
Bridge Roadway Width	ft.	
Median Width On Bridge	ft.	

MISC. BRIDGE DATA

Structure Flared 0 - No flare
Parallel Structure N - No parallel structure
Field Conn. ID
Abutment Foundation 1 - CONC
(Material/Type) 3 - FTG PILE
Pier Foundation 1 - CONC
(Material/Type) 3 - FTG PILE
Historic Status 5 - Not eligible

PAINT

Year Painted
Unsound Paint %
Painted Area sq. ft.
Primer Type
Finish Type

BRIDGE SIGNS

Posted Load 0 - Not Required
Traffic 0 - Not Required
Horizontal 0 - Not Required
Vertical N - Not Applicable

INSPECTION

Userkey 220
Unofficial Structurally Deficient N
Unofficial Functionally Obsolete N
Unofficial Sufficiency Rating -2
Routine Inspection Date 11/05/2015
Routine Inspection Frequency 12
Inspector Name DNR
Status A - Open

NBI CONDITION RATINGS

Deck 8 - Very Good Condition
Unsound Deck %
Superstructure 8 - Very Good Condition
Substructure 8 - Very Good Condition
Channel 9 - No noticeable deficiencies
Culvert N - Not Applicable

NBI APPRAISAL RATINGS

Structure Evaluation N
Deck Geometry N
Underclearances 9
Water Adequacy 9 - Bridge Above Flood Wat
Approach Alignment 9 - Superior to present desir

SAFETY FEATURES

Bridge Railing 1 - MEETS STANDARDS
GR Transition 0 - SUBSTANDARD
Appr. Guardrail 0 - SUBSTANDARD
GR Termini 0 - SUBSTANDARD

IN DEPTH INSP.

	Y/N	Freq	Date
Frac. Critical			
Underwater			
Pinned Asbly.			
Spec. Feat.			

WATERWAY

Drainage Area (sq. mi.)
Waterway Opening sq. ft.
Navigation Control 0 - No nav. control on waterw
Pier Protection
Nav. Clr. (ft.) **Vert.** ft. **Horiz.** ft.
Nav. Vert. Lift Bridge Clear. (ft.)
MN Scour Code A - NON WATER **Year**

CAPACITY RATINGS

Design Load 7 - PEDESTRIAN
Operating Rating 5 - NRAP
Inventory Rating 5 - NRAP
Posting VEH: **SEMI:** **DBL:**
Rating Date

MnDOT Permit Codes

A: N - N/A
B: N - N/A
C: N - N/A

MnDOT BRIDGE INSPECTION REPORT

11/12/2015

Inspector: DNR

BRIDGE 18529 PAUL BUNYAN TRAIL OVER EXCELSIOR RD **ROUTINE INSP. DATE: 11/05/2015**

County: Crow Wing
City: Baxter
Township:
Section: 5 Township: 133N Range: 28W
Span Type: 5 - Prestressed Concrete 02 - Stringer/Multi-beam or Girder
List:
NBI Deck: 8 Super: 8 Sub: 8 Chan: 9

Location: 0.4 MI E OF INT HWY
Route: Ref. Pt.:
Control Section:
Maint. Area:
Local Agency Bridge Nbr.:
Culv: N
Open, Posted, Closed: A - Open
MN Scour Code: A - NON WATERWAY

Length: 347.5 ft.
Deck Width: 16.0 ft.
Rdwy. Area/ Pct. Unsnd: 5560 sq. ft. / %
Paint Area/ Pct. Unsnd: sq. ft. / %
Culvert: N/A
Postings:

Appraisal Ratings - Approach: 9 Waterway: 9
Required Bridge Signs - Load Posting: 0 - Not Required Traffic: 0 - Not Required
Horizntal: 0 - Not Required Vertical: N - Not Applicable

Unofficial Structurally Deficient N
Unofficial Functionally Obsolete N
Unofficial Sufficiency Rating N

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
026	Top of Concrete Deck (No Overlay - Epoxy Rebar)	2	Routine	11/05/2015	6255 SF	6255	0	0	0	0
			Routine	01/01/2014	6255 SF	6255	0	0	0	0
	☐Requires Monitoring		☐Monitored							
	Notes: [2015] Minor transverse shrinkage cracks.									
109	Prestressed Concrete Girder or Beam	2	Routine	11/05/2015	688 LF	666	22	0	0	N/A
			Routine	01/01/2014	688 LF	688	0	0	0	N/A
	☐Requires Monitoring		☐Monitored							
	Notes: [2015] Both main span girders were hit by construction equipment during utility work and repaving of Excelsior Road. Impact damage was non-structural. Repairs have been made. There are diagonal cracks (most likely from prestressing release) with efflorescenece on 5 of the beam ends (all on pier 1 and 1 on the north end of beam 2 on span 3). There is some isolated special surface finish failure, predominantly on the top of the bottom flange on beam 1 span 1.									
155	Reinforced Concrete Floorbeam	2	Routine	11/05/2015	336 LF	336	0	0	0	N/A
			Routine	01/01/2014	336 LF	336	0	0	0	N/A
	☐Requires Monitoring		☐Monitored							
	Notes:									
210	Reinforced Concrete Pier Wall	2	Routine	11/05/2015	46 LF	46	0	0	0	N/A
			Routine	01/01/2014	46 LF	46	0	0	0	N/A
	☐Requires Monitoring		☐Monitored							
	Notes:									

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
215	Reinforced Concrete Abutment	2	Routine	11/05/2015	48 LF	48	0	0	0	N/A
			Routine	01/01/2014	48 LF	48	0	0	0	N/A
	☐ Requires Monitoring			☐ Monitored						
	Notes:									
234	Reinforced Concrete Pier Cap	2	Routine	11/05/2015	48 LF	48	0	0	0	N/A
			Routine	01/01/2014	48 LF	48	0	0	0	N/A
	☐ Requires Monitoring			☐ Monitored						
	Notes:									
300	Strip Seal Deck Joint	2	Routine	11/05/2015	36 LF	36	0	0	N/A	N/A
			Routine	01/01/2014	36 LF	36	0	0	N/A	N/A
	☐ Requires Monitoring			☐ Monitored						
	Notes:									
310	Elastomeric (Expansion) Bearing	2	Routine	11/05/2015	4 EA	4	0	0	N/A	N/A
			Routine	01/01/2014	4 EA	4	0	0	N/A	N/A
	☐ Requires Monitoring			☐ Monitored						
	Notes:									
313	Fixed Bearing	2	Routine	11/05/2015	8 EA	8	0	0	N/A	N/A
			Routine	01/01/2014	8 EA	8	0	0	N/A	N/A
	☐ Requires Monitoring			☐ Monitored						
	Notes:									
321	Concrete Approach Slab-Concrete Wearing Surface	2	Routine	11/05/2015	2 EA	2	0	0	0	N/A
			Routine	01/01/2014	2 EA	2	0	0	0	N/A
	☐ Requires Monitoring			☐ Monitored						
	Notes:									

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
334	Metal Bridge Railing (Coated or Painted)	2	Routine	11/05/2015	690 LF	690	0	0	0	0
			Routine	01/01/2014	690 LF	690	0	0	0	0
	☐Requires Monitoring			☐Monitored						
	Notes:									
358	Concrete Deck Cracking Smart Flag	2	Routine	11/05/2015	1 EA	1	0	0	0	N/A
			Routine	01/01/2014	1 EA	1	0	0	0	N/A
	☐Requires Monitoring			☐Monitored						
	Notes:									
359	Underside of Concrete Deck Smart Flag	2	Routine	11/05/2015	1 EA	1	0	0	0	0
			Routine	01/01/2014	1 EA	1	0	0	0	0
	☐Requires Monitoring			☐Monitored						
	Notes:									
380	Secondary Structural Elements	2	Routine	11/05/2015	1 EA	1	0	0	0	N/A
			Routine	01/01/2014	1 EA	1	0	0	0	N/A
	☐Requires Monitoring			☐Monitored						
	Notes:									
387	Reinforced Concrete Wingwall	2	Routine	11/05/2015	4 EA	4	0	0	0	N/A
			Routine	01/01/2014	4 EA	4	0	0	0	N/A
	☐Requires Monitoring			☐Monitored						
	Notes:									
964	Critical Finding Smart Flag	2	Routine	11/05/2015	1 EA	1	0	N/A	N/A	N/A
			Routine	01/01/2014	1 EA	1	0	N/A	N/A	N/A
	☐Requires Monitoring			☐Monitored						
	Notes: [2015] No critical findings noted.									
	DO NOT DELETE THIS CRITICAL FINDING SMART FLAG.									

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
965	Concrete Shear Cracking Smart Flag	2	Routine	11/05/2015	1 EA	1	0	0	0	N/A
			Routine	01/01/2014	1 EA	1	0	0	0	N/A

☐ Requires Monitoring ☐ Monitored

Notes:

984	Deck & Approach Drainage	2	Routine	11/05/2015	1 EA	1	0	0	N/A	N/A
			Routine	01/01/2014	1 EA	1	0	0	N/A	N/A

☐ Requires Monitoring ☐ Monitored

Notes:

985	Slopes & Slope Protection	2	Routine	11/05/2015	1 EA	1	0	0	N/A	N/A
			Routine	01/01/2014	1 EA	1	0	0	N/A	N/A

☐ Requires Monitoring ☐ Monitored

Notes:

986	Curb & Sidewalk	2	Routine	11/05/2015	1 EA	1	0	0	N/A	N/A
			Routine	01/01/2014	1 EA	1	0	0	N/A	N/A

☐ Requires Monitoring ☐ Monitored

Notes: [2015] Mino shrinkage cracks every 1 to 8 feet.

General Notes: [2015] Main span girders were hit by construction equipment during the summer of 2015. Repairs have been made. Agreed upon that this bridge will be placed on the City of Baxter's inventory after this inspection cycle.

September 2014: Bridge 18529 added to inventory by MnDOT Bridge Office.
The January 1, 2014, "dummy" inspection was created by the MnDOT Bridge Office --- THIS IS NOT AN ACTUAL FIELD INSPECTION.

58. Deck NBI: [2015] Minor transverse shrinkage cracks.

36A. Brdg Railings NBI:

36B. Transitions NBI:

36C. Appr Guardrail NBI:

36D. Appr Guardrail Terminal NBI:

59. Superstructure NBI:

60. Substructure NBI:

61. Channel NBI: Channel was added under north approach span during 2015 construction work on excelsior road.

62. Culvert NBI:

71. Waterway Adeq NBI:

72. Appr Roadway Alignment NBI:

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5

Inventory Notes:

Paul Ouren
Inspector's Signature

Paul Ouren
Reviewer's Signature

Pictures

Photo 1 - Side view

Photo 2 - Top view

Pictures

Photo 3 - Bridge plate

Photo 4 - Channel

Pictures

Photo 5 - DSC03167

Photo 6 - Impact damage repair

Pictures

Photo 7 - SSF failure

Photo 8 - DSC03166

Pictures

Photo 9 - SSF failure2

Photo 10 - Pier 1

Pictures

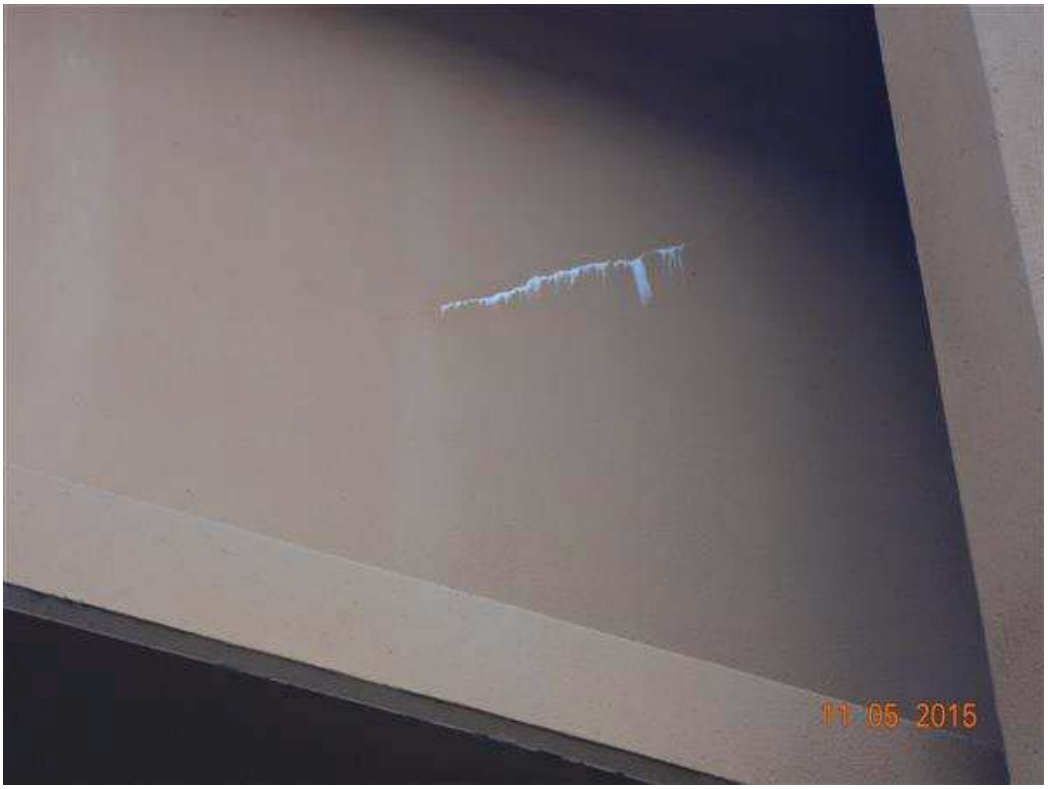


Photo 11 - Beam 2 span 1

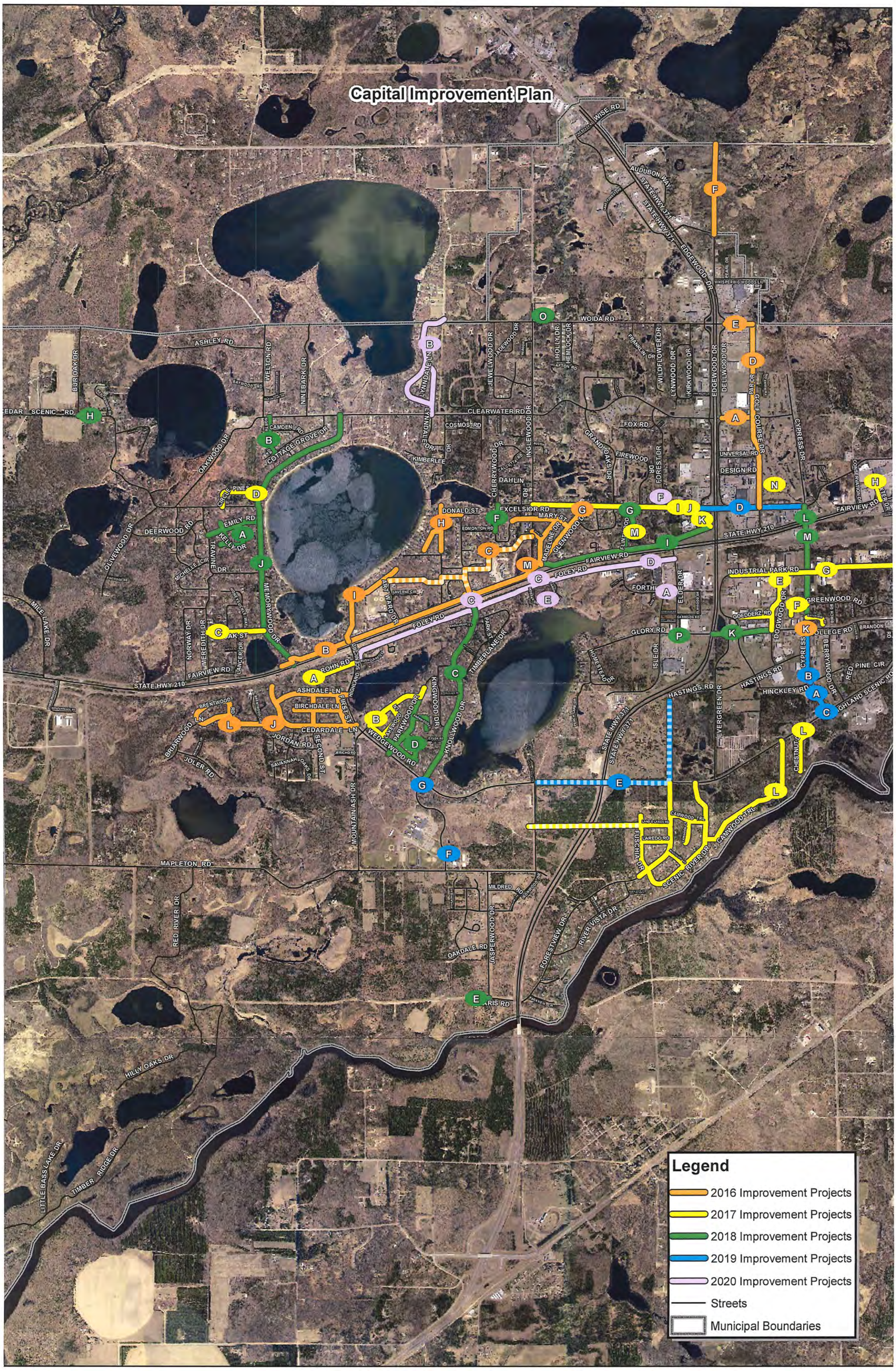
Photo 12 - Beam 1 span 1

Pictures

Photo 13 - Beam 2 span 3 (2)

Photo 14 - Beam 2 span 3

Capital Improvement Plan



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Year			Improvement Project	Total Project Cost	Special Assmnts	Federal/ State Grants	MSA Funds	CWC Funding	Tax Increment Proceeds	Sales Tax Proceeds	Replacement Fund Funding	Collector Street Funding	Capital Parks Funding	Water Enterprise Funding	Sewer Enterprise Funding	Storm Enterprise Funding	Property Tax Levy Financing	Comments
2016	FD	A	Clearwater Rd - Dellwood to Golf Course	168,000	168,000													2015 SEH Est
2016	FD	B	Fairview Rd - 343' W of Memorywood to Inglewood	1,799,900	487,800					717,200							594,900	11.11.15 SEH F/S Est; based on highest option of widened street
2016	NC	C	Fairview Rd Trail - Art Ward to Inglewood	764,900													764,900	11.11.15 SEH F/S Est; incl. with Fairview proj; all trails option
2016	FD	D	Golf Course Dr - Excelsior to Woida (FD & RC)	1,305,400	914,200					391,200								2015 WSN F/S
2016	FD	E	Woida Rd - Golf Course to Dellwood	128,700	94,600												34,100	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2016	FD	F	Dellwood Dr - Novotny to CSAH 49 (Baxter portion)	93,300	93,300													Est based on LRIP funding & Inglewood comparison
2016	MO	G	Glenwd, Madeline, John, Mary & S Cherrywd 613'	292,400	292,400													2013 B&M PMP study
2016	MO	H	Kenwood Dr - 493' N of Fairfax to terminus, Kenwood Ct and Donald St - Kenwood W to Knollwood	144,600	144,600													2013 B&M PMP study
2016	MO	I	Maplewood Drive (incl. Cemetery & OK Park)	156,400	116,900												39,500	2013 B&M PMP study
2016	MO	J	Southdale: Ashdale, Birchdale, Brentwood, Cedardale, First and Second (incl. Southdale Park)	694,000	680,800												13,200	2013 B&M PMP study
2016	N/C	K	College Right-Turn Lane at S Cypress Dr	224,500					224,500									Est based upon 2015 bid & current exp
2016		L	Lift Station Rehabilitation: Lift Station 8	136,000											136,000			PW provided lift station maintenance budget
2016		M	Lift Station 3 Reroute Improvements	559,000											559,000			Est 05-23-13 cost, incl add'l eng; does not incl add'l legal/acq RR
2016			Automatic Meter Reading (AMR)	1,100,000						1,100,000								Est budget
2016			Oscar Kristofferson Park Pavilion	250,000									250,000					Est budget
2016			**TOTALS**	**7,817,100**	**2,992,600**	**-**	**-**	**-**	**224,500**	**2,208,400**	**-**	**-**	**250,000**	**-**	**695,000**	**-**	**1,446,600**	

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2017	MO	A	Marohn Road - CSAH 48 to 1,375' W	72,900	72,900													2013 B&M PMP study
2017	MO	B	Mountain Ash-Wedgewood to Parkwood, Parkwood-Wedgewood to 300' N, Lakewood & Wedgewood -Mt Ash to Lakewood	198,300	198,300													2013 B&M PMP study
2017	MO	C	Oak Street	88,200	88,200													2013 B&M PMP study
2017	MO	D	Circle Pines Road	78,800	78,800													2013 B&M PMP study
2017	MO	E	Dogwood Dr - Ind Pk Rd to College Rd and Goedderz Road - Dogwood to 926' W	186,800	186,800													2013 B&M PMP study
2017	MO	F	Basswood & Greenwood - Cypress to Cul-de-sac	72,000	72,000													2013 B&M PMP study
2017	FD	G	Industrial Pk Rd - 1,414' W of Dogwood to CSAH 48	597,700	542,100									5,500			50,100	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2017	FD	H	Baxter Drive - TH 210 to 642' N	147,200	136,700												10,500	Est from 2013 B&M PMP-conv from sealcoat to FDR similar str
2017	FD	I	Excelsior Rd - Inglewood to 363' W of Edgewood	535,700	430,800												104,900	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2017	N/C	J	Excelsior Intersection at Fairview/Edgewood	1,640,000	250,000		750,000			640,000								F/S needed; potential funding w/ TIF proceeds new redevelopment TIF district & area SA; est '15 Isle roundabout & 10/14/09 WSN Fairview est costs
	N/C	K	Fairview Road Extension to Excelsior	568,000	148,400	419,600												
2017	R/U	L	Camwood, Chestnut & South Sewer Interceptor	5,905,500	2,752,300					2,068,100				134,400	289,100		661,600	F/S underway; WSN est from 2013
2017		M	Lift Station Rehabilitation: Lift Station 10	136,000											136,000			PW provided lift station maintenance budget
2017	N/C	N	Commercial Area Storm Water Pond (Excelsior)	916,700		438,600				300,000						178,100		HDR/WSB 2014 study: Concept 1 plus land & trails allow
2017			**TOTALS**	**11,143,800**	**4,957,300**	**858,200**	**750,000**	**-**	**-**	**3,008,100**	**-**	**-**	**-**	**139,900**	**425,100**	**178,100**	**827,100**	

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2018	MO	A	Emily Road, Emily Circle, Kelly Drive & Kelly Circle	194,400	194,400													2013 B&M PMP study
2018	MO	B	Northwood Drive	61,400	61,400													2013 B&M PMP study
2018	MO	C	Knollwood Drive - Foley Rd to CSAH 48	388,200	280,300												107,900	2013 B&M PMP study
2018	MO	D	Parkwood Dr - CSAH 48 to Mt Ash, Wedgewood Rd - Lakewood to N Wedgewood & Parkwood Ct	264,800	264,800													2013 B&M PMP study
2018	MO	E	Paris Road - Jasperwood to 408' W	23,800	22,100												1,700	2013 B&M PMP study
2018	MO	F	Cherrywood Dr - Excelsior to Edmonton	41,200	41,200													2013 B&M PMP study
2018	MO	G	Flintwood Drive	79,300	79,300													2013 B&M PMP study
2018	MO	H	Cedar Scenic Road - Bur Oak Dr to 590' E	31,300	31,300													2013 B&M PMP study
2018	FD	I	Fairview Rd - Inglewood to 1,185' E of Elder	503,400	251,700												251,700	*add trail on west section within city's add'l ROW?*
2018	FD	J	Memorywood Drive - Fairview to Clearwater	1,093,400	808,400												285,000	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2018	FD	K	College Road - TH 371 to Cypress Dr	536,000	362,800												173,200	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2018	NC	L	Cypress Drive - RR to Excelsior Rd	4,616,800						2,234,000		2,382,800						SEH 12/31/13 estimate; excludes ROW acq
2018	NC	M	Cypress Railroad Crossing (50' both sides)	654,700		429,900	-			224,800								SEH 12/20/13 estimate
2018	NC	N	Cypress Drive - RR to College Rd	3,789,000			1,100,000			1,520,000		1,169,000						SEH 12/31/13 est; excludes ROW acq - borrow ahead 2 yrs MSA
2018		O	North Water Tower: Reconditioning & Painting	900,000										900,000				KLM eng 2014 est
2018		P	Lift Station Rehabilitation: Lift Station 11	106,000											106,000			PW provided lift station maintenance budget
2018			**TOTALS**	**13,283,700**	**2,397,700**	**429,900**	**1,100,000**	**-**	**-**	**3,978,800**	**-**	**3,551,800**	**-**	**900,000**	**106,000**	**-**	**819,500**	

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2019	NC	A	Cypress Drive - CSAH 48 to Hinckley	930,800	518,500					100,000		268,600		12,200			31,500	2011 eng est w/ ROW allow
2019	RC	B	Cypress Drive - Hinckley to College	960,000						480,000		480,000						prior eng est
2019	NC	C	Cypress Drive Roundabout Intersection at CSAH 48	1,600,000				720,000		880,000								Est based upon '15 Isle proj w/ PW 5% annual infl & land allow
2019	FD	D	Excelsior Rd - 363' W of Edgewood to Cypress Dr	561,500	475,300												86,200	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2019	U/N	E	16" Water Main Ext - CSAH 48 to E Water Tower	740,000						500,000				240,000				'13 WSN est; f/s update needed; potential SA w/ development
2019	N/C	F	New Water Well	140,000										140,000				PW est; moved from 2016 to 2019
2019		G	Lift Station Rehabilitation: Lift Station 12	111,000											111,000			PW provided lift station maintenance budget
2019			**TOTALS**	**5,043,300**	**993,800**	**-**	**-**	**720,000**	**-**	**1,960,000**	**-**	**748,600**	**-**	**392,200**	**111,000**	**-**	**117,700**	
2020	FD	A	Forthun Road - Isle to Elder	50,700	50,700													2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2020	R/U	B	Lynndale Dr & Lynndale Ln - Clearwater to Woida	1,332,900	849,700									135,700	111,800		235,700	Est from WSN 2009 cost estimates with est. inflation
2020	N/C	C	Inglewood Dr Intersection Improvements at TH 210															2009 WSN est w/ inflation
			Inglewood Dr/Foley Rd Intersection & RR Crossing	882,700		303,000				579,700								
			Inglewood Drive Intersection with TH 210	530,900		308,000				222,900								
			Knollwood Drive Reconfiguration	206,600		37,600				169,000								
2020	FD	D	Foley Road - CSAH 48 to Elder Drive	986,800	384,400												602,400	2013 B&M PMP w/PW 1.6 FDR conv from MO & 5% inflation
2020	N/C	E	North Perch Lake Water and Sewer Utilities	409,700	409,700													F/S update needed; est from 2000 f/s, Finance updated unit prices '15 Isle w/ 16% Inflator to 2020 (PPI 8% last five years)
2020		F	Lift Station Rehabilitation: Lift Station 13	106,000											106,000			PW provided lift station maintenance budget
2020			**TOTALS**	**4,506,300**	**1,694,500**	**648,600**	**-**	**-**	**-**	**971,600**	**-**	**-**	**-**	**135,700**	**217,800**	**-**	**838,100**	
2016-2020 TOTALS				**41,794,200**	**13,035,900**	**1,936,700**	**1,850,000**	**720,000**	**224,500**	**12,126,900**	**-**	**4,300,400**	**250,000**	**1,567,800**	**1,554,900**	**178,100**	**4,049,000**	

***Proposed Draft, based upon 2013 Pavement Management Plan figures, engineer's estimates of projects updated for construction inflation, and other studies to determine approximate project costs, funding sources and schedule of improvements. Further engineering analysis on specific projects is necessary closer to the scheduled improvement year to determine specific total project costs, special assessments if applicable, and other funding sources. Figures are subject to change.**

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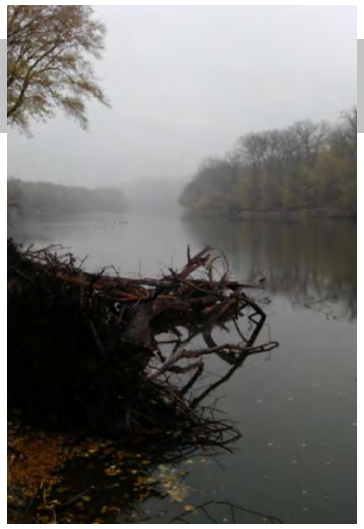
	Equipment															
2016	Parks 60" Mower Replacement	12,100							12,100							
2016	Public Works Admin Truck Replacement	31,500							31,500							
2016	PW Dump Trailer	10,400													10,400	
2016	PW & Parks Skidsteer with Attachments New	72,000							72,000							
2016	Police Squad 368 Replacement	40,500							40,500							
2016	Police Squad 365 Replacement	40,500							40,500							
2016	Police Squad 367 Replacement	40,500							40,500							
2016	Sewer Emergency Generator Addition	45,000											45,000			
2016	Sewer SCADA/Computer Equipment Upgrades	13,000											13,000			
2017	IT City Servers Replacement	20,000							20,000							
2017	Parks 3/4 Ton Truck w/ Plow Replacement	37,500							37,500							
2017	Parks Fertilizer Cart Spreader/Sprayer New	6,900							6,900							
2017	Parks Infield Mower Replacement	15,800							15,800							
2017	Parks Utility Vehicle/Work Cart Replacement	9,200							9,200							
2017	Public Works Admin Truck Replacement	26,500							26,500							
2017	Public Works Truck New	37,500							37,500							
2017	Police Squad 362 Replacement	40,500							40,500							
2017	Police Squad 364 Replacement	40,500							40,500							
2018	Parks 60" Mower w/ Bagger Replacement	12,800							12,800							
2018	Police Squad 361 Replacement	40,500							40,500							
2018	Storm Water Tractor with Mower Attach Replacement	75,000												75,000		
2019	Parks 12 Foot Mower Replacement	12,600							12,600							
2019	Parks 3/4 Ton Truck w/ Plow Replacement	35,000							35,000							
2019	Parks Grounds Master Mower Replacement	11,500							11,500							
2019	Public Works One-Ton Crane Truck Replacement	84,000							84,000							
2019	Public Works Truck Replacement	36,000							36,000							
2019	Police Squad 368 Replacement	42,500							42,500							
2019	Police Squad 363 Replacement	42,500							42,500							
2020	Parks 3/4 Ton Truck w/ Plow Replacement	35,000							35,000							
2020	Parks Utility Tractor Replacement	39,000							39,000							
2020	Sewer Emergency Generator Replacement	50,000											50,000			
2020	Police Squad 365 Replacement	42,500							42,500							
2020	Police Squad 367 Replacement	42,500							42,500							

WHISKEY CREEK SUBWATERSHED WATER QUALITY RETROFIT ANALYSIS



Engaging conservationists, city staff, the and the community for a targeted stormwater implementation plan, city ordinances, redevelopment and future development of the Hwy 371 corridor

December 2013

Crow Wing Soil and Water Conservation District

Central Regional Sustainable Development Partnership

University of Minnesota
Driven to Discover℠

HDR

PARTNERS

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Dr. Joe Magnar, University of Minnesota

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1 INTRODUCTION

The Crow Wing Soil and Water Conservation District (SWCD) was granted a University of Minnesota Central Region Partnership (CRSDP) Grant to conduct an analysis (Analysis) of the Whiskey Creek (Creek) watershed for potential locations for effective stormwater water quality best management practices to address nutrient and sediment discharges to the Creek. In light of the CRSDP grant requirements and the overarching conservation goals of the SWCD, the expressed overarching goal of the study was summarized as follows:

> "Engage local officials, city staff, and the community on a stormwater implementation plan, city ordinances, redevelopment and future development of the Hwy 371 corridor"

Additional goals for the analysis (as expressed by the SWCD and the CRDSP) include:

- Explicitly identify the best urban locations of specific stormwater water quality best management practices (BMPs) as determined by their annual cost per pound (LB) of treatment over a 30-year period
- Begin to address the expressed needs of local community groups, agencies and the Landscape Arboretum in relation to proactive management of Whiskey Creek
- Engage students form the Central Lakes College (CLC) in the analysis
- Enhance relationships between local citizens and the University of Minnesota
- Support environmental, social and economic sustainability

The analysis was comprised of an initial project scoping meeting with all partners, a collection and assessment of existing data and needs, a field reconnaissance of the subwatershed, water quality and flow sampling within the Creek, a desktop screening for additional opportunities and to define the area of interest (AOI), an existing conditions model of the AOI, a treatment-scaled model of proposed retrofit strategies and a cost-benefit analysis. Results of the scoping meeting, existing data review and desktop screening reduced the Creek's subwatershed to a smaller subwatershed defined as the AOI. The existing conditions model was constructed by assigning land use categories with related estimates of directly-connected impervious, indirectly-connected impervious and pervious land cover as well as depression storage.

2 WHISKEY CREEK SUBWATERSHED

2.1 WATERSHED CHARACTERISTICS

The Whiskey Creek Subwatershed is primarily located within the northern portion of Baxter's urban district with a small area of Brainerd Study Area included along the west bank of the Mississippi River (Figure 1). The subwatershed is comprised primarily of commercial land uses with a significant portion of natural, open space and freeway infrastructure. Sands with occasional areas of shallow groundwater dominate the soils in this subwatershed (Independent Testing Technologies, 1999, 2001a, 2001b, 2004). Runoff from the watershed discharges to Whiskey Creek in the vicinity of Fleet Farm and an abandoned golf course property at the intersection of Golf Course Drive N and Excelsior Rd N. The creek makes it way through the Northland Arboretum and a major wetland before emptying into the Mississippi River.

The subwatershed contains areas that seldom contribute flows to Whiskey Creek (personal communication with Trevor Walter, City of Baxter). For the purposes of this study, an Area of Interest (Figure 2) was defined that eliminated those portions of the subwatershed considered non-contributing for all storm events lesser than a 100-yr frequency.

2.2 STORMWATER INFRASTRUCTURE

Both Baxter and Brainerd provided Geographic Information Systems (GIS) databases of public stormwater infrastructure containing inlets, pipes, outlets, swales and ponds(Figure 3, Figure 4). This information was reviewed for flow routing and subsequent pipeshed delineation. The residential portion of the subwatershed west of HWY 371 and the Landscape Arboretum's grounds were excluded from further analysis given the expected low frequency and magnitude of stormwater contribution to Whiskey Creek relative to the remaining AOI.

3 METHODS

3.1 LAND USE CHARACTERIZATION

Contiguous land use groupings were delineated in GIS from aerial photography then characterized into WinSLAMM Standard Land Use codes (Appendix 1). Pipeshed boundaries were then used to clip and summarize land uses (Table 1). Walker (2007) provides guidance on adjusting parameter settings for each land use to "calibrate" the P8 model to produce expected WinSLAMM results (Table 2, Appendix 2). This step was deemed valuable given WinSLAMM's robust empirical land use specific data set related to runoff and pollutant build up and wash off in Midwestern states. Soils for the AOI were considered hydrologic soil group A with all pipeshed drainage areas having a Curve Number (CN) of 69.

3.2 Existing Stormwater Treatment Practices

Existing pond storage was estimated assuming a 2:1 slope and a live dead storage depth of 3-ft. Live storage was estimated as 3-ft as well. All ponds and drainage areas were constructed within HydroCAD with orifice outlets of diameters relative to City stormsewer data. No infiltration was allowed for the ponds. A 10-yr, type-2 storm event was used to model stage-dependent outflow (cubic feet per second discharge, cfs). P8 Urban Catchment Model (Walker, 1997) was then used to re-create stage-dependent storage and outflow (cfs) using this information.

3.3 Scoping, Desktop Review and Field Reconnaissance

An initial stakeholder scoping meeting was followed by a desktop review of the subwatershed and a field reconnaissance. The scoping meeting defined the goals of each stakeholder as well as brought each participant to a unified understanding of existing conditions within the subwatershed, including the locations and extent of areas of interest and existing stormwater infrastructure (both conveyance and treatment systems). A field visit to key locations identified in the desktop review of the subwatershed allowed all stakeholders and HDR staff to identify both potential BMP retrofit opportunities as well as non-contributing and site-limiting sites not conducive to retrofitting at this stage.

3.4 Existing Conditions and Treatment Model Runs

The AOI initial conditions mode setup was performed in two ways. The first incorporated the entire AOI into one system allowing for summed load estimates to the Mississippi River. The second divided the system into four smaller Groups based on their related outflow point (common receiving water body) for efficiency of iterative treatment strategy modeling runs (Figure 4). Iterative treatment scaling model runs for various BMP solutions were then investigated for each existing conditions model network.

New water quality ponds, pond modifications, permeable asphalt and bioretention systems were considered within the AOI. A new pond at the abandoned golf course was modeled using information from an existing proposal (Wildseth, Smith and Nolting, 2013). Existing pond modifications were in the form of addition of an iron-enhanced sand filter (IESF) as the primary outlet. Treatment analysis of the IESF considered facilities in 500 ft^2 increments with two feet of live storage and an infiltration rate of 6 inches per hour for the media. Dissolved phosphorous removal was set o 90% efficiency for all water passing through the IESF. Bioretention cells were similarly assessed by modeling one cell of incremental size at the outfall of the drainage area representing the sum of individual bioretention storage. One foot of ponding was modeled with no under-drain and 1.2 inches per hour infiltration capacity.

3.5 Value Analysis Setup

To measure each potential BMP against each other in terms of cost and performance, a value-based assessment was performed. First, each iterative treatment scenario for each BMP was run to estimate the annual treatment of Total Phosphorus (TP) and Total Suspended Solids (TSS). The total cost of the BMP design and installation costs as well as annual maintenance costs were

then estimated. An operational period of 30-years was selected to accommodate the effects of maintenance costs and life cycle for all BMPs. "Value" was then defined as an annually low $/LB-TP of treatment as follows:

$$\text{VALUE (Annual \$/LB-TP)} = \frac{[(\text{design and installation costs}) + (30 \text{ years X annual TP removed})]}{(30 \text{ years X annual maintenance cost})}$$

4 RESULTS

4.1 Existing Conditions Model Results

Estimates of TSS and TP loads were made in P8 software (Table 3,Table 4. Existing Conditions Catchment Loading and Treatment of TP). Estimates were produced for each individual BMP as well as for assemblages of catchments at their combined outfall. In the latter case, estimates were made for various assemblages starting from the Whiskey Creek-Mississippi confluence then upstream. The entire AOI is estimated to produce 335,097 lbs-TSS and 823.5 lbs-TP annually. Of these generated loads, existing BMP treatment is expected to remove 52% of the TSS and 22% of the TP, annually. Existing individual pond treatment appears to range from 29-81% for TSS and 5-51% for TP within the AOI.

Not all catchments within the AOI produced or treated TSS and TP equally. Catchment 12's southeastern quadrant (Catchment E12s in results tables), produced the highest loading and has no significant treatment at its immediate outfall to Whiskey Creek (73,259 lbs-TSS and 229.5 lbs-TP, annual loading). Other catchments with no proximal, significant treatment (3, 5, 6, and 10) range in loading from 831-20,598 lbs-TSS and 2.6-64.6 lbs-TP, annually.

4.2 Potential Best Management Practices Model Results

Consideration of availability and efficiency of existing BMPs along with site "buildability" drove the selection process of where to investigate strategies for a first-tier retrofit plan. Locations for recommended retrofit BLP locations exist within catchments 2, 3, 7 and at the beginning of the daylit portion of Whiskey Creek along Excelsior Rd N (\Figure 5). Although there are many other potential retrofit opportunities throughout the AOI, these locations are likely to produce the highest return on investment over a 30-year period for various reasons.

Catchment's 2 and 3 were identified as a high value locations for potential application of either permeable asphalt parking stalls or bioretention islands (Table 5, Table 6,Table 7). Both are part of the same parcel but are within different municipalities, draining to separate outfalls. Site 3 is nearly 100% impervious parking lot with opportunities to retrofit strips of permeable parking to break up the lot into smaller drainage areas. Alternatively, there is ample room for parking stall striping adjustment and drive lane modification to accommodate bioretention cells. These BMPs would treat runoff only from the parcel they reside in and would require modifications to the extent of sand and salt use applied during winter, improved lot sweeping/vacuuming, and, in

the case of bioretention cells, a sediment forebay. For both catchments, porous asphalt appears to be more valuable than bioretention cells in terms of water quality performance, but if the added benefits of improved aesthetics, shade and traffic calming/pedestrian safety are considered, bioretention may prove more valuable if designed with these values in mind.

Catchment 7 was also identified as a location for a valuable retrofit (Table 8). An existing pond treating this catchment can be modified to include an IESF bench to capture dissolved phosphorus from its outflows at high efficiency. The decision in regards to how extensive the IESF is built will depend mostly on overall AOI-wide pollutant removal goals for the Mississippi River and existing budget as the value estimates are flat-lined for each successive treatment level (i.e., they are the same). Installation and maintenance costs for this option are low and there is ample room and access for the IESF as well, making this an attractive strategy.

The proposed Whiskey Creek Pond is another highly attractive opportunity as it treats the majority of the commercial area contributing to the Creek as well as the largest, highest contributing load catchment in the AOI (E12s). In addition, that same catchment has little, far less valuable, opportunities for on-site treatment. The proposed design provided to HDR by the City of Baxter is estimated to receive over 151,000 lbs of TSS and 560 lbs of TP annually. The proposed design would treat TSS at 56% and TP at 26% while the addition of increased area for an IESF would slightly improve those results (Table 9). The modeling results for the IESF are somewhat attenuated given the magnitude of TP load coming to the site and would expect to improve if pond design was increased to above 50% TP removal. At that point, the suspended sediments would sufficiently be removed with the remaining TP load being dominated by dissolved phosphorus (P). The incremental improvement on TP removal at that point would therefore become much greater given that IESF's target dissolved-P and do so for a small cost.

When considering the options described herein, the most valuable strategy identified to address water quality concerns for Whiskey Creek would be to develop a retrofit plan starting with Catchment 7's 60%-TP removal option followed by the Whiskey Creek Pond with a 1000 ft^2 IESF primary outlet (Table 10).

5 REFERENCES

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6 TABLES

TABLE 1. LAND USE (IN ACRES) FOR WHISKEY CREEK CATCHMENTS

	Catchment														
Land Use[1]	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*Total*
DUP											5.4	0.9			6.3
FREE	7.1	2.5	0.5		0.2	0.0	0.0	0.4	15.7	3.3	10.9	61.2	7.0	11.5	120.3
HDRNA	5.0					2.8	1.5								9.4
INST													1.0		1.0
LDR												0.5	21.0		21.5
LI	6.3														6.3
MDRNA												0.4	1.0		1.4
MFRNA	5.0														5.0
OFPK	0.4								5.8	7.4	4.9	41.9	10.5	5.5	76.4
OSUD	29.4				14.7	2.5	0.0	27.0	9.5	19.4	37.1	0.9	1.8	1.9	144.2
PARK	128.8	0.4	4.5		0.7								0.8		135.2
SCH			1.6	3.2	2.0										6.7
SCOM												0.4			0.4
SHOP	12.5	19.8	18.8	19.8			36.9		21.3	23.2	1.5	133.9	7.4	16.6	311.8
SUB				0.1			14.8							0.7	15.5
Total	194.6	22.7	25.3	23.0	17.5	5.3	53.3	27.4	52.4	53.3	59.8	240.0	50.5	36.2	861.2

[1]Land use codes are described in Appendix 1

TABLE 2. P8 CALIBRATION TO WINSLAMM LAND USE DEFINITIONS

Land Use	Depression Storage (in)	Pervious Fraction	Indirectly-Connected Fraction	Directly Connected Fraction
DUP	0.02	0.609	0.121	0.271
FREE	0.022	0	0	1
HDRNA	0.017	0.469	0.131	0.399
INST	0.017	0.364	0.036	0.6
LDR	0.026	0.796	0.079	0.126
LI	0.029	0.205	0.088	0.707
MDRNA	0.029	0.622	0.135	0.242
MFRNA	0.025	0.462	0.063	0.474
OFPK	0.019	0.263	0.006	0.731
OSUD	0.027	0.951	0	0.049
PARK	0.01	0.856	0.041	0.103
SCH	0.026	0.421	0.014	0.565
SCOM	0.025	0.079	0.014	0.907
SHOP	0.023	0.083	0	0.917
SUB	0.04	0.904	0.04	0.056

[1]Land use codes are described in Appendix 1

Table 3. Existing Conditions Catchment Loading and Treatment of TSS

Contributing Catchment	Total TSS-Load (lbs/yr)	Sample Point/BMP	1st Receiving Water Body	Treatment of Upstream Load*	
				Total TSS-Trapped (lbs/yr)	Load Reduction (%)
Entire AOI	335,097	Lower Whiskey Creek	Mississippi River	173,990	52
1, 2, 3, 4, 5, 9n, 9s, 10, 11 E12n, E12s, W12n, W12s, 13, 14	154,264	Wetland	Lower Whiskey Creek	0	0
1, 2, 9n, 9s, 10, 11 E12n, E12s, W12n, W12s, 13, 14	212,615	Arboretum Ponds	Wetland	76,525	36
E12n, E12s, W12n, W12s, 13, 14	151,435	Upper Whiskey Creek	Arboretum Ponds	0	0
1	28,431	Arboretum Ponds	Wetland	0	0
2	13,793	Arboretum Ponds	Wetland	0	0
3	12,689	No BMP	Wetland	0	0
4	13,303	Pond-4	Wetland	9,186	69
5	1,368	No BMP	Wetland	0	0
6	831	No BMP	Lower Whiskey Creek	0	0
7	23,534	Pond-7	Lower Whiskey Creek	17,523	75
10	20,598	No BMP	Upper Whiskey Creek	76,525	36
11	12,806	Swale-11	Arboretum Ponds	8,922	70
9n	10,179	Arboretum Ponds	Wetland	0	0
9s	16,532	Pond-9s	Arboretum Ponds	11,637	70
E12n	21,553	Swale-E12n	Upper Whiskey Creek	13,395	62
E12s	73,259	No BMP	Upper Whiskey Creek	0	0
W12n	17,241	Swale-W12s	Upper Whiskey Creek	20,058	29
W12s	31,602	Swale-W12s	Upper Whiskey Creek		
13	16,752	Swale-W12s	Upper Whiskey Creek		
14	20,628	Pond-14	Upper Whiskey Creek	16,744	81

Table 4. Existing Conditions Catchment Loading and Treatment of TP

Contributing Catchment	Total TP-Load (lbs/yr)	Sample Point/BMP	1st Receiving Water Body	Treatment of Upstream Load*	
				Total TP-Trapped (lbs/yr)	Load Reduction (%)
Entire AOI	823.5	Lower Whiskey Creek	Mississippi River	207.1	22
1, 2, 3, 4, 5, 9n, 9s, 10, 11 E12n, E12s, W12n, W12s, 13, 14	778.6	Wetland	Lower Whiskey Creek	0.0	0
1, 2, 9n, 9s, 10, 11 E12n, E12s, W12n, W12s, 13, 14	787.4	Arboretum Ponds	Wetland	79.3	10
E12n, E12s, W12n, W12s, 13, 14	565.8	Upper Whiskey Creek	Arboretum Ponds	0.0	0
1	89.9	Arboretum Ponds	Wetland	0.0	0
2	43.2	Arboretum Ponds	Wetland	0.0	0
3	39.8	No BMP	Wetland	0.0	0
4	41.7	Pond-4	Wetland	15.2	37
5	4.3	No BMP	Wetland	0.0	0
6	2.6	No BMP	Lower Whiskey Creek	0.0	0
7	73.8	Pond-7	Lower Whiskey Creek	31.5	43
10	64.6	No BMP	Upper Whiskey Creek	0.0	0
11	40.3	Swale-11	Arboretum Ponds	15.7	39
9n	31.9	Arboretum Ponds	Wetland	0.0	0
9s	51.8	Pond-9s	Arboretum Ponds	19.7	38
E12n	67.5	Swale-E12n	Upper Whiskey Creek	20.3	30
E12s	229.5	No BMP	Upper Whiskey Creek	0.0	0
W12n	54.0	Swale-W12s	Upper Whiskey Creek	12.9	5
W12s	99.0	Swale-W12s	Upper Whiskey Creek		
13	52.6	Swale-W12s	Upper Whiskey Creek		
14	64.6	Pond-14	Upper Whiskey Creek	32.8	51

Table 5. Catchment 3 Permeable Asphalt Stalls Modeled Treatment Results

		Base Loading	Exist. Treat.	Net treat. %	Existing Load	NEW TREATMENT OPT-A New treat.	OPT-A Net %	OPT-B New treat.	OPT-B Net %	OPT-C New treat.	OPT-C Net %
TREATMENT	TP (lb/yr)	39.8	0	0%	39.8	11.9	30%	15.9	40%	19.9	50%
	TSS (lb/yr)	12,689	0	0%	12,689	6,767	53%	7,887	62%	8,889	70%
	Number of Stalls					38		54		76	
	Total BMP Area					5100	sqft	7,514	sqft	10,316	sqft
	BMP Type					Permeable Asphalt		Permeable Asphalt		Permeable Asphalt	
COST		Materials/Labor/Design				$51,000		$75,140		$103,160	
		Promotion & Admin Costs				$0		$0		$0	
		Probable Project Cost				$51,000		$75,140		$103,160	
		Annual O&M				$765		$1,127		$1,547	
		30-yr Cost/lb-TP				$207		$228		$251	
		30-yr Cost/1,000lb-TSS				$364		$460		$561	

Table 6. Catchment 3 Bioretention Island Modeled treatment Results

		Base Loading	Exist. Treat.	Net treat. %	Existing Load	NEW TREATMENT OPT-A New treat.	OPT-A Net %	OPT-B New treat.	OPT-B Net %	OPT-C New treat.	OPT-C Net %
TREATMENT	TP (lb/yr)	39.8	0	0%	39.8	11.9	30%	15.9	40%	19.9	50%
	TSS (lb/yr)	12,689	0	0%	12,689	6,743	53%	7,872	62%	8,883	70%
	Number of Islands					10		14		20	
	BMP Size (each)					500	sqft	500	sqft	500	sqft
	BMP Type					Bioretention		Bioretention		Bioretention	
COST		Materials/Labor/Design				$80,000		$112,000		$160,000	
		Promotion & Admin Costs				$200		$200		$200	
		Probable Project Cost				$84,200		$112,200		$160,200	
		Annual O&M (each cell)				$250		$250		$250	
		30-yr Cost/lb-TP				$435		$455		$520	
		30-yr Cost/1,000lb-TSS				$434		$507		$629	

Table 7. Catchment 2 Permeable Asphalt Stalls Modeled Treatment

		Base Loading	Exist. Treat.	Net treat. %	Existing Load	NEW TREATMENT					
						OPT-A		OPT-B		OPT-C	
						New treat.	Net %	New treat.	Net %	New treat.	Net %
TREATMENT	TP (lb/yr)	43.2	0	0	43.2	13	30%	17.3	40%	21.6	50%
	TSS (lb/yr)	13,793	0	0	13,793	7,360	53%	8,574	62%	9,663	70%
	Number of BMP's					1		1		1	
	BMP Size					5563	sq ft	8165	sq ft	9663	sq ft
	BMP Type					Permeable Asphalt		Permeable Asphalt		Permeable Asphalt	
COST		Materials/Labor/Design				$55,630		$81,650		$96,630	
		Promotion & Admin Costs				$200		$200		$200	
		Probable Project Cost				$55,830		$81,850		$96,830	
		Annual O&M				$834		$1,125		$1,449	
		30-yr Cost/lb-TP				$207		$229		$217	
		30-yr Cost/1,000lb-TSS				$366		$461		$484	

Table 8. Catchment 7 Iron Enhanced Sand Filter Modeled treatment

		Base Loading	Exist. Treat.	Net treat. %	Existing Load	NEW TREATMENT					
						OPT-A		OPT-B		OPT-C	
						New treat.	Net %	New treat.	Net %	New treat.	Net %
TREATMENT	TP (lb/yr)	73.8	31.5	43%	42.3	6.5	51%	12.9	60%	20.6	71%
	TSS (lb/yr)	23,534	17,523.00	74%	6,011	971	79%	1,952	83%	3,175	88%
	Number of BMP's					1		1		1	
	BMP Size					500	sqft	1,150	sqft	2,180	sqft
	BMP Type					Iron-enhanced Sand Filter		Iron-enhanced Sand Filter		Iron-enhanced Sand Filter	
COST		Materials/Labor/Design				$6,000		$13,800		$26,160	
		Promotion & Admin Costs				$0		$0		$0	
		Probable Project Cost				$6,000		$13,800		$26,160	
		Annual O&M				$100		$100		$100	
		30-yr Cost/lb-TP				$46		$43		$47	
		30-yr Cost/1,000lb-TSS				$309		$287		$306	

Table 9. Whiskey Creek Pond Modeled Treatment

		Base Loading	Exist. Treat.	Net treat. %	Existing Load	NEW TREATMENT OPT-A New treat.	OPT-A Net %	OPT-B New treat.	OPT-B Net %	OPT-C New treat.	OPT-C Net %
TREATMENT	TP (lb/yr)	565.8	0	0	565,8	146.9	26%	160	28%	167.1	30%
	TSS (lb/yr)	151,435	0	0	151,435	84,206	56%	86,329	57%	87,454	58%
	Number of BMP's					1		1		1	
	BMP Size					670,000	Cu ft	670,000	Cu ft	670,000	Cu ft
	BMP Type					Stormwater Wetland		Stormwater Wetland w/ IESF (1000 ft^2)		Stormwater Wetland w/ IESF (2000 ft^2)	
COST	Materials/Labor/Design					$250,000		$265,000		$280,000	
	Promotion & Admin Costs					0		0		0	
	Probable Project Cost					$250,000		$265,000		$280,000	
	Annual O&M					$250		$350		$450	
	30-yr Cost/lb-TP					$58		$57		$58	
	30-yr Cost/1,000lb-TSS					$102		$106		$112	

Table 10. Ranked Summary of Treatment Values

CATCHMENT # and TREATMENT LEVEL	Annual Value ($/LB-TP)	Annual TP Captured (LBs)	Annual TSS Captured (LBs)	Estimated Installation Cost
7-IESF, 60%	$43	12.9	1,952	$13,800
7-IESF, 50%	$46	6.5	971	$6,000
7-IESF, 70%	$47	20.6	3,175	$26,160
WC Pond, 28%	$57	160.0	86,329	$265,000
WC Pond, 26%	$58	146.9	84,206	$250,000
WC Pond, 30%	$58	167.1	87,454	$280,000
3-Porous Asphalt, 30%	$207	11.9	6,767	$51,000
2-Porous Asphalt, 30%	$207	13	7,360	$55,830
2-Porous Asphalt, 50%	$217	21.6	9,663	$96,830
3-Porous Asphalt, 40%	$228	15.9	7,887	$75,140
2-Porous Asphalt, 40%	$229	17.3	8,574	$81,850
3-Porous Asphalt, 50%	$251	19.9	8,889	$103,160
3-Bioretention, 30%	$435	11.9	6,743	$84,200
3-Bioretention, 40%	$455	15.9	7,872	$112,200
3-Bioretention, 50%	$520	19.9	8,883	$160,000

7 FIGURES

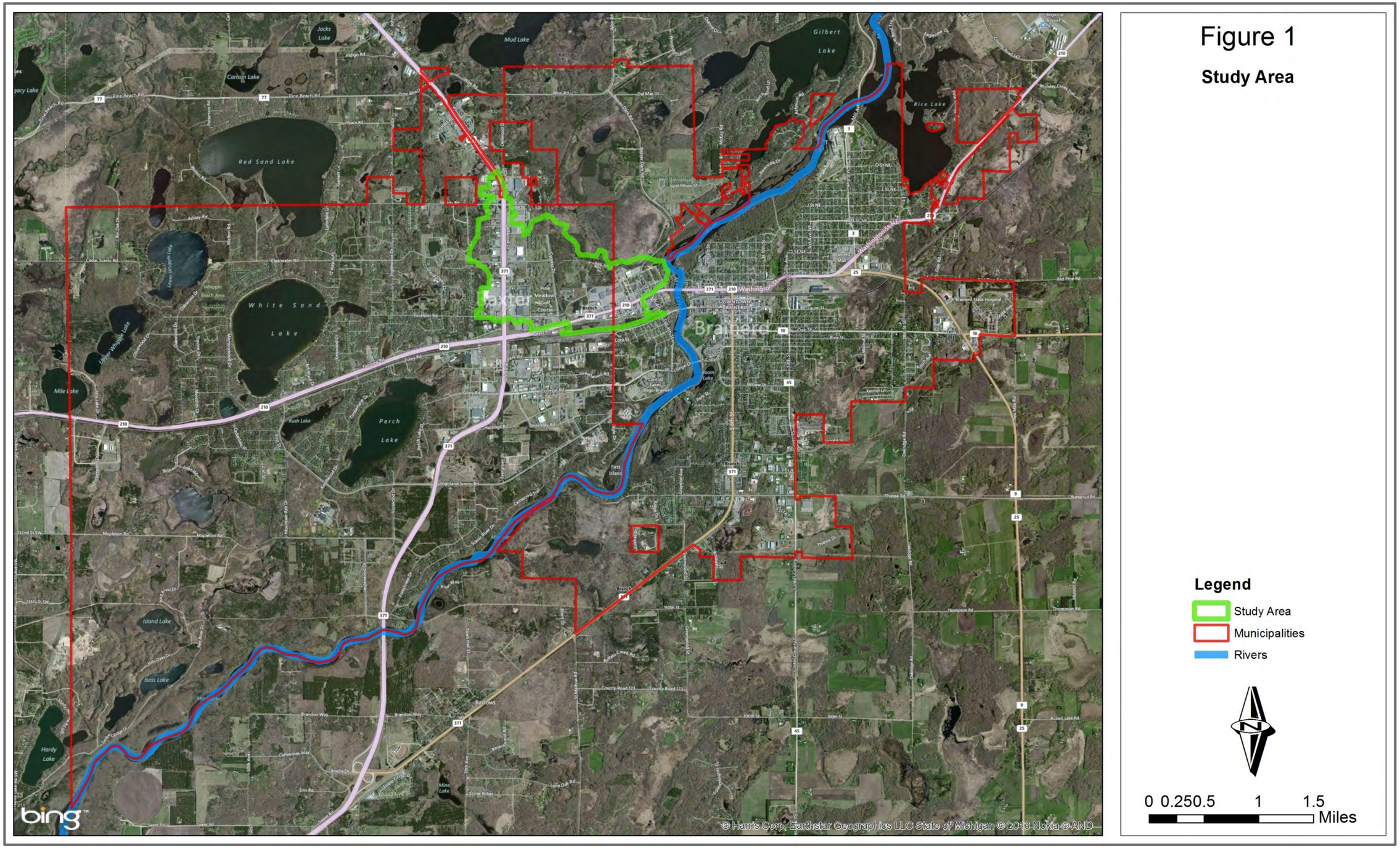

FIGURE 1. PROJECT LOCATION

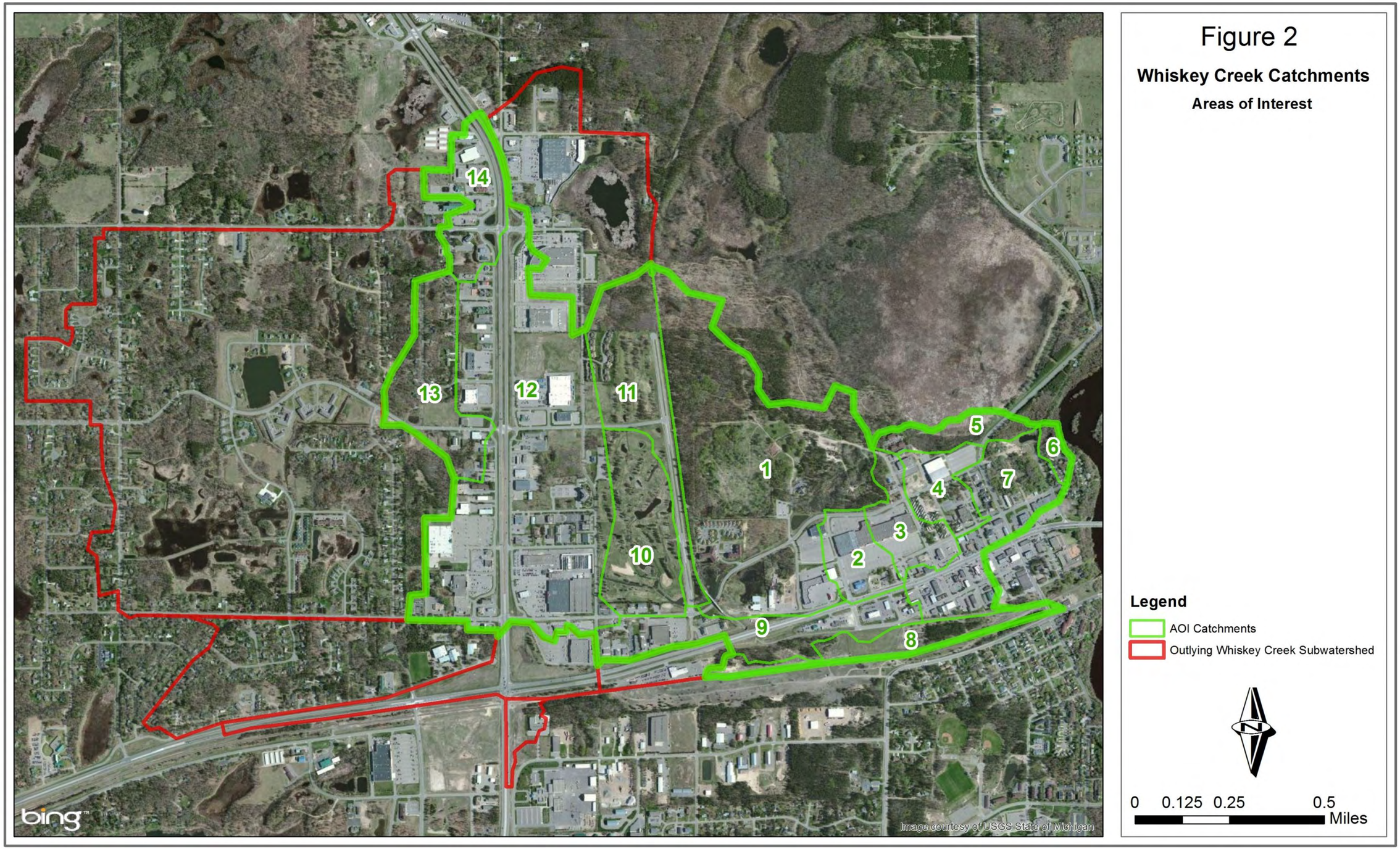

FIGURE 2. WHISKEY CREEK AREA OF INTEREST CATCHMENTS

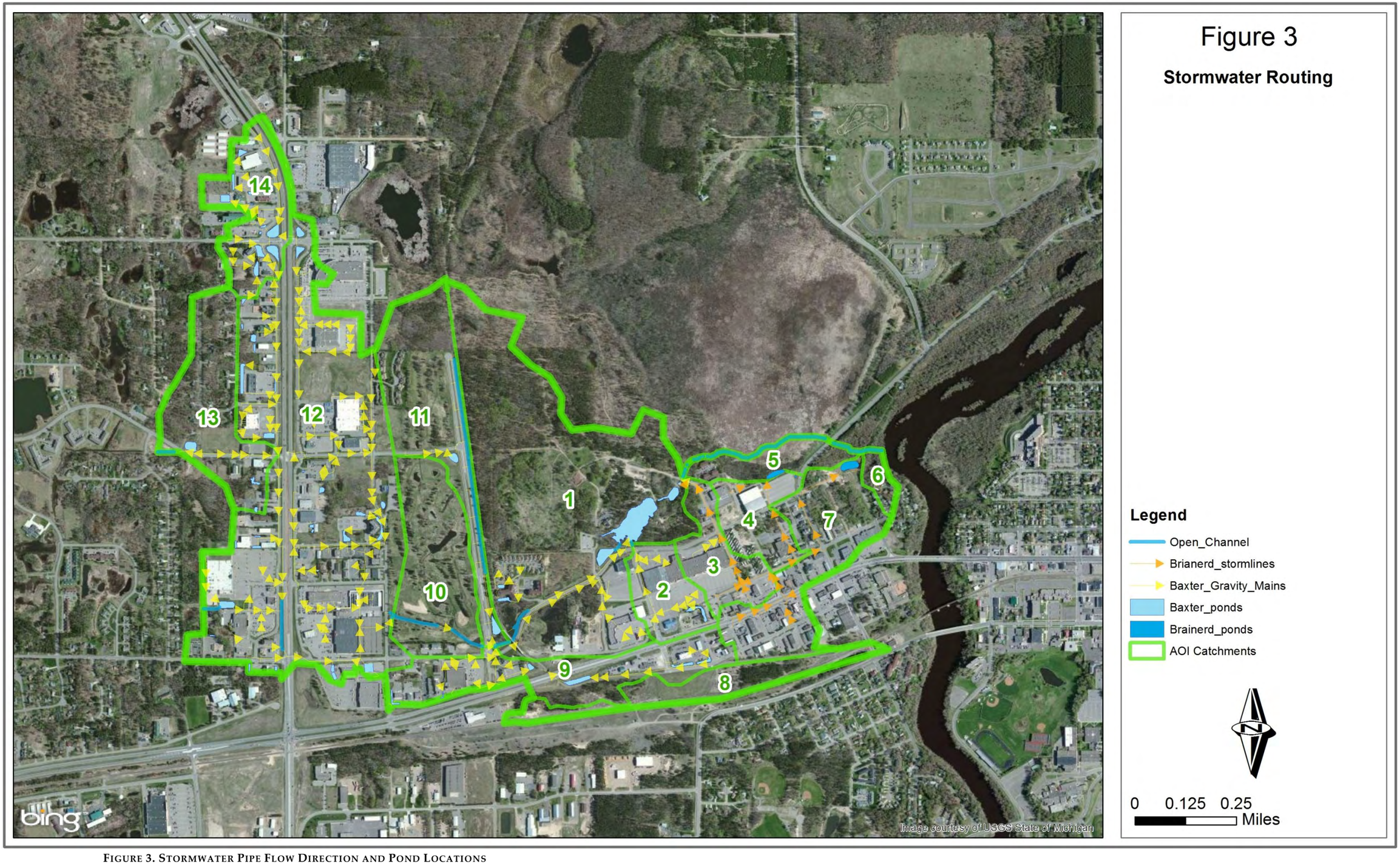

FIGURE 3. STORMWATER PIPE FLOW DIRECTION AND POND LOCATIONS

BMP	City ID	BMP	City ID
Pond 4	Brainerd:	Pond Ar	Baxter: sw-131, 180, 178
Pond 7	Brainerd:	Swale E12n[1]	N/A
Pond 9s	Baxter: sw-118, 158	Swale E12s[1]	N/A
Pond 14	Baxter: sw-21, 22, 23, 38, 41, 42, 43, 44, 45, 46, 47, 48	Swale W12n[1]	N/A
		Swale W12s	Brainerd: N/A

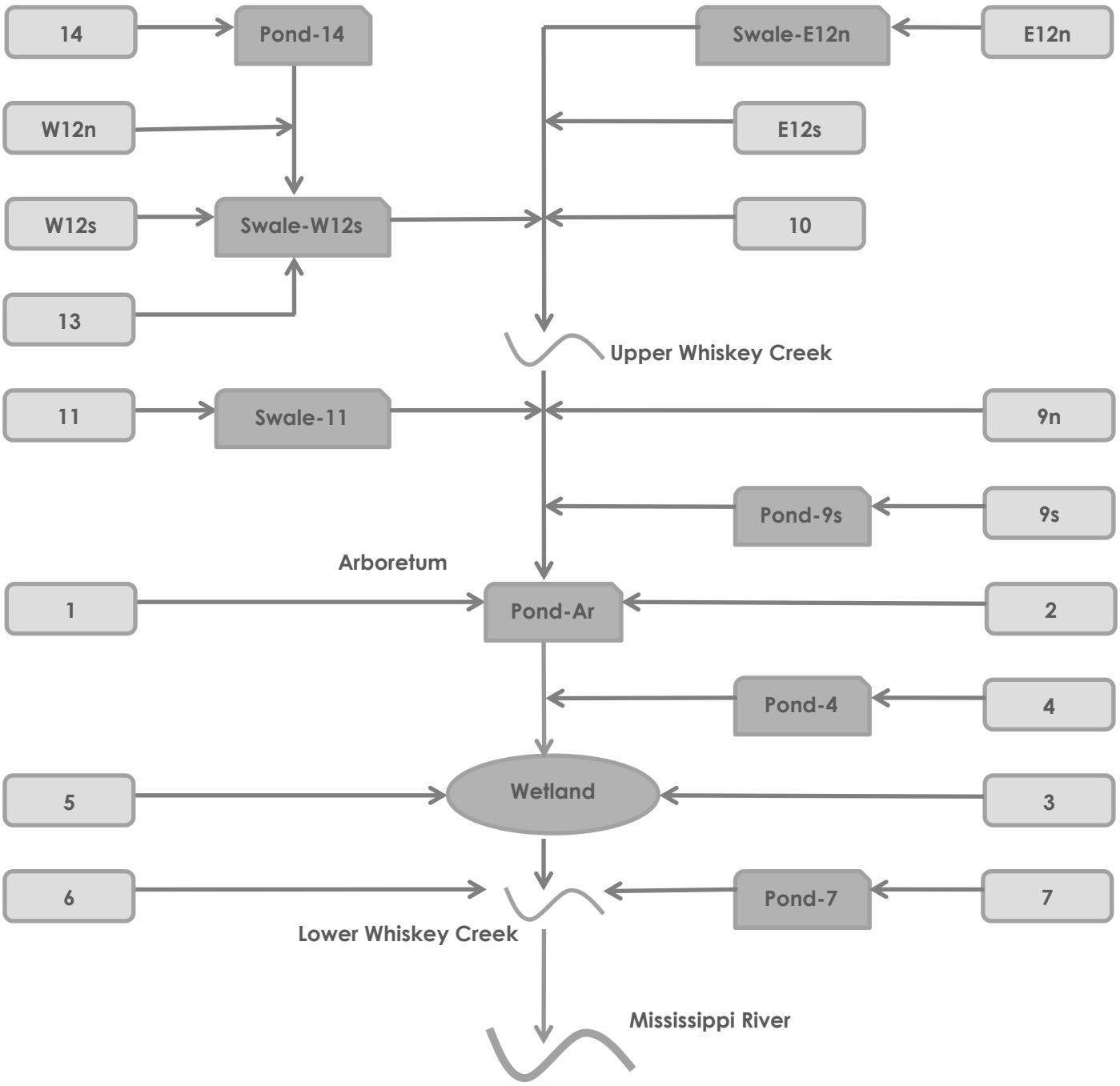

Figure 4. Stormwater Routing Schematic for Modeling

\Figure 5. Locations of the Highest Value BMP Retrofit Opportunities in the AOI

8 APPENDICES

APPENDIX 1 – WINSLAMM LAND USE DESCRIPTIONS

RESIDENTIAL LAND USES

HDRNA - High Density Residential without Alleys: Urban single family housing at a density of greater than 6 units/acre. Includes house, driveway, yards, sidewalks, and streets.

HDRWA - High Density Residential with Alleys: Same as HDRNA, except alleys exist behind the houses.

MDRNA - Medium Density Residential without Alleys: Same as HDRNA except the density is between 2 - 6 units/acre.

MDRWA - Medium Density Residential with Alleys: Same as HDRWA, except alleys exists behind the houses.

LDR - Low Density Residential: Same as HDRNA except the density is 0.7 to 2 units/acre.

DUP - Duplexes: Housing having two separate units in a single building.

MFRNA - Multiple Family Residential: Housing for three or more families, from 1 - 3 stories in height. Units may be adjoined up-and-down, side-by-side; or front-and-rear. Includes building, yard, parking lot, and driveways. Does not include alleys.

HRR - High Rise Residential: Same MFRNA except buildings are High Rise Apartments; multiple family units 4 or more stories in height.

MOBH - Mobile Home Park: A mobile home or trailer park, includes all vehicle homes, the yard, driveway, and office area.

SUB - Suburban: Same as HDRNA except the density is between 0.2 and 0.6 units/acre.

COMMERCIAL LAND USES

SCOM - Strip Commercial: Those buildings for which the primary function involves the sale of goods or services. This category includes some institutional lands found in commercial strips, such as post offices, courthouses, and fire and police stations. This category does not include buildings used for the manufacture of goods or warehouses. This land use includes the buildings, parking lots, and streets. This land use does not include nursery, tree farms, vehicle service areas, or lumber yards.

SHOP - Shopping Centers: Commercial areas where the related parking lot is at least 2.5 times the area of the building roof area. Parking areas usually surrounds the buildings in this land use. This land use includes the buildings, parking lot, and streets.

OFPK - Office Parks: Land use where non-retail business takes place. The buildings are usually multi storied buildings surrounded by larger areas of lawn and other landscaping. This land use includes the buildings, lawn, and road areas. Types of establishments that may be in this category includes: insurance offices, government buildings, and company headquarters.

CDT - Commercial Downtown: Multi-story high-density area with minimal pervious area, and with retail, residential and office uses.

INDUSTRIAL LAND USES

MI - Medium Industrial: This category includes businesses such as lumber yards, auto salvage yards, junk yards, grain elevators, agricultural coops, oil tank farms, coal and salt storage areas, slaughter houses, and areas for bulk storage of fertilizers.

LI - Non-Manufacturing: Those buildings that are used for the storage and/or distribution of goods waiting further processing or sale to retailers. This category mostly includes warehouses, and wholesalers where all operations are conducted indoors, but with truck loading and transfer operations conducted outside.

INSTITUTIONAL LAND USES

SCH - Education: Includes any public or private primary, secondary, or college educational institutional grounds. Includes buildings, playgrounds, athletic fields, roads, parking lots, and lawn areas.

INST - Miscellaneous Institutional: Churches and large areas of institutional property not part of CST and CDT.

HOSP - Hospital: Multi-story building surrounded by parking lots and some vegetated areas.

OTHER URBAN LAND USES

PARK - Parks: Outdoor recreational areas including municipal playgrounds, botanical gardens, arboretums, golf courses, and natural areas.

OSUD - Undeveloped: Lands that are private or publicly owned with no structures and have a complete vegetative cover. This includes vacant lots, urban fringe areas slated for development, greenways, and forest areas.

CEM - Cemetery: This land use file covers cemeteries, and includes road frontage along the cemetery, and paved areas and buildings within the cemetery.

FREEWAY LAND USES

FREE - Freeways: Limited access highways and the interchange areas, including any vegetated rights-of-ways.

APPENDIX 2 – P8 PARAMETERIZATION FOR WINSLAMM CODES

Catchment	Acres	Land Use	Depression Storage (in)	Pervious Fraction	Indirectly Connected Fraction	Directly Connected Fraction
1	7.08	FREE	0.022	0.000	0.000	1.000
1	5.04	HDRNA	0.017	0.469	0.131	0.399
1	6.33	LI	0.029	0.205	0.088	0.707
1	5.00	MFRNA	0.025	0.462	0.063	0.474
1	0.43	OFPK	0.019	0.263	0.006	0.731
1	29.36	OSUD	0.027	0.951	0.000	0.049
1	128.79	PARK	0.010	0.856	0.041	0.103
1	12.54	SHOP	0.023	0.083	0.000	0.917
2	2.54	FREE	0.022	0.000	0.000	1.000
2	0.43	PARK	0.010	0.856	0.041	0.103
2	19.75	SHOP	0.023	0.083	0.000	0.917
3	0.48	FREE	0.022	0.000	0.000	1.000
3	4.45	PARK	0.010	0.856	0.041	0.103
3	1.55	SCH	0.026	0.421	0.014	0.565
3	18.78	SHOP	0.023	0.083	0.000	0.917
4	3.15	SCH	0.026	0.421	0.014	0.565
4	19.83	SHOP	0.023	0.083	0.000	0.917
4	0.06	SUB	0.040	0.904	0.040	0.056
5	0.16	FREE	0.022	0.000	0.000	1.000
5	14.65	OSUD	0.027	0.951	0.000	0.049
5	0.72	PARK	0.010	0.856	0.041	0.103
5	1.95	SCH	0.026	0.421	0.014	0.565
6	0.00	FREE	0.022	0.000	0.000	1.000
6	2.79	HDRNA	0.017	0.469	0.131	0.399
6	2.52	OSUD	0.027	0.951	0.000	0.049
7	0.02	FREE	0.022	0.000	0.000	1.000
7	1.54	HDRNA	0.017	0.469	0.131	0.399
7	0.01	OSUD	0.027	0.951	0.000	0.049
7	36.92	SHOP	0.023	0.083	0.000	0.917
7	14.77	SUB	0.040	0.904	0.040	0.056
8	0.35	FREE	0.022	0.000	0.000	1.000
8	27.02	OSUD	0.027	0.951	0.000	0.049
9	15.74	FREE	0.022	0.000	0.000	1.000
9	5.84	OFPK	0.019	0.263	0.006	0.731
9	9.51	OSUD	0.027	0.951	0.000	0.049
9	21.34	SHOP	0.023	0.083	0.000	0.917
10	3.27	FREE	0.022	0.000	0.000	1.000
10	7.36	OFPK	0.019	0.263	0.006	0.731
10	19.44	OSUD	0.027	0.951	0.000	0.049
10	23.21	SHOP	0.023	0.083	0.000	0.917
11	5.42	DUP	0.020	0.609	0.121	0.271
11	10.94	FREE	0.022	0.000	0.000	1.000
11	4.90	OFPK	0.019	0.263	0.006	0.731
11	37.08	OSUD	0.027	0.951	0.000	0.049
11	1.50	SHOP	0.023	0.083	0.000	0.917
12	0.90	DUP	0.020	0.609	0.121	0.271
12	61.19	FREE	0.022	0.000	0.000	1.000
12	0.47	LDR	0.026	0.796	0.079	0.126

12	0.37	MDRNA	0.029	0.622	0.135	0.242
12	41.89	OFPK	0.019	0.263	0.006	0.731
12	0.92	OSUD	0.027	0.951	0.000	0.049
12	0.38	SCOM	0.025	0.079	0.014	0.907
12	133.90	SHOP	0.023	0.083	0.000	0.917
13	6.97	FREE	0.022	0.000	0.000	1.000
13	1.03	INST	0.017	0.364	0.036	0.600
13	21.00	LDR	0.026	0.796	0.079	0.126
13	0.98	MDRNA	0.029	0.622	0.135	0.242
13	10.45	OFPK	0.019	0.263	0.006	0.731
13	1.79	OSUD	0.027	0.951	0.000	0.049
13	0.81	PARK	0.010	0.856	0.041	0.103
13	7.43	SHOP	0.023	0.083	0.000	0.917
14	11.53	FREE	0.022	0.000	0.000	1.000
14	5.50	OFPK	0.019	0.263	0.006	0.731
14	1.87	OSUD	0.027	0.951	0.000	0.049
14	16.63	SHOP	0.023	0.083	0.000	0.917
14	0.65	SUB	0.040	0.904	0.040	0.056

Feasibility Study of Alternatives

Baxter water quality project

Whiskey Creek Tributary to the Mississippi River

Baxter, MN

October 16, 2014

Board Approval on October 21st, 2014

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Study Background

The City of Baxter, MN maintains a Municipal Separate Storm Sewer System (MS4) and operates under a General Permit National Pollutant Discharge Elimination System (NPDES) State Disposal System (SDS) General Permit (MNR040000) for discharges of stormwater runoff to receiving waters. Portions of the City were developed prior to modern stormwater rules and regulations including the bulk of the commercial district located along Trunk Highway 371, north of Trunk Highway 210. Though not legally obligated to treat runoff from such areas, the City has expressed both an environmental and practical obligation towards doing so. As evidenced by stringent municipal regulations mandating complete retention of the 100-yr event for new property development, Baxter has continued to seek out opportunities to minimize impacts on water quality. Given high ground water tables, low gradient change from the drainage area's spill point to the Arboretum and a significant low elevation point, localized flooding issues and downstream bank erosion within the Arboretum have been a problem in the past.

The City of Baxter hired HDR Engineering, Inc. (HDR) to determine the feasibility of retrofitting a new stormwater best management practice (BMP) at the outfall of this commercial area. The project site is identified as potentially high value for water quality treatment efficiency by an earlier study that analyzed the Whiskey Creek subwatershed for optimal locations and types of BMPs for retrofitting (Crow Wing Soil and Water Conservation District, 2013). In addition, the proposed site is located within a region of the highest risk factors for impacts on water quality in the county as well as with limited resources to protect (Crow Wing County Water Plan, 2013-2023). The site is located within a parcel recently purchased for development by the Evangelical Lutheran Good Samaritan Society (Good Samaritan) for senior assisted living. Good Samaritan has verbally expressed their interest in working with the City in its plans for development of a stormwater BMP as the City has expressed interest for doing so in such a way that incorporates multiple functions (Table 1).

Table 1. Direct and indirect benefits of the proposed project

Beneficiary	Benefits	Beneficiary	Benefits
Baxter	MS4 Minimum Control Measures, Flood Risk Mitigation, Park Amenity	**Habitat**	On-site/offsite fish, bird, pollinator
Good Samaritan Development	Park (quality of Life)	**Mississippi River**	Water quality
Baxter Residents/Visitors	Connection to Paul Bunyan Regional Trail & Clearwater Trail, Education/Outreach	**MHB, Crow Wing County and SWCD**	Plan implementation
Landscape Arboretum	Water quality, Bank Erosion Risk Mitigation		

Site Drivers and Concepts

Three concepts are presented in this section for the treatment of stormwater runoff from the commercial and mixed-use areas draining to Whiskey Creek within the Good Samaritan property. Offsite limitations driven by a very low gradient fall line and elevated stormwater gravity mains present substantial constraints for any reasonable stormwater treatment system considered for this site. This downstream stormwater infrastructure currently plays a key role in controlling the project site's hydraulics and will directly impact site design and overall water quality treatment efficiency, and appears to be a major factor in localized flooding issues. This section presents three finalized concepts assuming that there will be no change in elevation for the wetland east of Cypress Drive and north of Excelsior Road. However, changes to the wetland's outlet configuration and downstream stormwater gravity main elevation east of this wetland are recommended and included in the following concepts.

Physical Site Drivers

Downstream tail water conditions in the wetland east of Cypress Drive limits live storage capacity, the discharge of water and treatment efficiency of each of the project site conceptual designs. The wetland is hydraulically controlled at 1183.86 ft. ASL by a 48-inch pipe that conveys water to a stormwater pond also treating water from the movie theater and a portion of the Westport Mall area south of Excelsior Road. The elevation of the lowest inlet to the study site (along Golf Course Drive) enters at 1182.27 ft. This sets up an equalized surface water elevation on either side of Cypress Drive regulated by the downstream 48-inch pipe (Fig 2).

Road surfaces, upstream catch basin inverts and rim elevations also drive conceptual design. Cypress Drive and Golf Course Drive both sit relatively high to the project site. Upstream inverts of catch basins rise quickly shortly after the main "T" in the stormwater pipe, dividing the commercial area into two main drainages, with three catch basins at or below 1185 ft. rim elevations are located above 1190 ft (Fig 2).

Discussions with representatives from Good Samaritan suggest that the current drainage concept for development of the abandoned golf course property will be diverted from any proposed municipal stormwater treatment features.

The contributing drainage area is 386.5 acres of highly impervious cover. This is a large watershed for the size of the project site. The original Widseth Smith Nolting (WSN) concept called for 5 acres of property to be used for storage representing 1.3% of the drainage area. Although the concepts presented in the study call for larger permanent pools and land purchases, the ratios remain undersized for typical new development standards. Retrofits, however, are not subjected to a prescribed drainage area/BMP ratio, thus any improvement will be beyond what is required by State treatment regulations for land developed prior to their origination.

Overarching Constraints for New Stormwater Treatment

The biggest challenge to developing new stormwater treatment on the site is the effect of current tailwater conditions within the wetland east of Cypress Drive (hereafter referred to the

Excelsior Wetland). A 12-inch perforated pipe running along the south side of Excelsior Drive is in place to take overflow from the Excelsior Wetland and discharges to the Arboretum Stormwater Pond at the system's outfall to the east, near Conservation Drive. When that pond was constructed, however, the rock swale outfall's spillway elevation was placed too high and causes tailwater conditions for the 12-inch pipe, prohibiting it to drain properly. As a result, the Excelsior Wetland's elevation rose causing the current tailwater conditions for the proposed project, limiting water quality treatment performance and increasing the risk of localized flooding of Excelsior Drive adjacent to the wetland. To provide the most efficient water quality treatment and flood risk management, replacement of the 12-inch perforated pipe with an 18-inch pipe is recommended. Upsizing to an 18-inch pipe is recommended to accommodate increased capacity needs as the result of final buildout scenarios in the watershed as well as changes to rainfall frequency and intensity predictions (i.e., Atlas 14). The current project engineer for the Excelsior Drive reconstruction project, SEH, has determined that the upper limit of pipe sizing for this replacement is 18-inches, given the current constraints imposed by existing stormwater infrastructure, and plans on connecting the pipe to a previously abandoned line running along the south side of the Arboretum pond, thereby bypassing it. This will eliminate the tailwater effect currently imposed by the Arboretum Pond and provides enough hydraulic gradient to effectively control the elevation at the Excelsior Pond so that it's tailwater affect on the proposed Whiskey Creek pond is greatly reduced.

SEH plans on also replacing the Arboretum Pond's rock swale outlet with a multi-stage, compound outlet to control flows from the Excelsior Wetland and Conservation Drive stormwater system. This will effectively lower the permanent pool elevation creating more effective drainage of the Excelsior Wetland's 48-inch secondary overflow in order to reduce risk of flooding at that site and increase performance of the conceptual completed system.

HDR presented a concept of incorporating iron-enhanced sand filters (IESF) to treat dissolved phosphorus in effluent water. After further investigation of site limitations it was determined that insufficient elevation changes were available resulting in the elimination of this option. Concern over limited treatment potential and the possibility of tailwater conditions would potentially cause the system to become anoxic (oxygen depleted) have rendered this option infeasible. If the IESF is anoxic it has the potential to release phosphorus and become a pollutant source.

Similarly, the use of an actuated valve to draw down the system was presented to the City as one alternative. The concept would allow the City to remotely draw down the permanent pool ahead of a storm then close the outlet to create additional live storage and gain treatment efficiency. The current understanding of the improved system with the replaced perforated pipe allows for approximately 1-1.5 feet of potential draw down capacity thereby providing increased storage of the concepts and resulting improvements in water quality treatment. A final modeling exercise for this increased performance will be made during the design effort as controlling elevations of the replaced perforated pipe are not yet set.

A detailed analysis of the entire stormwater network from the top of the watershed to, at least, the north-south dirt road running south from NW 7th street within the Landscape Arboretum is needed to evaluate not only flows downstream of the proposed concepts, but also uphill

watershed flooding risk. This same analysis would more rigorously analyze the ability of the concepts solution to reduce flooding near the intersection of Excelsior Road and Broadmoor Drive. It is recommended that a dynamic hydraulic model (such as Infoworks) be developed for this purpose when the project is designed. That model will assist in performance optimization, risk mitigation and output to a P8 model for final treatment estimation. Optimization of a compound outlet structure for the chosen concept can then reliably be made and will most definitely improve the estimated performance on water quality treatment of the final design. Lastly, it is recommended that a portion of the upstream stormwater pipes leading to the site be viewed with closed circuit television for integrity. Though little risk is expected of surcharging catch basins to near the rim elevation, there would be risk of standing water exfiltrating and leading to impacts to infrastructure and property. Lining these pipes may be a viable option to mitigate this risk.

Original Concept

Baxter hired Widseth Smith Nolting (WSN) to perform a rapid analysis of the sizing requirements for a detention basin on the Good Samaritan parcel in 2013. This analysis used guidance criteria from the Minnesota Stormwater Manual using some combination of watershed area, impervious cover and a design storm event depth to estimate the volume of storage required to meet water quality treatment goals of the State. Although the calculations used for the WSN study were not evaluated for this feasibility analysis, the guidance used is generally accepted as a valid initial estimate of the expected performance of BMPs. A total land purchase of 5 acres would be required for this concept.

This concept assumes a bottom of dead storage elevation at 1180 and an overflow elevation set at 1184, 0.5 feet higher than the Excelsior Wetland overflow pipe. The layout allows for a commercial property to be developed within the southeast corner of the site.

Concept 1

Concept 1 makes use of similar detention functions as the Original Concept but makes modifications to layout, depth and vegetation (Fig 4). The layout of the Concept 1 perimeter follows, as closely as possible, the natural contours of the site giving a more natural aesthetic appearance than the previous layout in order to better meet the expressed desire to have the site become a Park feature for the City. It spreads its storage capacity across a wider area and slightly reduces the dead storage depth. A total live storage bounce of 3-ft is recommended, though likely not attainable given hydraulic gradient as well as upstream stormwater pipe surcharge potential constraints. A pre-treatment forebay is included as well as a dredge management area for sediment drying and loading purposes. Pathways and overlooks provide pedestrian flow and viewsheds, making use of existing bridges to cross the stormwater features (the westernmost bridge footings are still in place and the bridge will need to be reinstalled). Pathway connection to the City trail and Paul Bunyan Regional Trail will be made. A total parcel acquisition of 12.5 acres is recommended for this concept.

This concept assumes a bottom of dead storage elevation at 1178 and a primary overflow elevation set at 1182, equal to the lowest inlet pipe to the site. A second overflow structure set

at 1185 allows for three feet of live storage. The layout allows for the development of a park system and eliminates the commercial park expansion proposed within the original concept.

Option: An automated drawdown system can be incorporated into the pond outlet that would discharge stored water to reduce the pond elevation by 1 feet or more prior to a storm event (allowing for temporary live pool reduction to approximately 1181). This would provide increased live storage capacity and water quality treatment or would allow for a reduced overall excavated depth of the pond to reduce overall costs. The OptiRTC is a flexible platform that provides real-time control and data management services to meet a wide variety of environmental needs. The OptiRTC system is a cloud based Microsoft Windows Azure Application coupled with lightweight low cost remote control and monitoring hardware, which provides secure and reliable infrastructure for data collection, storage, processing and internet based delivery.

Design of an internet interface (i.e. dashboard) that includes information on the system in real-time such as pond water levels and forecasted rainfalls, will cost approximately $25,000. The project dashboard can be open to the public or made private at the discretion of the owner. An additional budget of $5,000 is necessary for site specific logic programming and actuated control design.

Installation of the fully configured OptiRTC controller will cost approximately $28,500. This budget price includes the OptiRTC Controller (internet interface), NEMA enclosure, level sensor, actuated valve, electrical feed (subcontract), system start-up services and confirmation of operational status.

For the first pond to be built with this system, then, an estimated $53,500 of expense is expected with additional ponds not requiring the internet interface dashboard control (i.e. every additional pond is then controlled in the original dashboard so only the cost of the OptiRTC controller is required). The prices above do not include construction documents and specifications, technical support during design and bidding, or user training on operation and maintenance. The estimated total expenses for this would be approximately $20,000.

Concept 2

Concept 2 uses the same elements of a pre-treatment forebay, walkways and trail connections but provides for a meander and naturalization of Whiskey Creek and several floodplain wetlands. As water flushed into the Creek during a storm, the elevation rises in the channel and connects to the wetlands for treatment. As flows increase a greater floodplain serves as additional storage, maximizing the potential of the site (7.6 acres of total floodplain). As with option 1, 12.5 acres of land would need to be acquired.

This concept assumes a bottom of dead storage elevation at 1179 and a primary overflow elevation set at 1182, equal to the lowest inlet pipe to the site. A second overflow structure set at 1185 allows for three feet of live storage. The layout allows for the development of a park system and eliminates the commercial park expansion proposed within the original concept.

Conceptual Efficiency

A P8 Urban Catchment Model (P8; version 3.4, William W. Walker, US Environmental Protection Agency, Minnesota Pollution Control Agency, Wisconsin Department of Natural Resources) was used to analyze the extent of precipitation data to estimate average annual TSS and TP generation, transportation and in-watershed treatment as well as three conceptual treatment scenarios. Cost estimates were based on unit pricing provided from current, completed City projects and RSMeans

Reconfigured Outflow Infrastructure

Costs

Table 2. Costs associated with new 18-inch perforated pipe along Excelsior Drive plus outlet modification within the Arboretum Pond.

Item (installed)	SEH, inc., Item Estimate
18-inch perforated pipe + outlet modification	$300,000
Gross	$300,000
Contingency (10%)	$30,000
Net	**$330,000**

Original Concept

Performance

In 2013, Crow Wing County Soil and Water Conservation District hired HDR Engineering, Inc. (HDR) to perform a more detailed analysis of the Whiskey Creek subwatershed to identify the most cost-efficient solutions available to Baxter for retrofitting stormwater BMPs. The analysis evaluated the drainage area running to the abandoned golf course property now owned by Good Samaritan. The study adopted WSN's proposed pond layout and stage-storage concept. The WSN concept assumed 200 acres of drainage area leading to the site, accounting for untreated portions of the watershed only. In this study, and the previous HDR analysis, additional drainage area was included in the HDR study north of Woida Road (the WSN study excluded this area).

Table 3. Estimated water quality treatment[1] of the Original Concept pond

Metric	Value (lbs/yr)	Percent Treatment
Total Phosphorus Watershed Load	566	-
Total Suspended Sediments Watershed Load	151,435	-
Total Phosphorus Treated	147	26%
Total Suspended Sediments Treated	84,206	56%

[1]Estimated treatment potential will likely increase during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a

multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

Costs

Table 4. Costs associated with Original Concept

Item	Quantity	Unit Cost Estimate	Item Estimate
Reconfigured Outflow Structure[1]	1	$330,000	$330,000
Mass Grading[1]	24,814 yd^3	$8/$yd^3$	$198,500
Outlet Structure	1	$15,000	$15,000
Staging	1	$15,000	$15,000
Vegetation/Erosion Control	0.75-ac	$25,000/ac	$18,750
Asphalt Paths		$2/$ft^2$	0
		TOTAL	$577,250

[1]Costs assume fill will placed within project site or on the Good Samaritan parcel

Concept 1

Performance

Table 5. Estimated water quality treatment[1] of Concept 1

Metric	Value (lbs/yr)	Percent Treatment
Total Phosphorus Watershed Load	566	-
Total Suspended Sediments Watershed Load	151,4335	-
Total Phosphorus Treated	211	37%
Total Suspended Sediments Treated	100,213	66%

[1]Estimated treatment potential will likely increase during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

Costs

Table 6. Costs associated with new Concept 1

Item	Quantity	Unit Cost Estimate	Item Estimate
Reconfigured Outflow Structure[1]	1	$330,000	$330,000
Mass Grading[1]	30,000 yd^3	$8/$yd^3$	$240,000
Outlet Structure	1	$15,000	$15,000
Mobilization	1	$15,000	$15,000
Vegetation/Erosion Control	1-ac	$25,000/ac	$25,000
Asphalt Paths	19,680 ft^2	$2/$ft^2$	$39,360
		TOTAL	$664,360

[1]Costs assume fill will placed within project site or on the Good Samaritan parcel

Concept 2

Performance

Table 7. Estimated water quality treatment[1] of Concept 2

Metric	Value (lbs/yr)[2]	Percent Treatment
Total Phosphorus Watershed Load	566	-
Total Suspended Sediments Watershed Load	151,435	-
Total Phosphorus Treated	261	46%
Total Suspended Sediments Treated	115,028	76%

[1]Estimated treatment potential will likely increase during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

[2]Wetland vegetation retardance was set to A for dense vegetation effects on treatment. No estimate was made of phosphorus uptake and assimilation.

Costs

Table 8. Costs associated with new Concept 2

Item	Quantity	Unit Cost Estimate	Item Estimate
Reconfigured Outflow Structures	1	$330,000	$330,000
Mass Grading[1]	72,600 yd^3	$8/$yd^3$	$580,800
Outlet Structure	1	$15,000	$15,000
Mobilization	1	$15,000	$15,000
Vegetation/Erosion Control	3-ac	$25,000/ac	$75,000
Asphalt Paths	17,750 ft^2	$2/$ft^2$	$35,500
		TOTAL	$1,051,300

[1]Costs assume fill will placed within project site or on the Good Samaritan parcel

Value

To determine the overall pollutant treatment value of each concept, consideration of installation, maintenance and treatment performance for total phosphorus (TP) was determined for a thirty year period. Management of the site relative to inlet and outlet maintenance is considered equal between all three concepts. Similarly, dredging, dredge storage, trucking and tipping fees are also similar between the concepts. In as such, these costs were not calculated for the value estimation. The principal difference in maintenance between the concepts is vegetation management and grading extent. The initial 5-7 years of vegetation management are crucial for plant establishment and, thus, require more labor than subsequent years. The total coverage of plantings also drives costs. This in combination with total installation expenses and estimated TP-performance drive the value estimates for each (Table 9).

Table 9. 30-year annual average performance[1] value for each Concept

Concept	Installation Costs	30-year vegetation maintenance costs[2]	30-year lbs-TP treated	Annual Average $/LB-TP[3]
Original Concept	$570,250	$26,250	147	$4,058
Concept 1	$664,360	$35,000	211	$3,128
Concept 2	$1,051,300	$105,000	261	$4,294

[1]Estimated Annual Average $/LB-TP will likely decrease during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

[2]Assumes $2000/yr/ac for vegetation establishment maintenance for 5 years and $1000/yr/ac thereafter. Excludes all costs considered equal between concepts such as dredge management and fees and inlet and outlet maintenance.

[3]Pathway costs were not included in estimated of treatment costs

Next Steps

Funding

Several potential sources for funding exist for the City of Baxter. The following list is by no means all inclusive but identifies several common funding mechanisms the City can investigate outside of internal, municipal funding mechanisms.

1. Minnesota Board of Water and Soil Resources
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Literature Cited

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Figure 1. Project site

Figure 2. Site development driving invert elevations

Figure 3. Planform and longitudinal cross section of proposed inverts and features

Figure 4. Concept 1

Figure 5. Concept 2

Figure 1. Project site

Project Location	Legend	Version	Date	Project Manager	500 250 0 500 Feet	N
	Whiskey Creek Project Site	Prepared for City of Baxter	Project Baxter water quality project for the Whiskey Creek tributary to the Mississippi River			

Figure 2. Site development driving invert elevations

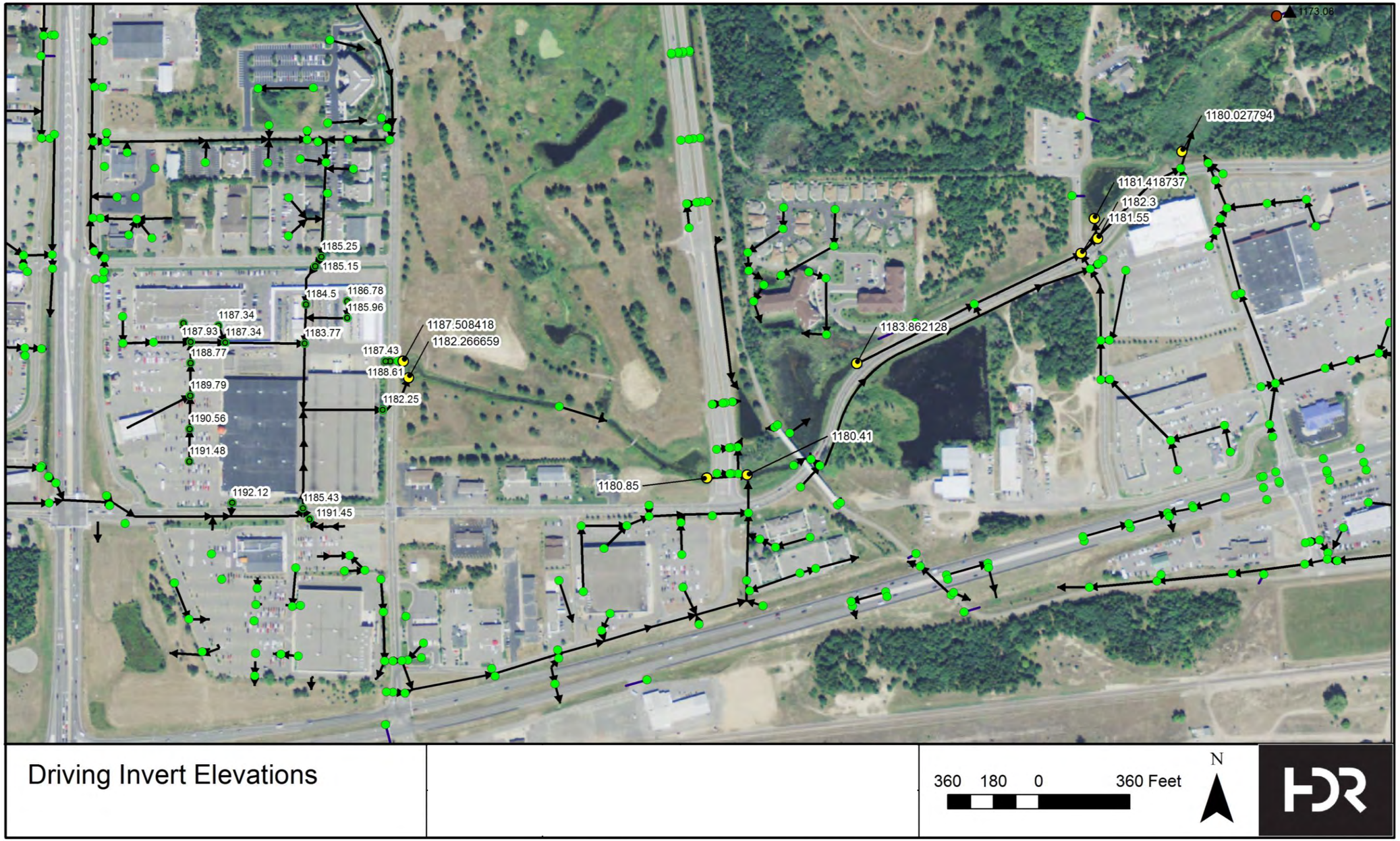


Figure 3. Planform of proposed stormsewer modifications

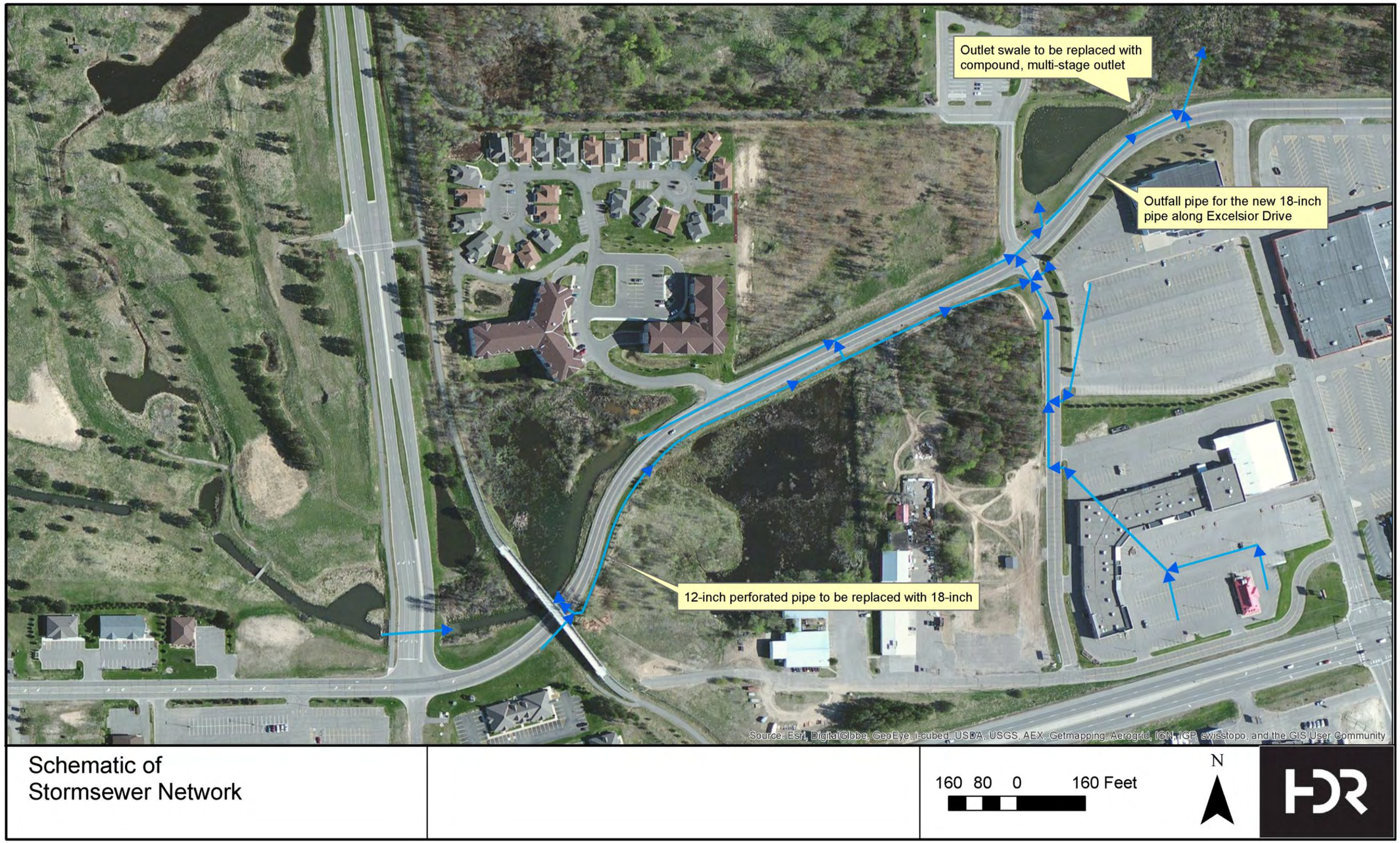


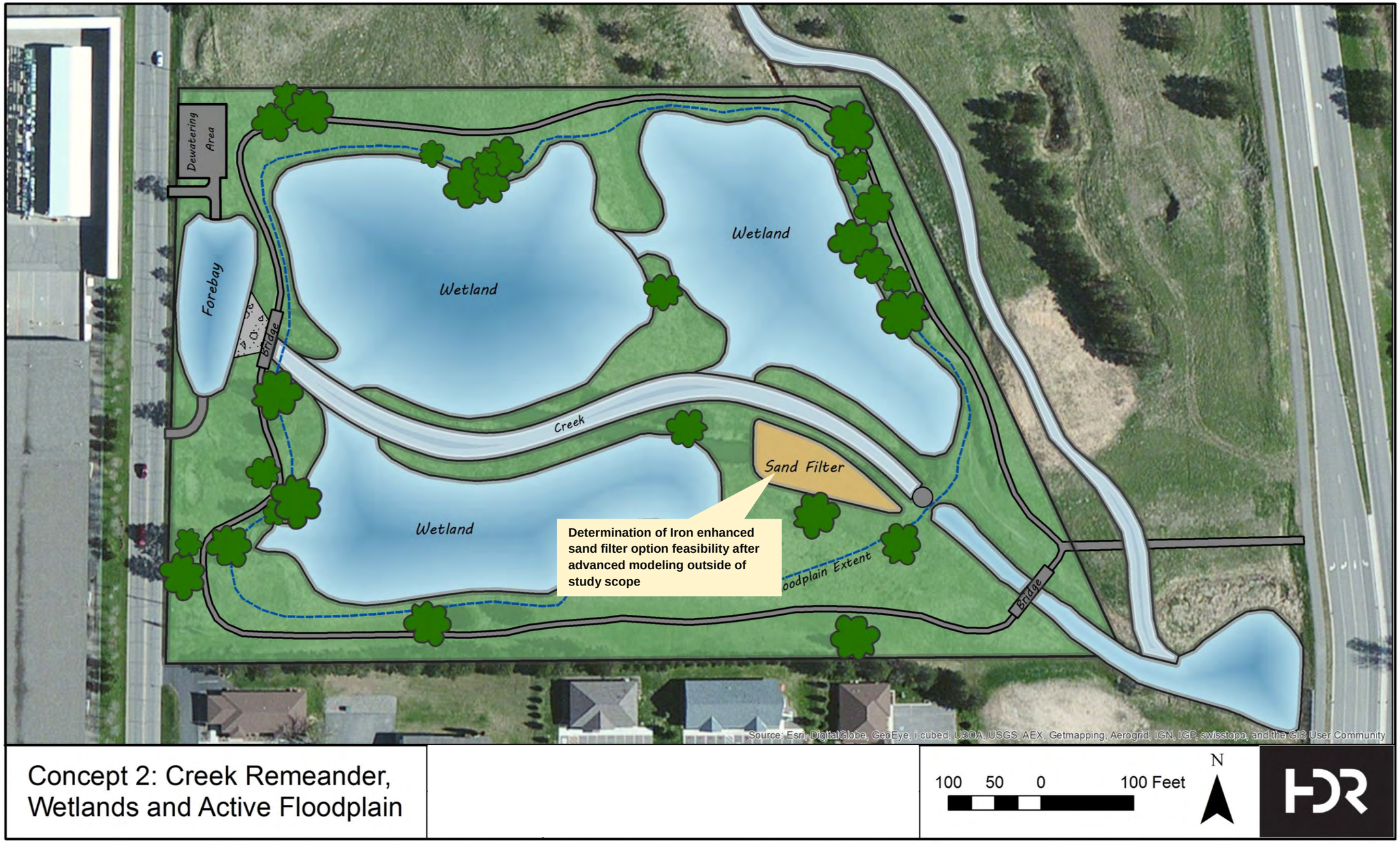
Figure 4. Concept 1

Concept 1: Extended Detention Pond (opt: Actuated Draw Down)

100 50 0 100 Feet

N

Figure 5.Concept 2



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Study Background

The City of Baxter, MN maintains a Municipal Separate Storm Sewer System (MS4) and operates under a General Permit National Pollutant Discharge Elimination System (NPDES) State Disposal System (SDS) General Permit (MNR040000) for discharges of stormwater runoff to receiving waters. Portions of the City were developed prior to modern stormwater rules and regulations including the bulk of the commercial district located along Trunk Highway 371, north of Trunk Highway 210. Though not legally obligated to treat runoff from such areas, the City has expressed both an environmental and practical obligation towards doing so. As evidenced by stringent municipal regulations mandating complete retention of the 100-yr event for new property development, Baxter has continued to seek out opportunities to minimize impacts on water quality. Given high ground water tables, low gradient change from the drainage area's spill point to the Arboretum and a significant low elevation point, localized flooding issues and downstream bank erosion within the Arboretum have been a problem in the past.

The City of Baxter hired HDR Engineering, Inc. (HDR) to determine the feasibility of retrofitting a new stormwater best management practice (BMP) at the outfall of this commercial area. The project site is identified as potentially high value for water quality treatment efficiency by an earlier study that analyzed the Whiskey Creek subwatershed for optimal locations and types of BMPs for retrofitting (Crow Wing Soil and Water Conservation District, 2013). In addition, the proposed site is located within a region of the highest risk factors for impacts on water quality in the county as well as with limited resources to protect (Crow Wing County Water Plan, 2013-2023). The site is located within a parcel recently purchased for development by the Evangelical Lutheran Good Samaritan Society (Good Samaritan) for senior assisted living. Good Samaritan has verbally expressed their interest in working with the City in its plans for development of a stormwater BMP as the City has expressed interest for doing so in such a way that incorporates multiple functions (Table 1).

Table 1. Direct and indirect benefits of the proposed project

Beneficiary	Benefits	Beneficiary	Benefits
Baxter	MS4 Minimum Control Measures, Flood Risk Mitigation, Park Amenity	**Habitat**	On-site/offsite fish, bird, pollinator
Good Samaritan Development	Park (quality of Life)	**Mississippi River**	Water quality
Baxter Residents/Visitors	Connection to Paul Bunyan Regional Trail & Clearwater Trail, Education/Outreach	**MHB, Crow Wing County and SWCD**	Plan implementation
Landscape Arboretum	Water quality, Bank Erosion Risk Mitigation		

Site Drivers and Concepts

Three concepts are presented in this section for the treatment of stormwater runoff from the commercial and mixed-use areas draining to Whiskey Creek within the Good Samaritan property. Offsite limitations driven by a very low gradient fall line and elevated stormwater gravity mains present substantial constraints for any reasonable stormwater treatment system considered for this site. This downstream stormwater infrastructure currently plays a key role in controlling the project site's hydraulics and will directly impact site design and overall water quality treatment efficiency, and appears to be a major factor in localized flooding issues. This section presents three finalized concepts assuming that there will be no change in elevation for the wetland east of Cypress Drive and north of Excelsior Road. However, changes to the wetland's outlet configuration and downstream stormwater gravity main elevation east of this wetland are recommended and included in the following concepts.

Physical Site Drivers

Downstream tail water conditions in the wetland east of Cypress Drive limits live storage capacity, the discharge of water and treatment efficiency of each of the project site conceptual designs. The wetland is hydraulically controlled at 1183.86 ft. ASL by a 48-inch pipe that conveys water to a stormwater pond also treating water from the movie theater and a portion of the Westport Mall area south of Excelsior Road. The elevation of the lowest inlet to the study site (along Golf Course Drive) enters at 1182.27 ft. This sets up an equalized surface water elevation on either side of Cypress Drive regulated by the downstream 48-inch pipe (Fig 2).

Road surfaces, upstream catch basin inverts and rim elevations also drive conceptual design. Cypress Drive and Golf Course Drive both sit relatively high to the project site. Upstream inverts of catch basins rise quickly shortly after the main "T" in the stormwater pipe, dividing the commercial area into two main drainages, with three catch basins at or below 1185 ft. rim elevations are located above 1190 ft (Fig 2).

Discussions with representatives from Good Samaritan suggest that the current drainage concept for development of the abandoned golf course property will be diverted from any proposed municipal stormwater treatment features.

The contributing drainage area is 386.5 acres of highly impervious cover. This is a large watershed for the size of the project site. The original Widseth Smith Nolting (WSN) concept called for 5 acres of property to be used for storage representing 1.3% of the drainage area. Although the concepts presented in the study call for larger permanent pools and land purchases, the ratios remain undersized for typical new development standards. Retrofits, however, are not subjected to a prescribed drainage area/BMP ratio, thus any improvement will be beyond what is required by State treatment regulations for land developed prior to their origination.

Overarching Constraints for New Stormwater Treatment

The biggest challenge to developing new stormwater treatment on the site is the effect of current tailwater conditions within the wetland east of Cypress Drive (hereafter referred to the

Excelsior Wetland). A 12-inch perforated pipe running along the south side of Excelsior Drive is in place to take overflow from the Excelsior Wetland and discharges to the Arboretum Stormwater Pond at the system's outfall to the east, near Conservation Drive. When that pond was constructed, however, the rock swale outfall's spillway elevation was placed too high and causes tailwater conditions for the 12-inch pipe, prohibiting it to drain properly. As a result, the Excelsior Wetland's elevation rose causing the current tailwater conditions for the proposed project, limiting water quality treatment performance and increasing the risk of localized flooding of Excelsior Drive adjacent to the wetland. To provide the most efficient water quality treatment and flood risk management, replacement of the 12-inch perforated pipe with an 18-inch pipe is recommended. Upsizing to an 18-inch pipe is recommended to accommodate increased capacity needs as the result of final buildout scenarios in the watershed as well as changes to rainfall frequency and intensity predictions (i.e., Atlas 14). The current project engineer for the Excelsior Drive reconstruction project, SEH, has determined that the upper limit of pipe sizing for this replacement is 18-inches, given the current constraints imposed by existing stormwater infrastructure, and plans on connecting the pipe to a previously abandoned line running along the south side of the Arboretum pond, thereby bypassing it. This will eliminate the tailwater effect currently imposed by the Arboretum Pond and provides enough hydraulic gradient to effectively control the elevation at the Excelsior Pond so that it's tailwater affect on the proposed Whiskey Creek pond is greatly reduced.

SEH plans on also replacing the Arboretum Pond's rock swale outlet with a multi-stage, compound outlet to control flows from the Excelsior Wetland and Conservation Drive stormwater system. This will effectively lower the permanent pool elevation creating more effective drainage of the Excelsior Wetland's 48-inch secondary overflow in order to reduce risk of flooding at that site and increase performance of the conceptual completed system.

HDR presented a concept of incorporating iron-enhanced sand filters (IESF) to treat dissolved phosphorus in effluent water. After further investigation of site limitations it was determined that insufficient elevation changes were available resulting in the elimination of this option. Concern over limited treatment potential and the possibility of tailwater conditions would potentially cause the system to become anoxic (oxygen depleted) have rendered this option infeasible. If the IESF is anoxic it has the potential to release phosphorus and become a pollutant source.

Similarly, the use of an actuated valve to draw down the system was presented to the City as one alternative. The concept would allow the City to remotely draw down the permanent pool ahead of a storm then close the outlet to create additional live storage and gain treatment efficiency. The current understanding of the improved system with the replaced perforated pipe allows for approximately 1-1.5 feet of potential draw down capacity thereby providing increased storage of the concepts and resulting improvements in water quality treatment. A final modeling exercise for this increased performance will be made during the design effort as controlling elevations of the replaced perforated pipe are not yet set.

A detailed analysis of the entire stormwater network from the top of the watershed to, at least, the north-south dirt road running south from NW 7th street within the Landscape Arboretum is needed to evaluate not only flows downstream of the proposed concepts, but also uphill

watershed flooding risk. This same analysis would more rigorously analyze the ability of the concepts solution to reduce flooding near the intersection of Excelsior Road and Broadmoor Drive. It is recommended that a dynamic hydraulic model (such as Infoworks) be developed for this purpose when the project is designed. That model will assist in performance optimization, risk mitigation and output to a P8 model for final treatment estimation. Optimization of a compound outlet structure for the chosen concept can then reliably be made and will most definitely improve the estimated performance on water quality treatment of the final design. Lastly, it is recommended that a portion of the upstream stormwater pipes leading to the site be viewed with closed circuit television for integrity. Though little risk is expected of surcharging catch basins to near the rim elevation, there would be risk of standing water exfiltrating and leading to impacts to infrastructure and property. Lining these pipes may be a viable option to mitigate this risk.

Original Concept

Baxter hired Widseth Smith Nolting (WSN) to perform a rapid analysis of the sizing requirements for a detention basin on the Good Samaritan parcel in 2013. This analysis used guidance criteria from the Minnesota Stormwater Manual using some combination of watershed area, impervious cover and a design storm event depth to estimate the volume of storage required to meet water quality treatment goals of the State. Although the calculations used for the WSN study were not evaluated for this feasibility analysis, the guidance used is generally accepted as a valid initial estimate of the expected performance of BMPs. A total land purchase of 5 acres would be required for this concept.

This concept assumes a bottom of dead storage elevation at 1180 and an overflow elevation set at 1184, 0.5 feet higher than the Excelsior Wetland overflow pipe. The layout allows for a commercial property to be developed within the southeast corner of the site.

Concept 1

Concept 1 makes use of similar detention functions as the Original Concept but makes modifications to layout, depth and vegetation (Fig 4). The layout of the Concept 1 perimeter follows, as closely as possible, the natural contours of the site giving a more natural aesthetic appearance than the previous layout in order to better meet the expressed desire to have the site become a Park feature for the City. It spreads its storage capacity across a wider area and slightly reduces the dead storage depth. A total live storage bounce of 3-ft is recommended, though likely not attainable given hydraulic gradient as well as upstream stormwater pipe surcharge potential constraints. A pre-treatment forebay is included as well as a dredge management area for sediment drying and loading purposes. Pathways and overlooks provide pedestrian flow and viewsheds, making use of existing bridges to cross the stormwater features (the westernmost bridge footings are still in place and the bridge will need to be reinstalled). Pathway connection to the City trail and Paul Bunyan Regional Trail will be made. A total parcel acquisition of 12.5 acres is recommended for this concept.

This concept assumes a bottom of dead storage elevation at 1178 and a primary overflow elevation set at 1182, equal to the lowest inlet pipe to the site. A second overflow structure set

at 1185 allows for three feet of live storage. The layout allows for the development of a park system and eliminates the commercial park expansion proposed within the original concept.

Option: An automated drawdown system can be incorporated into the pond outlet that would discharge stored water to reduce the pond elevation by 1 feet or more prior to a storm event (allowing for temporary live pool reduction to approximately 1181). This would provide increased live storage capacity and water quality treatment or would allow for a reduced overall excavated depth of the pond to reduce overall costs. The OptiRTC is a flexible platform that provides real-time control and data management services to meet a wide variety of environmental needs. The OptiRTC system is a cloud based Microsoft Windows Azure Application coupled with lightweight low cost remote control and monitoring hardware, which provides secure and reliable infrastructure for data collection, storage, processing and internet based delivery.

Design of an internet interface (i.e. dashboard) that includes information on the system in real-time such as pond water levels and forecasted rainfalls, will cost approximately $25,000. The project dashboard can be open to the public or made private at the discretion of the owner. An additional budget of $5,000 is necessary for site specific logic programming and actuated control design.

Installation of the fully configured OptiRTC controller will cost approximately $28,500. This budget price includes the OptiRTC Controller (internet interface), NEMA enclosure, level sensor, actuated valve, electrical feed (subcontract), system start-up services and confirmation of operational status.

For the first pond to be built with this system, then, an estimated $53,500 of expense is expected with additional ponds not requiring the internet interface dashboard control (i.e. every additional pond is then controlled in the original dashboard so only the cost of the OptiRTC controller is required). The prices above do not include construction documents and specifications, technical support during design and bidding, or user training on operation and maintenance. The estimated total expenses for this would be approximately $20,000.

Concept 2

Concept 2 uses the same elements of a pre-treatment forebay, walkways and trail connections but provides for a meander and naturalization of Whiskey Creek and several floodplain wetlands. As water flushed into the Creek during a storm, the elevation rises in the channel and connects to the wetlands for treatment. As flows increase a greater floodplain serves as additional storage, maximizing the potential of the site (7.6 acres of total floodplain). As with option 1, 12.5 acres of land would need to be acquired.

This concept assumes a bottom of dead storage elevation at 1179 and a primary overflow elevation set at 1182, equal to the lowest inlet pipe to the site. A second overflow structure set at 1185 allows for three feet of live storage. The layout allows for the development of a park system and eliminates the commercial park expansion proposed within the original concept.

Conceptual Efficiency

A P8 Urban Catchment Model (P8; version 3.4, William W. Walker, US Environmental Protection Agency, Minnesota Pollution Control Agency, Wisconsin Department of Natural Resources) was used to analyze the extent of precipitation data to estimate average annual TSS and TP generation, transportation and in-watershed treatment as well as three conceptual treatment scenarios. Cost estimates were based on unit pricing provided from current, completed City projects and RSMeans

Reconfigured Outflow Infrastructure

Costs

Table 2. Costs associated with new 18-inch perforated pipe along Excelsior Drive plus outlet modification within the Arboretum Pond.

Item (installed)	SEH, inc., Item Estimate
18-inch perforated pipe + outlet modification	$300,000
Gross	$300,000
Contingency (10%)	$30,000
Net	**$330,000**

Original Concept

Performance

In 2013, Crow Wing County Soil and Water Conservation District hired HDR Engineering, Inc. (HDR) to perform a more detailed analysis of the Whiskey Creek subwatershed to identify the most cost-efficient solutions available to Baxter for retrofitting stormwater BMPs. The analysis evaluated the drainage area running to the abandoned golf course property now owned by Good Samaritan. The study adopted WSN's proposed pond layout and stage-storage concept. The WSN concept assumed 200 acres of drainage area leading to the site, accounting for untreated portions of the watershed only. In this study, and the previous HDR analysis, additional drainage area was included in the HDR study north of Woida Road (the WSN study excluded this area).

Table 3. Estimated water quality treatment[1] of the Original Concept pond

Metric	Value (lbs/yr)	Percent Treatment
Total Phosphorus Watershed Load	566	-
Total Suspended Sediments Watershed Load	151,435	-
Total Phosphorus Treated	147	26%
Total Suspended Sediments Treated	84,206	56%

[1]Estimated treatment potential will likely increase during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a

multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

Costs

Table 4. Costs associated with Original Concept

Item	Quantity	Unit Cost Estimate	Item Estimate
Reconfigured Outflow Structure[1]	1	$330,000	$330,000
Mass Grading[1]	24,814 yd^3	$8/$yd^3$	$198,500
Outlet Structure	1	$15,000	$15,000
Staging	1	$15,000	$15,000
Vegetation/Erosion Control	0.75-ac	$25,000/ac	$18,750
Asphalt Paths		$2/$ft^2$	0
		TOTAL	$577,250

[1]Costs assume fill will placed within project site or on the Good Samaritan parcel

Concept 1

Performance

Table 5. Estimated water quality treatment[1] of Concept 1

Metric	Value (lbs/yr)	Percent Treatment
Total Phosphorus Watershed Load	566	-
Total Suspended Sediments Watershed Load	151,4335	-
Total Phosphorus Treated	211	37%
Total Suspended Sediments Treated	100,213	66%

[1]Estimated treatment potential will likely increase during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

Costs

Table 6. Costs associated with new Concept 1

Item	Quantity	Unit Cost Estimate	Item Estimate
Reconfigured Outflow Structure[1]	1	$330,000	$330,000
Mass Grading[1]	30,000 yd^3	$8/$yd^3$	$240,000
Outlet Structure	1	$15,000	$15,000
Mobilization	1	$15,000	$15,000
Vegetation/Erosion Control	1-ac	$25,000/ac	$25,000
Asphalt Paths	19,680 ft^2	$2/$ft^2$	$39,360
		TOTAL	$664,360

[1]Costs assume fill will placed within project site or on the Good Samaritan parcel

Concept 2

Performance

Table 7. Estimated water quality treatment[1] of Concept 2

Metric	Value (lbs/yr)[2]	Percent Treatment
Total Phosphorus Watershed Load	566	-
Total Suspended Sediments Watershed Load	151,435	-
Total Phosphorus Treated	261	46%
Total Suspended Sediments Treated	115,028	76%

[1]Estimated treatment potential will likely increase during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

[2]Wetland vegetation retardance was set to A for dense vegetation effects on treatment. No estimate was made of phosphorus uptake and assimilation.

Costs

Table 8. Costs associated with new Concept 2

Item	Quantity	Unit Cost Estimate	Item Estimate
Reconfigured Outflow Structures	1	$330,000	$330,000
Mass Grading[1]	72,600 yd^3	$8/$yd^3$	$580,800
Outlet Structure	1	$15,000	$15,000
Mobilization	1	$15,000	$15,000
Vegetation/Erosion Control	3-ac	$25,000/ac	$75,000
Asphalt Paths	17,750 ft^2	$2/$ft^2$	$35,500
		TOTAL	$1,051,300

[1]Costs assume fill will placed within project site or on the Good Samaritan parcel

Value

To determine the overall pollutant treatment value of each concept, consideration of installation, maintenance and treatment performance for total phosphorus (TP) was determined for a thirty year period. Management of the site relative to inlet and outlet maintenance is considered equal between all three concepts. Similarly, dredging, dredge storage, trucking and tipping fees are also similar between the concepts. In as such, these costs were not calculated for the value estimation. The principal difference in maintenance between the concepts is vegetation management and grading extent. The initial 5-7 years of vegetation management are crucial for plant establishment and, thus, require more labor than subsequent years. The total coverage of plantings also drives costs. This in combination with total installation expenses and estimated TP-performance drive the value estimates for each (Table 9).

Table 9. 30-year annual average performance[1] value for each Concept

Concept	Installation Costs	30-year vegetation maintenance costs[2]	30-year lbs-TP treated	Annual Average $/LB-TP[3]
Original Concept	$570,250	$26,250	147	$4,058
Concept 1	$664,360	$35,000	211	$3,128
Concept 2	$1,051,300	$105,000	261	$4,294

[1]Estimated Annual Average $/LB-TP will likely decrease during the design phase once downstream retrofitted pipes and outlets are set and the entire watershed and stormsewer network are modeled in Infoworks, or similar. That information allows for optimization of a multi-stage outlet in the conceptual designs. A more basic outlet with conservative treatment potential was assumed at this stage of conceptual design.

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Several potential sources for funding exist for the City of Baxter. The following list is by no means all inclusive but identifies several common funding mechanisms the City can investigate outside of internal, municipal funding mechanisms.

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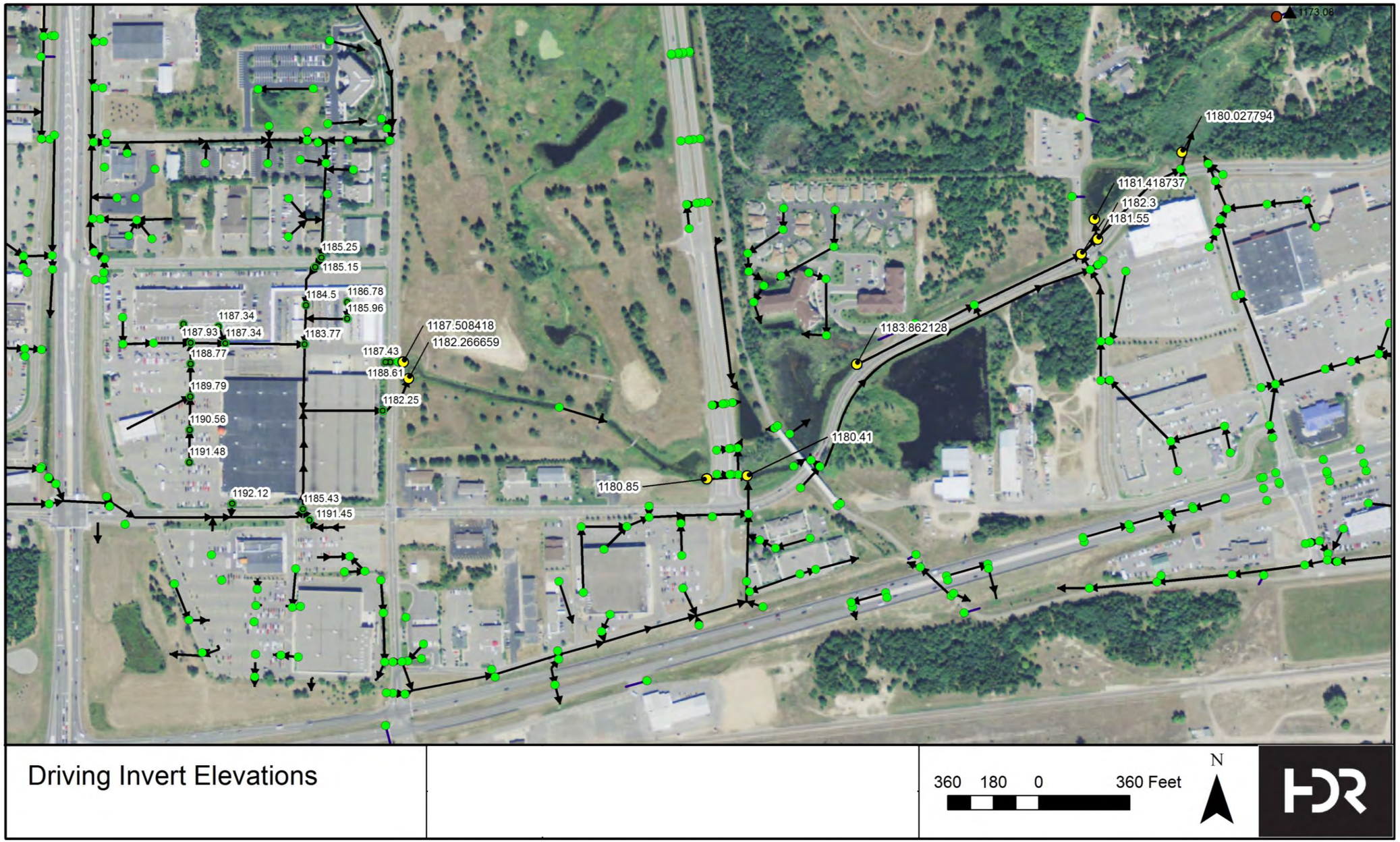

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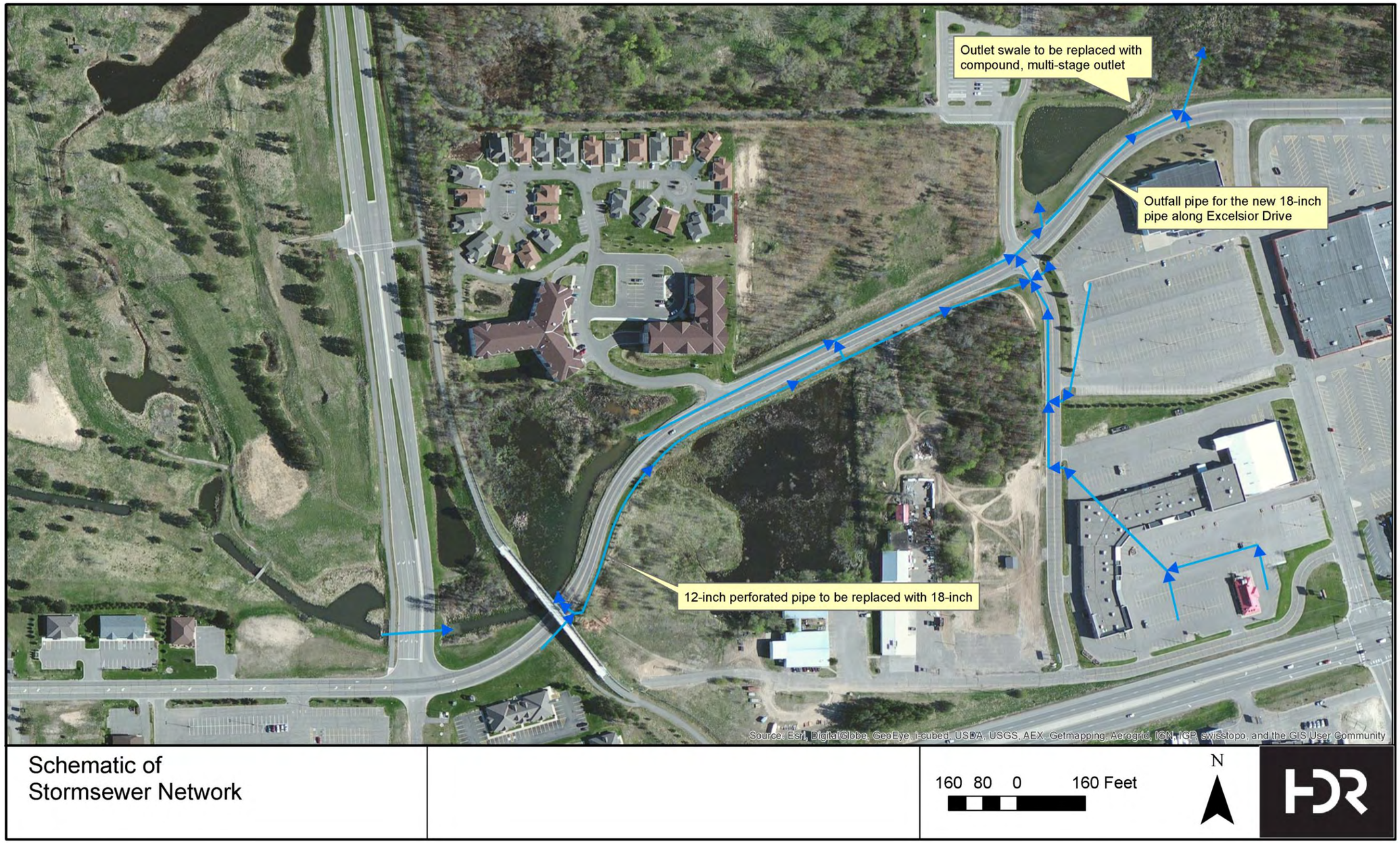

Figure 4. Concept 1

Concept 1: Extended Detention Pond (opt: Actuated Draw Down)

100 50 0 100 Feet

N
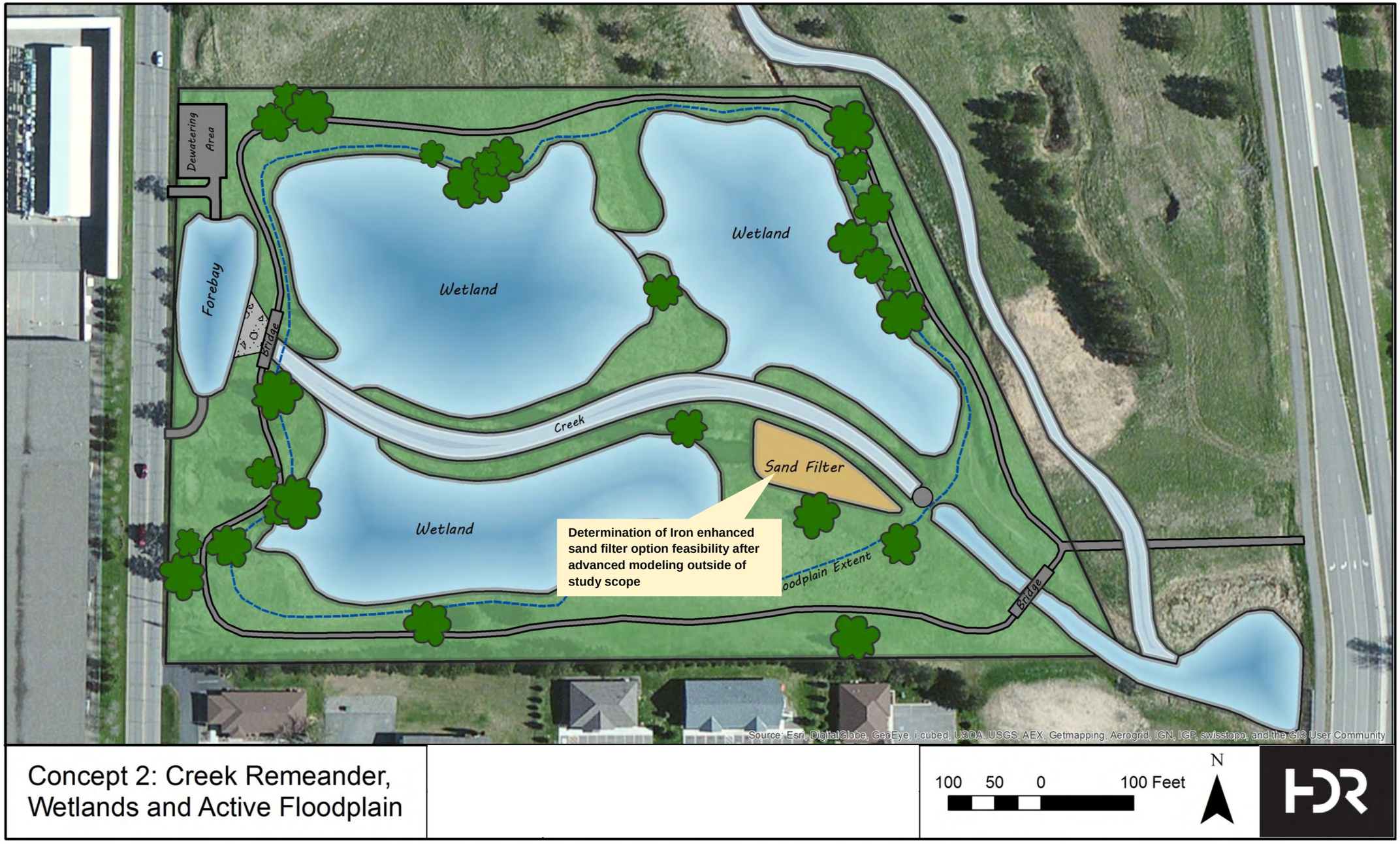
Figure 5.Concept 2