

# Northwest Area Sanitary Sewer and Watermain Master Plan

Rib Mountain Sanitary District  
Wausau, Wisconsin

January 17, 2017



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BHA#: 2016.081

January 17, 2017

Mr. Michael Heyroth, Utility Director  
Rib Mountain Sanitary District  
5703 Lilac Avenue  
Wausau, WI 54401

Subject: Sanitary Sewer and Watermain Master Plan – NW Service Area

Dear Mike:

Introduction

The study area of this report is the urban area along CTH NN from Rib Mountain Way to Redwing Road. The Granite Peak Ski Area has plans for significant development along the south edge of the study area approximately at the south end of Grouse Lane.

The following guidelines were utilized to develop the sanitary sewer and watermain master plan:

1. Exclude wetlands and wetland indicator soils areas from the service area. Those areas are shown in Figure 1.
2. For vacant property fronting on an existing roadways, use 200 to 250 feet front frontage to estimate number of potential residential developments.
3. Utilize information from private well logs for determining depth to groundwater and depth to bedrock. Information taken from 2007 Feasibility Study for Sanitary Sewer and Water Utility Expansion of CTH NN to Whippoorwill Road, CWEA Project #3768 07.
4. From 2015 Engineering Evaluation of Water Supply and Storage Facilities, Becher Hoppe Associates, use a household density of 2.5 persons per household and average residential customer consumption of 150 gallons per day.
5. Minimum design fire protection:
  - a. Development Density: Single family residential: 500 GPM at 20 psi.
  - b. Development Density: Medium/high density residential areas: 1,000 GPM at 20 psi.
6. Create looping water mains where practical to provide two independent sources of water for uninterrupted service.
7. Restore Town roads to Town's standard sections (3-inch, 26-foot wide pavement; 8-inch base course). Restore CTH NN sections to match existing.

### Service Area Characteristics

The developable area of the study area has the potential for approximately 126 single family residential lots. See Figure 2.

The proposed Granite Peak development is believed to consist of the following:

1. 1,300 persons in condo lodge, multi-family, and townhouse development.  
Utilizing 2.5 persons per household, the proposed development is equivalent to 520 single family residential customers.
2. Maximum of 8,000 skiers at existing and proposed facilities.  
Based on parking spaces – existing and proposed – estimate 4,000 skiers at proposed development. Proposed facilities expected to have same water use as existing facilities. Existing domestic water usage at Granite Peak is 425,000 gallons over the winter period of 180 days. If Saturday and Sunday water usage is twice as much as Monday through Friday water usage, Saturday and Sunday water usage is 3,630 GPD. That water usage is equivalent to 24 single family residences.

### Basis of Design

The developable area of the study area has the potential for the following development:

Single family residences:	126
Proposed Granite Peak Lodging equivalent single family residences:	520
Proposed Granite Peak Ski Facilities equivalent single family residences:	24
Total Equivalent Single Family Residences	670

Utilizing a 150 GPD water consumption for a single family residence and a peaking factor of 4 for peak hour estimating, the projected water use and wastewater generation is as follows:

#### Average Daily Use:

$$670 \text{ customers} \times 150 \text{ GPCD} = 100,500 \text{ GPD} = 70 \text{ GPM}$$

#### Peak Hour Use:

$$670 \text{ customers} \times 150 \text{ GPCD} \times 4 = 402,000 \text{ GPD} = 280 \text{ GPM}$$

Size lift station pumps at 280 GPM. Use eight-inch diameter forcemain.

#### Opinion of Probable Cost

We have proposed opinions of probable cost for each roadway and major improvement to allow an incremental approach to the overall project. The full development facilities including serving the Granite Peak expansion are provided in Figure 3. The individual component opinions of probable cost are provided as attachments and summarized as follows:

Table

No.	Location	Total Project Cost
1.	CTH NN: Rib Mtn Way to Grouse Lane	\$1,213,200
2.	Bobwhite Road	\$264,300
3.	Sandpiper Avenue	\$551,100
4.	Grouse Lane - North	\$264,200
5.	Grouse Lane - South	\$766,100
6.	CTH NN - Watermain Loop	\$169,700
7.	Canvasback/Mountain Lane Watermain Loop	\$436,600
8.	CTH NN: Grouse Lane to Redwing Road	\$1,494,400
9.	Crane Drive	\$696,100
10.	Springbrook Drive	\$655,800
11.	Springbrook Circle	\$94,700
Total		\$6,606,200

If sanitary sewer and watermain facilities are considered to solely serve the Granite Peak proposed development at this time, it is recommended that the Sanitary District maximize use of the proposed infrastructure for future sewer expansion of the Sanitary District. Since the CTH NN pavement was recently upgraded in 2009, the pipelines would be located in easements along the south right of way of CTH NN. An easement along the south lot line of the property at the SE corner of Grouse Lane and CTH NN would also be required. See Figure 4. The opinion of probable cost for this installation is \$1,496,400 as provided in Table GP1.

## Funding

For typical watermain and sanitary sewer projects, there are three main sources of funding:

1. USDA Rural Services – Rural Utilities: The sanitary district may be eligible for loan financing through the USDA Rural Development. The present interest rate is 2.375% and the term of the loan is 40 years.
2. Community Development Block Grants – Public Facilities: The Town of Rib Mountain contains 23.2% of low and moderate income families. To be eligible for Community Development Block Grants for Public Facilities, a community must contain at least 51.0% of low and moderate income families. The CDBG Block Grant Program offers grants up to \$750,000.
3. Clean Water Fund/Safe Drinking Water Loan Fund: The Sanitary District is eligible for loan financing at 1.96% / 0.924% current interest rates over a 20 year term.

There are also other funding programs intended for commercial or industrial development:

1. State of Wisconsin – Community Development Block Grant – Economic Development (CDBG-ED) Program
  - a. Designed to stimulate economic development activity by assisting the private sector to create or retain jobs for LMI persons, primarily through loans to businesses.
  - b. Interest rate based on need. Typically 2-4% for 7 years with a balloon payment in year 7.
2. State of Wisconsin Economic Development Corporation (WEDC) – Economic Development Tax Credit
  - a. Tax Credits of \$3,000 to \$5,000 per full time job.

It is important to confirm the fire protection needs of the proposed Granite Peak development. If greater than 1,000 GPM at 20 psi is required, the watermain system will require reinforcement. One means of doing so would be to add the Canvasback / Mountain Lane return loop at a project cost of \$436,600.

Please advise when you can meet to review this report.

Sincerely,



Kenneth J. Ligman, P.E.

KJL:III

**Table 1. CTH NN - Grouse Lane to Rib Mtn. Way**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 30,000	\$ 28,000
2	Traffic Control	1	L.S.	\$ 5,000	\$ 5,000
3	Erosion Control	1	L.S.	\$ 5,000	\$ 5,000
4	Removing Pavement	8600	S.Y.	\$ 3	\$ 25,800
5	Base Aggregate	4200	TON	\$ 25	\$ 105,000
6	Asphaltic Surface	2100	TON	\$ 75	\$ 157,500
7	Topsoil, Fertilize, Seed, Mulch	90	S.Y.	\$ 10	\$ 900
8	Sanitary Sewer Manhole	100	V.F.	\$ 300	\$ 30,000
9	Sanitary Sewer Manhole Casting	5	E.A.	\$ 300	\$ 1,500
10	PVC Wye, 8 inch x 4 inch	0	EA.	\$ 300	\$ -
11	PVC Wye, 10 inch x 4 inch	5	E.A.	\$ 300	\$ 1,500
12	Sanitary Sewer PVC-SDR35, 10 inch	2250	L.F.	\$ 55	\$ 123,750
13	Sanitary Sewer PVC-SDR35, 8 inch	0	L.F.	\$ 50	\$ -
14	Sanitary Sewer PVC-SCD40, 4 inch	170	L.F.	\$ 45	\$ 7,650
15	Watermain PVC, 10 inch	2250	L.F.	\$ 48	\$ 108,000
16	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
17	Watermain PVC, 6 inch	125	L.F.	\$ 40	\$ 5,000
18	Valve and Valve Box, 10 inch	3	EA.	\$ 2,400	\$ 7,200
19	Valve and Valve Box, 8 inch	0	EA.	\$ 1,800	\$ -
20	Valve and Valve Box, 6 inch	5	EA.	\$ 1,200	\$ 6,000
21	Ductile Iron Fittings	10	EA.	\$ 600	\$ 6,000
22	Standard Hydrant	5	EA.	\$ 3,600	\$ 18,000
23	Corporation Stop, 1 inch	11	EA.	\$ 200	\$ 2,200
24	Curb Stop And Box, 1 inch	11	EA.	\$ 250	\$ 2,750
25	Copper Water Service, 1 inch	370	L.F.	\$ 40	\$ 14,800
26	Lift Station	1	L.S.	\$ 200,000	\$ 200,000
27	Water Booster Station	0	L.S.	\$ -	\$ -
28	Dewatering	1	L.S.	\$ 10,000	\$ 10,000
29	Rock Excavation	0	C.Y.	\$ -	\$ -
30	Land/Easements	1	L.S.	\$ 25,000	\$ 25,000
31	Forcemain, 8 inch	1000	L.F.	\$ 44	\$ 44,000
32	Directional Bored HDPE Watermain, 10 inch	300	L.F.	\$ 100	\$ 30,000
Construction Costs					\$ 970,550
Contingency					\$ 97,100
Technical Services, Legal, & Administrative Costs					\$ 145,600
Project Total					\$ 1,213,200

**Table 2. Bobwhite Road to Mockingbird Lane**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 6,000	\$ 6,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	1700	S.Y.	\$ 3	\$ 5,100
5	Base Aggregate	870	TON	\$ 25	\$ 21,750
6	Asphaltic Surface	300	TON	\$ 75	\$ 22,500
7	Topsoil, Fertilize, Seed, Mulch	800	S.Y.	\$ 10	\$ 8,000
8	Sanitary Sewer Manhole	30	V.F.	\$ 300	\$ 9,000
9	Sanitary Sewer Manhole Casting	2	E.A.	\$ 300	\$ 600
10	PVC Wye, 8 inch x 4 inch	8	EA.	\$ 300	\$ 2,400
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	700	L.F.	\$ 50	\$ 35,000
13	Sanitary Sewer PVC-SCD40, 4 inch	250	L.F.	\$ 45	\$ 11,250
14	Watermain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	1200	L.F.	\$ 40	\$ 48,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	2	EA.	\$ 1,800	\$ 3,600
19	Valve and Valve Box, 6 inch	3	EA.	\$ 1,200	\$ 3,600
20	Ductile Iron Fittings	5	EA.	\$ 600	\$ 3,000
21	Standard Hydrant	3	EA.	\$ 3,600	\$ 10,800
22	Corporation Stop, 1 inch	9	EA.	\$ 200	\$ 1,800
23	Curb Stop And Box, 1 inch	9	EA.	\$ 250	\$ 2,250
24	Copper Water Service, 1 inch	270	L.F.	\$ 40	\$ 10,800
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
29	Land/Easements	1	L.S.	\$ 2,000	\$ 2,000
Construction Costs					\$ 211,450
Contingency					\$ 21,100
Technical Services, Legal, &Administrative Costs					\$ 31,700
Project Total					\$ 264,300

**Table 3. Sandpiper Avenue and Mockingbird Lane**

Opinion of Probable Costs

## Rib Mountain

Item No.	Item Description	Estimated Quantity	Unit	Unit Cost	Total Cost
1	Mobilization	1	L.S.	\$ 13,000	\$ 13,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	4500	S.Y.	\$ 3	\$ 13,500
5	Base Aggregate	2500	TON	\$ 25	\$ 62,500
6	Asphaltic Surface	800	TON	\$ 75	\$ 60,000
7	Topsoil, Fertilize, Seed, Mulch	350	S.Y.	\$ 10	\$ 3,500
8	Sanitary Sewer Manhole	90	V.F.	\$ 300	\$ 27,000
9	Sanitary Sewer Manhole Casting	7	E.A.	\$ 300	\$ 2,100
10	PVC Wye, 8 inch x 4 inch	17	EA.	\$ 300	\$ 5,100
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	1800	L.F.	\$ 50	\$ 90,000
13	Sanitary Sewer PVC-SCD40, 4 inch	500	L.F.	\$ 45	\$ 22,500
14	Watermain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	1900	L.F.	\$ 40	\$ 76,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	3	EA.	\$ 1,800	\$ 5,400
19	Valve and Valve Box, 6 inch	4	EA.	\$ 1,200	\$ 4,800
20	Ductile Iron Fittings	4	EA.	\$ 600	\$ 2,400
21	Standard Hydrant	4	EA.	\$ 3,600	\$ 14,400
22	Corporation Stop, 1 inch	21	EA.	\$ 200	\$ 4,200
23	Curb Stop And Box, 1 inch	21	EA.	\$ 250	\$ 5,250
24	Copper Water Service, 1 inch	630	L.F.	\$ 40	\$ 25,200
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
Construction Costs					\$ 440,850
Contingency					\$ 44,100
Technical Services, Legal, &Administrative Costs					\$ 66,100
Project Total					\$ 551,100

**Table 4. North Grouse Lane to Sandpiper Avenue**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 6,000	\$ 6,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	2200	S.Y.	\$ 3	\$ 6,600
5	Base Aggregate	1100	TON	\$ 25	\$ 27,500
6	Asphaltic Surface	400	TON	\$ 75	\$ 30,000
7	Topsoil, Fertilize, Seed, Mulch	900	S.Y.	\$ 10	\$ 9,000
8	Sanitary Sewer Manhole	30	V.F.	\$ 300	\$ 9,000
9	Sanitary Sewer Manhole Casting	2	E.A.	\$ 300	\$ 600
10	PVC Wye, 8 inch x 4 inch	8	EA.	\$ 300	\$ 2,400
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	640	L.F.	\$ 50	\$ 32,000
13	Sanitary Sewer PVC-SCD40, 4 inch	240	L.F.	\$ 45	\$ 10,800
14	Watermain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	1100	L.F.	\$ 40	\$ 44,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	1	EA.	\$ 1,800	\$ 1,800
19	Valve and Valve Box, 6 inch	2	EA.	\$ 1,200	\$ 2,400
20	Ductile Iron Fittings	2	EA.	\$ 600	\$ 1,200
21	Standard Hydrant	2	EA.	\$ 3,600	\$ 7,200
22	Corporation Stop, 1 inch	9	EA.	\$ 200	\$ 1,800
23	Curb Stop And Box, 1 inch	9	EA.	\$ 250	\$ 2,250
24	Copper Water Service, 1 inch	270	L.F.	\$ 40	\$ 10,800
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
29	Land/Easements	1	L.S.	\$ 2,000	\$ 2,000
Construction Costs					\$ 211,350
Contingency					\$ 21,100
Technical Services, Legal, &Administrative Costs					\$ 31,700
Project Total					\$ 264,200

**Table 5. South Grouse Lane**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 19,000	\$ 18,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	1400	S.Y.	\$ 3	\$ 4,200
5	Base Aggregate	1100	TON	\$ 25	\$ 27,500
6	Asphaltic Surface	250	TON	\$ 75	\$ 18,750
7	Topsoil, Fertilize, Seed, Mulch	80	S.Y.	\$ 10	\$ 800
8	Sanitary Sewer Manhole	40	V.F.	\$ 300	\$ 12,000
9	Sanitary Sewer Manhole Casting	5	E.A.	\$ 300	\$ 1,500
10	PVC Wye, 8 inch x 4 inch	4	EA.	\$ 300	\$ 1,200
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	1450	L.F.	\$ 50	\$ 72,500
13	Sanitary Sewer PVC-SCD40, 4 inch	90	L.F.	\$ 45	\$ 4,050
14	Watermain PVC, 10 inch	1450	L.F.	\$ 48	\$ 69,600
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	30	L.F.	\$ 40	\$ 1,200
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	1	EA.	\$ 1,800	\$ 1,800
19	Valve and Valve Box, 6 inch	2	EA.	\$ 1,200	\$ 2,400
20	Ductile Iron Fittings	3	EA.	\$ 600	\$ 1,800
21	Standard Hydrant	3	EA.	\$ 3,600	\$ 10,800
22	Corporation Stop, 1 inch	4	EA.	\$ 200	\$ 800
23	Curb Stop And Box, 1 inch	4	EA.	\$ 250	\$ 1,000
24	Copper Water Service, 1 inch	100	L.F.	\$ 40	\$ 4,000
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	1	L.S.	\$ 250,000	\$ 250,000
27	Dewatering	1	L.S.	\$ 5,000	\$ 5,000
28	Rock Excavation	1000	C.Y.	\$ 100	\$ 100,000
Construction Costs					\$ 612,900
Contingency					\$ 61,300
Technical Services, Legal, &Administrative Costs					\$ 91,900
Project Total					\$ 766,100

**Table 6. Base System Looping WM Snowbird Lane to Rib Mtn. Way**

Opinion of Probable Costs

## Rib Mountain

Item No.	Item Description	Estimated Quantity	Unit	Unit Cost	Total Cost
1	Mobilization	1	L.S.	\$ 4,000	\$ 4,000
2	Traffic Control	1	L.S.	\$ 1,000	\$ 1,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	80	S.Y.	\$ 3	\$ 240
5	Base Aggregate	40	TON	\$ 25	\$ 1,000
6	Asphaltic Surface	20	TON	\$ 75	\$ 1,500
7	Topsoil, Fertilize, Seed, Mulch	3200	S.Y.	\$ 10	\$ 32,000
8	Sanitary Sewer Manhole	0	V.F.	\$ 300	\$ -
9	Sanitary Sewer Manhole Casting	0	E.A.	\$ 300	\$ -
10	PVC Wye, 8 inch x 4 inch	0	EA.	\$ 300	\$ -
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	0	L.F.	\$ 50	\$ -
13	Sanitary Sewer PVC-SCD40, 4 inch	0	L.F.	\$ 45	\$ -
14	Watermain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	1500	L.F.	\$ 44	\$ 66,000
16	Watermain PVC, 6 inch	50	L.F.	\$ 40	\$ 2,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	2	EA.	\$ 1,800	\$ 3,600
19	Valve and Valve Box, 6 inch	3	EA.	\$ 1,200	\$ 3,600
20	Ductile Iron Fittings	5	EA.	\$ 600	\$ 3,000
21	Standard Hydrant	3	EA.	\$ 3,600	\$ 10,800
22	Corporation Stop, 1 inch	0	EA.	\$ 200	\$ -
23	Curb Stop And Box, 1 inch	0	EA.	\$ 250	\$ -
24	Copper Water Service, 1 inch	0	L.F.	\$ 40	\$ -
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
29	Land/Easements	1	L.S.	\$ 5,000	\$ 5,000
Construction Costs					\$ 135,740
Contingency					\$ 13,500
Technical Services, Legal, &Administrative Costs					\$ 20,400
Project Total					\$ 169,700

**Table 7. Looping WM Canvasback Lane and Mountain Lane to Grouse Lane**

## Opinion of Probable Costs

## Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 10,000	\$ 10,000
2	Traffic Control	1	L.S.	\$ 1,000	\$ 1,000
3	Erosion Control	1	L.S.	\$ 10,000	\$ 10,000
4	Removing Pavement	90	S.Y.	\$ 3	\$ 270
5	Base Aggregate	60	TON	\$ 25	\$ 1,500
6	Asphaltic Surface	20	TON	\$ 75	\$ 1,500
7	Topsoil, Fertilize, Seed, Mulch	3800	S.Y.	\$ 2	\$ 7,600
8	Sanitary Sewer Manhole	0	V.F.	\$ 300	\$ -
9	Sanitary Sewer Manhole Casting	0	E.A.	\$ 300	\$ -
10	PVC Wye, 8 inch x 4 inch	0	EA.	\$ 300	\$ -
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	0	L.F.	\$ 50	\$ -
13	Sanitary Sewer PVC-SCD40, 4 inch	0	L.F.	\$ 45	\$ -
14	Waterman PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	1800	L.F.	\$ 44	\$ 79,200
16	Watermain PVC, 6 inch	50	L.F.	\$ 40	\$ 2,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	4	EA.	\$ 1,800	\$ 7,200
19	Valve and Valve Box, 6 inch	4	EA.	\$ 1,200	\$ 4,800
20	Ductile Iron Fittings	8	EA.	\$ 600	\$ 4,800
21	Standard Hydrant	4	EA.	\$ 3,600	\$ 14,400
22	Corporation Stop, 1 inch	0	EA.	\$ 200	\$ -
23	Curb Stop And Box, 1 inch	0	EA.	\$ 250	\$ -
24	Copper Water Service, 1 inch	0	L.F.	\$ 40	\$ -
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	1	L.S.	\$ -	\$ -
28	Rock Excavation	2000	C.Y.	\$ 100	\$ 200,000
29	Land/Easements	1	L.S.	\$ 5,000	\$ 5,000
				Construction Costs	\$ 349,270
				Contingency	\$ 34,900
				Technical Services, Legal, &Administrative Costs	\$ 52,400
				Project Total	\$ 436,600

**Table 8. CTH NN - Redwing Road to Grouse Lane**

Opinion of Probable Costs

Rib Mountain

Item No.	Item Description	Estimated Quantity	Unit	Unit Cost	Total Cost
1	Mobilization	1	L.S.	\$ 35,000	\$ 35,000
2	Traffic Control	1	L.S.	\$ 5,000	\$ 5,000
3	Erosion Control	1	L.S.	\$ 5,000	\$ 5,000
4	Removing Pavement	15000	S.Y.	\$ 3	\$ 45,000
5	Base Aggregate	7300	TON	\$ 25	\$ 182,500
6	Asphaltic Surface	3600	TON	\$ 75	\$ 270,000
7	Topsoil, Fertilize, Seed, Mulch	270	S.Y.	\$ 10	\$ 2,700
8	Sanitary Sewer Manhole	230	V.F.	\$ 300	\$ 69,000
9	Sanitary Sewer Manhole Casting	15	E.A.	\$ 300	\$ 4,500
10	PVC Wye, 8 inch x 4 inch	0	EA.	\$ 300	\$ -
11	PVC Wye, 10 inch x 4 inch	15	E.A.	\$ 300	\$ 4,500
12	Sanitary Sewer PVC-SDR35, 10 inch	4000	L.F.	\$ 55	\$ 220,000
13	Sanitary Sewer PVC-SDR35, 8 inch	0	L.F.	\$ 50	\$ -
14	Sanitary Sewer PVC-SCD40, 4 inch	500	L.F.	\$ 45	\$ 22,500
15	Watermain PVC, 10 inch	4000	L.F.	\$ 48	\$ 192,000
16	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
17	Watermain PVC, 6 inch	200	L.F.	\$ 40	\$ 8,000
18	Valve and Valve Box, 10 inch	5	EA.	\$ 2,400	\$ 12,000
19	Valve and Valve Box, 8 inch	0	EA.	\$ 1,800	\$ -
20	Valve and Valve Box, 6 inch	8	EA.	\$ 1,200	\$ 9,600
21	Ductile Iron Fittings	15	EA.	\$ 600	\$ 9,000
22	Standard Hydrant	8	EA.	\$ 3,600	\$ 28,800
23	Corporation Stop, 1 inch	20	EA.	\$ 200	\$ 4,000
24	Curb Stop And Box, 1 inch	20	EA.	\$ 250	\$ 5,000
25	Copper Water Service, 1 inch	660	L.F.	\$ 40	\$ 26,400
26	Lift Station	0	L.S.	\$ 200,000	\$ -
27	Water Booster Station	0	L.S.	\$ -	\$ -
28	Dewatering	1	L.S.	\$ 10,000	\$ 10,000
29	Rock Excavation	0	C.Y.	\$ -	\$ -
30	Land/Easements	1	L.S.	\$ 25,000	\$ 25,000
31	Forcemain, 8 inch	0	L.F.	\$ 44	\$ -
Construction Costs					\$ 1,195,500
Contingency					\$ 119,600
Technical Services, Legal, &Administrative Costs					\$ 179,300
Project Total					\$ 1,494,400

**Table 9. Crane Drive - North Springbrook Drive**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 16,000	\$ 16,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	5800	S.Y.	\$ 3	\$ 17,400
5	Base Aggregate	2900	TON	\$ 25	\$ 72,500
6	Asphaltic Surface	1100	TON	\$ 75	\$ 82,500
7	Topsoil, Fertilize, Seed, Mulch	500	S.Y.	\$ 10	\$ 5,000
8	Sanitary Sewer Manhole	120	V.F.	\$ 300	\$ 36,000
9	Sanitary Sewer Manhole Casting	7	E.A.	\$ 300	\$ 2,100
10	PVC Wye, 8 inch x 4 inch	25	EA.	\$ 300	\$ 7,500
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	2200	L.F.	\$ 50	\$ 110,000
13	Sanitary Sewer PVC-SCD40, 4 inch	750	L.F.	\$ 45	\$ 33,750
14	Watermain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	2300	L.F.	\$ 40	\$ 92,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	3	EA.	\$ 1,800	\$ 5,400
19	Valve and Valve Box, 6 inch	4	EA.	\$ 1,200	\$ 4,800
20	Ductile Iron Fittings	15	EA.	\$ 600	\$ 9,000
21	Standard Hydrant	4	EA.	\$ 3,600	\$ 14,400
22	Corporation Stop, 1 inch	27	EA.	\$ 200	\$ 5,400
23	Curb Stop And Box, 1 inch	27	EA.	\$ 250	\$ 6,750
24	Copper Water Service, 1 inch	810	L.F.	\$ 40	\$ 32,400
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
Construction Costs					\$ 556,900
Contingency					\$ 55,700
Technical Services, Legal, &Administrative Costs					\$ 83,500
Project Total					\$ 696,100

**Table 10. South Springbrook - St. Francis Way - Hillcrest Lane**

## Opinion of Probable Costs

## Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 15,000	\$ 15,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	5900	S.Y.	\$ 3	\$ 17,700
5	Base Aggregate	3000	TON	\$ 25	\$ 75,000
6	Asphaltic Surface	1100	TON	\$ 75	\$ 82,500
7	Topsoil, Fertilize, Seed, Mulch	300	S.Y.	\$ 10	\$ 3,000
8	Sanitary Sewer Manhole	100	V.F.	\$ 300	\$ 30,000
9	Sanitary Sewer Manhole Casting	8	E.A.	\$ 300	\$ 2,400
10	PVC Wye, 8 inch x 4 inch	15	EA.	\$ 300	\$ 4,500
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	2200	L.F.	\$ 50	\$ 110,000
13	Sanitary Sewer PVC-SCD40, 4 inch	450	L.F.	\$ 45	\$ 20,250
14	Watertmain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	2300	L.F.	\$ 40	\$ 92,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	3	EA.	\$ 1,800	\$ 5,400
19	Valve and Valve Box, 6 inch	4	EA.	\$ 1,200	\$ 4,800
20	Ductile Iron Fittings	15	EA.	\$ 600	\$ 9,000
21	Standard Hydrant	4	EA.	\$ 3,600	\$ 14,400
22	Corporation Stop, 1 inch	21	EA.	\$ 200	\$ 4,200
23	Curb Stop And Box, 1 inch	21	EA.	\$ 250	\$ 5,250
24	Copper Water Service, 1 inch	630	L.F.	\$ 40	\$ 25,200
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
Construction Costs					\$ 524,600
Contingency					\$ 52,500
Technical Services, Legal, &Administrative Costs					\$ 78,700
Project Total					\$ 655,800

**Table 11. Spring Circle**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 2,000	\$ 2,000
2	Traffic Control	1	L.S.	\$ 2,000	\$ 2,000
3	Erosion Control	1	L.S.	\$ 2,000	\$ 2,000
4	Removing Pavement	700	S.Y.	\$ 3	\$ 2,100
5	Base Aggregate	350	TON	\$ 25	\$ 8,750
6	Asphaltic Surface	150	TON	\$ 75	\$ 11,250
7	Topsoil, Fertilize, Seed, Mulch	80	S.Y.	\$ 10	\$ 800
8	Sanitary Sewer Manhole	10	V.F.	\$ 300	\$ 3,000
9	Sanitary Sewer Manhole Casting	1	E.A.	\$ 300	\$ 300
10	PVC Wye, 8 inch x 4 inch	4	EA.	\$ 300	\$ 1,200
11	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
12	Sanitary Sewer PVC-SDR35, 8 inch	200	L.F.	\$ 50	\$ 10,000
13	Sanitary Sewer PVC-SCD40, 4 inch	150	L.F.	\$ 45	\$ 6,750
14	Watermain PVC, 10 inch	0	L.F.	\$ 48	\$ -
15	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
16	Watermain PVC, 6 inch	250	L.F.	\$ 40	\$ 10,000
17	Valve and Valve Box, 10 inch	0	EA.	\$ 2,400	\$ -
18	Valve and Valve Box, 8 inch	1	EA.	\$ 1,800	\$ 1,800
19	Valve and Valve Box, 6 inch	1	EA.	\$ 1,200	\$ 1,200
20	Ductile Iron Fittings	2	EA.	\$ 600	\$ 1,200
21	Standard Hydrant	1	EA.	\$ 3,600	\$ 3,600
22	Corporation Stop, 1 inch	4	EA.	\$ 200	\$ 800
23	Curb Stop And Box, 1 inch	4	EA.	\$ 250	\$ 1,000
24	Copper Water Service, 1 inch	150	L.F.	\$ 40	\$ 6,000
25	Lift Station	0	L.S.	\$ -	\$ -
26	Water Booster Station	0	L.S.	\$ -	\$ -
27	Dewatering	0	L.S.	\$ -	\$ -
28	Rock Excavation	0	C.Y.	\$ -	\$ -
Construction Costs					\$ 75,750
Contingency					\$ 7,600
Technical Services, Legal, &Administrative Costs					\$ 11,400
Project Total					\$ 94,700

**Table GP1. Grouse and CTH NN**

Opinion of Probable Costs

Rib Mountain

<b>Item No.</b>	<b>Item Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Mobilization	1	L.S.	\$ 32,000	\$ 32,000
2	Traffic Control	1	L.S.	\$ 10,000	\$ 10,000
3	Erosion Control	1	L.S.	\$ 10,000	\$ 10,000
4	Removing Pavement	1100	S.Y.	\$ 3	\$ 3,300
5	Base Aggregate	1500	TON	\$ 25	\$ 37,500
6	Asphaltic Surface	250	TON	\$ 75	\$ 18,750
7	Topsoil, Fertilize, Seed, Mulch	3800	S.Y.	\$ 2	\$ 7,600
8	Sanitary Sewer Manhole	55	V.F.	\$ 300	\$ 16,500
9	Sanitary Sewer Manhole Casting	5	E.A.	\$ 300	\$ 1,500
10	PVC Wye, 8 inch x 4 inch	4	E.A.	\$ 300	\$ 1,200
11	PVC Wye, 10 inch x 4 inch	0	E.A.	\$ 300	\$ -
12	Sanitary Sewer PVC-SDR35, 10 inch	0	L.F.	\$ 55	\$ -
13	Sanitary Sewer PVC-SDR35, 8 inch	1600	L.F.	\$ 50	\$ 80,000
14	Sanitary Sewer PVC-SCD40, 4 inch	120	L.F.	\$ 45	\$ 5,400
15	Watermain PVC, 10 inch	3000	L.F.	\$ 48	\$ 144,000
16	Watermain PVC, 8 inch	0	L.F.	\$ 44	\$ -
17	Watermain PVC, 6 inch	150	L.F.	\$ 40	\$ 6,000
18	Valve and Valve Box, 10 inch	5	E.A.	\$ 2,400	\$ 12,000
19	Valve and Valve Box, 8 inch	0	E.A.	\$ 1,800	\$ -
20	Valve and Valve Box, 6 inch	6	E.A.	\$ 1,200	\$ 7,200
21	Ductile Iron Fittings	20	E.A.	\$ 600	\$ 12,000
22	Standard Hydrant	6	E.A.	\$ 3,600	\$ 21,600
23	Corporation Stop, 1 inch	4	E.A.	\$ 200	\$ 800
24	Curb Stop And Box, 1 inch	4	E.A.	\$ 250	\$ 1,000
25	Copper Water Service, 1 inch	120	L.F.	\$ 40	\$ 4,800
26	Lift Station	1	L.S.	\$ 200,000	\$ 200,000
27	Water Booster Station	1	L.S.	\$ 250,000	\$ 250,000
28	Dewatering	1	L.S.	\$ 20,000	\$ 20,000
29	Rock Excavation	1000	C.Y.	\$ 100	\$ 100,000
30	Land/Easements	1	L.S.	\$ 30,000	\$ 30,000
31	Forcemain, 8 inch	1000	L.F.	\$ 44	\$ 44,000
32	Directional Bored HDPE Forcemain, 8 inch	1000	L.F.	\$ 90	\$ 90,000
33	Directional Bored HDPE Watermain, 10 inch	300	L.F.	\$ 100	\$ 30,000
Construction Costs					\$ 1,197,150
Contingency					\$ 119,700
Technical Services, Legal, &Administrative Costs					\$ 179,600
Project Total					\$ 1,496,400

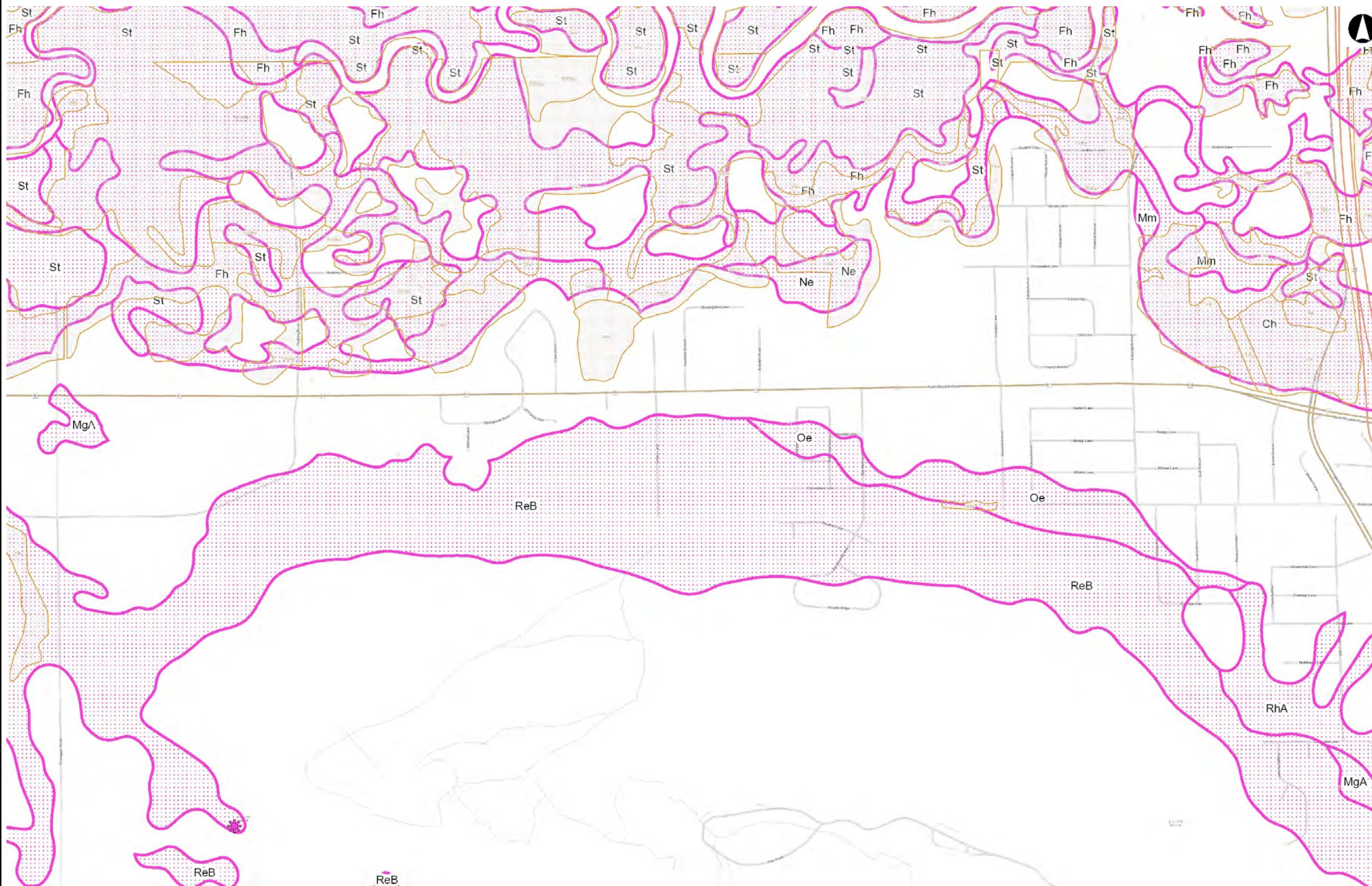


## Surface Water Data Viewer Map - Wetland Inventory + Indicator Soils



### Legend

- Wetland Class Points**
  - Dammed pond
  - Excavated pond
  - Filled excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
- Filled Points**
- Wetland Class Areas**
  - Wetland
  - Upland
- Filled Areas**
- NRCS Wetspots**
- Wetland Indicators**
- Critical Habitat Areas**
  - Other Public Rights Feature
  - Sensitive Area Designation
- Municipality**
- State Boundaries**
- County Boundaries**
- Major Roads**
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads**
  - County HWY
  - Local Road
- Railroads**
- Tribal Lands**
- Rivers and Streams**
- Intermittent Streams**
- Lakes and Open water**



0.4                  0                  0.21                  0.4  
Miles                  NAD\_1983\_HARN\_Wisconsin\_TM                  1:13,446  
© Latitude Geographics Group Ltd.

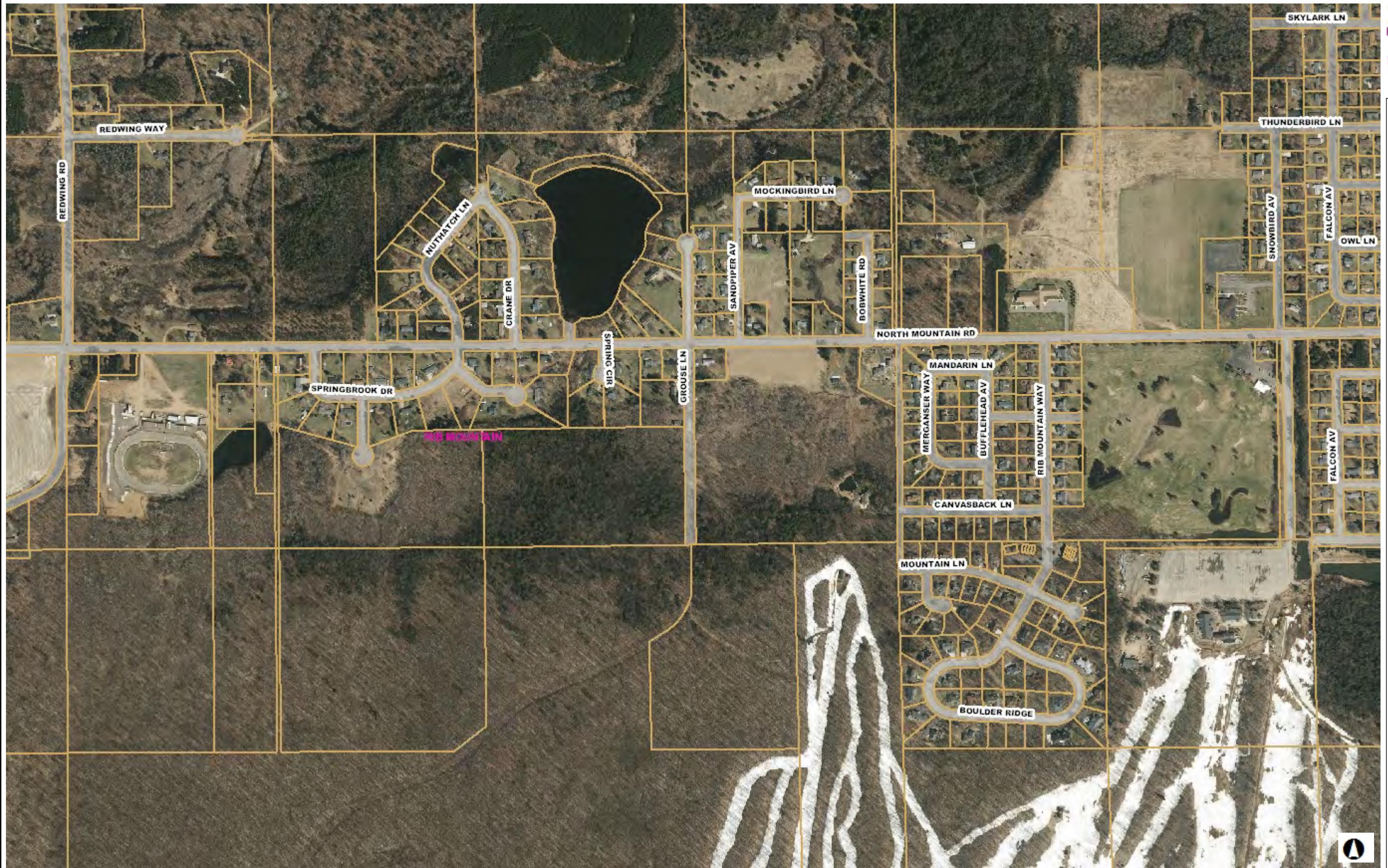
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**Notes** Rib Mountain Sanitary District  
System Expansion Study  
Phase 1: Northwest Service Area

Figure 1



## Land Information Mapping System



HALSEY  
BERLIN  
BERN  
MAINE  
TEXASHIEWITT  
HOLTON  
STETSON  
EASTON  
HULL  
WIEN  
CASSE  
RINGLE  
BRIGHTON  
HEMET  
REID  
DAY  
MOSINE  
BEVENT  
SPENCER  
BERGEN  
FRANZEN

Legend

- Parcels
- Right Of Ways
- Road Names
- Named Places
- Municipalities
- 2015 Orthos
- Red: Band\_1  
Green: Band\_2  
Blue: Band\_3
- 2015 Orthos
- Wausau-Schofield
- Red: Band\_1  
Green: Band\_2  
Blue: Band\_3

Rib Mountain Sanitary District  
System Expansion Study  
Phase 1: Northwest Service Area

305.36 0 305.36 Feet

User Defined\_Lambert\_Conformal\_Conic

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Figure 2

