SALT STORAGE NEEDS REPORT

2017-2018

Wisconsin Department of Transportation
Division of Transportation System Development
Bureau of Highway Maintenance
Winter Operations Unit

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ACKNOWLEDGMENTS

Many people at Wisconsin DOT contributed to the development of this report, including:

- James Hughes, Bureau of Highway Maintenance
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We wish to thank these individuals for their contributions to and assistance with this report.

Cover Photo Credit: WisDOT

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1 Introduction

ABOUT THIS REPORT

The Wisconsin Department of Transportation (WisDOT) is responsible for the winter maintenance of state and federal highways, and collaborates with 72 county highway departments to do so. Timely application of salt and liquid brines, along with appropriate application rates, are vital to efforts to keep highways free of snow and ice. Every county stores salt for use on state and federal highways, and WisDOT finances that salt and its storage to ensure adequate supply.

The purpose of this report is to document salt storage capacities in sheds that have been financed with funds from WisDOT so that investment in new facilities can be prioritized to areas of greatest need.

Washington County, Site ID 2-66-102-3

EXECUTIVE SUMMARY OF FINDINGS

Ensuring each county has adequate storage capacity accommodates State salt needs each winter is a priority for WisDOT. Based on WisDOT data, the state uses an average of 510,289 tons of salt each year. The state's target capacity is 125 percent of average annual usage, which equals 637,859 tons. Ideally, each county, region and the state as a whole will have state-funded capacity to store 125 percent of the five-year average annual usage. Only the Southwest Region has the capacity to meet this 125 percent target.

Chippewa County, Site ID 6-09-4-4

As outlined in the following pages, the state's current salt storage capacity is inadequate. Only 29 of Wisconsin's 72 counties (40%) meet the target capacity. The counties furthest from meeting target capacities, based on total tonnage, include Barron, Columbia, Milwaukee, Rock, Saint Croix, and Waukesha Counties. Together these six counties represent 72 percent of the 51,412 ton statewide gap between functional capacity and target capacity, or 40 percent of the total new storage capacity needed (98,538 tons) to bring every county up to the target capacity.

The need for investment in salt storage is also increased by the need for repair or replacement of existing facilities. Based on shed condition evaluations in 2018 (described in Chapter 4), 11% of the State's functional capacity (66,734 tons) is in sheds that are considered to be in poor condition. Poor condition represents a shed with need of a major improvement or which will require replacement within the next five years.

2 Statewide Salt Storage

WHY SALT STORAGE MATTERS

Salt use varies from year to year. For example, the 2011-2012 winter season was mild and county crews applied 355,519 tons of salt to Wisconsin's state and federal highways. This was 47% less than the peak year of 2013-2014, when 669,807 tons were used. The cost of salt, more than $38 million in 2017-2018, is directly affected by the storage capacity in each county.

Each county manages the salt during the winter season, typically purchased through a state bid arranged by WisDOT. Counties and municipalities can participate in the state bid to benefit in the combined buying power of Wisconsin governmental agencies. The current bid structure separates the salt bid into three categories: early-fill, seasonal-fill and vendor reserve.

Early-fill salt must begin after the salt contract award date and all orders in by August 15 and be delivered before November 16th, unless otherwise agreed. With early-fill salt, the vendor has the flexibility to deliver the salt between the award date of the salt bid and November 16th.

Seasonal-salt is delivered during the winter season and is needed in counties which lack sufficient storage for an average winter. Seasonal-salt must be delivered within 10 business days of the order being placed. The amount and cost of the early-fill and seasonal-fill salt, including material and delivery, is set by the salt bid contract. Per the terms of the salt contract, the tonnage of salt identified as seasonal-fill must be purchased and stored. In the event of a milder than normal winter and all the seasonal-salt was not ordered and cannot be stored in a shed, the vendor(s) will store the salt for a monthly storage fee. This fee can be as high as $10 per month per ton of salt stored.

Vendor reserve salt is salt that the vendor is required to have on hand for purchase during winters that are worse than average. Unlike seasonal-salt, purchase of vendor reserve salt is not guaranteed or required. The vendor reserve quantity is typically equal to 20% of the total of early-fill and seasonal-fill salt quantities.

The early-fill salt provides the greatest flexibility with delivering salt to the respective sheds; therefore, the unit cost is generally lower than the unit cost of seasonal and vendor reserve salt. The seasonal-salt and vendor reserve salt is costlier to provide due to the short notice delivery requirements, the smaller size of these deliveries and the uncertainty of demand. These conditions increase the cost of seasonal and vendor reserve salt and likely precludes some potential vendors from bidding on the state salt contract.

Marathon County, Site ID 4-37-8-2

The state could reduce its material costs by purchasing more salt as early-fill. To purchase more salt as early fill, the state needs more storage capacity. Even with additional capacity, some seasonal salt would still be necessary. However, additional storage capacity could reduce the need to pay the vendor to store unused seasonal-salt.

METHODOLOGY - SETTING THE TARGET CAPACITY

To calculate each county and region's target capacity, the average annual salt use for each county for the past five winters is calculated. The average annual salt use is then multiplied by 125 percent to establish the target capacity. The 2017-2018, 5-year average annual salt use is 510,289 tons and the target capacity is 637,859 tons. To put this in context, the greatest single-season use of salt in the last decade was 669,807 tons of salt used during the 2013-2014 winter season. This is 131 percent of the 2017-2018 five-year average. The 125 percent target capacity is intended to eliminate the need for seasonal and vendor reserve salt in most counties during most years.

All storage capacities referenced herein describe state financed functional and target capacities. Functional capacity is the amount of salt a facility can store based on factors such as loading equipment and practices, and is generally less than the full design capacity. The "state financed" descriptor indicates that this report evaluates only sheds and storage that is state-funded and committed for salt used on state and federal highways. State financed facilities are those facilities where WisDOT has funded a percentage of the cost to construct, relocate or remodel a salt storage facility.

STATEWIDE FINDINGS

Statewide, storage facilities supported by WisDOT are equipped to effectively hold 587,450 tons. Based on the 125 percent target capacity, the state's total storage capacity should be 637,859 tons, necessitating a net increase of 50,409 tons of storage space. But that much new storage would not be enough to bring each individual county up to the 125 percent target. The aggregate storage needed to meet the target capacity in every county is 98,538 tons.

The gap between current and target capacity is greatest in the Northwest region. Only the Southwest region met its regional target capacity. Only 36 percent of the counties in the Northeast Region, 29 percent of the counties in the Southeast Region and 25 percent of counties in the Northwest Region meet the target capacity for each individual county.

A region's ability to meet target capacity is a function of the average annual salt use for each county for the past five winters. In 2018, target capacities for the regions increased between 4 percent and 10 percent from 2016. Target capacities are variable and can create challenges when planning for subsequent winters.

The percent of actual storage capacity relative to target capacity for WisDOT regions and individual counties is provided in Figures 2.1 and 2.2. These figures show where WisDOT has adequate salt storage capacity and where additional storage capacity is required.

Table 2.1. Regional and Statewide Capacity Needs

Region	Current State Financed Functional Capacity	Target Capacity (125% of average use)	Capacity Needed to Meet Target*
Southwest	176,428	175,425	Target Met
Southeast	125,355	131,429	6,074
Northwest	106,359	137,851	31,492
Northeast	77,242	82,026	4,784
North Central	102,066	111,128	9,062
State Total	587,450	637,859	51,412

*In this table, Capacity Needed to Meet Target is the difference between current and target capacity within each region. These region and state totals include storage capacities that exceed the target in some counties, and therefore under represent the capacity needed to bring all individual counties up to the target storage capacity.

Figure 2.1. 2018 State Financed Functional Capacity as Percentage of Target Capacity (By County)

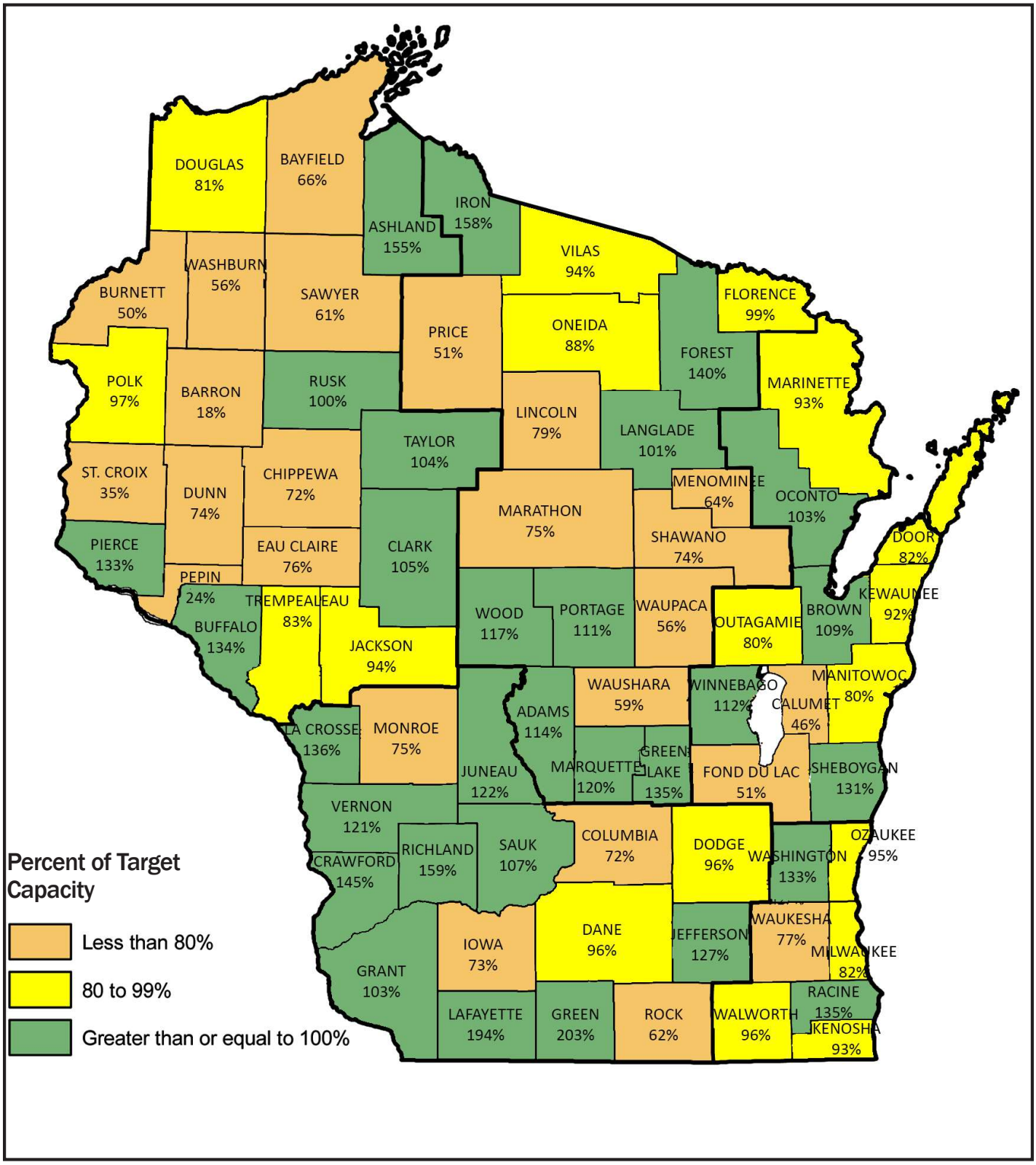
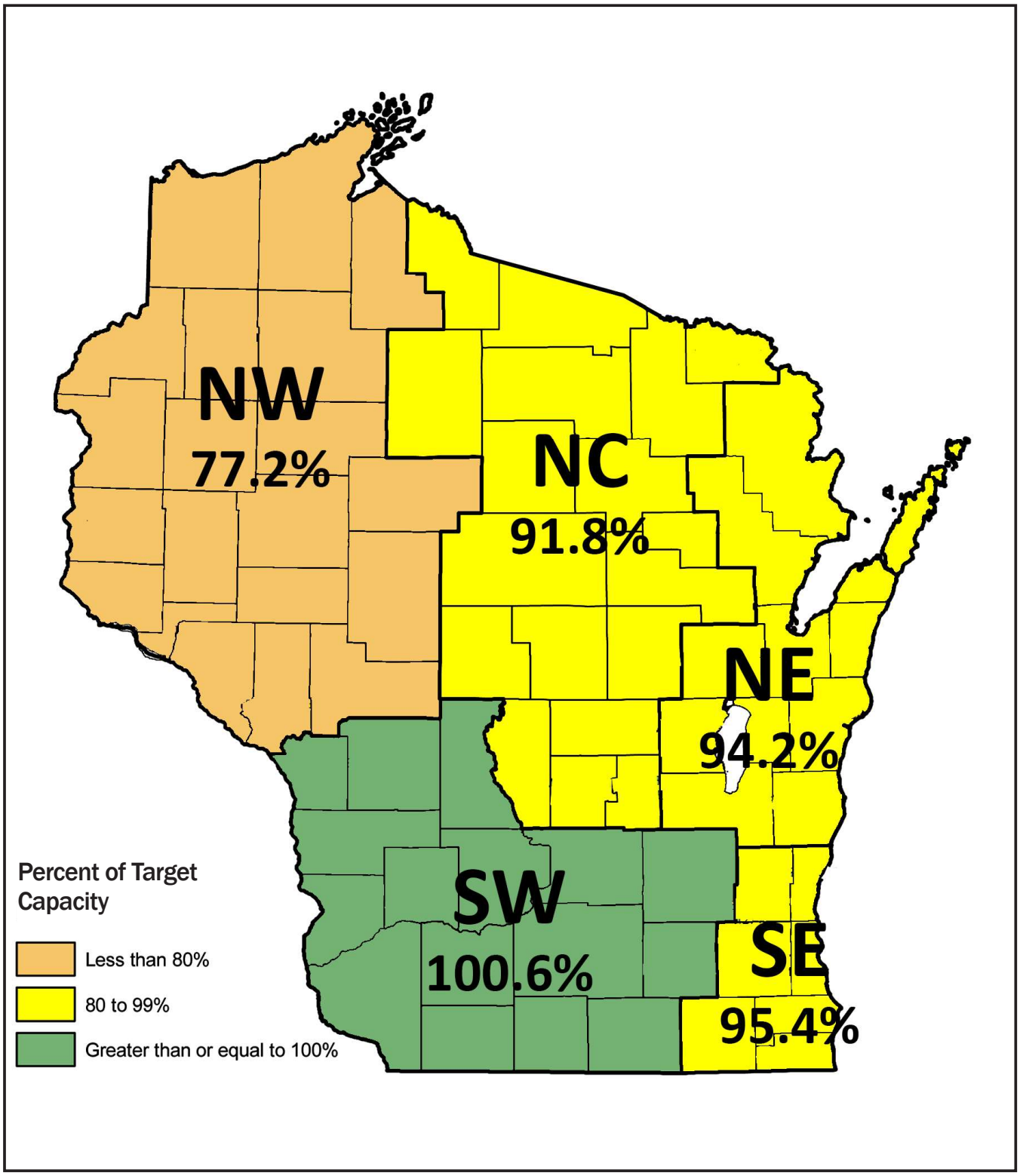


Figure 2.2. 2018 State Financed Functional Capacity as Percentage of Target Capacity (By Region)



COUNTY FINDINGS - NORTH CENTRAL REGION

The North Central region is currently able to store 102,066 tons of salt. The region must increase its storage capacity by 18,491 tons to meet its 125 percent target capacity in every county.

Iron, Forest and Green Lake counties have adequate space to store more than 130 percent of their target capacity, while 10 of the 18 counties in the region are unable to store their target capacity of salt.

The Waupaca highway department is moving its main highway garage and will abandon the existing location. One state financed shed at the current main highway garage will be abandoned in the next three years.

- *Waupaca County, 4-68-17-2 (960 tons, DECLINING)*

Note: WisDOT is not planning to construct any sheds in the North Central region over the next three years.

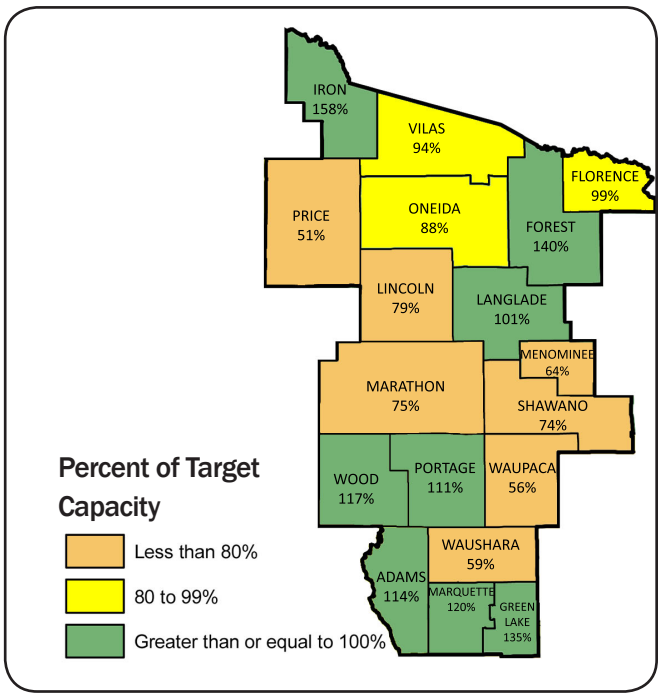


Table 2.2. North Central Region Capacity Needs

County	Current State Financed Functional Capacity (Tons)	Target Capacity (125% of average use) (Tons)	Capacity Needed to Meet Target* (Tons)
Marathon	**10,393**	**13,914**	**3,521**
Price	**3,560**	**6,940**	**3,380**
Waupaca	**4,210**	**7,576**	**3,366**
Shawano	**6,670**	**8,999**	**2,329**
Waushara	**2,750**	**4,625**	**1,875**
Lincoln	**4,748**	**6,035**	**1,287**
Oneida	**8,176**	**9,301**	**1,125**
Menominee	**1,750**	**2,746**	**996**
Vilas	**9,350**	**9,929**	**579**
Florence	**3,200**	**3,233**	**33**
Langlade	**4,339**	**4,315**	**Target Met**
Portage	**7,875**	**7,098**	**Target Met**
Adams	**3,625**	**3,188**	**Target Met**
Wood	**6,850**	**5,856**	**Target Met**
Marquette	**4,500**	**3,758**	**Target Met**
Green Lake	**1,850**	**1,366**	**Target Met**
Forest	**8,970**	**6,394**	**Target Met**
Iron	**9,250**	**5,855**	**Target Met**
NC Total	**102,066**	**111,128**	**18,491**

* The Capacity Needed to Meet Target is the aggregate shortfall for all counties that do not currently meet the target storage capacity. This number is greater than the difference between the regional total current capacity and the regional total target capacity because some counties exceed the target storage capacity.

COUNTY FINDINGS - NORTHEAST REGION

The Northeast region is currently able to store 77,242 tons of salt. The region must increase its storage capacity by 10,550 tons to meet its 125 percent target capacity in every county.

Seven of the 11 counties in the region are unable to store their target capacity of salt.

Note: WisDOT is planning on constructing one salt shed in the NE region over the next three years. This shed is not included in the table below. The location of the new shed and its state financed estimated functional capacity is as follows:

- *Fond du Lac County (8,000 tons)*

The Fond du Lac highway department is moving its main highway garage and will abandon the existing locations. Two state financed sheds at the current main highway garage will be abandoned in 2019. These sheds have been removed from the table below:

- *Fond du Lac County, 3-20-201-5 (4,200 tons, ADEQUATE)*
- *Fond du Lac County, 3-20-201-6 (4,095 tons, ADEQUATE)*

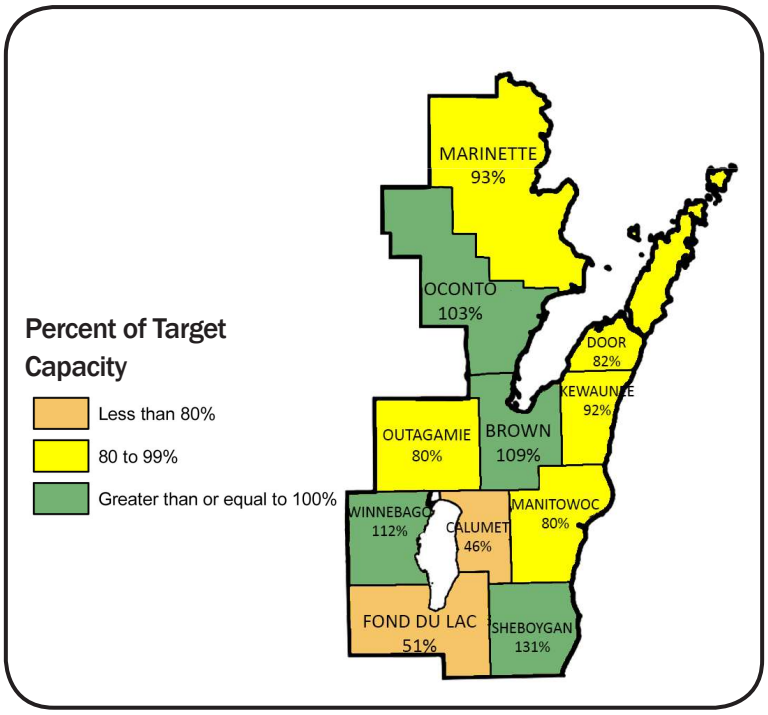


Table 2.3. Northeast Region Capacity Needs

County	Current State Financed Functional Capacity (Tons)	Target Capacity (125% of average use) (Tons)	Capacity Needed to Meet Target* (Tons)
Fond du Lac	**4,887**	**9,583**	**4,696**
Outagamie	**6,800**	**8,456**	**1,656**
Manitowoc	**6,200**	**7,741**	**1,541**
Calumet	**1,100**	**2,391**	**1,291**
Door	**3,603**	**4,400**	**797**
Marinette	**6,500**	**6,968**	**468**
Kewaunee	**1,240**	**1,341**	**101**
Oconto	**6,640**	**6,429**	**Target Met**
Brown	**14,854**	**13,669**	**Target Met**
Winnebago	**12,480**	**11,160**	**Target Met**
Sheboygan	**12,938**	**9,888**	**Target Met**
NE Total	**77,242**	**82,026**	**10,550**

* The Capacity Needed to Meet Target is the aggregate shortfall for all counties that do not currently meet the target storage capacity. This number is greater than the difference between the regional total current capacity and the regional total target capacity because some counties exceed the target storage capacity.

COUNTY FINDINGS - NORTHWEST REGION

The Northwest region is currently able to store 106,359 tons of salt. The region must increase its storage capacity by 36,769 tons to meet its 125 percent target capacity in every county.

Ashland, Buffalo and Pierce counties have adequate space to store 130 percent of their target capacity, while 15 of the 20 counties in the region are unable to store their target capacity of salt.

Note: WisDOT is planning on constructing two salt sheds in the NW region over the next three years. These sheds are not included in the table below. The location of the new sheds and their state financed estimated functional capacities are as follows:

- *Eau Claire County (7,500 tons)*
- *St. Croix County (10,000 tons)*

WisDOT is planning on abandoning the following sheds within the next three years:

- *Eau Claire County, 5-18-1-1 (1,200 tons, POOR)*
- *Eau Claire County, 5-18-1-2 (1,900 tons, DECLINING)*
- *Eau Claire County, 5-18-1-6 (3,900 tons, ADEQUATE)*

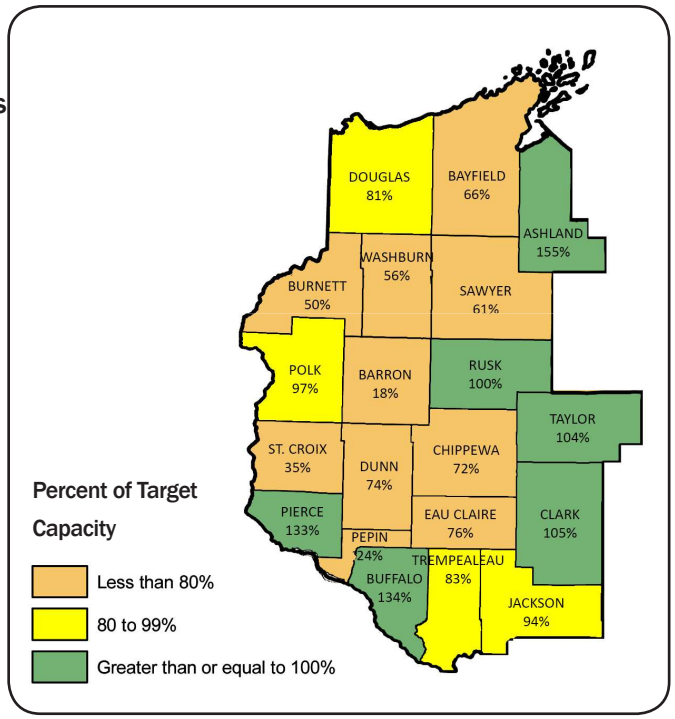


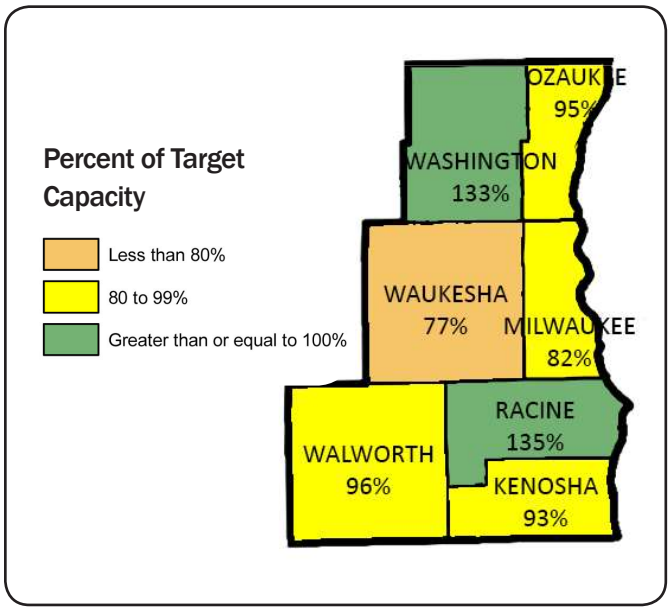
Table 2.4 Northwest Region Capacity Needs

County	Current State Financed Functional Capacity (Tons)	Target Capacity (125% of average use) (Tons)	Capacity Needed to Meet Target* (Tons)
Saint Croix	4,989	14,206	9,217
Barron	960	5,379	4,419
Chippewa	9,500	13,191	3,691
Washburn	3,980	7,083	3,103
Dunn	8,675	11,688	3,013
Eau Claire	8,200	10,799	2,599
Bayfield	4,300	6,559	2,259
Sawyer	3,500	5,719	2,219
Douglas	7,684	9,480	1,796
Burnett	1,700	3,431	1,731
Trempealeau	6,180	7,415	1,235
Pepin	200	826	626
Jackson	9,117	9,718	601
Polk	7,250	7,498	248
Rusk	3,000	3,014	14
Taylor	4,050	3,876	Target Met
Clark	6,400	6,095	Target Met
Pierce	6,775	5,094	Target Met
Buffalo	3,850	2,870	Target Met
Ashland	6,049	3,913	Target Met
NW Total	**106,359**	**137,851**	**36,769**

* The Capacity Needed to Meet Target is the aggregate shortfall for all counties that do not currently meet the target storage capacity. This number is greater than the difference between the regional total current capacity and the regional total target capacity because some counties exceed the target storage capacity.

COUNTY FINDINGS - SOUTHEAST REGION

The Southeast region has a state financed functional capacity of 125,355 tons. The region must increase its storage capacity by 15,245 tons to meet its 125 percent target capacity in every county.



Milwaukee County has the largest current functional capacity in both the region and the state (36,200 tons), but it is at 82 percent of its target capacity (43,890 tons).

Two counties (Racine and Washington) in the region exceed their target capacities. Racine is over 130 percent of its target capacity. Five of the seven counties in the region are unable to store their target capacity of salt .

Note: WisDOT is planning on constructing one shed in the Southeast region over the next three years. This shed is not included in the table on the following pages. The location of the new shed and its state financed functional capacity is as follows:

- *Waukesha County (10,000 tons)*

Table 2.5. Southeast Region Capacity Needs

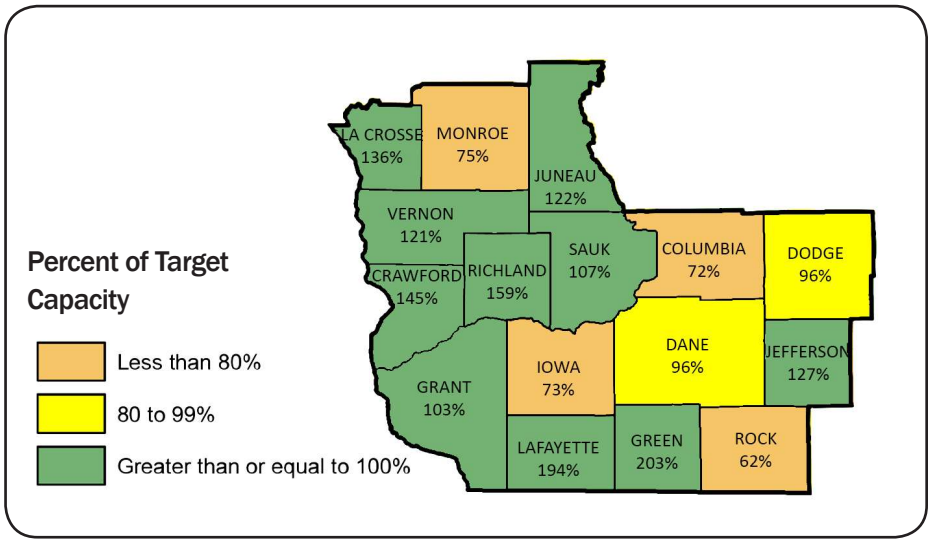
County	Current State Financed Functional Capacity (Tons)	Target Capacity (125% of average use) (Tons)	Capacity Needed to Meet Target* (Tons)
Milwaukee	**36,200**	**43,890**	**7,690**
Waukesha	**18,350**	**23,958**	**5,608**
Kenosha	**11,075**	**11,938**	**863**
Ozaukee	**7,925**	**8,333**	**408**
Walworth	**15,730**	**16,408**	**678**
Washington	**18,075**	**13,543**	**Target Met**
Racine	**18,000**	**13,361**	**Target Met**
SE Total	**125,355**	**131,429**	**15,245**

* The Capacity Needed to Meet Target is the aggregate shortfall for all counties that do not currently meet the target storage capacity. This number is greater than the difference between the regional total current capacity and the regional total target capacity because some counties exceed the target storage capacity.

COUNTY FINDINGS - SOUTHWEST REGION

The Southwest region is currently able to store 176,428 tons of salt. The region must increase its storage capacity by 17,483 tons to meet its target capacity in every county.

Six of the 16 counties in the region are unable to store their target capacity of salt.



Note: WisDOT is planning on constructing four salt sheds in the SW region over the next three years. These sheds are not included in the table on the following page. The location of the new sheds and their state financed estimated functional capacities are as follows:

- *Columbia County (7,000 tons)*
- *Dane County (8,000 tons)*
- *Rock County (5,000 tons)*
- *Dane County (5,000 tons)*

WisDOT is planning on abandoning the following sheds within the next three years:

- *Columbia County, 1-11-5-2 (900 tons, POOR)*
- *Dane County, 1-13-266-1 (1,850 tons, POOR)*

Table 2.6. Southwest Region Capacity Needs

County	Current State Financed Functional Capacity (Tons)	Target Capacity (125% of average use) (Tons)	Capacity Needed to Meet Target* (Tons)
Columbia	15,408	21,341	5,933
Rock	7,340	11,796	4,456
Monroe	8,905	11,940	3,035
Iowa	4,900	6,714	1,814
Dane	41,100	42,703	1,603
Dodge	13,900	14,543	643
Grant	9,270	8,969	Target Met
Vernon	8,450	6,958	Target Met
Sauk	12,137	11,304	Target Met
Jefferson	13,750	10,849	Target Met
Juneau	10,800	8,825	Target Met
LaCrosse	10,038	7,375	Target Met
Crawford	6,550	4,508	Target Met
Richland	4,880	3,076	Target Met
Lafayette	4,300	2,211	Target Met
Green	4,700	2,315	Target Met
SW Total	**176,428**	**175,425**	**17,483**

* The Capacity Needed to Meet Target is the aggregate shortfall for all counties that do not currently meet the target storage capacity. This number is greater than the difference between the regional total current capacity and the regional total target capacity because some counties exceed the target storage capacity.

3 Shed Condition Inspections

Inspections assessing the physical condition of state financed salt sheds were completed by region and county highway department staff in 2018. The purpose of these inspections is to evaluate the condition of state financed sheds. The results of these inspections are used to help create a capital improvement plan (CIP) for state financed salt sheds. The CIP could be used to identify maintenance actions to extend the service-life of existing sheds or identify where investments in new state financed salt sheds are most needed.

METHODOLOGY - COMPONENT RATING

The inspection of each shed evaluated the following components:

- Apron and pad,
- Ceiling and roof,
- Walls, and
- Doors

Each component was rated as "excellent", "good", "okay", "poor" or "bad". If a component was rated as "excellent" it received one (1) point, "good" received two (2) points, "okay" received three (3) points, "poor" received four (4) points and "bad" was given five (5) points. Photos were taken of any components rated as “poor” or “bad”.

METHODOLOGY - WEIGHTING

To summarize the inspection of each shed into a system that would facilitate direct comparisons between all state financed sheds, each component was assigned a factor that correlated to the goals of the inspections:

- Structural integrity of the shed, and
- Protecting salt from rain, sleet and snow

The higher the factor, the greater the importance to achieving the primary goals of the shed. Apron and pad were assigned a factor of one (1), ceiling and roof was assigned a factor of ten (10), walls were assigned a factor of seven (7) and doors were assigned a factor of five (5). For example, if the ceiling and roof condition is rated as "poor" (four points), with a factor of ten, the roof and ceiling component would receive a weighted score of 40.

METHODOLOGY - OVERALL SHED RATING

The weighted scores of the shed components were summed giving each shed a single, total score. The total scores of all state financed sheds were ranked using an ordinal scale. The mean shed condition rating was 48.57. The highest (or worst condition) score was 88 and the lowest (or best condition) was 23. The scores were categorized using the standard deviation of the overall shed scores (which was 12.85). The categories and the scores that make up each are defined below:

- Poor (61.42-88.00)
- Declining (48.57-61.41)
- Adequate (35.72-48.56)
- Excellent (23.00-35.71)

The rating scale is a starting point to help identify sheds in the poorest conditions. There are several components that should be considered when deciding which sheds to replace or repair, such as whether the county has met its target capacity, age of sheds and the capacity of any nearby sheds. The following page includes examples of each of the four components and what a component in "poor" or "bad" condition looks like.

Examples of "Poor" and "Bad" Shed Component Conditions

Cracked walls (Poor - 28 total points)

Severe cracking over entire apron (Bad - 5 total points)

Ceiling trusses are damaged and not repaired (Poor - 40 total points)

No door present (Bad - 25 total points)

Weathered shingles-curled/missing (Poor - 40 total points)

STATEWIDE FINDINGS

The following table summarizes the condition of the sheds and the total functional and state financed storage associated with each condition category.

Table 2.7. Statewide Shed Condition Summary

Shed Rating	Total Functional Capacity (Tons)	% of Total	State Financed Functional Capacity (Tons)	% of Total
POOR	**80,363**	**11%**	**66,734**	**11%**
DECLINING	**145,244**	**20%**	**116,302**	**20%**
ADEQUATE	**269,461**	**38%**	**227,229**	**39%**
EXCELLENT	**160,435**	**22%**	**123,701**	**21%**
NOT RATED	***61,006***	***9%***	***53,484***	***9%***
TOTAL	**716,509**	**100%**	**587,450**	**100%**

COUNTY FINDINGS - NORTH CENTRAL REGION

The North Central region is currently able to store 102,066 tons of salt (92 percent of target capacity) in 62 state financed sheds. Of these 62 sheds, thirteen (24,646 tons of state financed functional capacity) are in poor condition.

Table 2.8. North Central Region Shed Condition Summary

Shed Rating	Total Functional Capacity (Tons)	% of Total	State Financed Functional Capacity (Tons)	% of Total
POOR	27,870	23%	24,646	24%
DECLINING	12,400	10%	12,160	12%
ADEQUATE	54,945	46%	46,555	46%
EXCELLENT	25,950	21%	18,705	18%
NOT RATED	*0*	*0%*	*0*	*0%*
TOTAL	**121,165**	**100%**	**102,066**	**100%**

Table 2.9. North Central Region Salt Shed Conditions

County	Site ID	*Total Functional Capacity (Tons)*	State Financed Functional Capacity (Tons)	*Apron & Pad Score*	*Ceiling & Roof Score*	*Wall Score*	*Door Score*	Total Score	Rating
Green Lake	4-24-5-5	400	400	4	40	21	15	80	POOR
Oneida	4-43-1-2	950	950	2	40	28	10	80	POOR
Forest	4-21-155-1	7,650	7,650	4	40	14	10	68	POOR
Vilas	4-63-20-1	1,100	1,100	2	20	21	25	68	POOR
Green Lake	4-24-7-4	650	650	2	40	14	10	66	POOR
Marquette	4-39-138-1	2,000	1,300	2	40	14	10	66	POOR
Marquette	4-39-138-5	2,200	2,200	2	40	14	10	66	POOR
Menominee	4-74-85-1	1,750	1,750	2	30	14	20	66	POOR
Oneida	4-43-1-5	7,650	5,126	2	40	14	10	66	POOR
Price	4-50-17-1	700	700	2	40	14	10	66	POOR
Waupaca	4-68-112-1	1,350	1,350	2	30	21	10	63	POOR
Forest	4-21-110-1	870	870	4	20	28	10	62	POOR
Vilas	4-63-20-2	600	600	3	20	14	25	62	POOR
Marquette	4-39-42-3	1,000	1,000	2	20	14	25	61	DECLINING
Oneida	4-43-2-2	900	900	2	20	28	10	60	DECLINING
Wood	4-71-54-1	1,450	1,450	3	20	21	15	59	DECLINING
Florence	4-19-106-2	200	200	2	20	14	20	56	DECLINING
Iron	4-26-24-3	7,650	7,650	2	30	14	10	56	DECLINING
Waupaca	4-68-17-2	1,200	960	2	30	14	10	56	DECLINING
Adams	4-01-7-1	550	550	4	20	14	10	48	ADEQUATE
Waushara	4-69-56-5	430	400	4	20	14	10	48	ADEQUATE
Wood	4-71-51-4	1,700	1,700	4	20	14	10	48	ADEQUATE
Adams	4-01-217-1	1,575	1,575	3	20	14	10	47	ADEQUATE
Iron	4-26-23-2	1,600	1,600	3	20	14	10	47	ADEQUATE
Marathon	4-37-17-1	800	704	3	20	14	10	47	ADEQUATE

County	Site ID	*Total Functional Capacity (Tons)*	State Financed Functional Capacity (Tons)	*Apron & Pad Score*	*Ceiling & Roof Score*	*Wall Score*	*Door Score*	Total Score	Rating
Shawano	4-58-97-2	440	440	3	20	14	10	47	ADEQUATE
Waushara	4-69-57-8	400	400	3	20	14	10	47	ADEQUATE
Waushara	4-69-59-2	600	600	3	20	14	10	47	ADEQUATE
Wood	4-71-55-3	725	725	3	20	14	10	47	ADEQUATE
Wood	4-71-55-4	675	675	3	20	14	10	47	ADEQUATE
Waushara	4-69-57-9	450	400	3	20	14	10	47	ADEQUATE
Adams	4-01-200-1	3,000	1,500	2	20	14	10	46	ADEQUATE
Forest	4-21-9-3	450	450	2	20	14	10	46	ADEQUATE
Green Lake	4-24-5-7	400	400	2	20	14	10	46	ADEQUATE
Green Lake	4-24-7-3	400	400	2	20	14	10	46	ADEQUATE
Langlade	4-34-12-1	200	200	2	20	14	10	46	ADEQUATE
Langlade	4-34-12-2	900	900	2	20	14	10	46	ADEQUATE
Langlade	4-34-13-1	4,100	3,239	2	20	14	10	46	ADEQUATE
Lincoln	4-35-15-4	850	850	2	20	14	10	46	ADEQUATE
Marathon	4-37-183-1	3,300	2,310	2	20	14	10	46	ADEQUATE
Marathon	4-37-184-1	2,700	2,214	2	20	14	10	46	ADEQUATE
Oneida	4-43-126-1	600	600	2	20	14	10	46	ADEQUATE
Oneida	4-43-2-1	600	600	2	20	14	10	46	ADEQUATE
Portage	4-49-3-3	3,900	3,315	2	20	14	10	46	ADEQUATE
Price	4-50-101-1	5,200	2,860	2	20	14	10	46	ADEQUATE
Shawano	4-58-99-4	3,500	3,500	2	20	14	10	46	ADEQUATE
Vilas	4-63-21-5	7,650	7,650	2	20	14	10	46	ADEQUATE
Waupaca	4-68-18-1	1,000	1,000	2	20	14	10	46	ADEQUATE
Waupaca	4-68-20-3	900	900	2	20	14	10	46	ADEQUATE
Waushara	4-69-57-2	400	400	2	20	14	10	46	ADEQUATE
Waushara	4-69-57-1	550	550	2	20	14	10	46	ADEQUATE
Lincoln	4-35-14-4	4,400	2,948	2	10	14	10	36	ADEQUATE
Marathon	4-37-8-2	3,500	2,345	2	10	14	5	31	EXCELLENT
Marathon	4-37-9-1	6,000	2,820	2	10	14	5	31	EXCELLENT
Portage	4-49-3-4	5,500	3,360	2	10	7	10	29	EXCELLENT
Florence	4-19-6-2	3,000	3,000	1	10	7	5	23	EXCELLENT
Portage	4-49-0-1	1,200	1,200	1	10	7	5	23	EXCELLENT
Lincoln	4-35-14-2	950	950	1	10	7	5	23	EXCELLENT
Shawano	4-58-326-5	3,500	2,730	1	10	7	5	23	EXCELLENT
Wood	4-71-51-3	2,300	2,300	1	10	7	4	23	EXCELLENT
NC Averages	--	--	--	2.3	21.8	14.5	10.7	49.3	DECLINING
NC Totals	--	121,165	102,066	--	--	--	--	--	

COUNTY FINDINGS - NORTHEAST REGION

The Northeast region is able to store 77,242 tons of salt (94 percent of target capacity), in 44 salt sheds. Of these 44 sheds, only two (1,843 tons of state financed functional capacity) are in poor condition.

Table 2.10. Northeast Region Shed Condition Summary

Shed Rating	Total Functional Capacity (Tons)	% of Total	State Financed Functional Capacity (Tons)	% of Total
POOR	1,843	2%	1,843	2%
DECLINING	10,994	12%	7,528	10%
ADEQUATE	40,486	44%	31,914	41%
EXCELLENT	35,320	38%	31,957	42%
NOT RATED	*4,000*	*4%*	*4,000*	*5%*
TOTAL	**92,643**	**100%**	**77,242**	**100%**

Table 2.11. Northeast Region Salt Shed Conditions

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Oconto	3-42-305-1	240	240	4	40	21	10	75	POOR
Door	3-15-370-1	1,603	1,603	3	30	7	25	65	POOR
Brown	3-05-88-4	1,244	1,244	4	30	14	10	58	DECLINING
Fond du Lac	3-20-202-1	4,000	2,000	3	30	14	10	57	DECLINING
Marinette	3-38-115-5	2,500	2,500	2	20	14	20	56	DECLINING
Manitowoc	3-36-22-5	1,200	1,200	1	20	21	10	52	DECLINING
Sheboygan	3-59-315-5	1,000	150	3	20	14	15	52	DECLINING
Brown	3-05-87-1	1,050	434	2	20	14	15	51	DECLINING
Marinette	3-38-111-3	1,500	1,500	3	20	14	10	47	ADEQUATE
Sheboygan	3-59-315-1	1,500	1,500	3	20	14	10	47	ADEQUATE
Winnebago	3-70-352-1	3,000	3,000	3	20	14	10	47	ADEQUATE
Manitowoc	3-36-23-1	1,500	750	2	20	14	10	46	ADEQUATE
Manitowoc	3-36-24-4	1,200	1,200	2	20	14	10	46	ADEQUATE
Marinette	3-38-110-5	2,500	2,500	2	20	14	10	46	ADEQUATE
Oconto	3-42-52-1	3,200	3,200	2	20	14	10	46	ADEQUATE
Oconto	3-42-53-4	3,200	3,200	2	20	14	10	46	ADEQUATE
Outagamie	3-44-242-1	4,000	2,000	2	20	14	10	46	ADEQUATE
Sheboygan	3-59-58-6	1,180	1,180	2	20	14	10	46	ADEQUATE
Sheboygan	3-59-59-1	750	248	2	20	14	10	46	ADEQUATE
Sheboygan	3-59-59-5	1,180	1,180	2	20	14	10	46	ADEQUATE
Winnebago	3-70-342-2	6,000	3,480	2	20	14	10	46	ADEQUATE
Outagamie	3-44-7-1	600	600	2	20	14	10	46	ADEQUATE

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Outagamie	3-44-2-1	450	450	2	20	14	10	46	ADEQUATE
Manitowoc	3-36-348-1	4,600	2,300	1	20	14	10	45	ADEQUATE
Manitowoc	3-36-360-1	750	750	1	20	14	10	45	ADEQUATE
Sheboygan	3-59-58-3	2,000	1,500	1	20	14	10	45	ADEQUATE
Brown	3-05-91-3	1,376	1,376	4	20	14	5	43	ADEQUATE
Brown	3-05-86-4	2,800	2,800	1	10	14	5	30	EXCELLENT
Door	3-15-360-1	1,000	1,000	2	10	7	10	29	EXCELLENT
Outagamie	3-44-7-4	3,000	3,000	2	10	7	10	29	EXCELLENT
Kewaunee	3-31-256-1	240	240	2	10	7	5	24	EXCELLENT
Outagamie	3-44-9-1	1,500	750	2	10	7	5	24	EXCELLENT
Fond du Lac	3-20-204-3	1,600	1,600	1	10	7	5	23	EXCELLENT
Fond du Lac	3-20-536-1	3,900	1,287	1	10	7	5	23	EXCELLENT
Brown	3-05-391-1	3,000	3,000	1	10	7	5	23	EXCELLENT
Brown	3-05-86-7	6,000	6,000	1	10	7	5	23	EXCELLENT
Calumet	3-08-74-5	1,100	1,100	1	10	7	5	23	EXCELLENT
Door	3-15-355-1	1,000	1,000	1	10	7	5	23	EXCELLENT
Winnebago	3-70-393-1	3,000	3,000	1	10	7	5	23	EXCELLENT
Sheboygan	3-59-315-8	1,000	1,000	1	10	7	5	23	EXCELLENT
Sheboygan	3-59-537-1	5,000	5,000	1	10	7	5	23	EXCELLENT
Sheboygan	3-59-58-6	1,180	1,180	1	10	7	5	23	EXCELLENT
Kewaunee	3-31-16-7	1,000	1,000	not rated	not rated	not rated	not rated	not rated	Not Rated
Winnebago	3-70-539-1	3,000	3,000	not rated	not rated	not rated	not rated	not rated	Not Rated
NE Averages				1.9	17.6	11.8	9.2	40.5	ADEQUATE
NE Totals	–	92,643 tons	77,242 tons	–	–	–	–	–	

COUNTY FINDINGS - NORTHWEST REGION

The Northwest region's current state financed functional capacity of 106,359 tons (77 percent of target capacity) is stored in 78 sheds. Of these 78 sheds, six (4,215 tons of state financed functional capacity) are in poor condition.

Table 2.12. Northwest Region Shed Condition Summary

Shed Rating	Total Functional Capacity (Tons)	% of Total	State Financed Functional Capacity (Tons)	% of Total
POOR	4,500	4%	4,215	4%
DECLINING	21,010	16%	17,974	17%
ADEQUATE	73,745	57%	60,330	57%
EXCELLENT	26,125	20%	20,864	19%
NOT RATED	*3,323*	*3%*	*2,976*	*3%*
TOTAL	**128,703**	**100%**	**106,359**	**100%**

Table 2.13. Northwest Region Salt Shed Conditions

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Jackson	5-27-602-2	400	240	4	30	28	20	82	POOR
Eau Claire	5-18-1-1	1,200	1,200	2	40	28	10	80	POOR
Chippewa	5-09-7-4	1,250	1,125	1	40	28	10	79	POOR
Dunn	5-17-3-1	325	325	2	40	21	15	78	POOR
Dunn	5-17-2-1	325	325	2	20	35	15	72	POOR
Clark	5-10-1-1	1,000	1,000	2	20	28	20	70	POOR
Jackson	5-27-601-2	5,000	3,700	2	40	7	10	59	DECLINING
Douglas	5-16-29-1	4,960	3,224	4	30	14	10	58	DECLINING
Eau Claire	5-18-1-2	1,900	1,900	2	20	21	15	58	DECLINING
Buffalo	5-06-500-2	500	500	2	30	14	10	56	DECLINING
Taylor	5-60-2-1	150	150	2	20	14	20	56	DECLINING
Dunn	5-17-1-5	5,000	5,000	2	20	21	10	53	DECLINING
Trempealeau	5-61-803-1	3,500	3,500	5	20	14	10	49	DECLINING
Pierce	5-47-1-4	3,500	3,500	4	20	14	10	48	ADEQUATE
Pierce	5-47-36-1	500	500	4	20	14	10	48	ADEQUATE
Pierce	5-47-7-1	200	200	3	20	14	10	47	ADEQUATE
Trempealeau	5-61-830-2	900	810	3	20	14	10	47	ADEQUATE
Barron	5-03-2-1	480	480	3	20	14	10	47	ADEQUATE
Ashland	5-02-2-1	320	320	2	20	14	10	46	ADEQUATE
Ashland	5-02-3-1	480	480	2	20	14	10	46	ADEQUATE
Ashland	5-02-63-1	5,520	4,449	2	20	14	10	46	ADEQUATE
Ashland	5-02-64-1	800	800	2	20	14	10	46	ADEQUATE

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Bayfield	5-04-14-1	720	720	2	20	14	10	46	ADEQUATE
Bayfield	5-04-16-1	240	240	2	20	14	10	46	ADEQUATE
Bayfield	5-04-17-1	240	240	2	20	14	10	46	ADEQUATE
Bayfield	5-04-19-1	3,100	3,100	2	20	14	10	46	ADEQUATE
Burnett	5-07-25-1	1,100	1,100	2	20	14	10	46	ADEQUATE
Chippewa	5-09-24-1	1,200	1,200	2	20	14	10	46	ADEQUATE
Douglas	5-16-28-1	320	320	2	20	14	10	46	ADEQUATE
Douglas	5-16-30-1	320	320	2	20	14	10	46	ADEQUATE
Douglas	5-16-30-4	1,000	1,000	2	20	14	10	46	ADEQUATE
Douglas	5-16-31-1	320	320	2	20	14	10	46	ADEQUATE
Dunn	5-17-1-1	1,700	850	2	20	14	10	46	ADEQUATE
Dunn	5-17-3-2	175	175	2	20	14	10	46	ADEQUATE
Eau Claire	5-18-1-6	3,900	3,900	2	20	14	10	46	ADEQUATE
Jackson	5-27-601-1	800	640	2	20	14	10	46	ADEQUATE
Jackson	5-27-601-3	2,100	441	2	20	14	10	46	ADEQUATE
Jackson	5-27-602-1	800	720	2	20	14	10	46	ADEQUATE
Pierce	5-47-1-3	850	850	2	20	14	10	46	ADEQUATE
Pierce	5-47-3-1	200	200	2	20	14	10	46	ADEQUATE
Pierce	5-47-4-1	200	200	2	20	14	10	46	ADEQUATE
Pierce	5-47-6-1	200	200	2	20	14	10	46	ADEQUATE
Polk	5-48-21-1	4,100	4,100	2	20	14	10	46	ADEQUATE
Rusk	5-54-43-5	3,000	3,000	2	20	14	10	46	ADEQUATE
Saint Croix	5-55-4-1	150	150	2	20	14	10	46	ADEQUATE
Sawyer	5-57-45-5	1,600	1,600	2	20	14	10	46	ADEQUATE
Sawyer	5-57-47-1	300	300	2	20	14	10	46	ADEQUATE
Sawyer	5-57-48-4	1,600	1,600	2	20	14	10	46	ADEQUATE
Taylor	5-60-1-6	3,000	2,100	2	20	14	10	46	ADEQUATE
Taylor	5-60-3-1	1,800	1,800	2	20	14	10	46	ADEQUATE
Trempealeau	5-61-805-1	850	510	2	20	14	10	46	ADEQUATE
Trempealeau	5-61-808-1	1,000	1,000	2	20	14	10	46	ADEQUATE
Washburn	5-65-97-1	480	480	2	20	14	10	46	ADEQUATE
Washburn	5-65-98-1	10,000	3,500	2	20	14	10	46	ADEQUATE
Barron	5-03-10-1	480	480	2	20	14	10	46	ADEQUATE
Clark	5-10-3-4	1,000	1,000	2	20	14	10	46	ADEQUATE
Clark	5-10-2-2	5,000	4,400	1	20	14	10	45	ADEQUATE
Chippewa	5-09-5-2	1,250	1,125	1	20	7	15	43	ADEQUATE
Dunn	5-17-1-2	1,000	1,000	1	10	21	10	42	ADEQUATE
Buffalo	5-06-501-1	1,200	1,200	2	20	7	10	39	ADEQUATE
Buffalo	5-06-502-6	2,150	2,150	2	20	7	10	39	ADEQUATE

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Pepin	5-46-1-1	1,000	200	2	20	7	10	39	ADEQUATE
Trempealeau	5-61-807-1	600	360	4	10	14	10	38	ADEQUATE
Chippewa	5-09-4-4	5,500	4,950	1	10	14	10	35	EXCELLENT
Saint Croix	5-55-22-1	1,500	1,200	2	10	7	10	29	EXCELLENT
Saint Croix	5-55-21-1	700	469	1	10	7	10	28	EXCELLENT
Chippewa	5-09-27-1	1,100	1,100	2	10	7	5	24	EXCELLENT
Dunn	5-17-33-2	1,000	1,000	2	10	7	5	24	EXCELLENT
Saint Croix	5-55-5-1	1,000	670	2	10	7	5	24	EXCELLENT
Eau Claire	5-18-69-1	1,200	1,200	1	10	7	5	23	EXCELLENT
Jackson	5-27-903-1	1,000	1,000	1	10	7	5	23	EXCELLENT
Saint Croix	5-55-89-1	1,000	1,000	1	10	7	5	23	EXCELLENT
Pierce	5-47-3-4	1,125	1,125	1	10	7	5	23	EXCELLENT
Saint Croix	5-55-5-7	1,500	1,500	1	10	7	5	23	EXCELLENT
Douglas	5-16-27-4	2,500	2,500	1	10	7	5	23	EXCELLENT
Polk	5-48-41-12	7,000	3,150	1	10	7	5	23	EXCELLENT
Jackson	5-27-602-6	2,400	2,376	not rated	not rated	not rated	not rated	not rated	Not Rated
Burnett	5-07-23-3	923	600	not rated	not rated	not rated	not rated	not rated	Not Rated
NW Averages				2.0	19.5	13.8	10.0	45.3	ADEQUATE
NW Totals	–	128,703	106,359						

COUNTY FINDINGS - SOUTHEAST REGION

The Southeast region's current state financed functional capacity of 125,355 tons (95 percent of target capacity) is stored in 25 sheds. Of these 25 sheds, two (7,500 tons of state financed functional capacity) are in poor condition.

Table 2.14. Southeast Region Shed Condition Summary

Shed Rating	Total Functional Capacity (Tons)	% of Total	State Financed Functional Capacity (Tons)	% of Total
POOR	15,000	8%	7,500	6%
DECLINING	79,350	45%	60,500	48%
ADEQUATE	26,075	15%	21,120	17%
EXCELLENT	54,100	31%	34,735	28%
NOT RATED	*2,500*	*1%*	*1,500*	*1%*
TOTAL	**177,025**	**100%**	**125,355**	**100%**

Table 2.15. Southeast Region Salt Shed Conditions

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Kenosha	2-30-201-1	12,000	6,000	2	30	14	25	71	POOR
Waukesha	2-67-205-1	3,000	1,500	2	30	14	25	71	POOR
Waukesha	2-67-201-1	4,500	2,700	2	20	14	25	61	DECLINING
Waukesha	2-67-4-1	950	450	2	20	14	25	61	DECLINING
Waukesha	2-67-2-2	3,000	1,500	1	20	14	25	60	DECLINING
Waukesha	2-67-1-2	2,400	1,200	3	30	14	10	57	DECLINING
Racine	2-51-2-6	4,000	4,000	2	30	14	10	56	DECLINING
Walworth	2-64-203-3	14,000	8,400	2	30	14	10	56	DECLINING
Milwaukee	2-40-205-1	12,500	10,000	3	30	7	15	55	DECLINING
Milwaukee	2-40-202-1	12,500	10,000	1	30	14	10	55	DECLINING
Waukesha	2-67-4-2	3,000	1,500	2	20	7	25	54	DECLINING
Ozaukee	2-45-203-6	3,500	1,750	5	20	14	10	49	DECLINING
Racine	2-51-2-4	9,500	9,500	2	30	7	10	49	DECLINING
Waukesha	2-67-201-11	9,500	9,500	2	30	7	10	49	DECLINING
Walworth	2-64-202-1	3,000	2,250	1	30	7	10	48	ADEQUATE
Kenosha	2-30-1-1	5,075	5,075	2	20	14	10	46	ADEQUATE
Racine	2-51-1-11	3,000	3,000	2	30	7	5	44	ADEQUATE
Walworth	2-64-109-1	4,000	3,120	1	20	7	10	38	ADEQUATE
Ozaukee	2-45-201-1	9,500	6,175	2	10	14	10	36	ADEQUATE
Racine	2-51-1-1	1,500	1,500	2	10	14	10	36	ADEQUATE
Walworth	2-64-203-11	14,000	1,960	3	20	7	5	35	EXCELLENT
Washington	2-66-103-1	11,050	5,525	2	10	7	10	29	EXCELLENT
Milwaukee	2-40-206-14	18,000	16,200	1	10	7	5	23	EXCELLENT
Washington	2-66-102-3	11,050	11,050	1	10	7	5	23	EXCELLENT
Washington	2-66-101-4	2,500	1,500	not rated	not rated	not rated	not rated	not rated	Not Rated
SE Averages	--	--	--	2.0	22.5	10.8	13.1	**48.4**	ADEQUATE
SE Totals	--	**177,025**	**125,355**	--	--	--	--	--	

COUNTY FINDINGS - SOUTHWEST REGION

The Southwest region's current state financed functional capacity of 176,428 tons (meets target capacity) is stored in 70 sheds. Of these 70 sheds, 11 (28,530 tons of state financed functional capacity) are in poor condition.

Table 2.16. Southwest Region Shed Condition Summary

Shed Rating	Total Functional Capacity (Tons)	% of Total	State Financed Functional Capacity (Tons)	% of Total
POOR	31,150	16%	28,530	16%
DECLINING	21,490	11%	18,140	10%
ADEQUATE	74,210	37%	67,310	38%
EXCELLENT	18,940	10%	17,440	10%
NOT RATED	*51,183*	*26%*	*45,008*	*26%*
TOTAL	**196,973**	**100%**	**176,428**	**100%**

Table 2.17. Southwest Region Salt Shed Conditions

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Dodge	1-14-33-1	1,000	1,000	2	40	28	15	85	POOR
Columbia	1-11-5-2	1,800	900	2	30	21	25	78	POOR
Juneau	1-29-85-2	6,000	6,000	3	40	14	20	77	POOR
Dane	1-13-266-1	1,850	1,850	5	40	14	10	69	POOR
Dodge	1-14-34-1	1,000	1,000	3	30	21	15	69	POOR
La Crosse	1-32-653-1	6,000	6,000	3	40	14	10	67	POOR
Richland	1-52-767-1	200	200	3	40	14	10	67	POOR
Columbia	1-11-346-1	4,000	4,000	2	40	14	10	66	POOR
Lafayette	1-33-477-1	1,500	1,500	2	40	14	10	66	POOR
Lafayette	1-33-174-3	1,800	1,800	4	20	21	20	65	POOR
Richland	1-52-768-1	6,000	4,280	4	20	14	25	63	POOR
Grant	1-22-387-2	2,300	2,300	2	30	14	15	61	DECLINING
Green	1-23-49-2	3,000	1,500	2	20	14	25	61	DECLINING
Grant	1-22-197-1	170	170	3	20	21	15	59	DECLINING
Crawford	1-12-550-2	450	450	4	30	14	10	58	DECLINING
La Crosse	1-32-681-1	1,200	1,200	3	30	14	10	57	DECLINING
Dane	1-13-501-1	4,500	3,150	2	30	14	10	56	DECLINING
Grant	1-22-478-3	2,800	2,800	2	30	14	10	56	DECLINING
La Crosse	1-32-651-4	2,000	2,000	2	30	14	10	56	DECLINING
Sauk	1-56-120-3	2,000	2,000	2	30	14	10	56	DECLINING
Richland	1-52-766-2	400	400	3	20	21	10	54	DECLINING
Rock	1-53-481-1	1,170	1,170	2	20	21	10	53	DECLINING
Lafayette	1-33-510-1	1,500	1,000	2	20	14	15	51	DECLINING
Crawford	1-12-555-4	200	200	4	20	14	10	48	ADEQUATE

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Crawford	1-12-556-1	300	300	4	20	14	10	48	ADEQUATE
Dane	1-13-1-1	1,100	1,100	4	20	14	10	48	ADEQUATE
Sauk	1-56-292-1	500	500	4	20	14	10	48	ADEQUATE
Crawford	1-12-553-1	300	300	3	20	14	10	47	ADEQUATE
Dodge	1-14-488-1	8,000	5,600	3	20	14	10	47	ADEQUATE
La Crosse	1-32-652-2	250	188	3	20	14	10	47	ADEQUATE
Monroe	1-41-701-1	1,500	1,005	3	20	14	10	47	ADEQUATE
Monroe	1-41-725-725	6,000	6,000	3	20	14	10	47	ADEQUATE
Crawford	1-12-554-1	300	300	2	20	14	10	46	ADEQUATE
Crawford	1-12-576-1	2,000	2,000	2	20	14	10	46	ADEQUATE
Dane	1-13-12-2	1,400	1,400	2	20	14	10	46	ADEQUATE
Dane	1-13-479-1	14,000	12,600	2	20	14	10	46	ADEQUATE
Dane	1-13-486-1	10,000	8,000	2	20	14	10	46	ADEQUATE
Dodge	1-14-511-1	4,400	4,400	2	20	14	10	46	ADEQUATE
Iowa	1-25-73-5	4,000	4,000	2	20	14	10	46	ADEQUATE
La Crosse	1-32-654-2	650	650	2	20	14	10	46	ADEQUATE
Monroe	1-41-704-4	400	400	2	20	14	10	46	ADEQUATE
Sauk	1-56-119-2	1,800	1,800	2	20	14	10	46	ADEQUATE
Vernon	1-62-889-3	4,000	4,000	2	20	14	10	46	ADEQUATE
Rock	1-53-63-3	2,000	2,000	2	20	7	10	39	ADEQUATE
Rock	1-53-68-1	1,170	1,170	2	20	7	10	39	ADEQUATE
Sauk	1-56-292-3	1,940	1,397	2	20	7	10	39	ADEQUATE
Columbia	1-11-236-2	8,000	8,000	2	10	14	10	36	ADEQUATE
Sauk	1-56-118-3	1,940	1,940	3	10	7	10	30	EXCELLENT
Jefferson	1-28-512-1	4,000	2,500	2	10	7	5	24	EXCELLENT
Jefferson	1-28-513-1	10,000	10,000	1	10	7	5	23	EXCELLENT
Rock	1-53-522-1	3,000	3,000	1	10	7	5	23	EXCELLENT
Grant	1-22-500-1	5,000	4,000	not rated	not rated	not rated	not rated	0	not rated
Sauk	1-56-120-2	5,000	4,000	not rated	not rated	not rated	not rated	0	not rated
Sauk	1-56-397-1	1,000	500	not rated	not rated	not rated	not rated	0	not rated
Iowa	1-25-902-1	900	900	not rated	not rated	not rated	not rated	0	not rated
Jefferson	1-28-58-7	3,000	1,250	not rated	not rated	not rated	not rated	0	not rated
Columbia	1-11-8-4	3,800	2,508	not rated	not rated	not rated	not rated	0	not rated
Dodge	1-14-523-1	1,900	1,900	not rated	not rated	not rated	not rated	0	not rated
Crawford	1-12-552-8	5,000	3,000	not rated	not rated	not rated	not rated	0	not rated
Juneau	1-29-144-4	2,400	2,400	not rated	not rated	not rated	not rated	0	not rated
Juneau	1-29-204-5	2,400	2,400	not rated	not rated	not rated	not rated	0	not rated
Dane	1-13-905-1	10,000	10,000	not rated	not rated	not rated	not rated	0	not rated
Monroe	1-41-702-5	?	1,500	not rated	not rated	not rated	not rated	0	not rated

County	Site ID	Total Functional Capacity (Tons)	State Financed Functional Capacity (Tons)	Apron & Pad Score	Ceiling & Roof Score	Wall Score	Door Score	Total Score	Rating
Vernon	1-62-?-?	?	2,500	not rated	not rated	not rated	not rated	0	not rated
Green	1-23-?-?	4,000	3,200	not rated	not rated	not rated	not rated	0	not rated
Dane	1-13-?-?[1]	4,000	3,000					0	not rated
Vernon	1-62-856-1	250	250	not rated	not rated	not rated	not rated	0	not rated
Vernon	1-62-857-1	550	550	not rated	not rated	not rated	not rated	0	not rated
Vernon	1-62-884-2	650	650	not rated	not rated	not rated	not rated	0	not rated
Vernon	1-62-894-2	1,333	500	not rated	not rated	not rated	not rated	0	not rated
SW Averages	--	--	--	2.5	23.5	14.1	11.5	51.7	DECLINING
SW Totals	--	196,973	176,428	--	--	--	--	--	

[1] Shed has been let and construction will begin in 2019. Should be ready for 2019/2020 winter

4 Conclusions

STORAGE NEEDS

This report documents a need for more salt storage in the State. Because each county is responsible for maintaining its own supply of salt, it is necessary to consider the storage needs of individual counties. The aggregate shortfall of state financed functional target storage capacity is 98,538 tons. This shortage is offset by the 29 counties that meet or exceed the storage target. Statewide, relative to the target functional capacity, there is a net shortfall of about 51,412 tons of storage capacity. The northwest region is furthest from its target capacity (the region currently has only 77% of its target capacity of 137,851 tons). When building more storage capacity, it may be advantageous to meet some of that need with a regional approach that allows salt to be distributed among multiple counties as the need arises, especially later into the season.

The salt shed condition report indicates that 11% of the State's functional storage capacity is made up of sheds that are in poor condition and need repair or replacement. This translates into an additional 66,734 tons of the State's functional storage capacity requiring repair or replacement. The region with the greatest percentage of its storage capacity in poor condition is the North Central Region (24 percent of State financed functional capacity is in poor condition).

Priority for salt shed construction should be focused in the counties with the greatest percentage gap between current and target storage, counties with sheds in poor condition, and to counties with interstate and priority routes. Counties with less than 50% of targeted storage include Barron, Burnett, Calumet, Pepin and Saint Croix. Of these counties, Saint Croix is the only one with interstate routes.

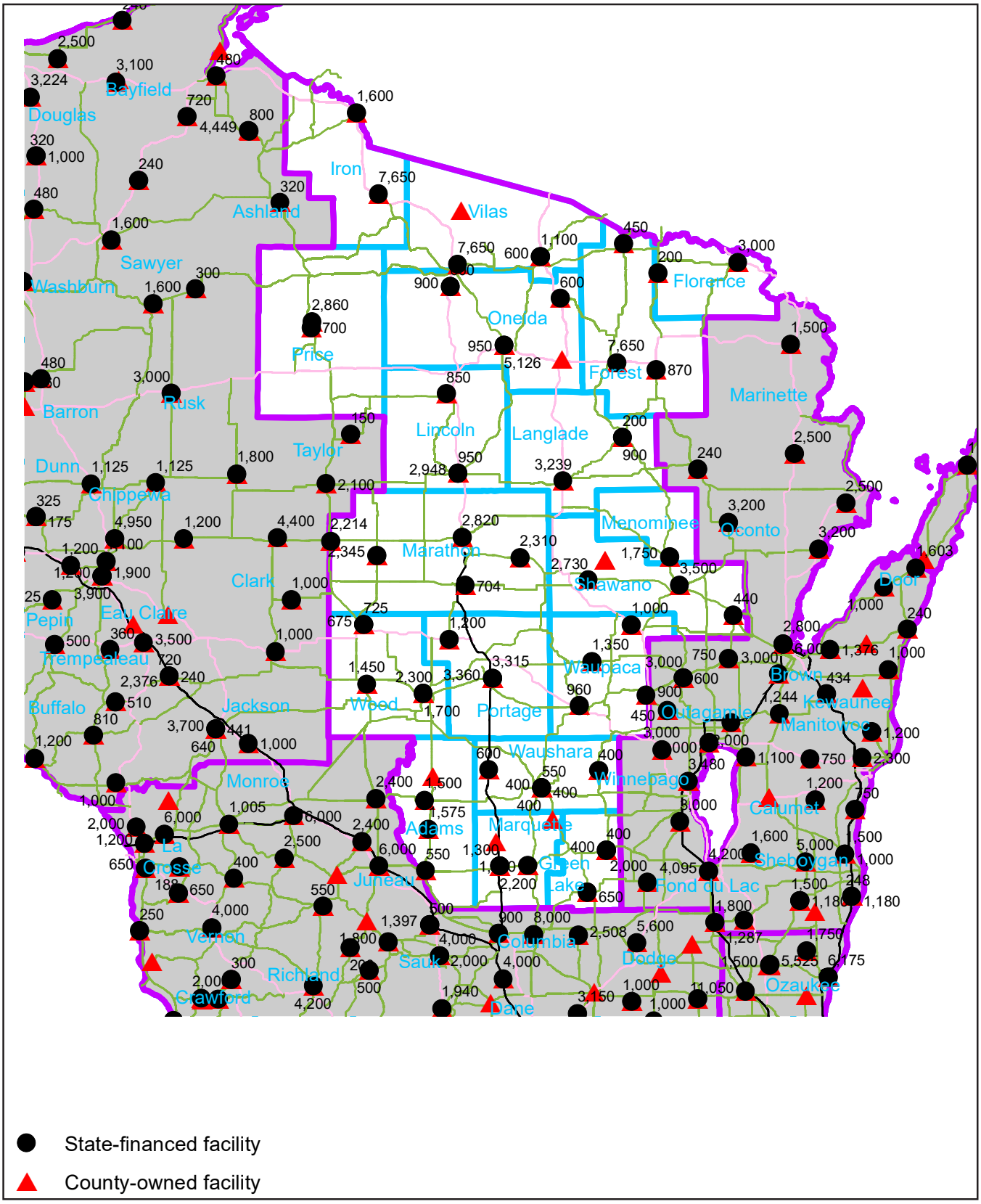
FINANCIAL NEEDS

A new storage shed, if constructed with a conventional wood frame design, costs about $75-250 per ton of storage. Larger sheds are more efficient and cost-effective than smaller ones. Assuming the midpoint of this cost range, the 98,538 tons of additional storage needed to meet the target capacity of 125 percent of the average annual use represents a potential cost of about $16.0 million. The 66,734 tons of storage facilities needing repair or replacement (sheds in poor condition) could cost up to $10.8 million if simply replaced, but some of those deficiencies can be resolved with less costly repairs.

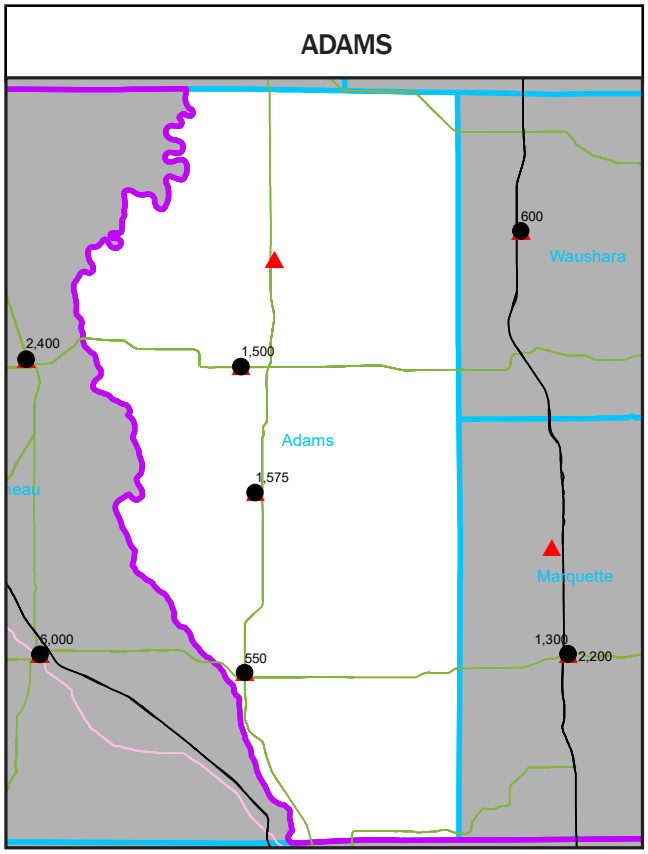
Dodge County, Site ID 1-14-33-1

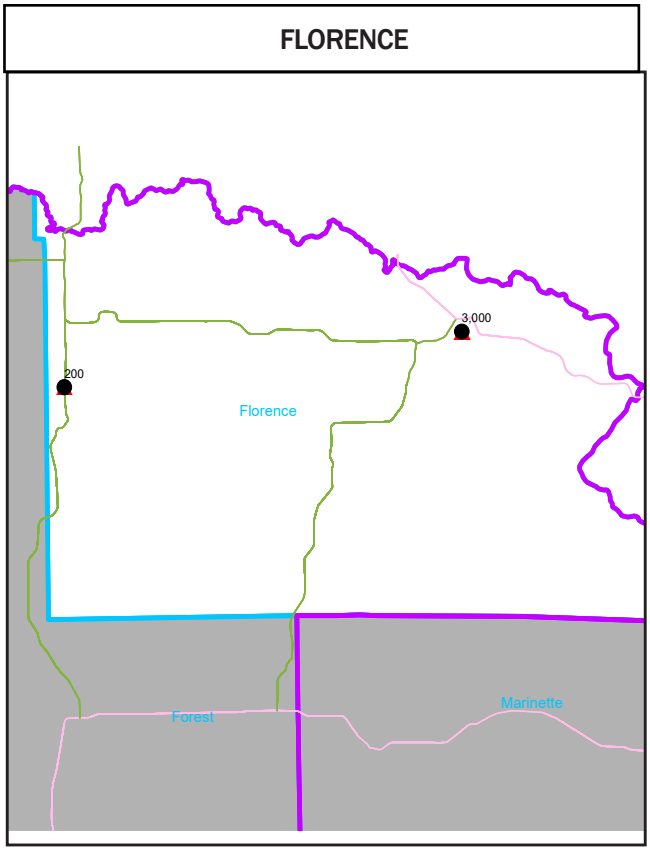
Appendix

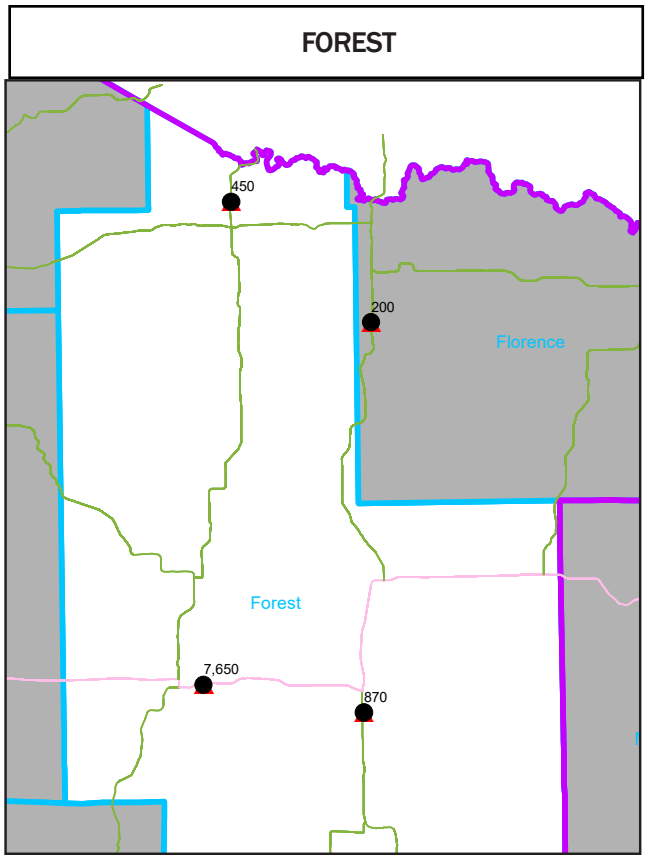
North Central Region Salt Sheds

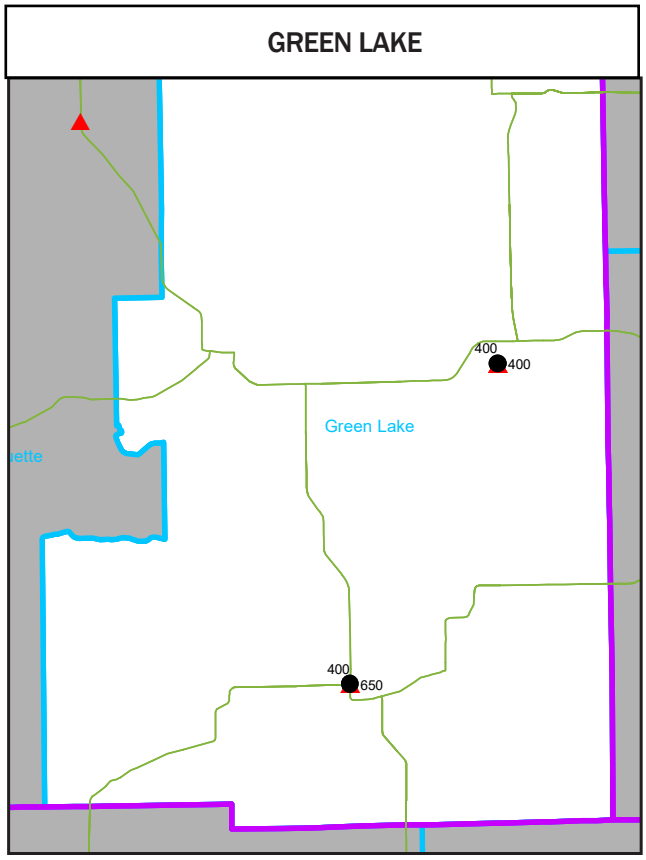


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

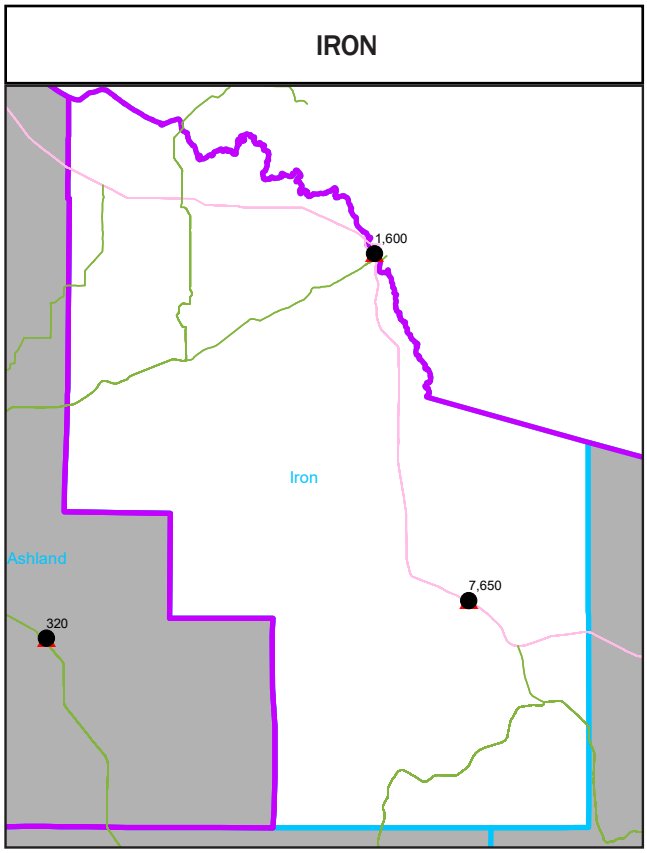


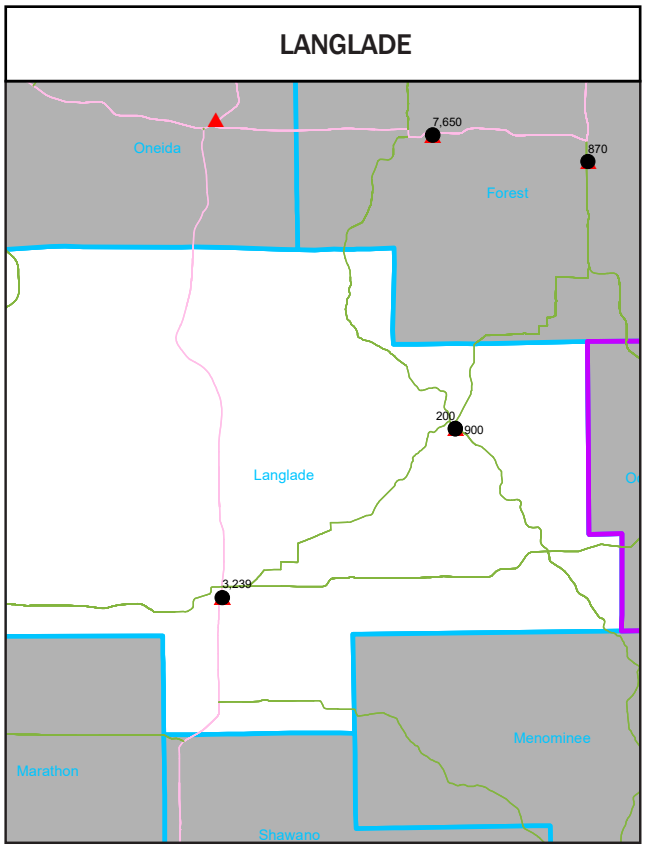


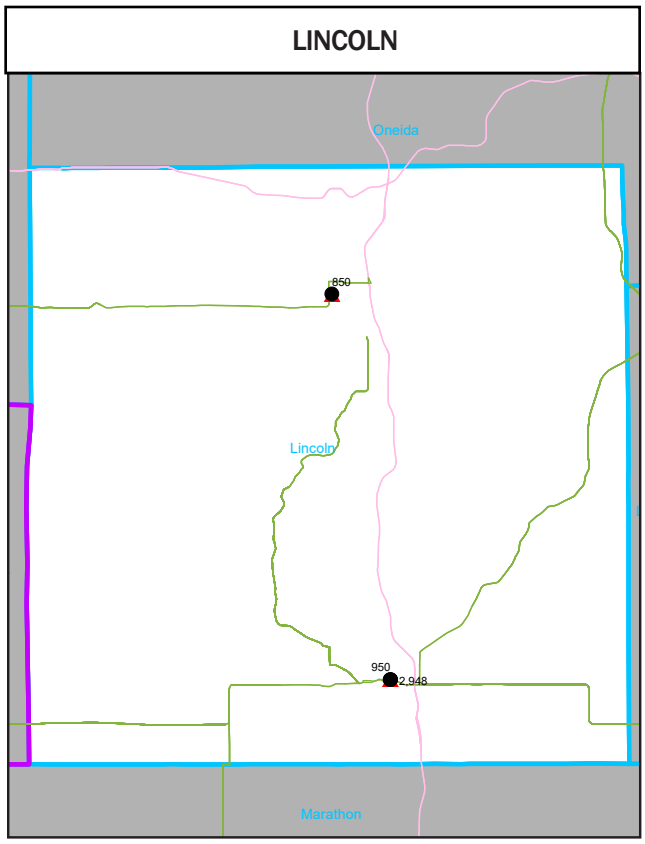


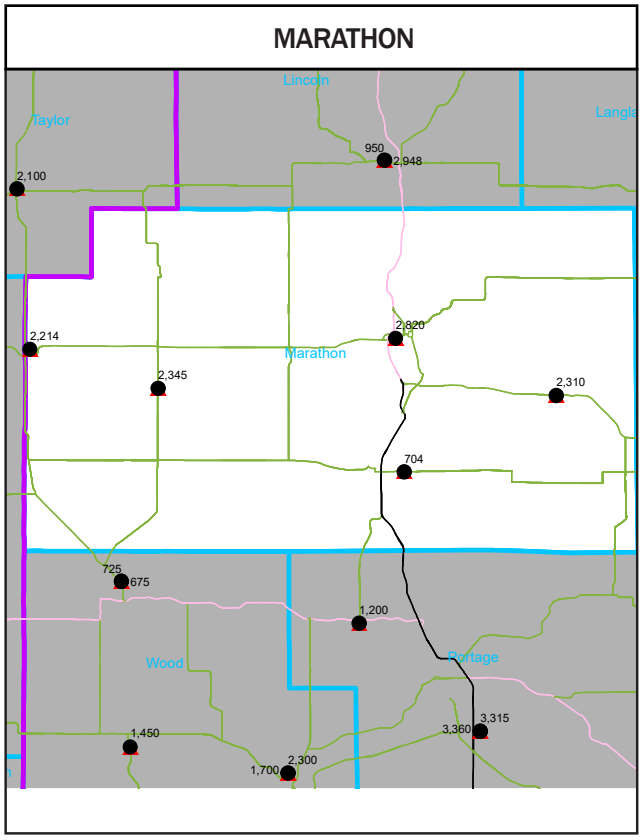


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.









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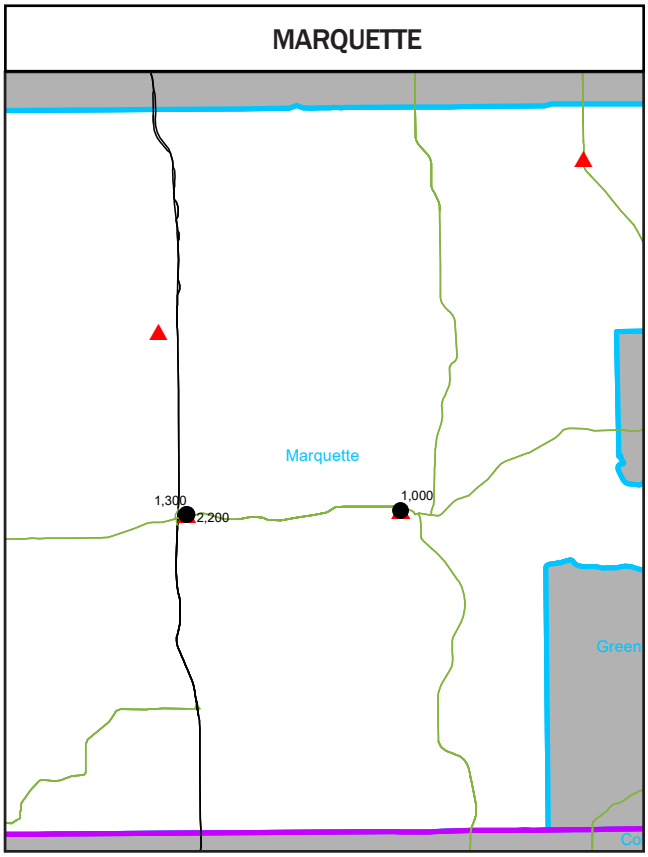
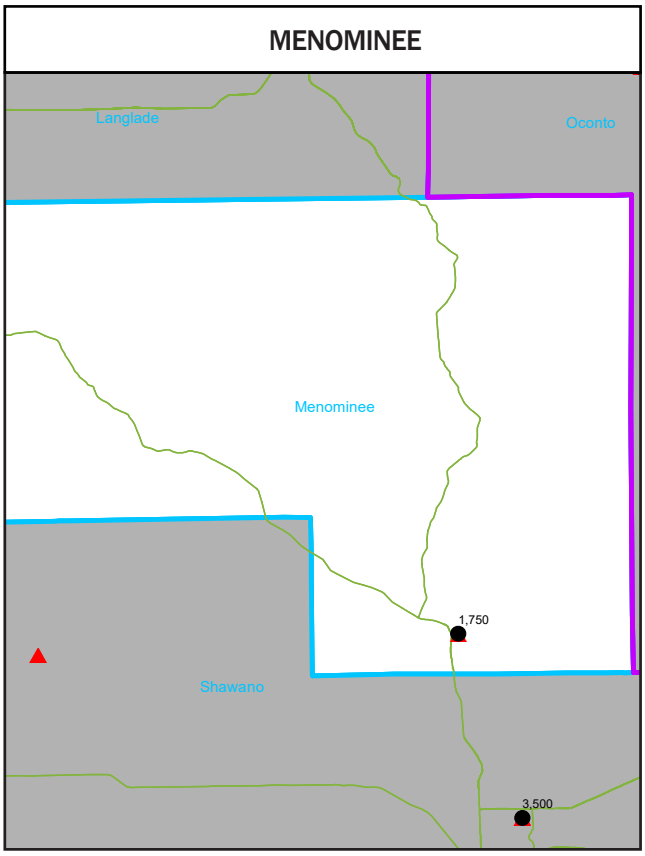
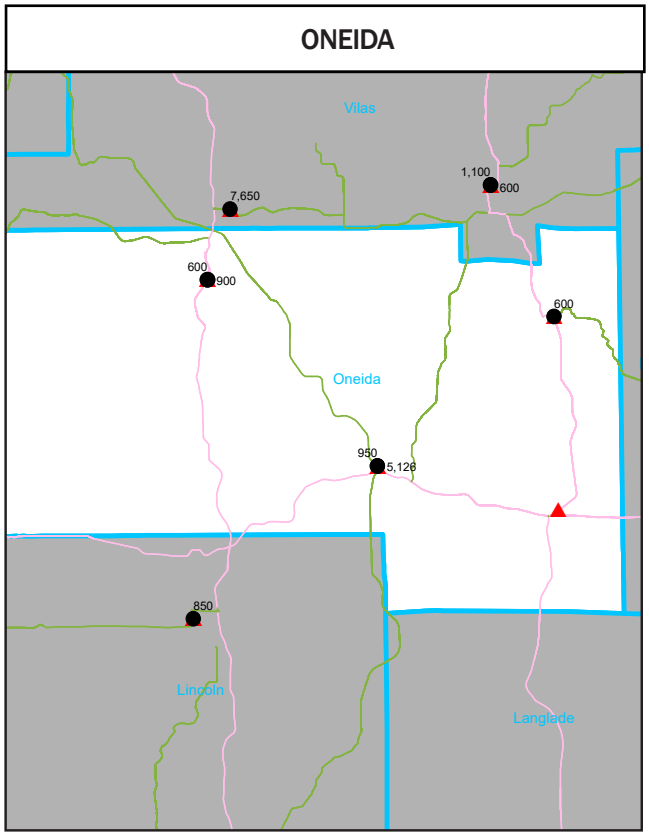
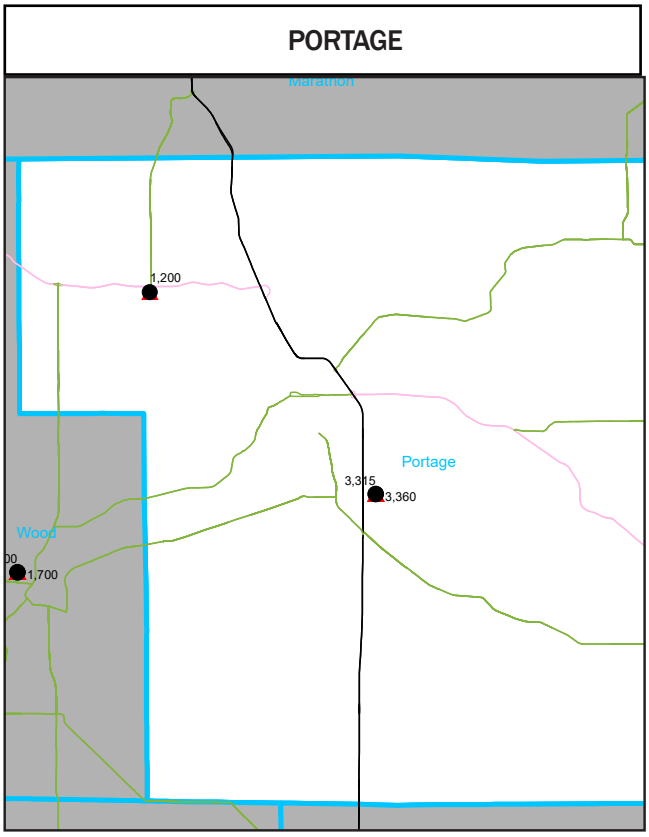


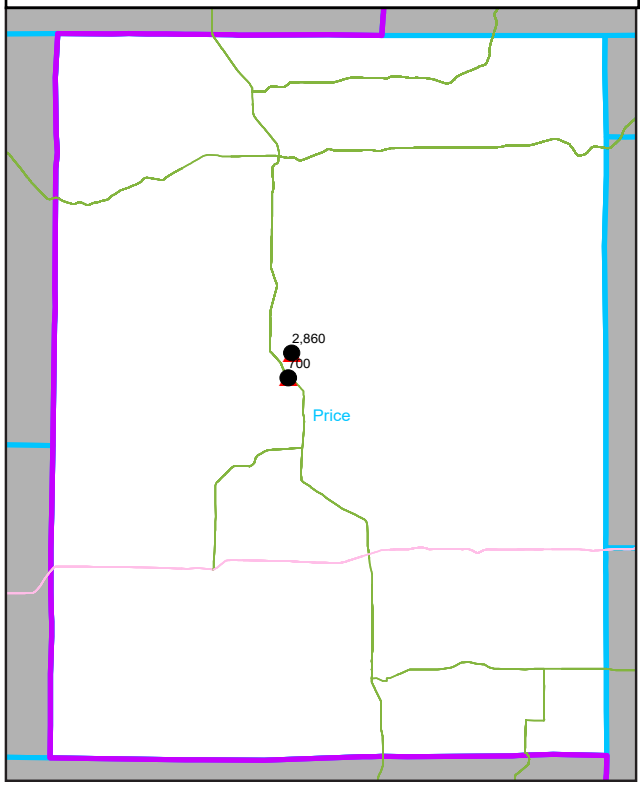




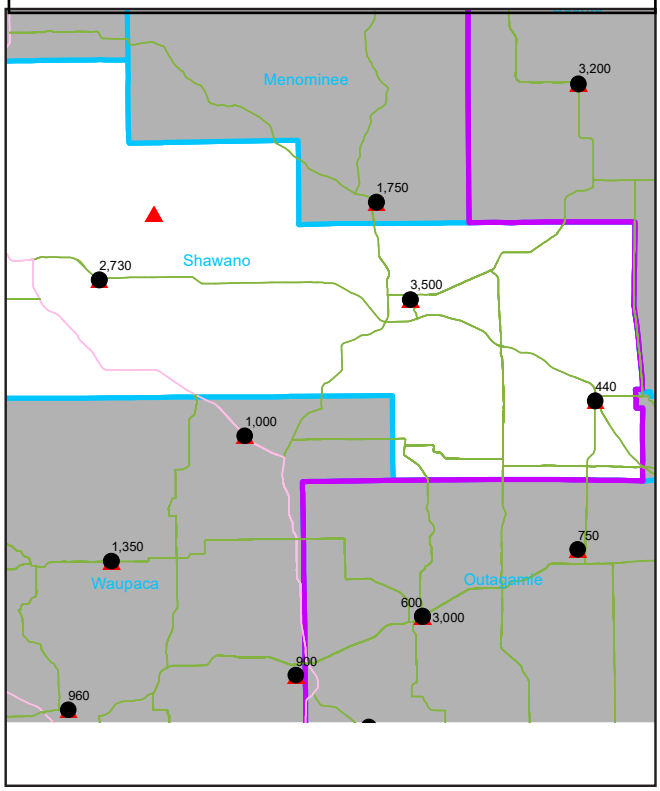


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

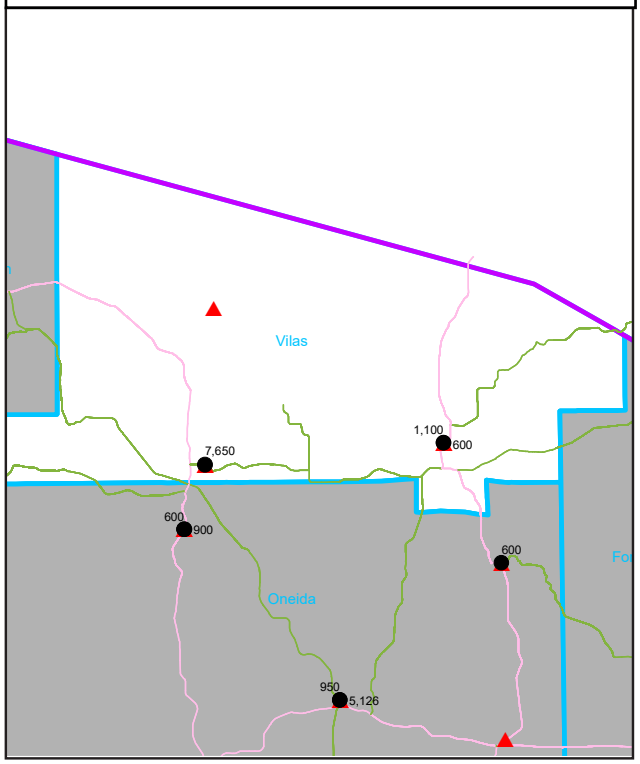
PRICE



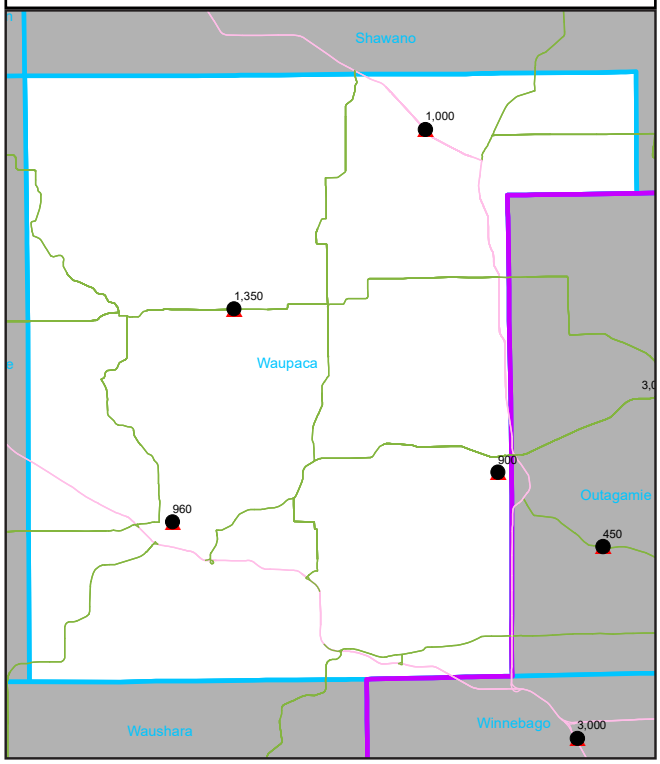
SHAWANO



VILAS



WAUPACA



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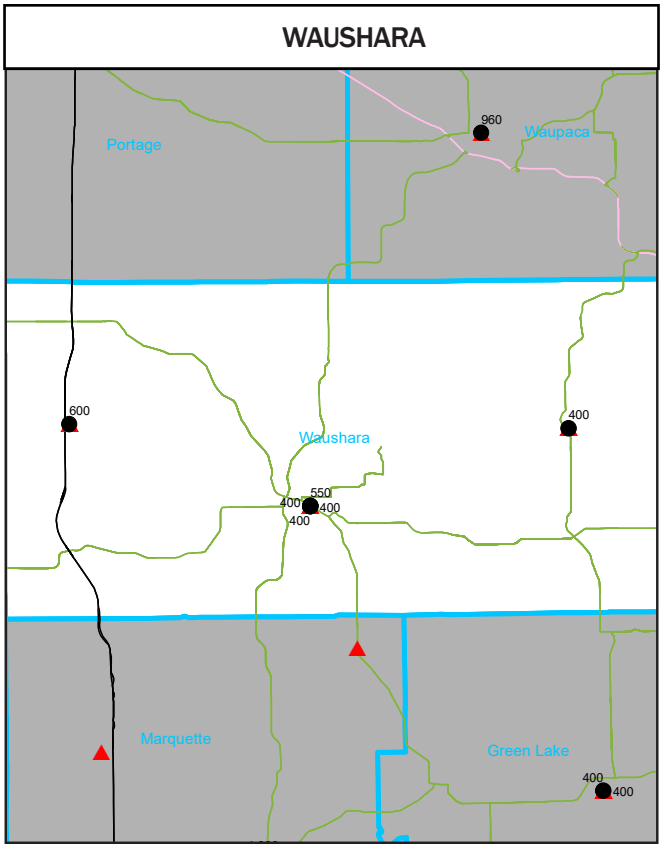
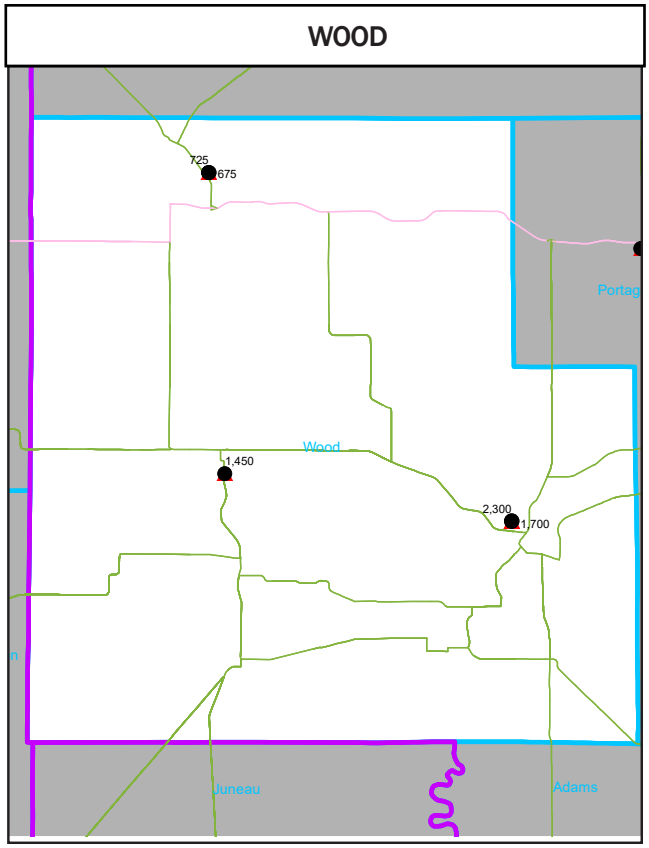
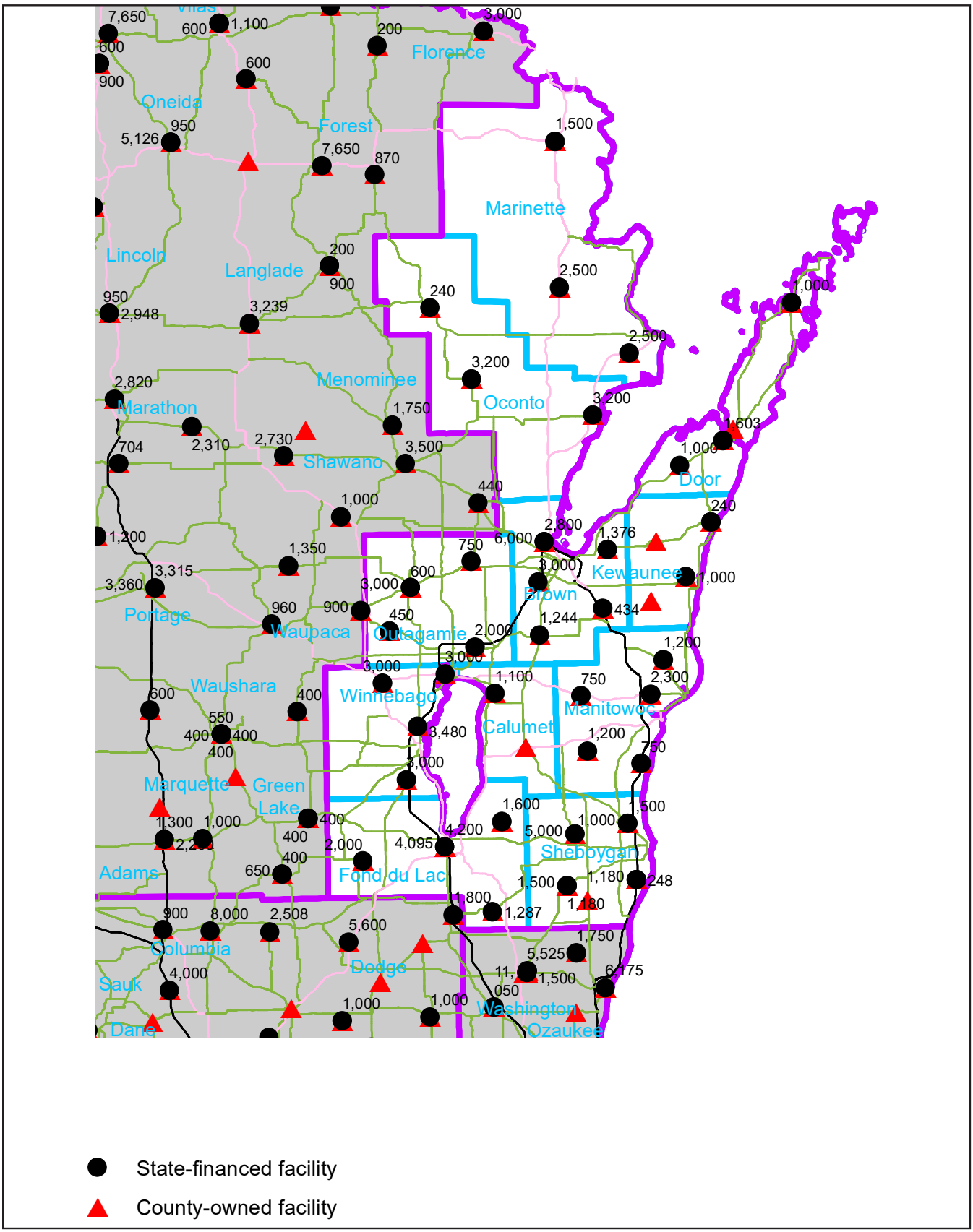




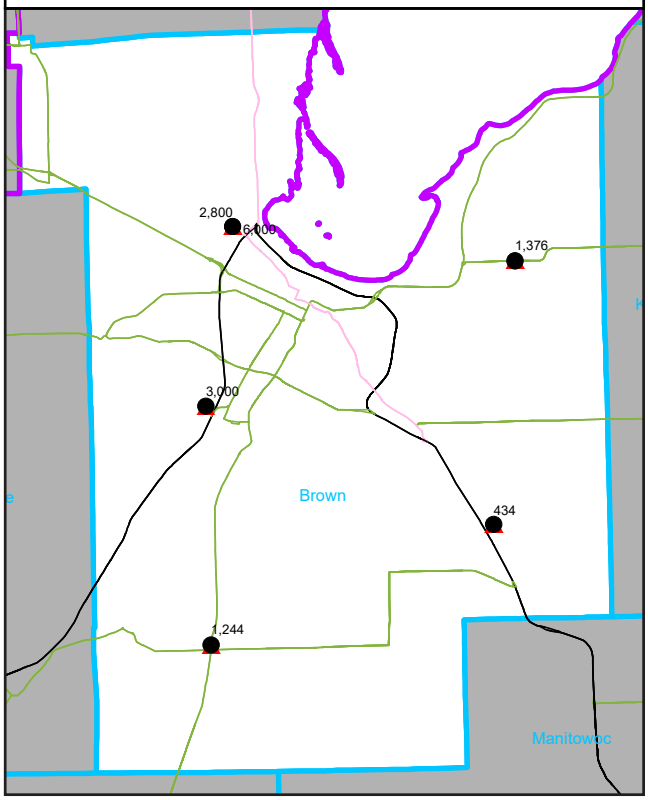
Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

Northeast Region Salt Sheds

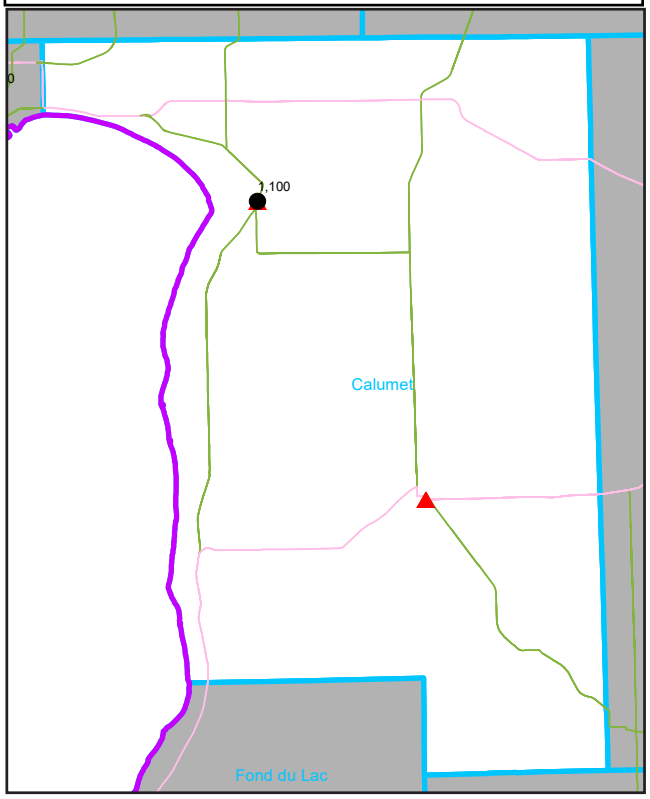


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

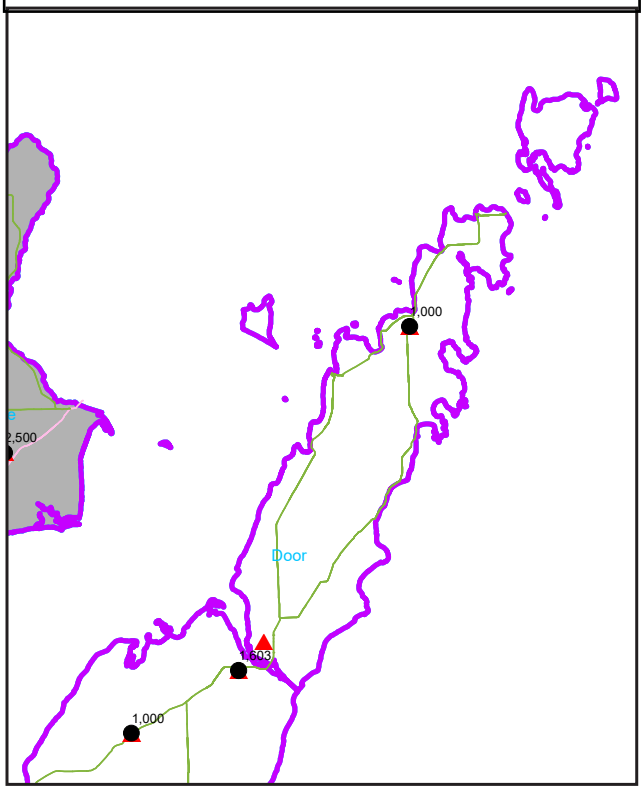
BROWN



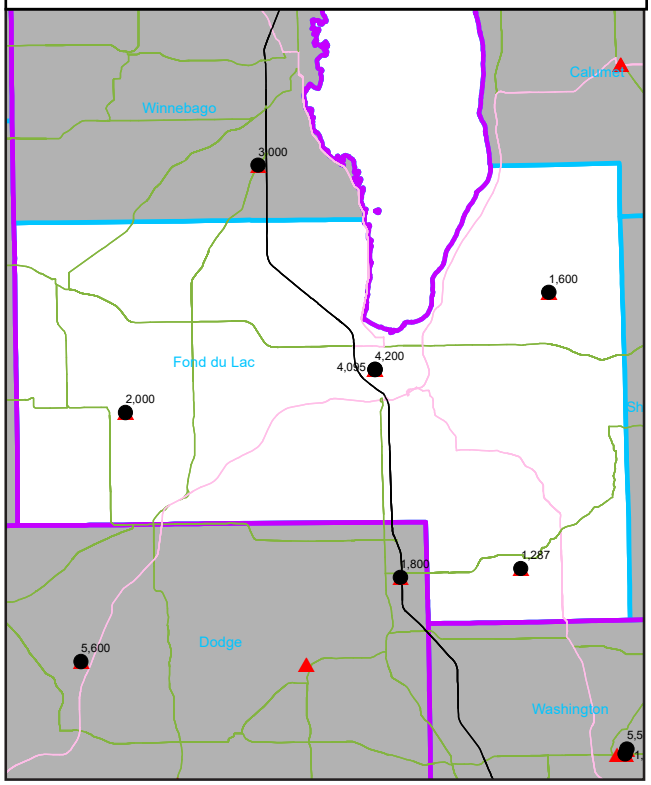
CALUMET



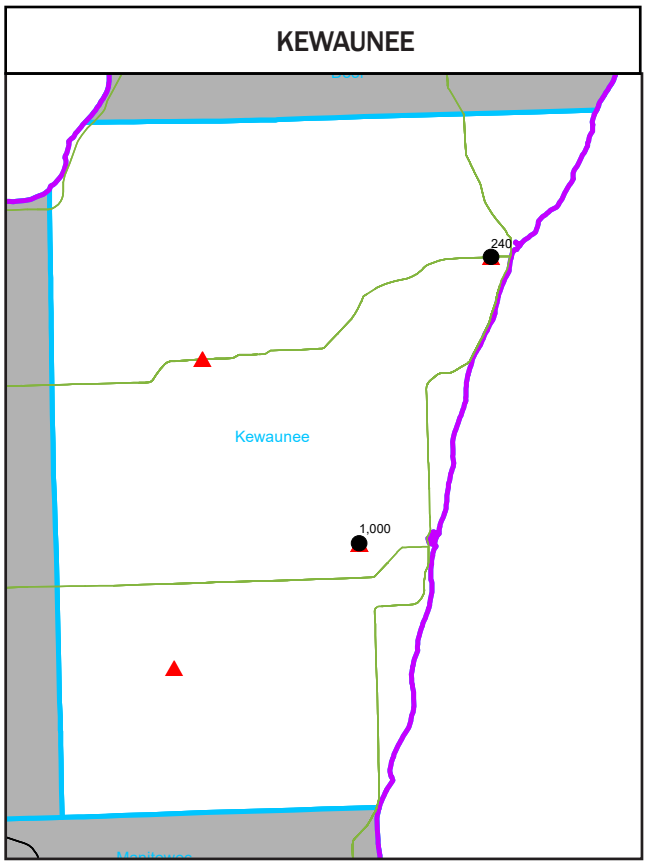
DOOR

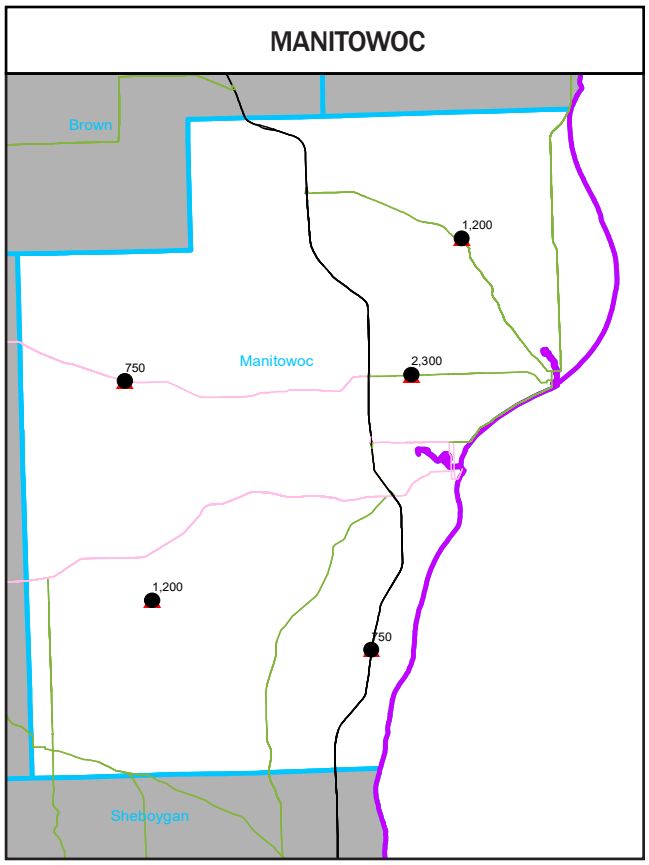


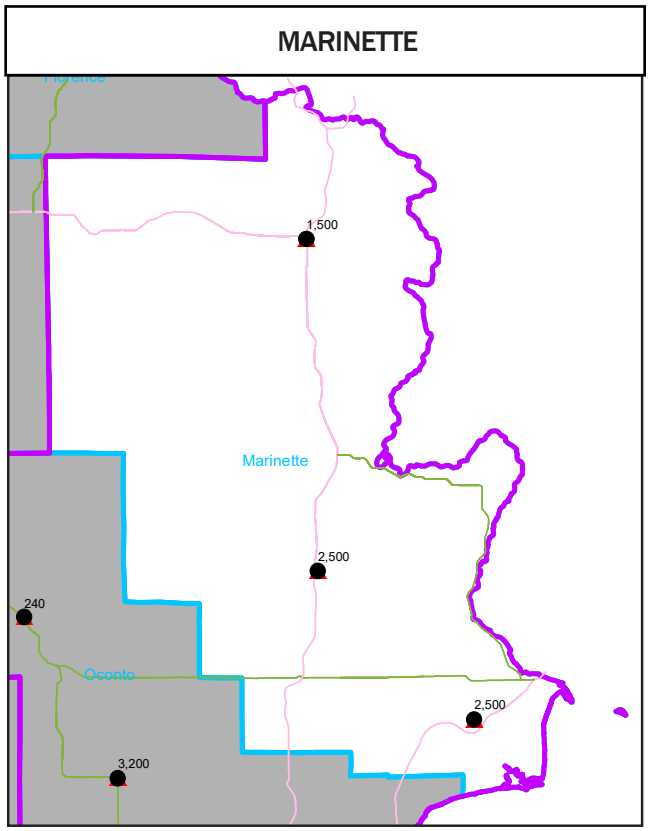
FOND DU LAC

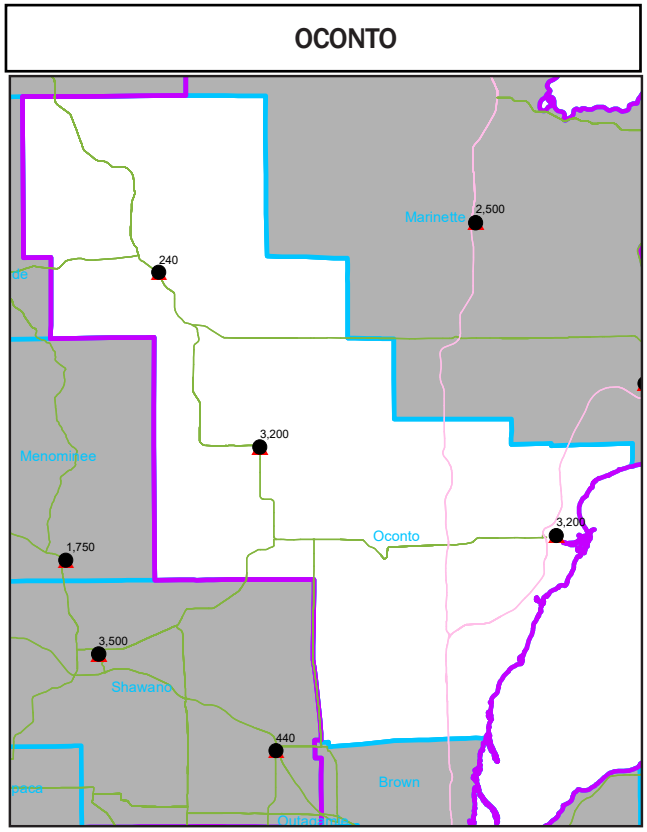


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.









Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

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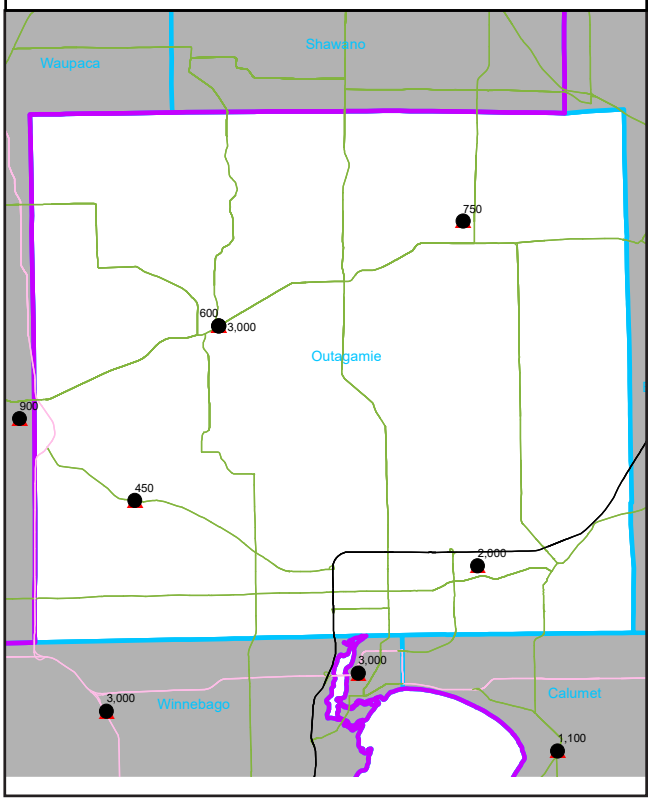
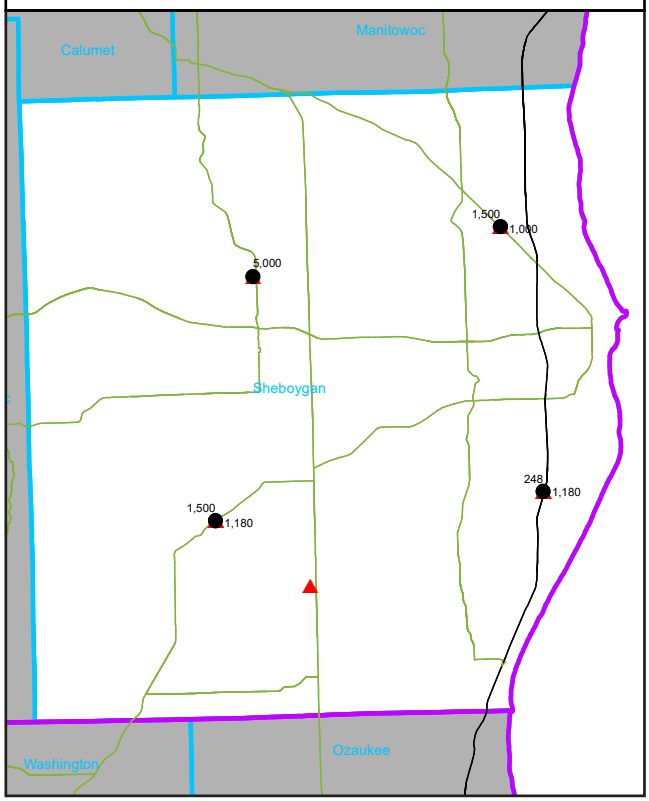


SHEBOYGAN



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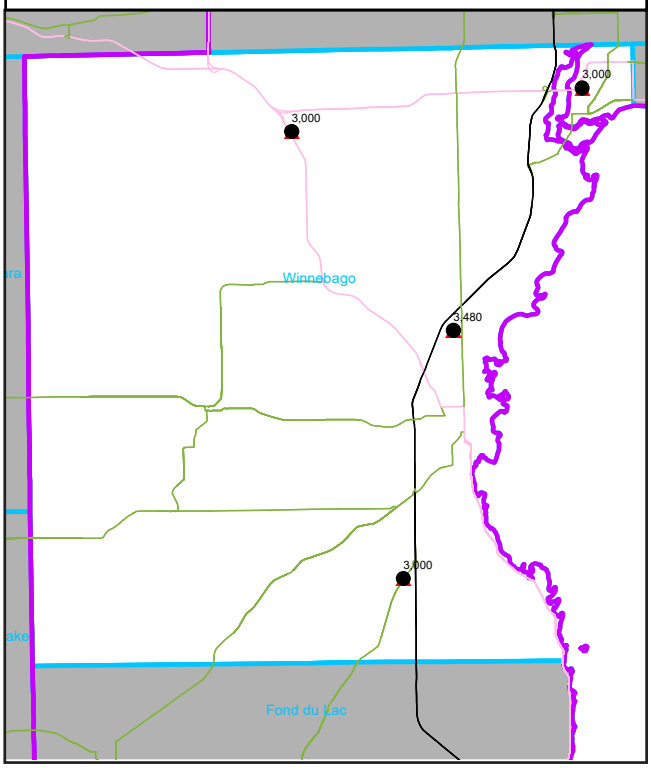
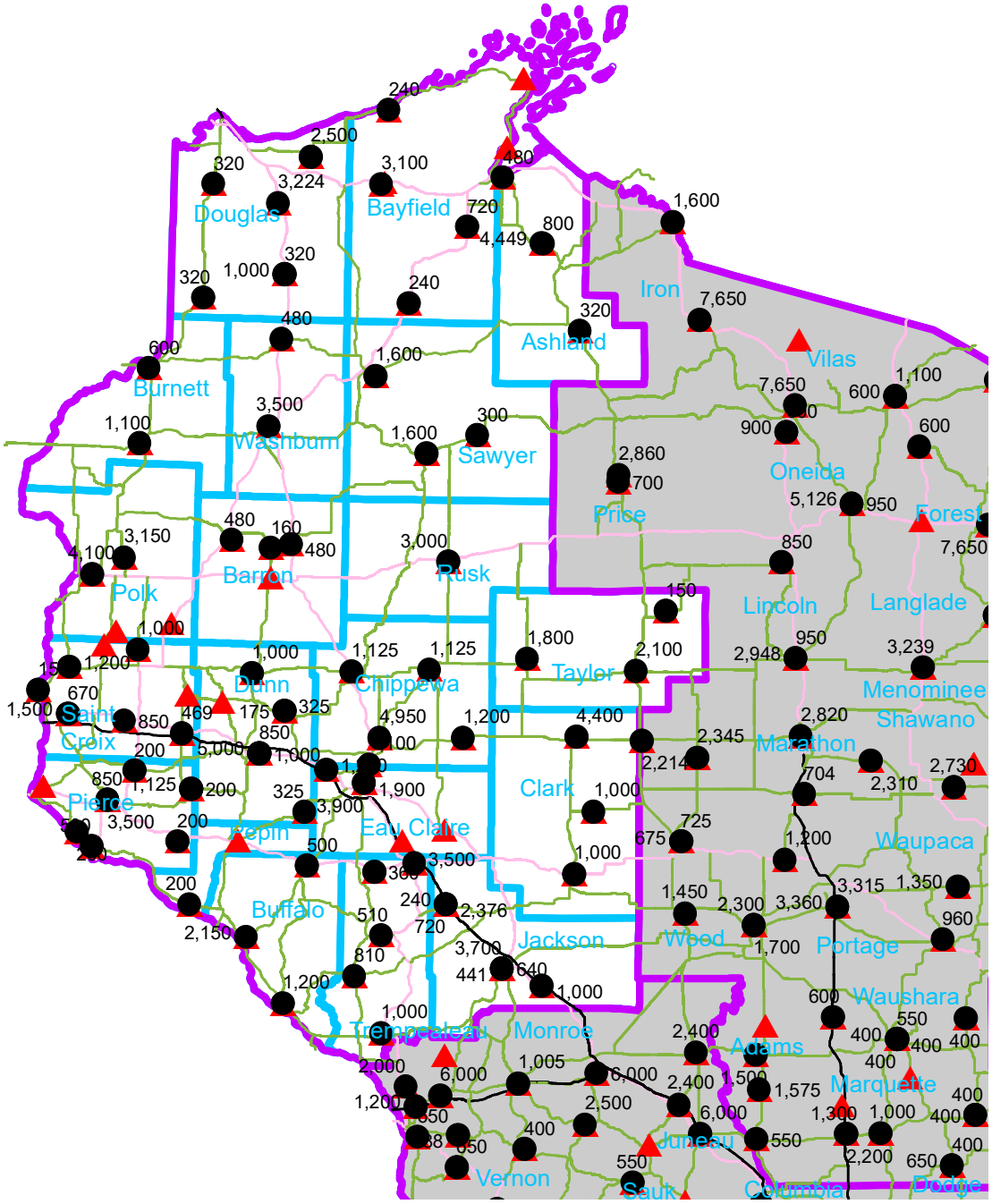


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

Northwest Region Salt Sheds

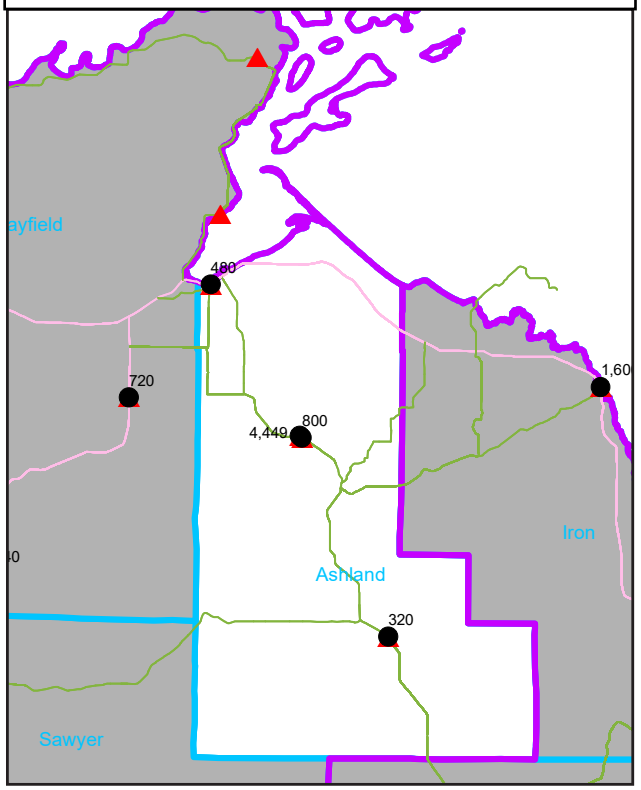


State-financed facility

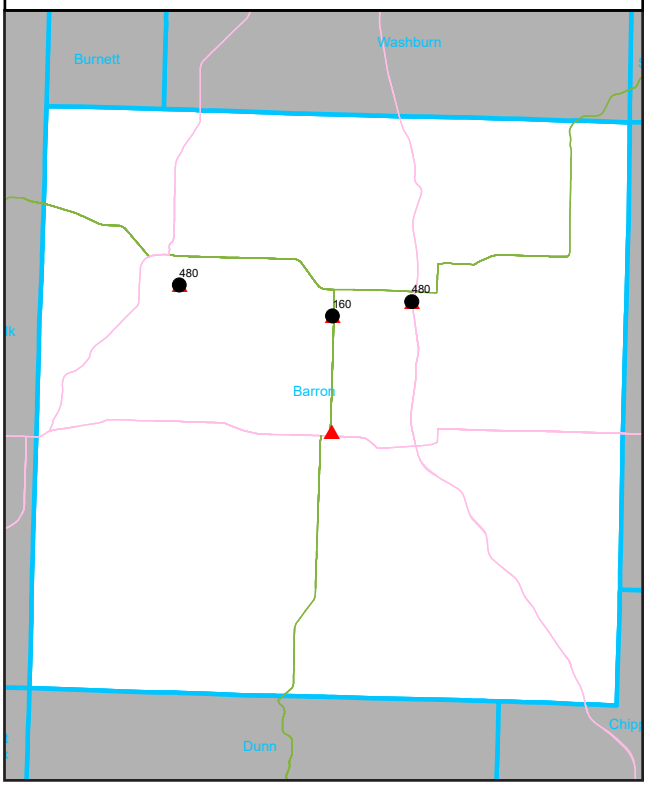
County-owned facility

Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

ASHLAND



BARRON



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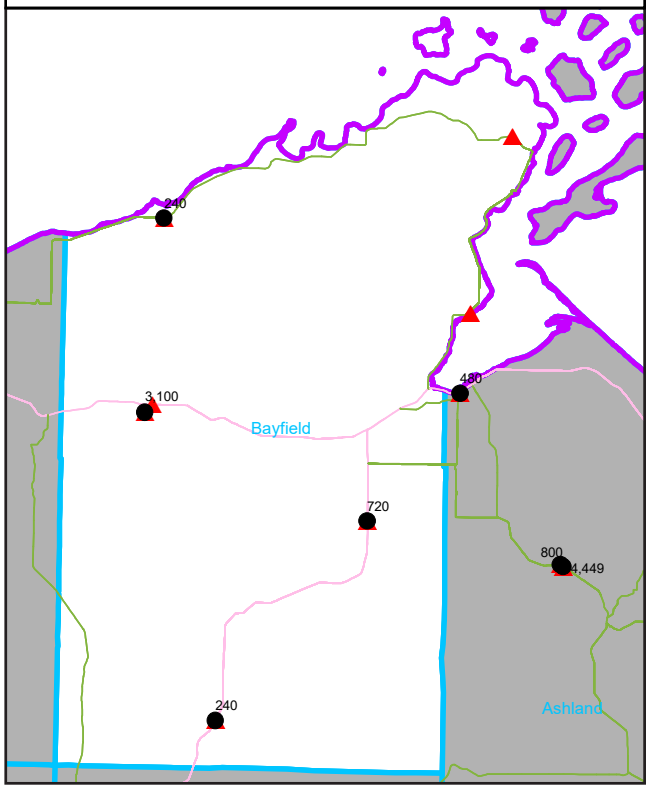

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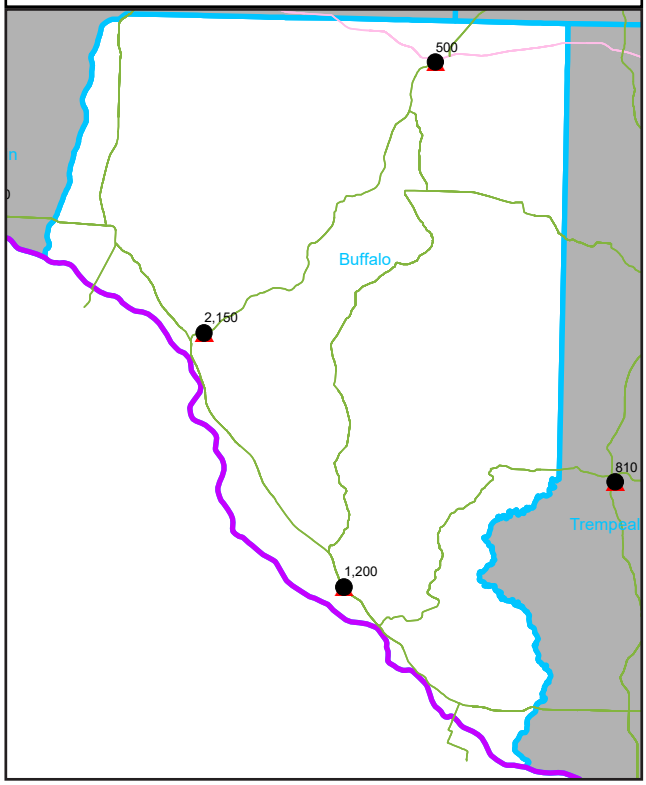

Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

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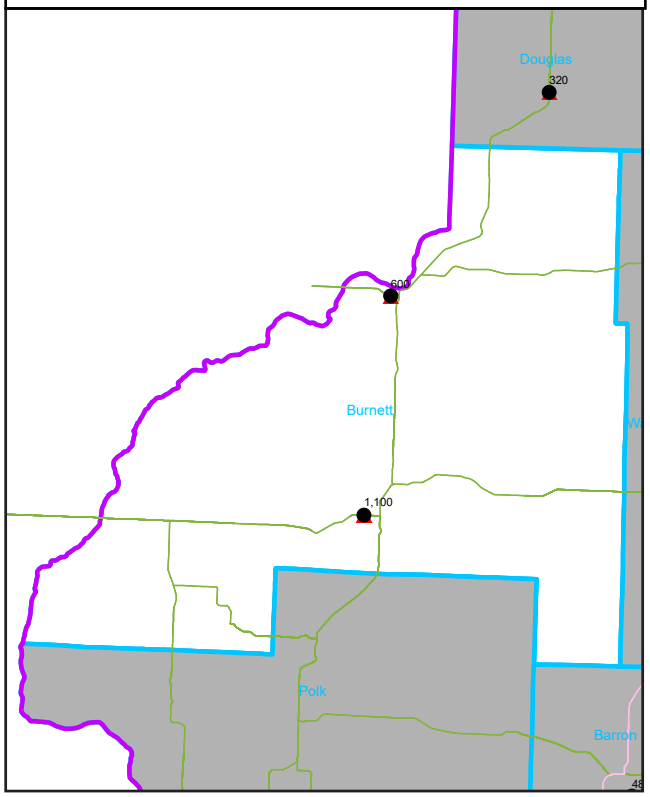
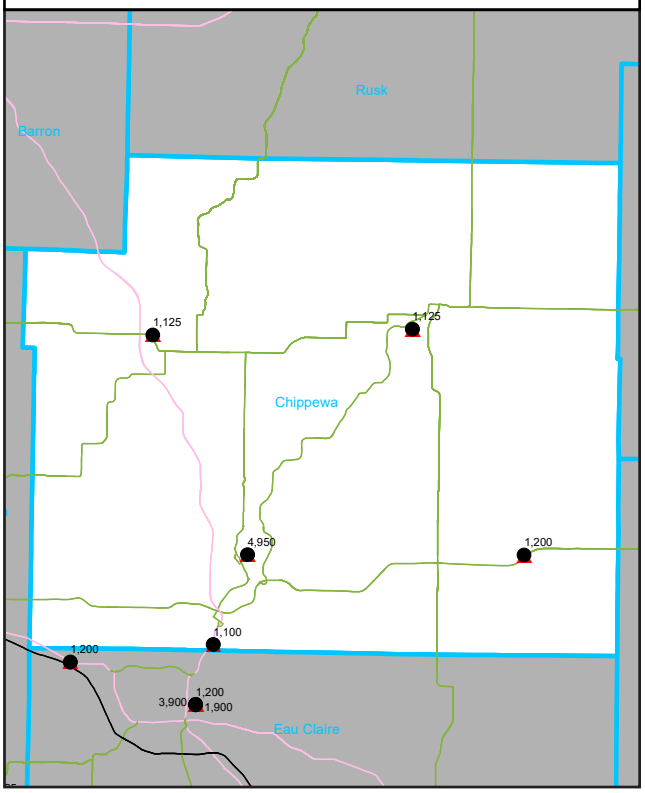
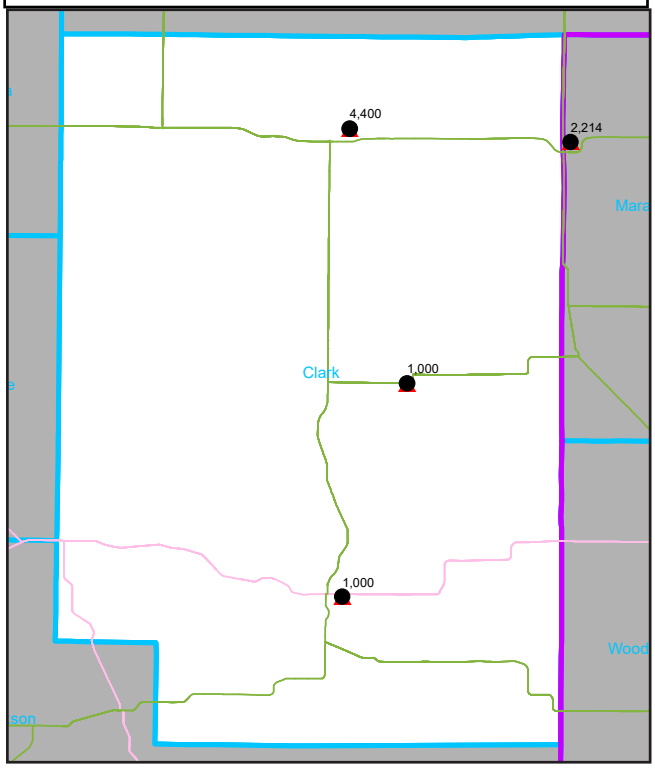


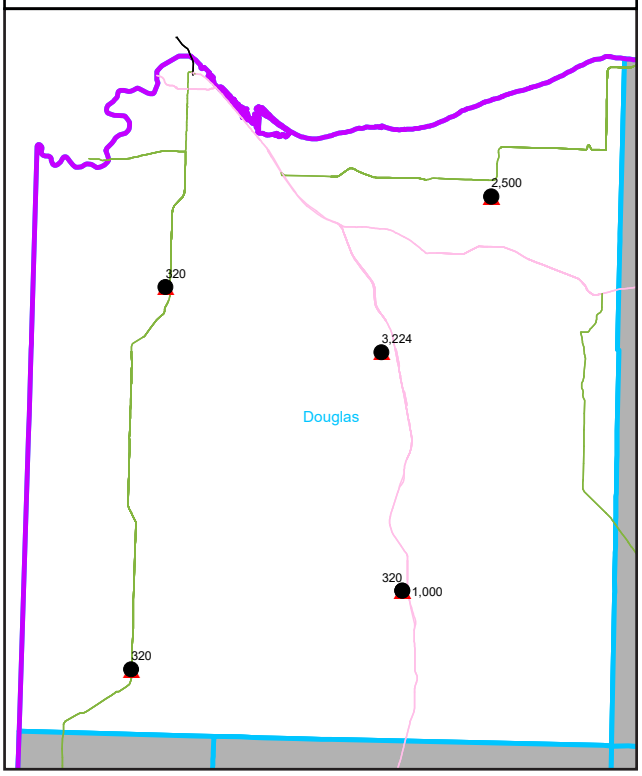
CHIPPEWA



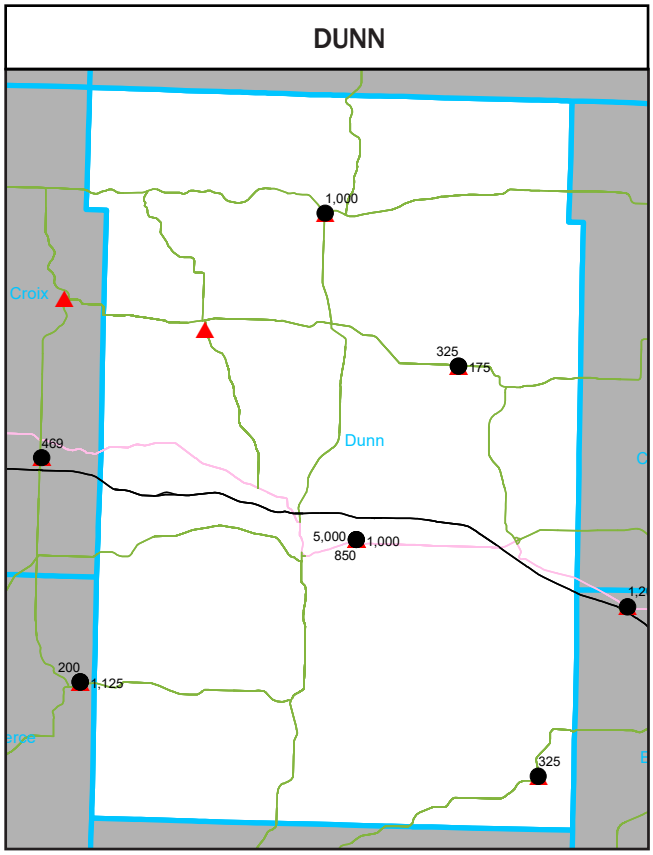
CLARK

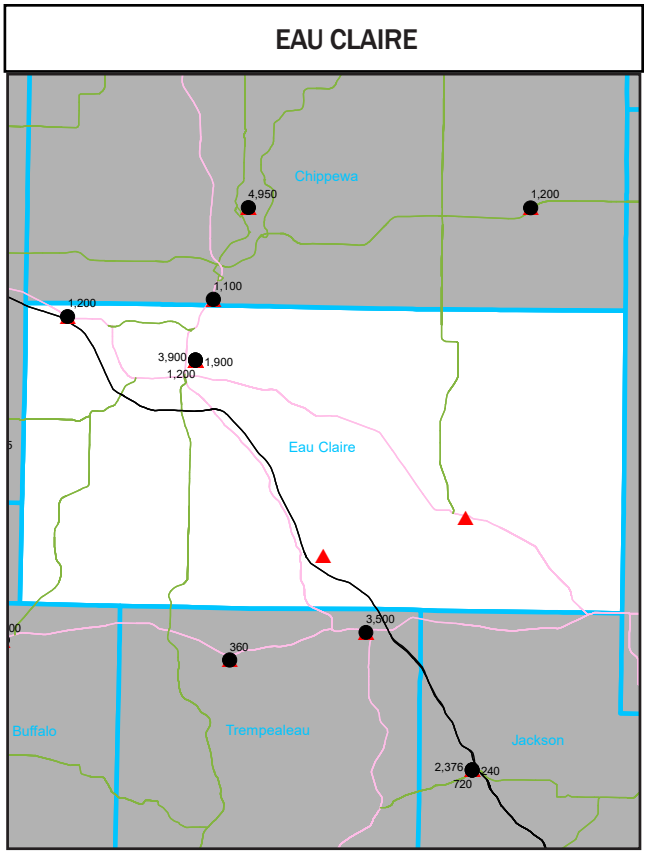


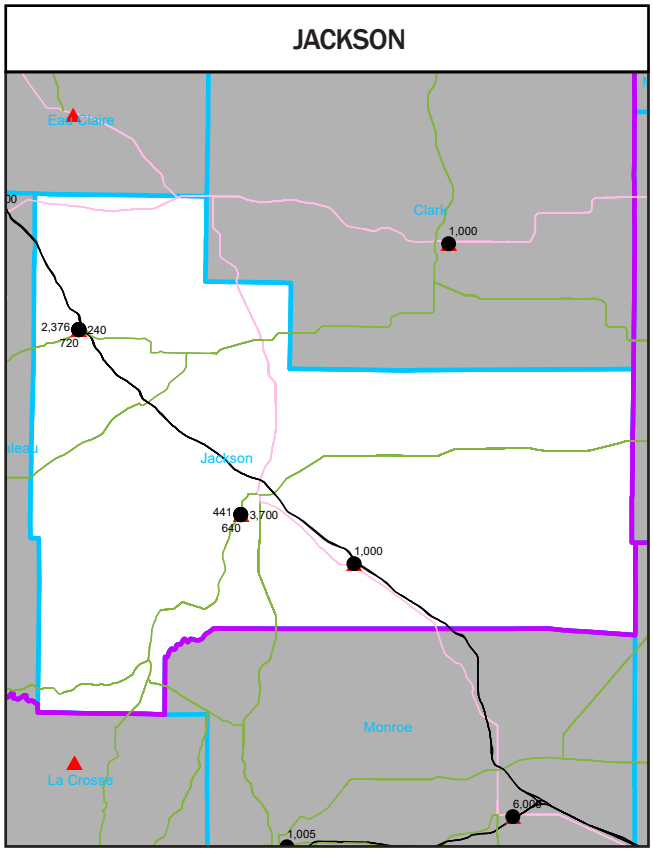
DOUGLAS

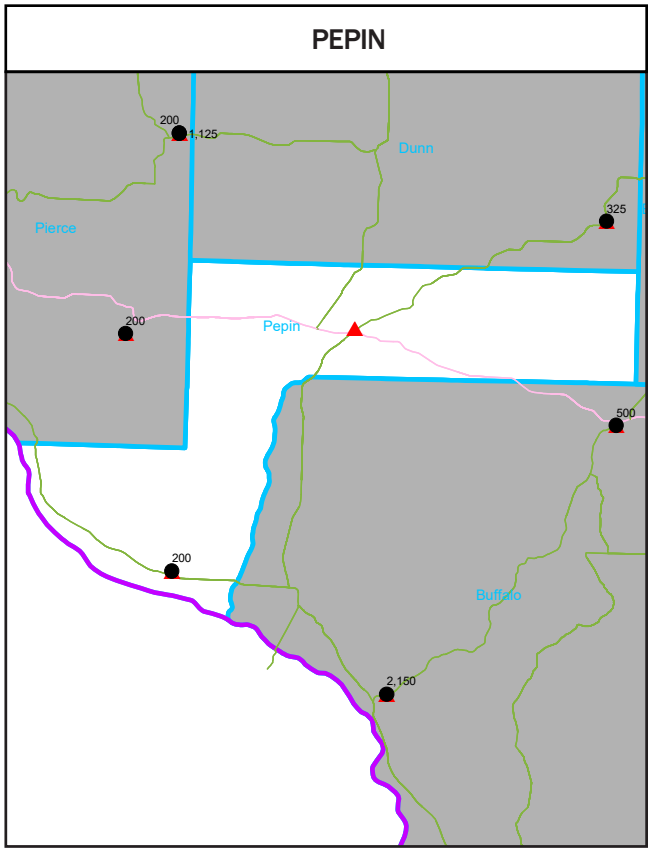


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

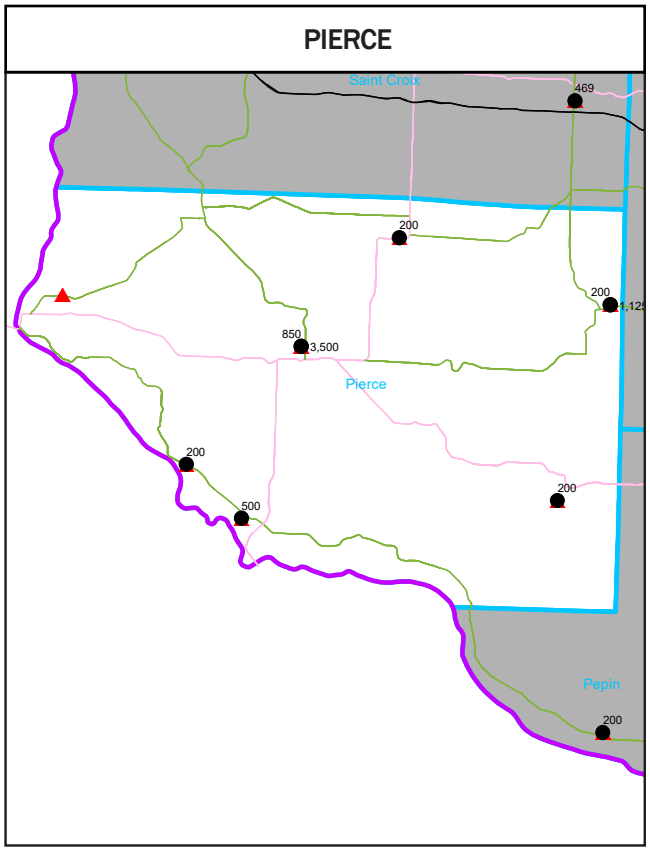


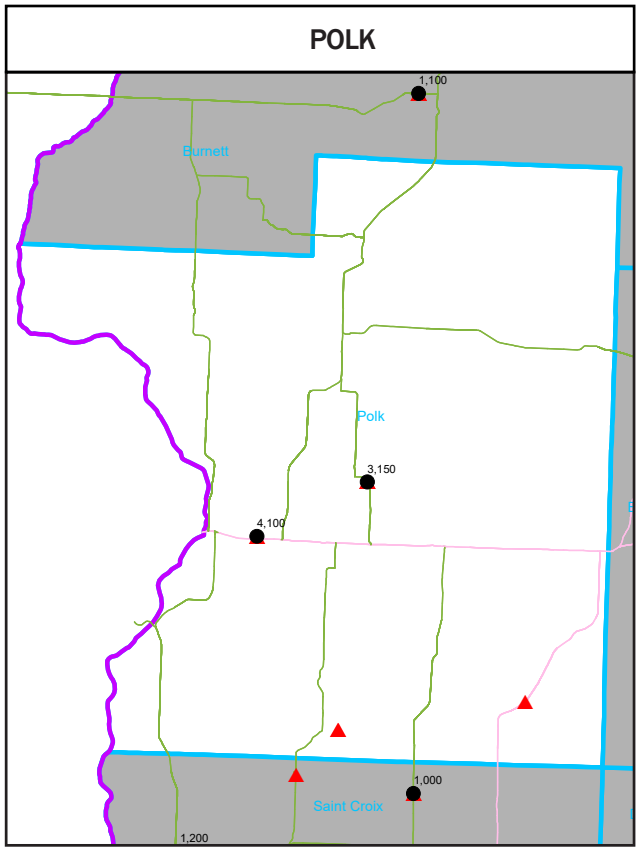


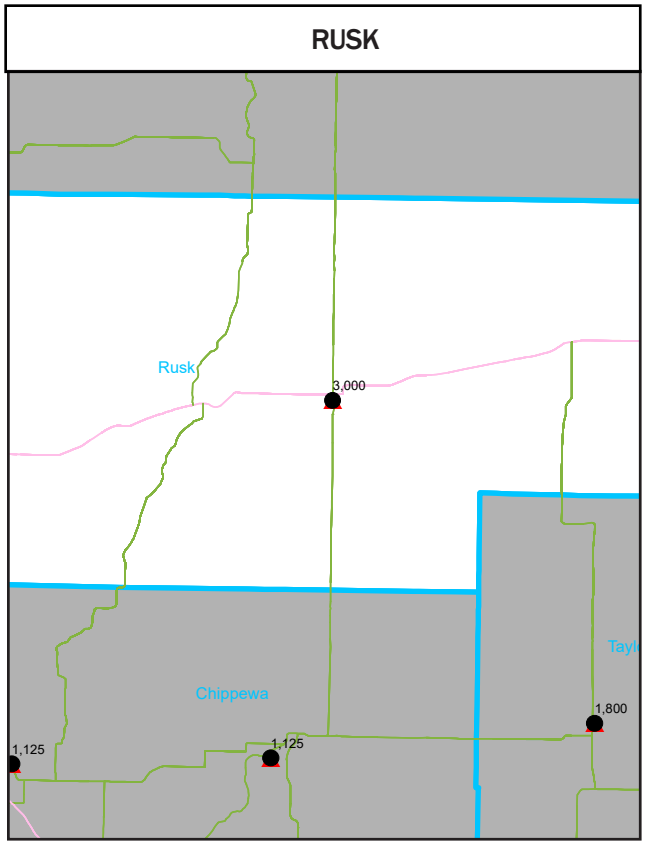


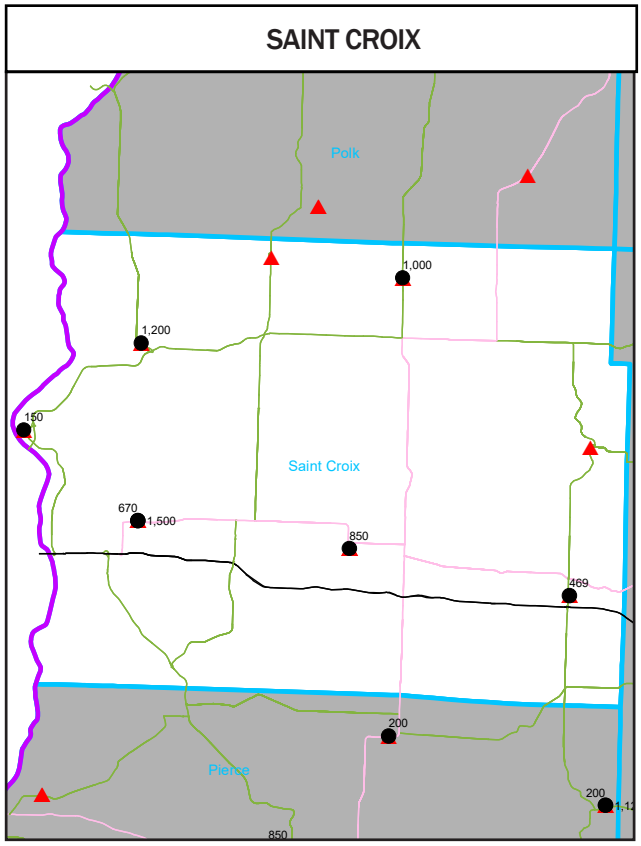


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

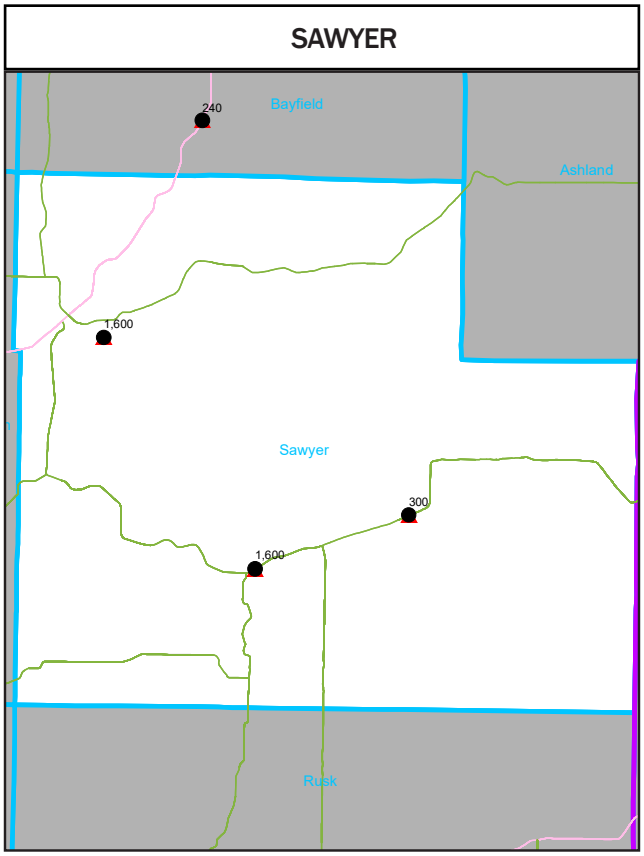


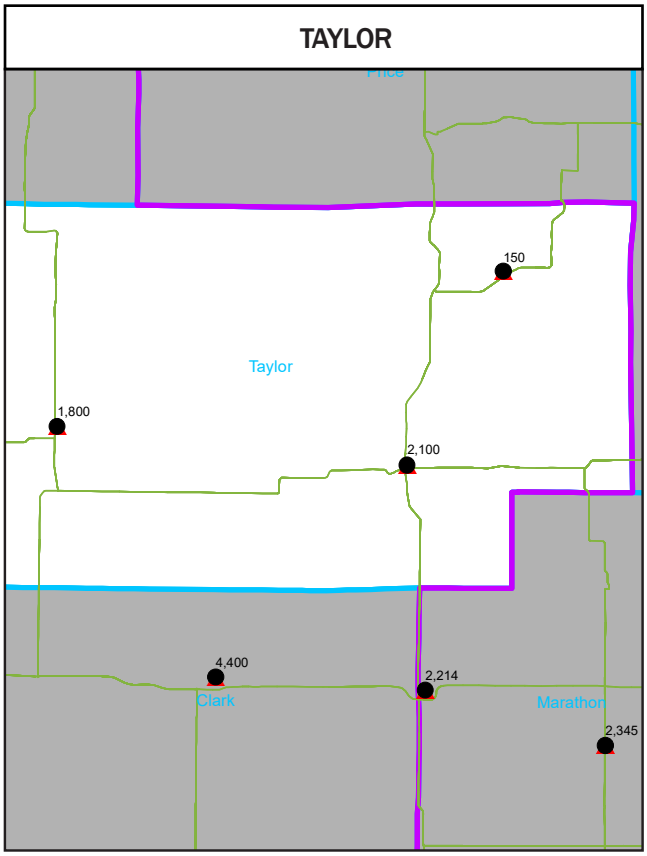


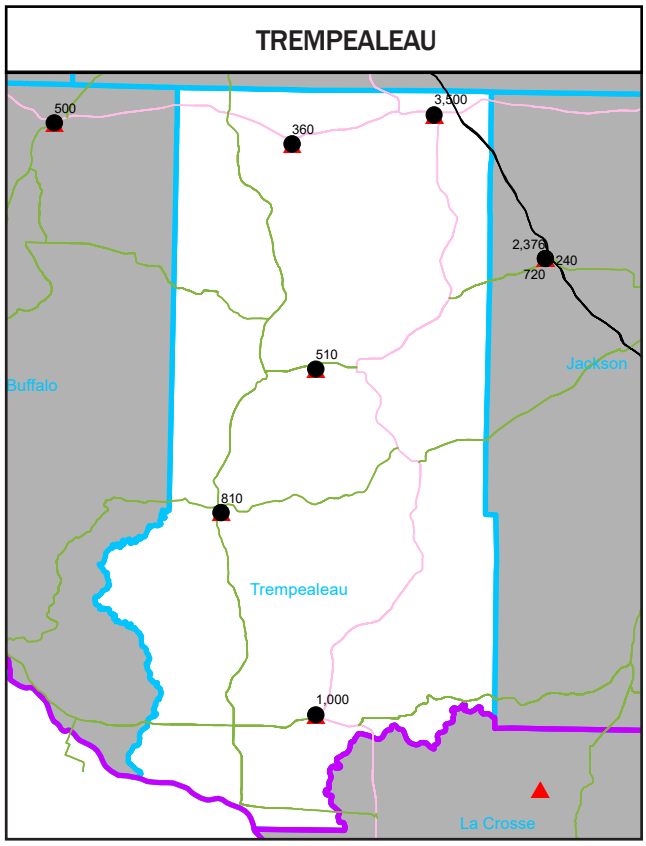


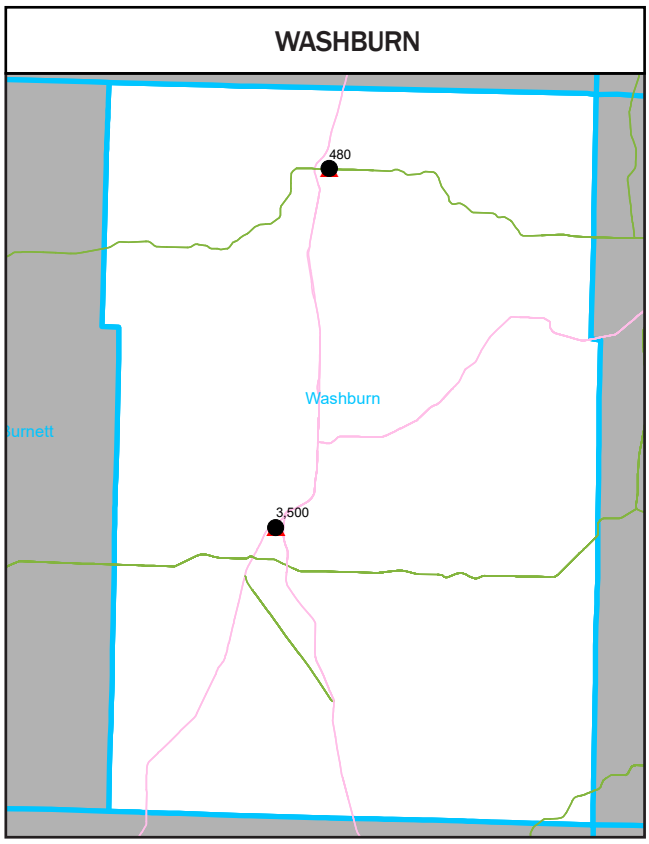


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.



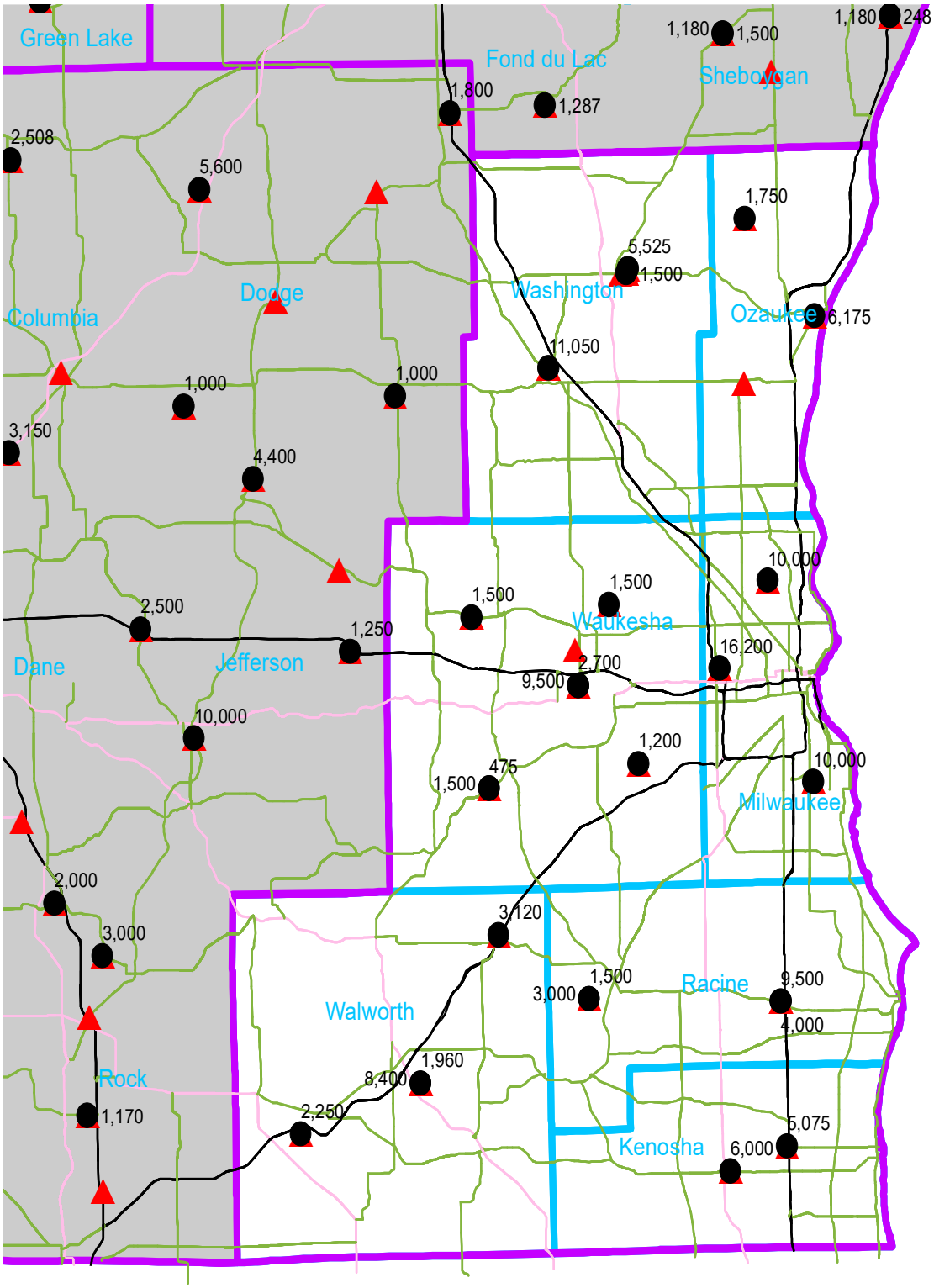






Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

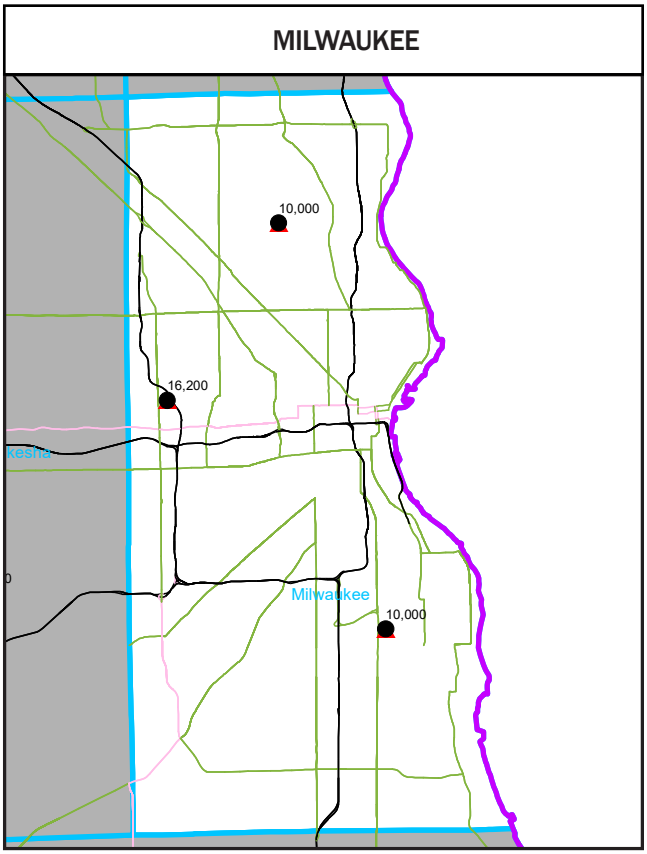
Southeast Region Salt Sheds

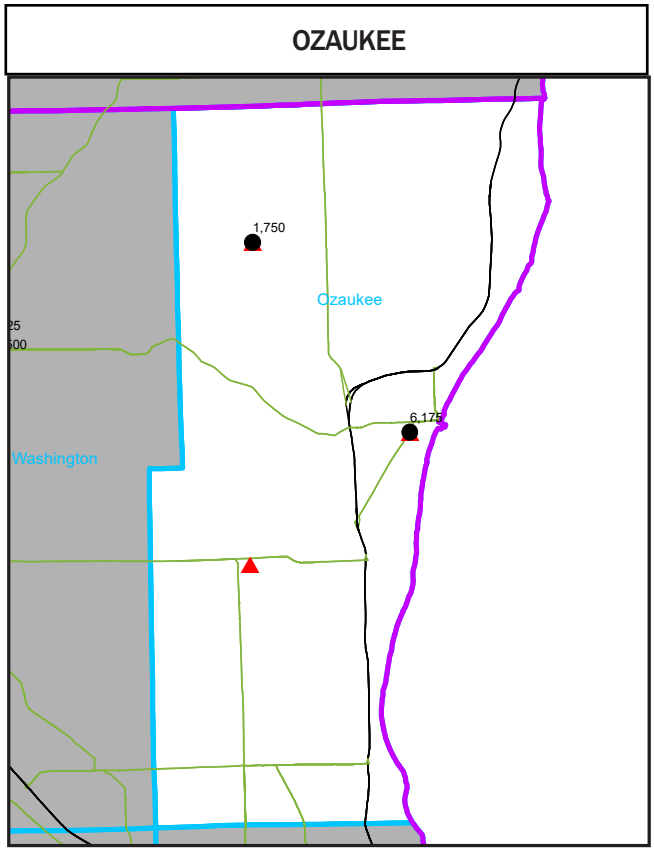


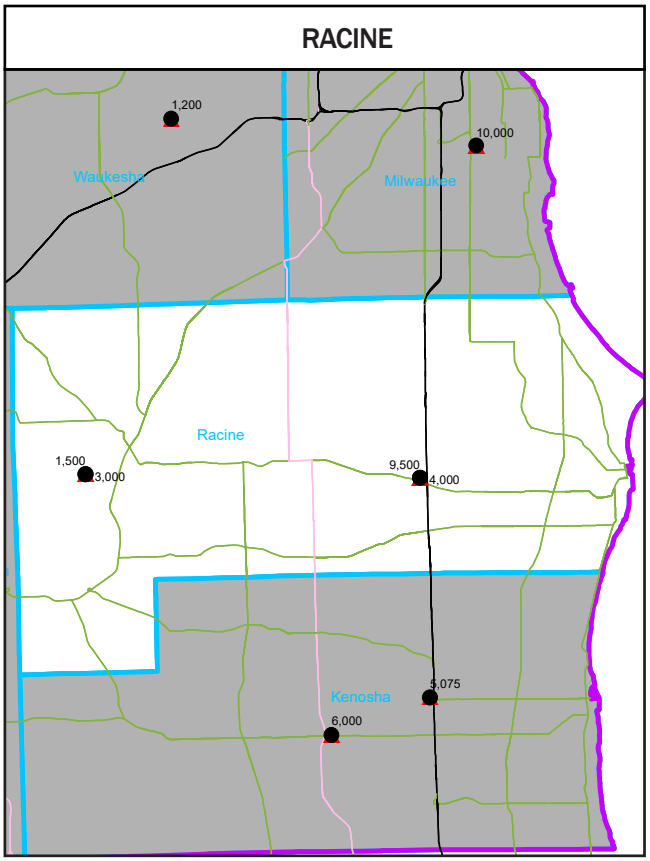
State-financed facility

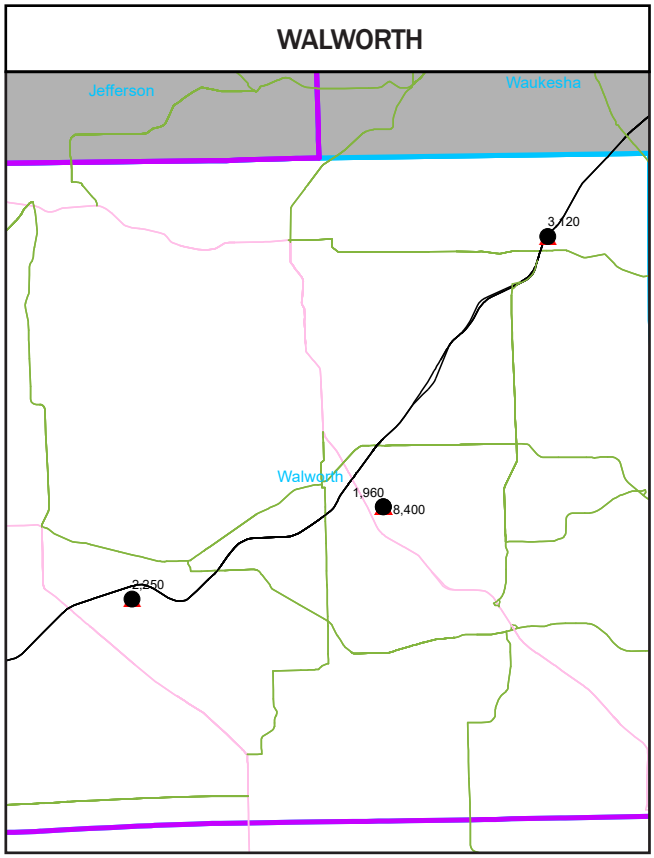
County-owned facility

Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

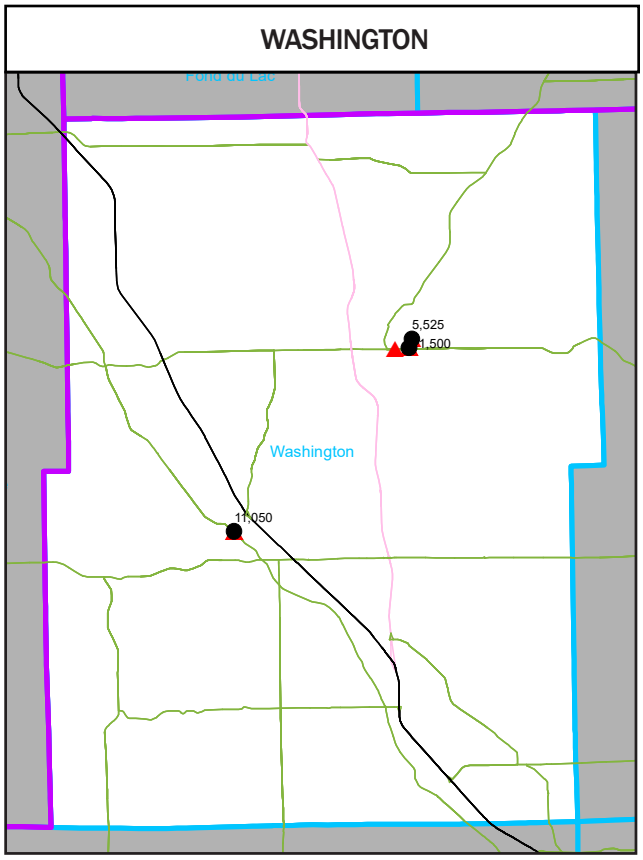


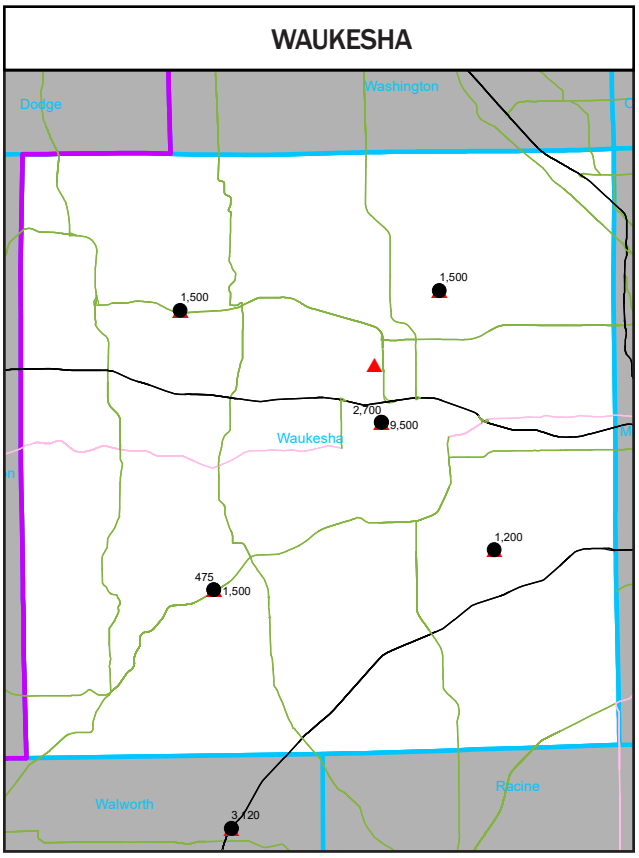






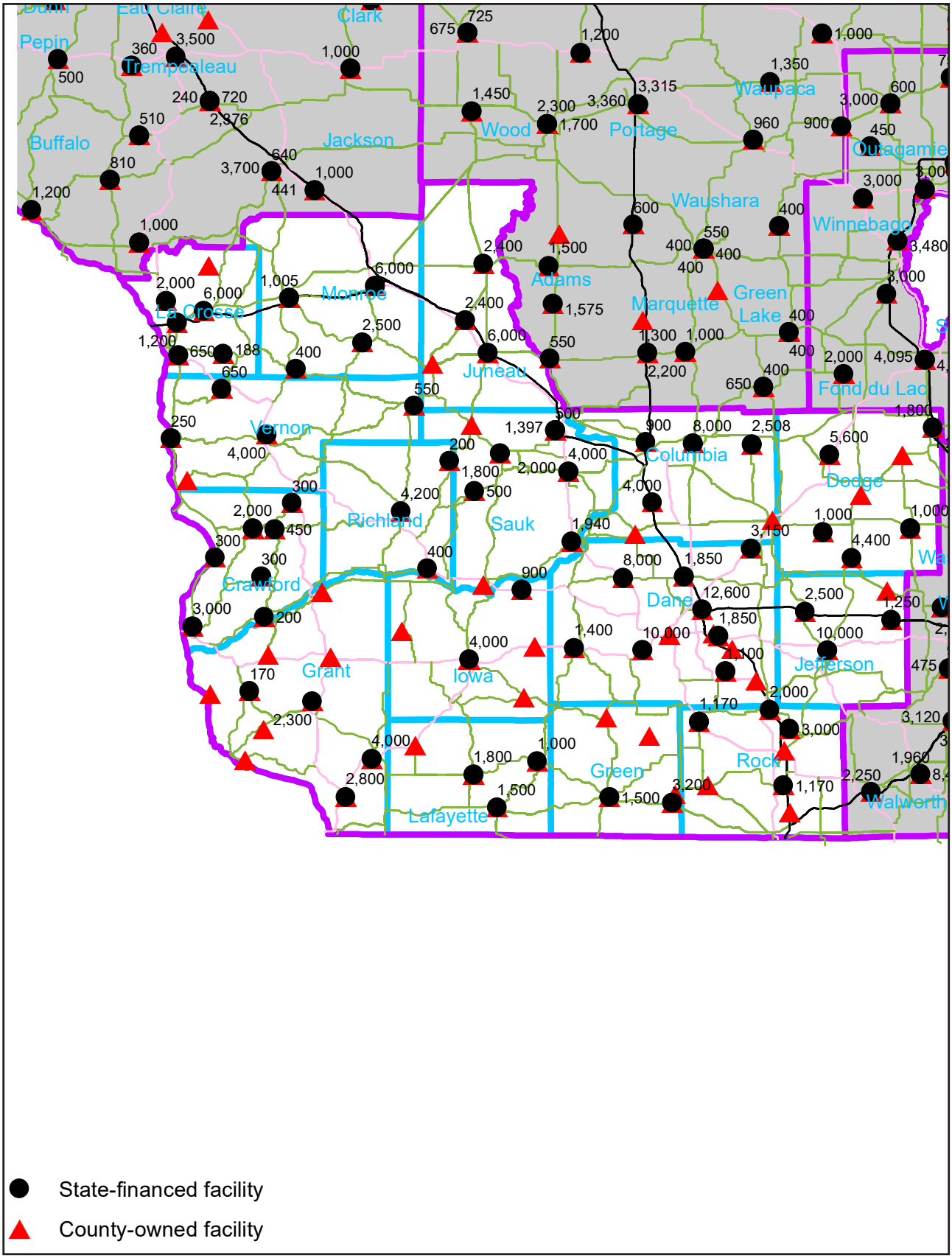
Numbered labels indicate the shed capacity allotted to WisDOT, in tons.



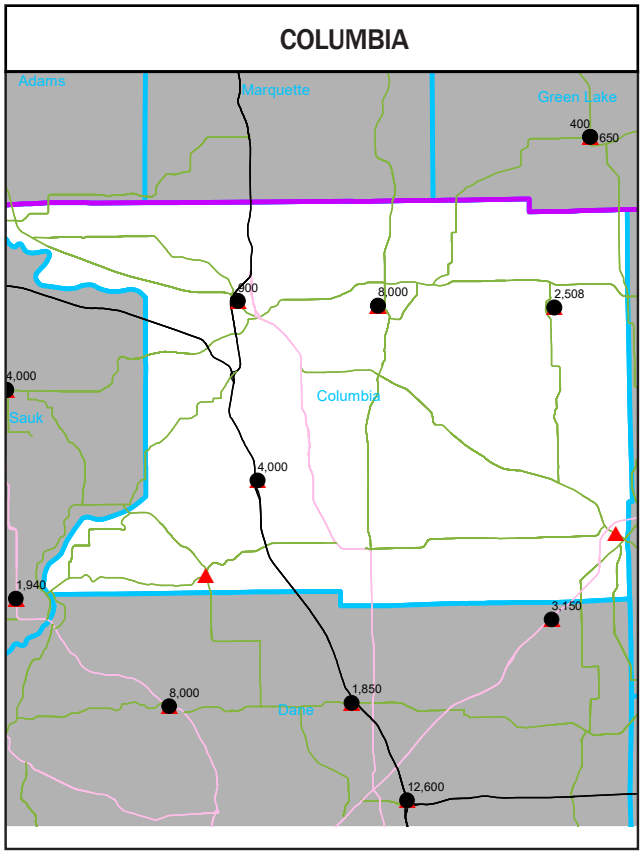


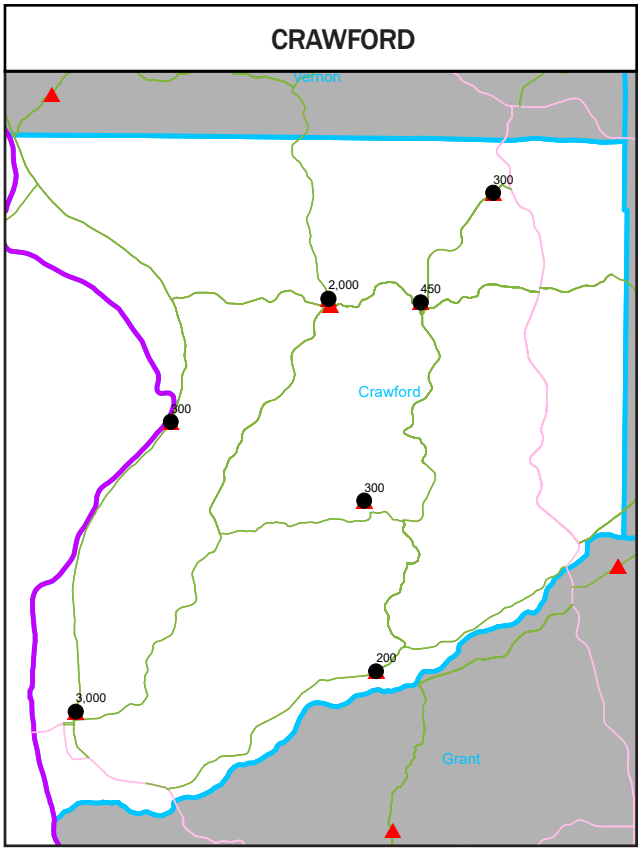
Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

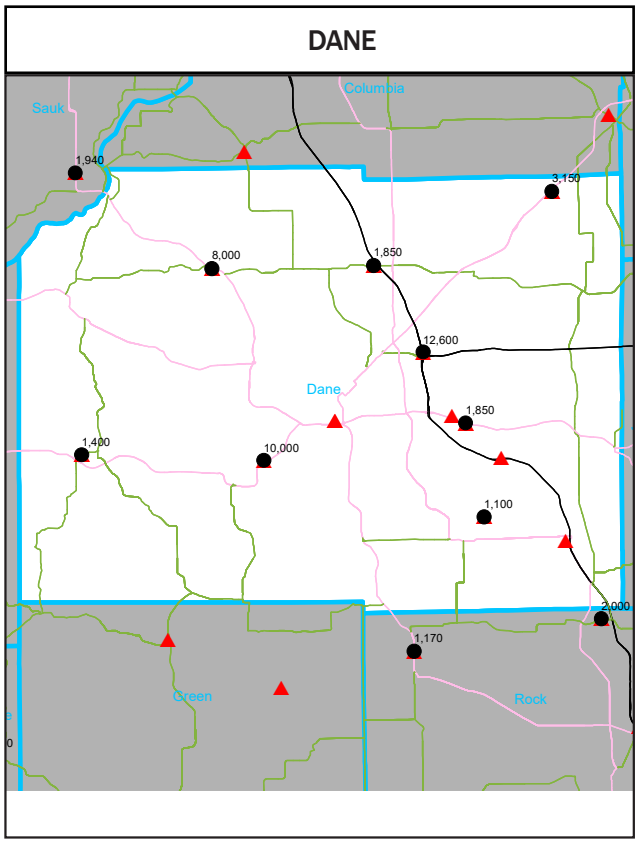
Southwest Region Salt Sheds

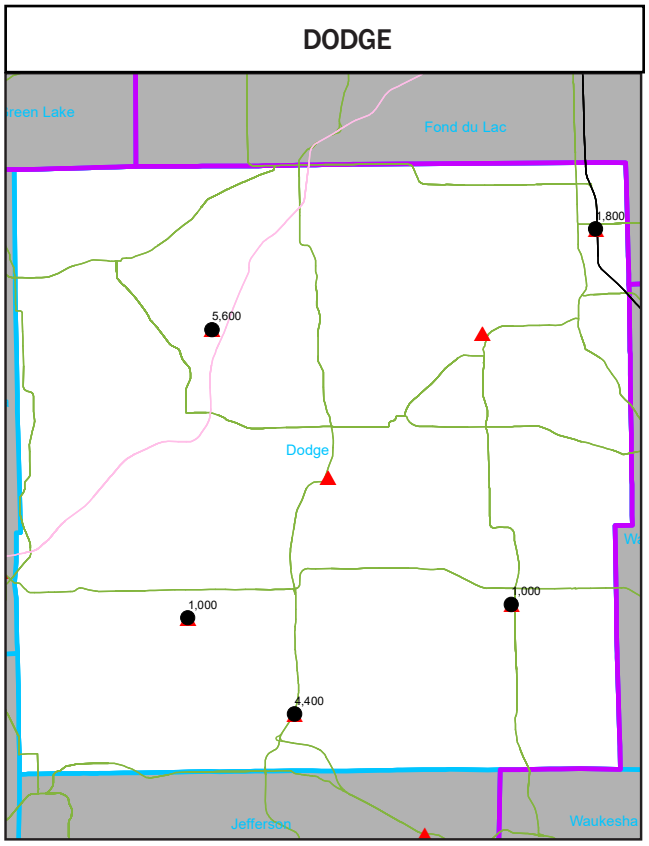


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

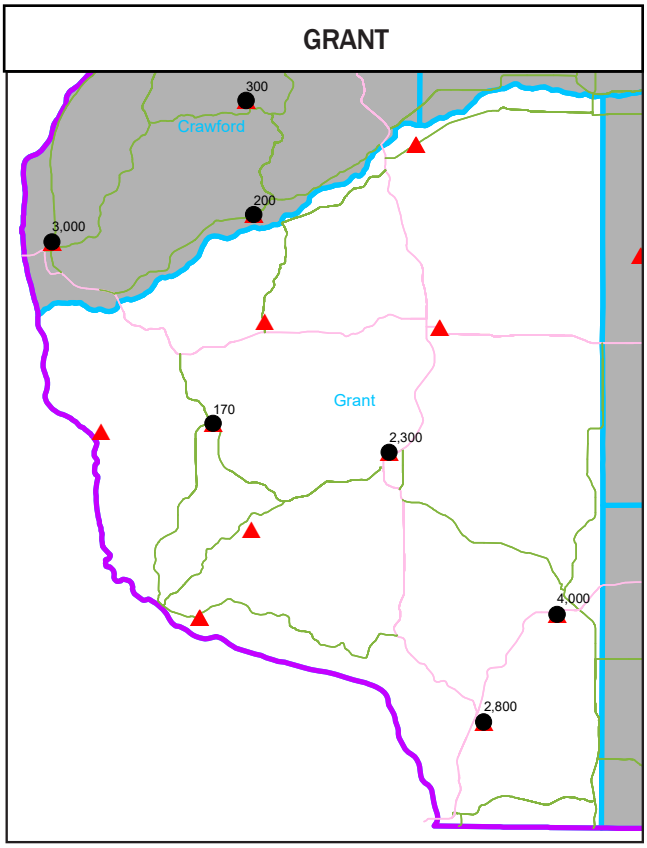


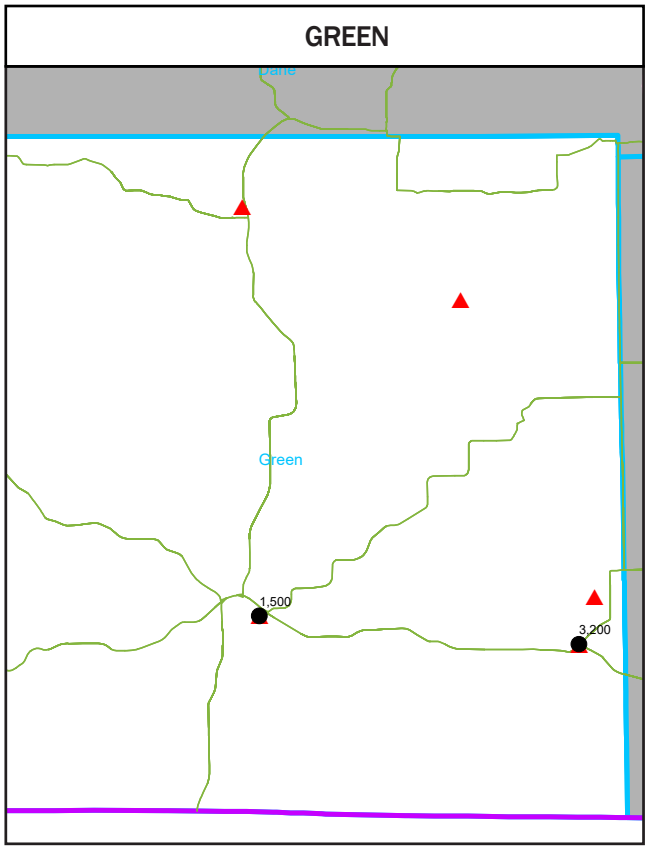


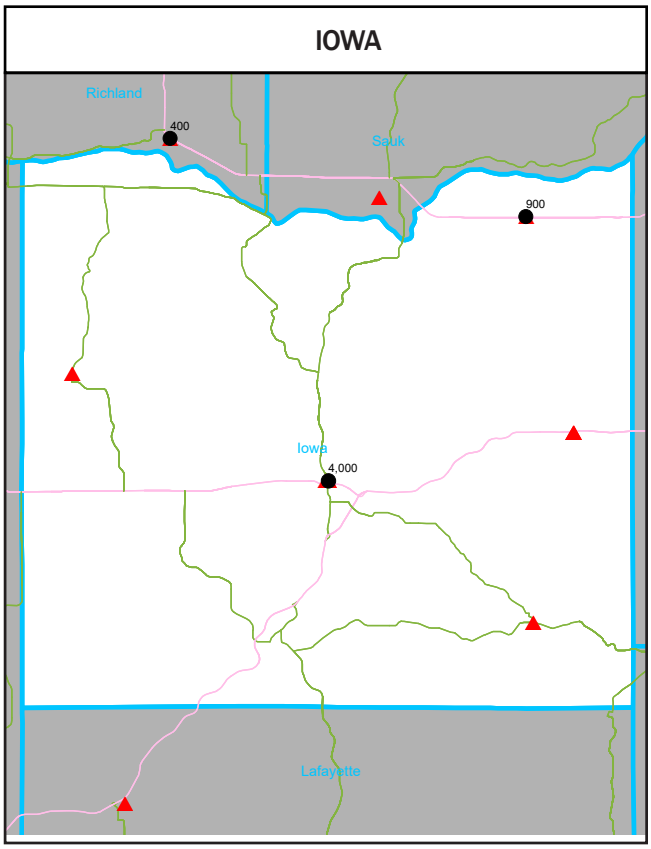


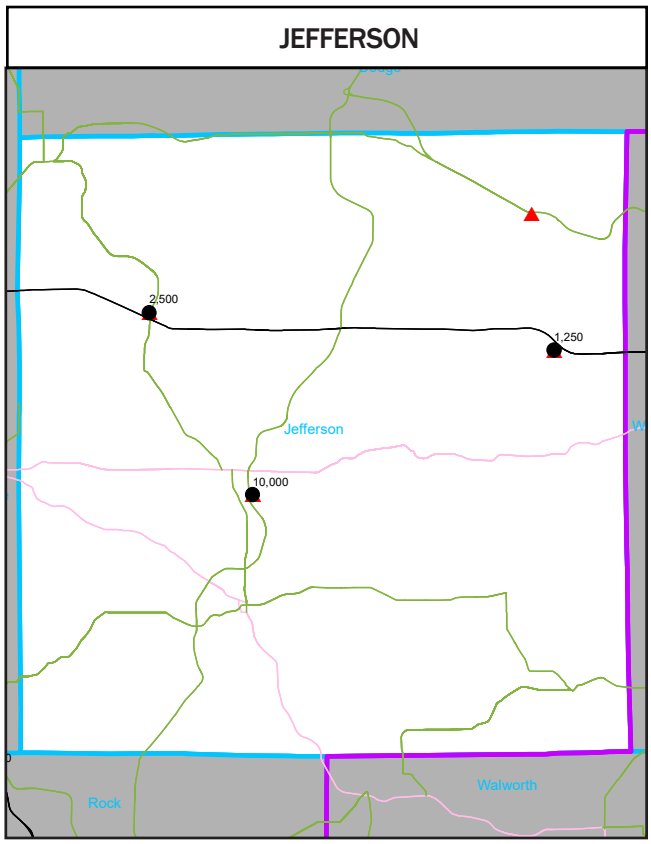


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

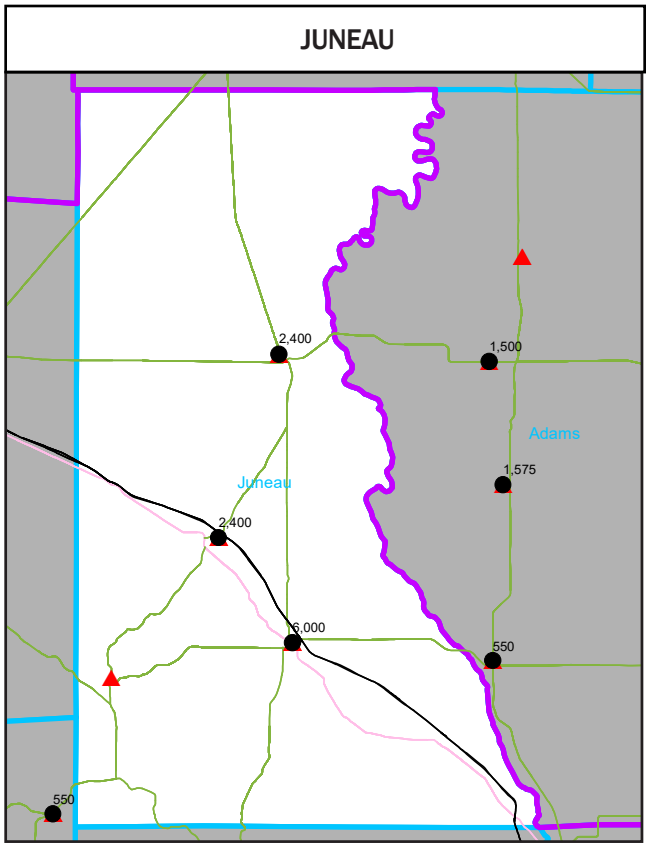


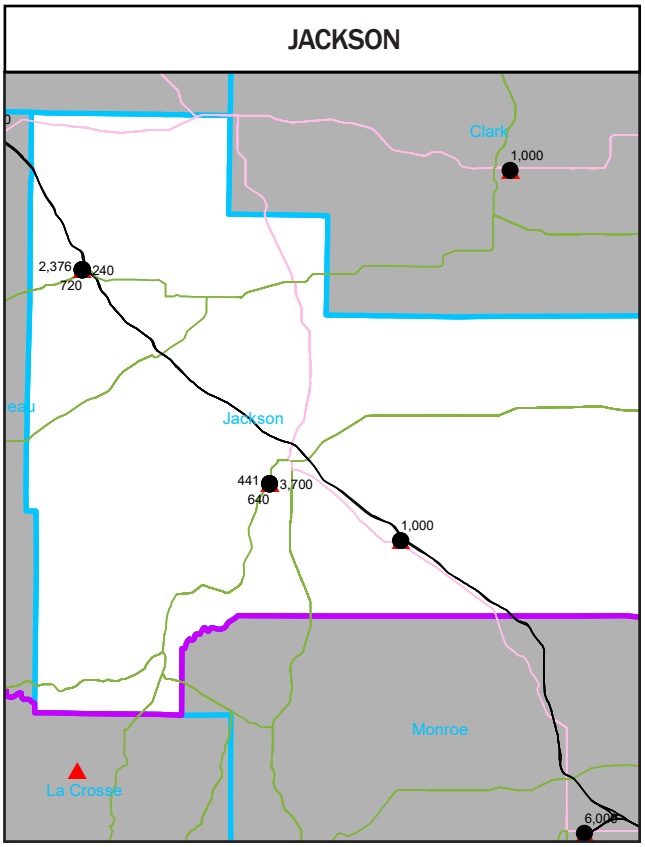


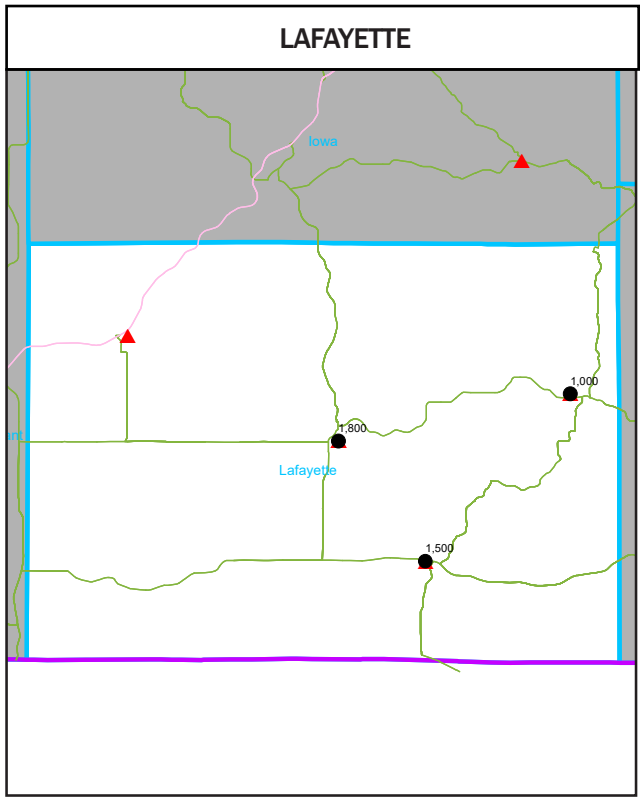


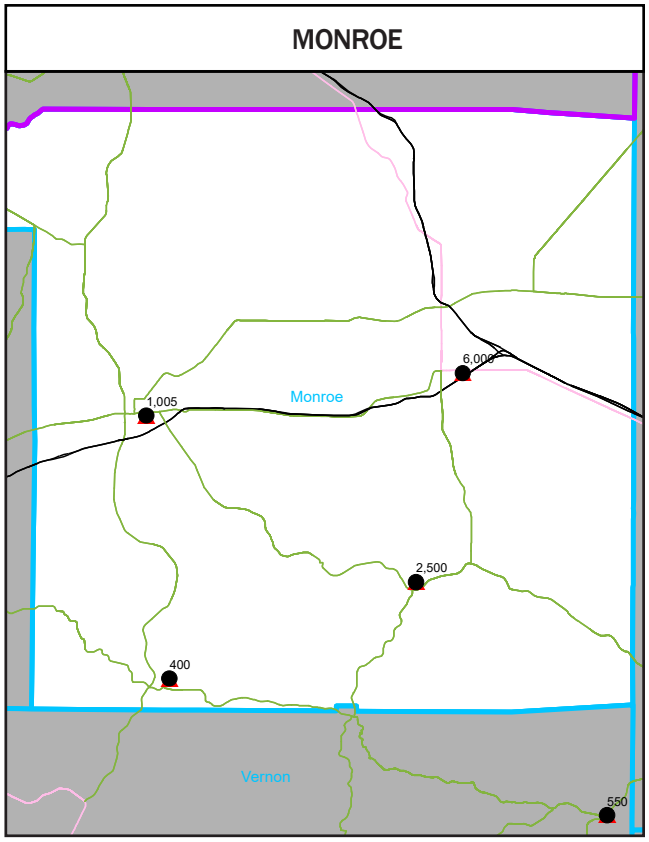


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.

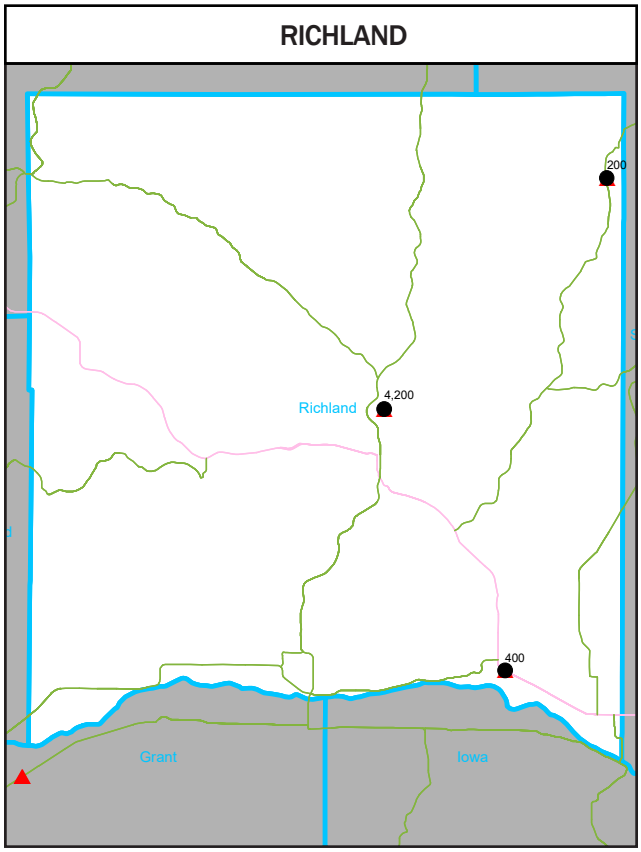


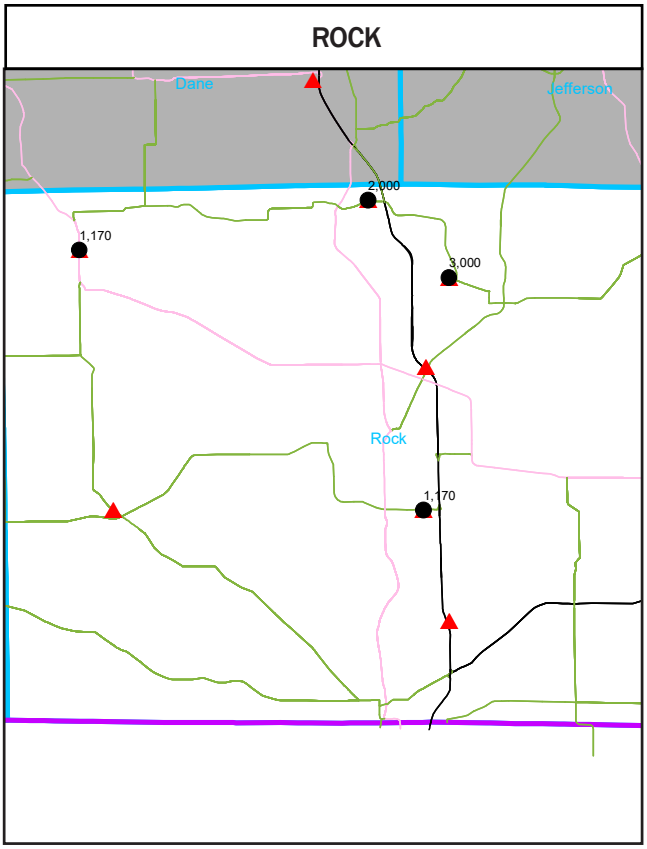


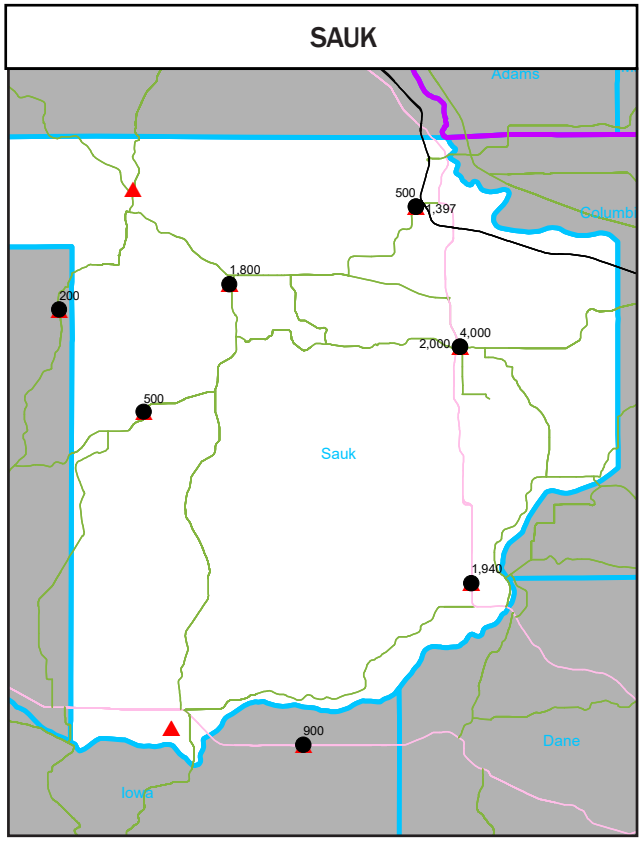


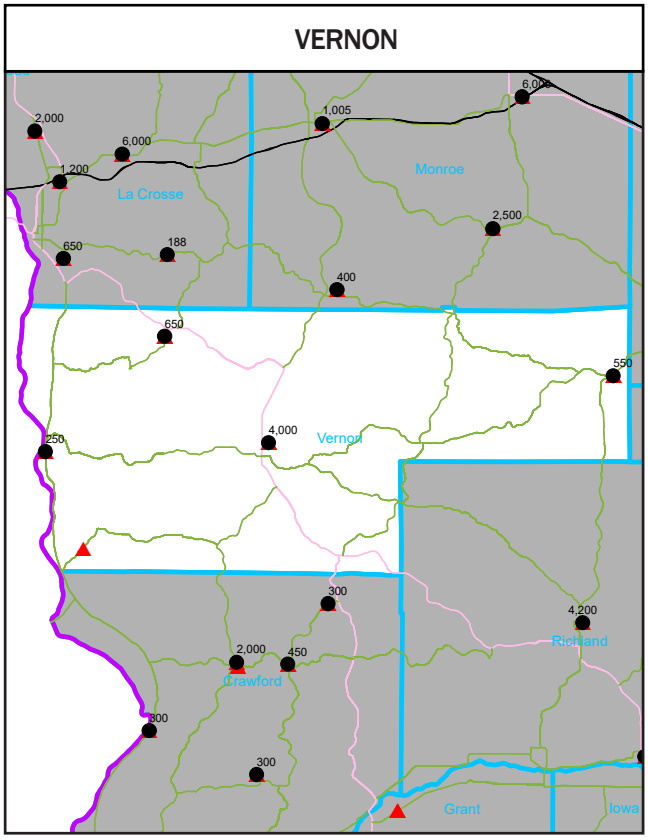


Numbered labels indicate the shed capacity allotted to WisDOT, in tons.









Numbered labels indicate the shed capacity allotted to WisDOT, in tons.