

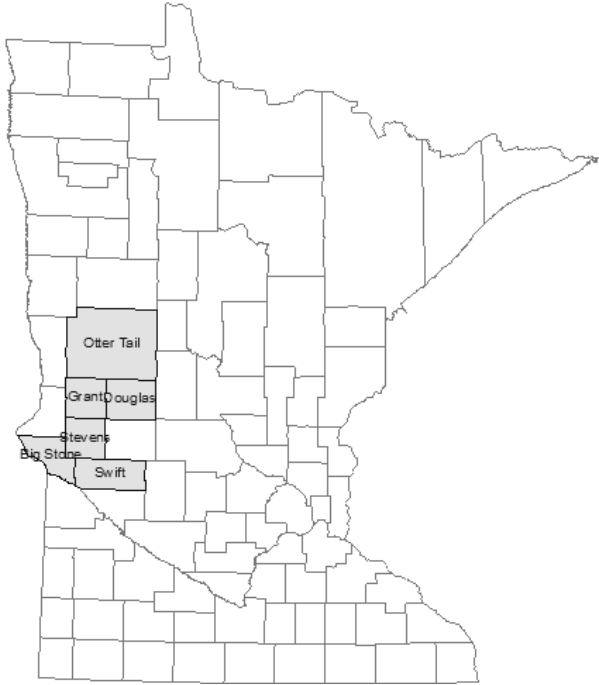
Pomme de Terre Watershed Bus Tour

319 Project Promotion & One Watershed, One Plan Kickoff

Tour Itinerary

8:00 AM - 08:30 AM	Tipsinah Mounds Campground - Coffee, snacks, sign-up, packet pick-up
8:35 AM - 09:00 AM	Welcome and Load Bus
9:00 AM - 09:15 AM	Introductions on Pomme de Terre River Association and 1W1P Committees - Stephanie Adams, PdTRA Coordinator
9:15 AM - 10:15 AM	Otter Tail County Tour - Brad Mergens, West Otter Tail SWCD - Aaron Larson, West Otter Tail SWCD - John Lahn, Area Certification Specialist
10:15 AM - 10:30 AM	Douglas County Tour - Jerry Haggenmiller , Douglas County Commissioner
10:30 AM - 11:30 AM	Grant County Tour - Joe Montonye, Grant SWCD - Paul Wymar, MPCA - Greg Lillemon, Grant County –P&Z
11:30 AM—12:00 AM	Stevens County Tour - Matt Solemsaas, Stevens SWCD - Jeni Marchland - MDH
12:00 AM - 12:45 AM	Pomme de Terre Campground, Morris - Catered Lunch
12:45 AM - 01:00 PM	Load Bus
1:00 PM - 01:25 PM	Stevens County Tour Cont. - Matt Solemsaas, Stevens SWCD
1:25 PM - 02:55 PM	Swift County Tour - Andy Albertson, Swift SWCD - Paul Wymar, MPCA
2:55 PM - 03:10 PM	Big Stone County Tour - Mitch Kill, Big Stone SWCD - Pete Waller, BWSR
3:10 PM - 04:15 PM	Return to Tipsinah Mounds Campground

Minnesota Counties



Minnesota Major Watersheds



Pomme de Terre Watershed



- 875 Square Miles
- 751.3 miles of River and Streams
- 69% Crop land
- 9% water
- 9 cities
- 2010 Census: 15,232
- Counties—% of watershed
 - Stevens - 39%
 - Otter Tail—23%
 - Grant - 18%
 - Swift - 13%
 - Douglas - 4%
 - Big Stone - 3%

Project Implementation Funding since 2010

CLEAN WATER FUNDS

PDTRA has been continually successful at applying and obtaining grant funding through the Clean Water Land & Legacy Amendment. An amendment passed by MN voters to approve a *three-eighths* of 1% tax raise on taxable sales to fund programs and projects that protect, restore, and enhance lakes, rivers, streams, and groundwater. PDTRA has used these funds to help provide cost-share on Best Management Practices (BMP) and the time required by SWCD staff to provide Technical Assistance and Project Development on these projects.

GRANT	AMOUNT	WORKPLAN	# BMPS	BUFFERS & WETLANDS	STATUS
2011 CWF	\$244,880	Projects and SWCD Time	74	983.2 Acres	Completed
2012 CWF	\$329,718	Projects and SWCD Time	21	1,749.1 Acres	Completed
2013 CWF	\$451,508	Projects and SWCD Time	60	965.66 Acres	Completed
2014 CWF	\$259,816	Projects and SWCD Time	30	626.37 Acres	Ending 2017
2015 CWF	\$312,196.	SWCD Time	2014 Fed. 319	1,636.46 Acres	Ending 2018
2017 CWF	\$303,550.	SWCD Time	2016 Fed. 319	488.2 Acres	NEW – 2019

FEDERAL 319 FUNDS

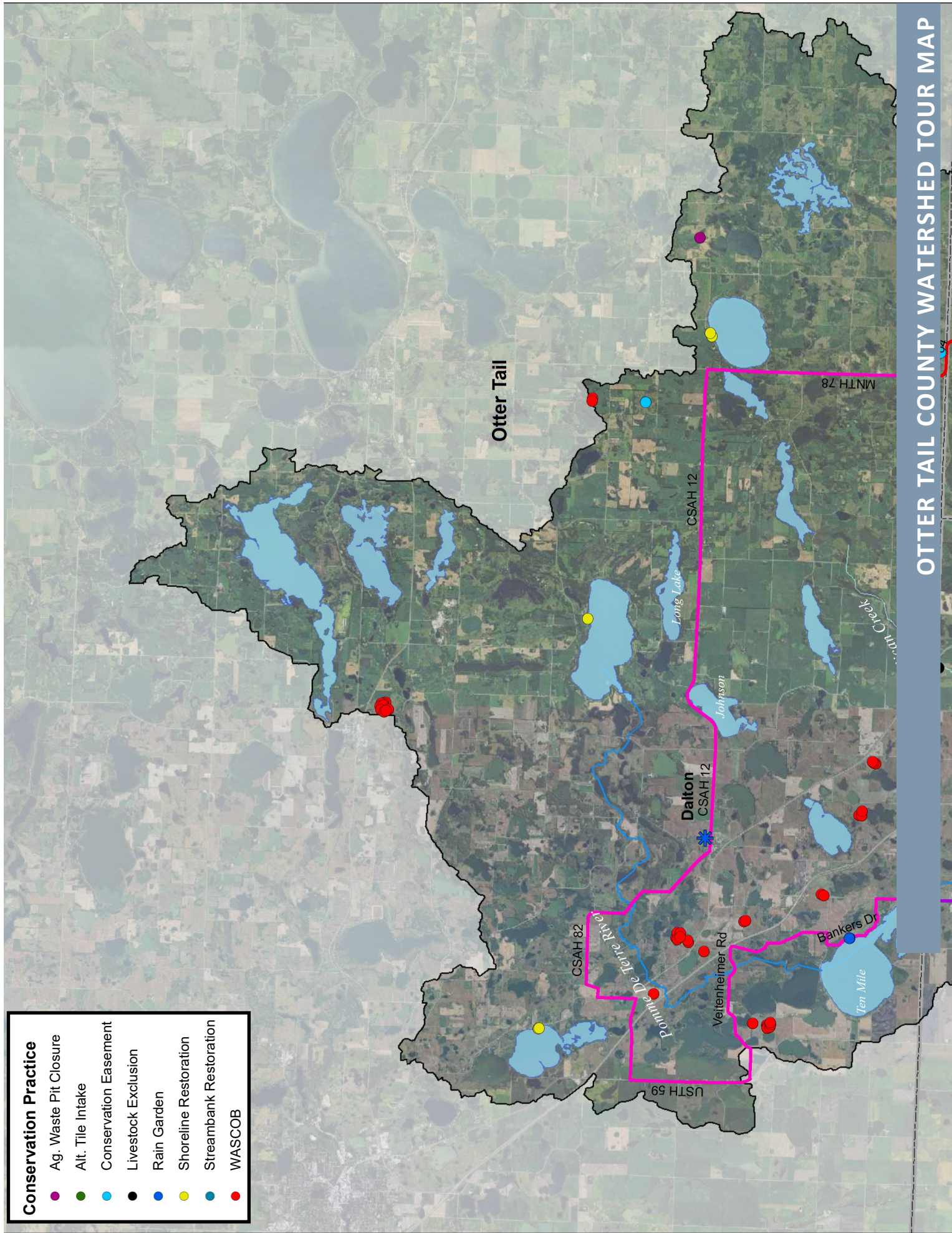
An amendment to the Clean Water Act established the Section 319 Nonpoint Source Management Program to address a need for aiding state and local nonpoint source efforts. PDTRA has been able to bolster its reach by utilizing funds from 319 for implementing BMP projects along with being able to provide education and outreach to the community and for completing water quality monitoring within the Pomme de Terre Watershed.

GRANT	AMOUNT	WORKPLAN	# BMPS	STATUS
2014 319	\$192,079	Best Management Practice Implementation	21	Ending 2018
2016 319	\$210,000	Best Management Practice Implementation		NEW - 2020

PROJECTS

The BMPs that PDTRA provide cost-share on aim to reduce the amount of Sediment and Phosphorus entering the Pomme de Terre River and its contributing lakes and streams.

BMP	# OF BMPS	EST. SEDIMENT REDUCTION	EST. PHOSPHOROUS REDUCTION
Livestock Exclusions	10	248 Ton/yr.	230.2 lbs./yr.
Rain Gardens	86	5.5 Ton/yr.	22.06 lbs./yr.
Water & Sediment Control Basins	97	4,635.9 Ton/yr.	4,656.7 lbs./yr.
Shoreline Restoration	11	185.0 Ton/yr.	176.3 lbs./yr.
Streambank Restoration	4	142.6 Ton/yr.	128.2 lbs./yr.
Ag. Waste Pit Closures	2		973.3 lbs./yr.
Filter Strips (CRP & CCRP)	3,386 Acres	40,278.76 Ton/yr.	40,278.76 lbs./yr.
Wetland Restoration (CRP & CCRP)	3,859 Acres	36,500.6 Ton/yr.	36,500.6 lbs./yr.



West Otter Tail SWCD

THE VALUE OF LAKES IN OTTER TAIL COUNTY

Statistics

- Otter Tail County has 1,049 **lakes** (262 in the Pomme de Terre (PdT) Watershed Equals 23,493 acres and 480 miles of shoreline) *Approx. 1,475 residential parcels are located on these lakes*
 - Total of 4,600 miles of **shoreline** (480 in the PdT Watershed)
 - 12,000 **seasonal properties** (over 1,000 in the PdT Watershed)
- 11% of the County is covered in Water (18% in the PdT watershed)

Value of Lakeshore

- Pelican Lake market value - \$5,200/ft
- Pelican Lake is in Scambler & Dunn Township
- Market Value of those 2 townships is \$840 million
- For comparison, the city of Perham's market value is \$363 million

Property Tax Classes and %

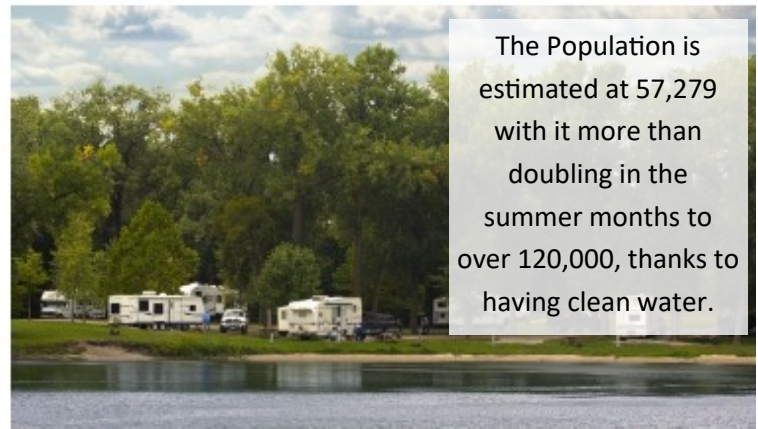
Ag Land - 23%

Residential - 29%

Seasonal - 30%

Industrial - 11%

Seasonal properties represent
\$11.4million!



SHORELINE RESTORATION AND STORMWATER RUNOFF

Native shoreline plantings stabilize soils with their long, dense roots that hold soil particles together to help prevent soil erosion and reduce ice damage. A native planting also creates a buffer along your lakeshore that enhances water quality by reducing runoff from lawns that can otherwise pollute your lake. The blossoms of many native flowering plants will add beauty and interest to your property and the planting as a whole provides crucial habitat for wildlife.

Projects Installed

- 4 Shoreline
- 1 Raingarden
- 1 bank stabilization

Eagle Lake Shoreline Restoration



Before



After

EROSION CONTROL

Erosion control practices are designated to reduce gully and rill erosion in agricultural fields. Erosion control practices most commonly utilized are structural practices such as water and sediment control basins, terraces, and grassed waterways. These practices are designed to capture and slow runoff during storm events. By capturing and slowing the runoff it allows sediment to settle out in the field reducing the amount that is deposited into a waterbody.



Gully Erosion in Ag Field

There is approx. 50,800 acres of tillable land within the watershed in Otter Tail County. This related to only 39% of the watershed

Projects Installed

- 31 WASCOB's installed with Grant Funding
- 10 WASCOB's to be installed in Fall, 2017



Water and Sediment Control Basin

CONSERVATION LANDS



Diversified Native Grass and Wildflower Plant-

Conservation Reserve Program (CRP) - 4,400 acres (8% of tillable land)

There is approx. 13,000 acres of permanently protected land within the watershed in Otter Tail County. This relates to 10% of the watershed

Private Land Easements - 7,313 Acres

- 216 MNDNR Prairie Bank
- 395 Acres Wetland Reserve Program (WRP)
- 1,311 Acres Reinvest in MN
- 669 Acres Minnesota Land Trust
- 1,202 Acres USFWS Habitat Easement
- 3,520 Acres USFWS Wetland Easement



Public Lands - 5,779 Acres

- 555 acres of Wildlife Management Areas (WMA)
- 5,141 acres of Waterfowl Production Areas (WPA)
- 83 acres of Nature Conservancy

Minnesota Department of Agriculture (MDA)

MN AGRICULTURAL WATER QUALITY CERTIFICATION PROGRAM

Become a Water Quality Certified Farm

This Program certifies farmers for managing the land within their operation in a way that protects water quality.

Agricultural operations and landowners seeking certification will undergo a three step process. Local conservation professionals assist farmers through the certification process.



1. Application

The first step is self-verification by producers that they are meeting existing MN law and regulations regarding water quality. These existing regulations including shore land setbacks, feedlot permits and disposal of waste pesticides. If producers have questions, MAWQCP - licensed certifiers will connect them to the respective local authority. Producers must maintain compliance with existing regulations at the time of certification; certainty does not offer exemption from rules and regulation that currently exist.

2. Assessment

The next step in certification is an evaluation of each field within the operation using the assessment tool. The assessment tool is a computer model in which data inputs are made based on answers to questions related to how the field is managed. The output of the assessment tool is a unitless index score from 1-10 that aggregates a field's potential risk to water quality. A score of 8.5 or greater is necessary for certification eligibility.

The assessment tool evaluates the following:

- Physical field characteristics
- Nutrient management factors
- Tillage management factors
- Pest management factors
- Irrigation and tile drainage management
- Conservation practices

Producers can expect to answer questions related to slope and soil type, fertility and tillage management, pest management, and water-friendly conservation practices - such as the use of grass waterways or sediment basins

To view the online assessment tool, visit: <https://mnwatercertify.mda.state.mn.us/wqcpapp/>

3. Verification

The last step in certification is an on-farm field verification with a MAWQCP—licensed certifier. This visit allows the producer and certifier to go through the operation on a field-by-field basis to identify and discuss any further water quality related issues.

If during the certification process, specific issues related to water quality are identified, technical and financial assistance is available.

After completing the three-step certification process, producers and landowners have the opportunity to enter into a ten-year certification contract that ensures regulatory certainty from the State of Minnesota. Certified operations may also choose to be publicly recognized as a Minnesota Water Quality Certified Farm which includes field sign and use of the logo.

Certified operations can update their certification records at any time by contacting the local certifier when land is added or practices are changed so certification status may be maintained.



Douglas SWCD

CONSERVATION LAND IN THE PDT WATERSHED OF DOUGLAS COUNTY

Public lands - 1,460 Acres

- Nature Conservancy - 57 Acres
- Waterfowl Production Areas - 1,292 Acres
- Wildlife Management Areas—111 Acres



Waterfowl Production Area



Wetland Reserve Program Easement

Private Land Easements - 7,980 Acres

BWSR Reinvest in Minnesota - 191 Acres

MNDNR Prairie Bank - 591 Acres

NRCS Wetland Reserve Program - 226 Acres

USFWS Habitat Easement - 331 Acres

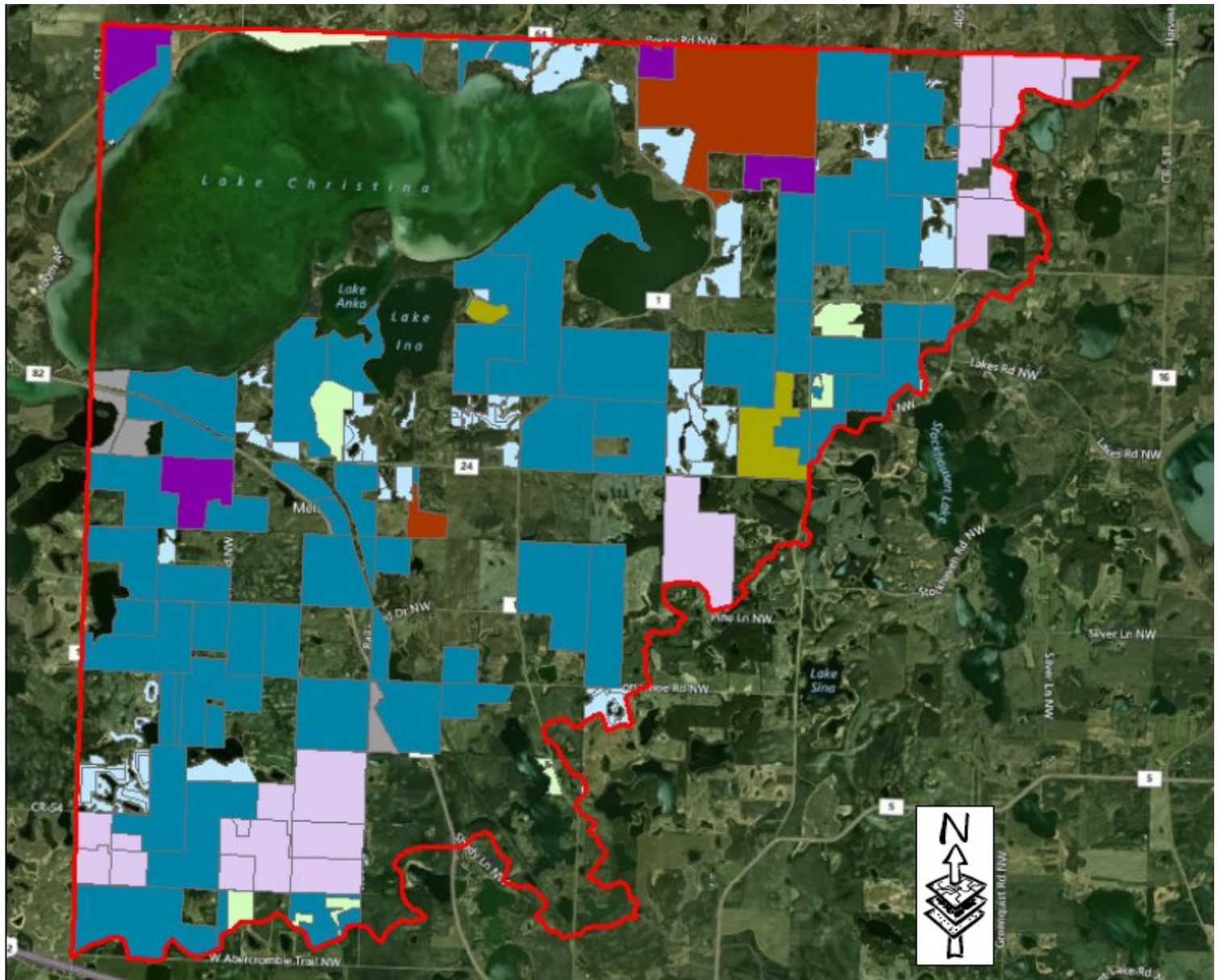
USFWS Wetland Easement - 6,641 Acres

CONSERVATION RESERVE PROGRAM - 1,498 ACRES

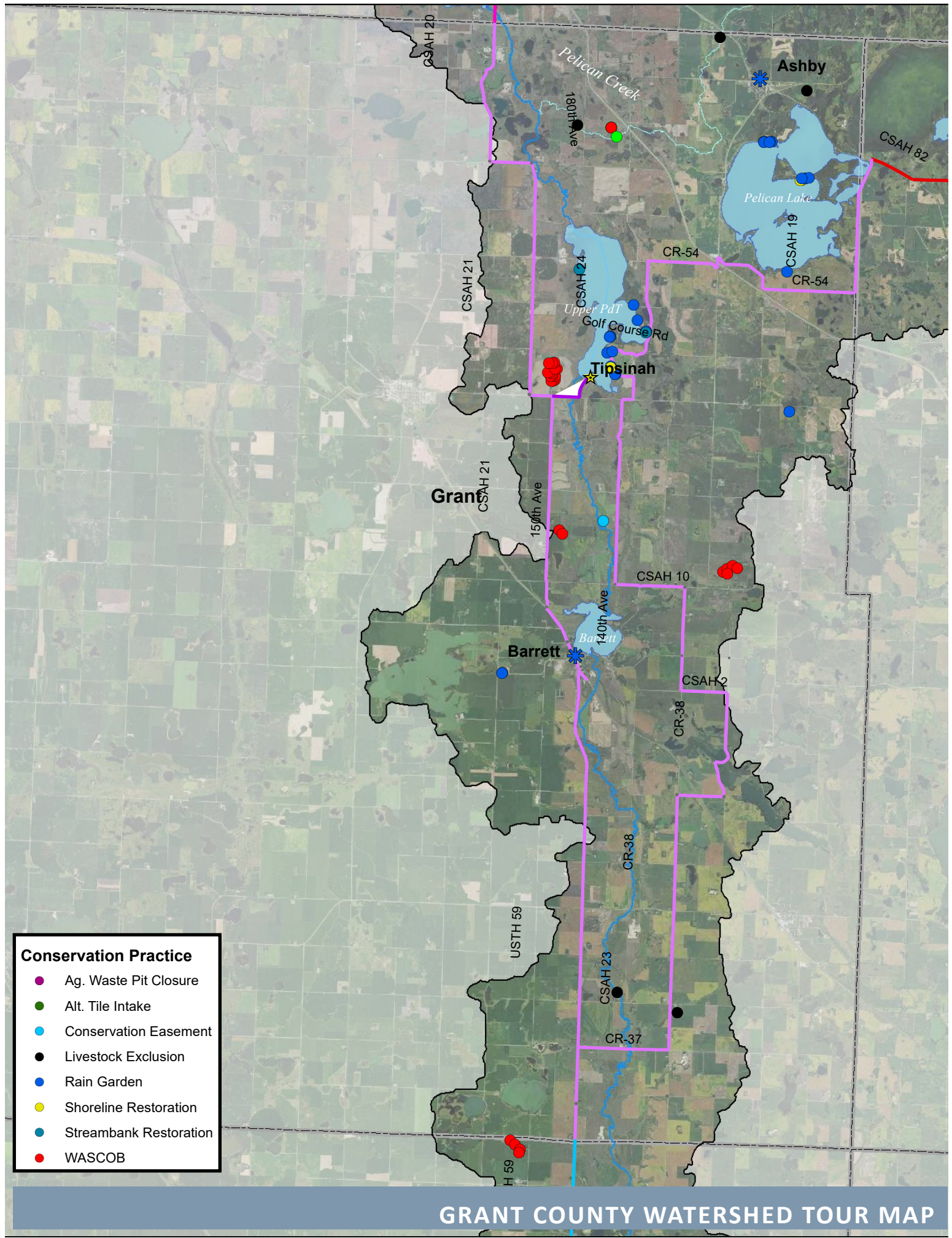


Conservation Reserve Program site before and after establishment

CONSERVATION LAND IN THE PDT WATERSHED OF DOUGLAS COUNTY



- Pomme de Terre Watershed in Douglas County
- Nature Conservancy
- Wildlife Management Areas
- Waterfowl Production Areas
- Reinvest In Minnesota
- Prairie Bank
- Wetland Reserve Program
- USFWS Wetland Easement
- USFWS Habitat Easement
- Conservation Reserve Program



Conservation Practice

- Ag. Waste Pit Closure
- Alt. Tile Intake
- Conservation Easement
- Livestock Exclusion
- Rain Garden
- Shoreline Restoration
- Streambank Restoration
- WASCOB

GRANT COUNTY WATERSHED TOUR MAP

Marcus Olson
Grant SWCD Perpetual Easement
Pomme de Terre Clean Water Partnership



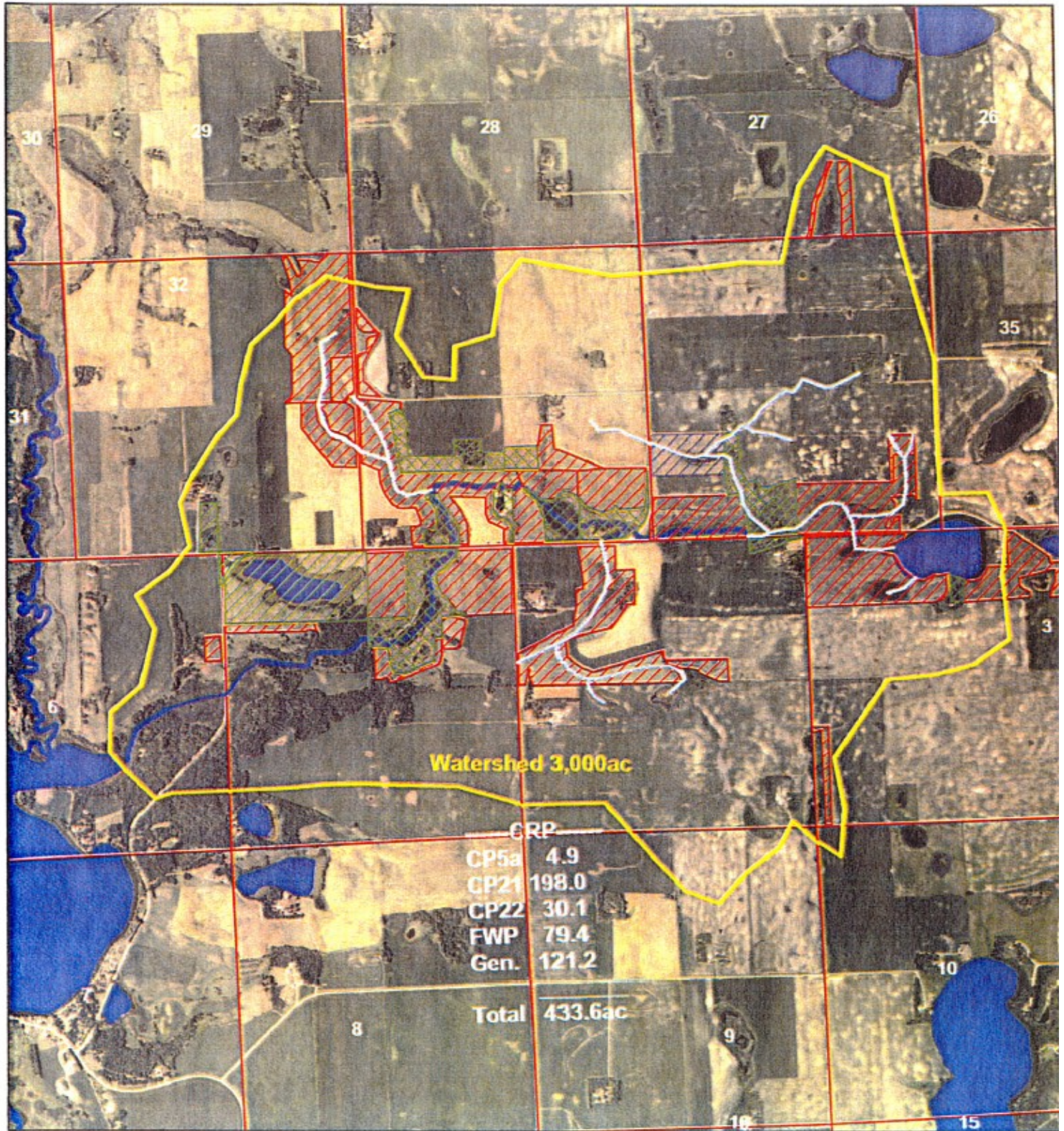
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1 inch = 509 feet

Maps are for graphical purposes only. They do not represent a legal survey

CRP

District: GRANT SOIL & WATER CONSERVATION DISTRICT



Legend



- Grassland &/or Marsh
- USF&W
- WRP 22.5ac
- CRP 433.6ac
- Section
- DNR_Rivers
- DNR_Lakes

-----CRP-----
15 Landowners
31 Contracts



Grant County

Acres Planted (Physically in Grant Co)

	1978	1988	1998	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Alfalfa	14,100	19,000	6,300	3,592	2,487	2,315	2,060	1,921	1,607	1,185	1,369	1,564	1,968	1,849	1,606
Barley	43,000	34,000	3,400	1,232	1,081	943	1,196	993	536	518	620	355	220	84	18
Dry Beans	NR	1,400	2,700	2,048	1,738	2,303	2,849	4,437	3,326	4,408	2,566	1,853	3,061	2,523	3,694
Corn	46,100	37,700	58,000	99,184	126,339	107,087	99,705	98,689	101,868	122,559	131,053	101,134	107,176	121,485	117,252
Average Yield	82.0	63.0	152.0	146.0	132.0	152.0	157.7	172.7	123.2	182.9	160.0	145	176	198	
CRP			16,700	29,294	29,997	28,877	28,581	29,292	28,904	27,617	25,100	25,350	24,348	25,426	25,191
Fallow/PP			1,000	1,897	1,134	607	3,012	1,621	18,010	505	2,598	32,317	434	358	862
Oats	NR	NR	NR	211	177	173	90	151	40	100	89	255	309	120	37
Sugar Beets	4,500	6,800	10,600	10,668	10,734	9,186	10,058	10,744	10,770	10,452	11,422	11,323	12,474	12,235	8,842
Average Yield	16.6	15.0	19.5	23.4	22.1	23.5	23.5	27.5	17.1	24.6	N/A	N/A	N/A	31.0	
Soybeans	38,500	84,900	123,000	109,417	84,669	105,490	112,120	108,206	95,572	98,526	93,194	97,366	116,108	102,046	112,211
Average Yield	25.0	18.0	36.0	37.0	38.0	35.5	36.3	41.3	37.1	44.2	38.0	43.0	47.0	51.0	
Sunflowers	NR	NR	NR	150	381	1,052	802	954	162	155	193	0	73	273	731
Sweet Corn							750	541	884	611	534	0	0	0	0
Wheat	100,200	70,300	70,000	28,020	27,181	28,117	26,412	23,989	19,119	15,359	11,461	10,510	13,211	12,588	8,875
Average Yield	25	16.0	47.0	55.0	48.0	63.2	60.9	59.4	41.3	57.2	56.0	58.0	61.0	66.0	
WRP											2,183	1,829	2,254	1,576	1,435
TOTALS	246,400	254,100	291,700	285,713	285,919	286,150	287,635	281,537	280,798	281,995	282,382	283,856	281,636	280,563	280,754



discover the cover

Cover Crops:

- Restore Soil Health
- Protect Natural Resources
- Provide Wildlife Habitat
- Feed Livestock



Contact your local NRCS office to learn more about the technical and financial assistance available.

**Natural Resources
Conservation Service**

www.nrcs.usda.gov

Soil Health with Cover Crops in Minnesota

This fact sheet is designed to give a quick overview of what it takes to successfully establish a cover crop. Natural resource professionals at the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) will assist you with specific recommendations for your cover crop project.

Cover Crop Overview

A cover crop is grasses, legumes, forbs or other herbaceous plants that are established for seasonal cover and conservation purposes.

Where the practice applies

Cover crops may be used on all lands needing vegetative cover for natural resource protection and improvement. Cover crops are an excellent tool when used in combination with other practices such as conservation crop rotations and residue management practices to improve soil health.

Cover Crop Benefits/Purposes

There are a variety of reasons to plant cover crops. They include:

- Reduce Soil Erosion from wind and water
- Improve Soil Health by improving organic matter
- Increase Soil Porosity & Infiltration
- Improve Soil Microbiology
- Produce/Scavenge Crop Nutrients
- Capture and recycle or redistribute excess nutrients in the soil profile
- Improve Nutrient Cycling
- Protect Water Quality
- Enhance Wildlife Habitat
- Protect growing crops from damage by wind-borne particles

- Minimize and reduce soil compaction
- Weed suppression
- Soil moisture management

Where the practice applies

When you decide to plant a cover crop, keep the following considerations in mind:

- Cover crop species, seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, planting methods, termination methods and dates will be consistent with approved local criteria and site conditions.
- The cover crop species selected will be compatible with the other components of the cropping system.
- Select herbicides used for the preceding crop(s) for compatibility with the planned cover crop species.
- Do not use plants that are included on the Minnesota noxious weed or invasive species list.
- Cover Crop residue will not be burned.
- Use plant species that enhance forage opportunities for pollinators by using diverse legumes and other forbs.
- Plan to establish and terminate cover crops to adequately protect during critical erosion period(s).
- Select cover crop species that produce high volumes above and below ground biomass to maintain or improve soil organic matter, improve soil structure, and increase soil moisture through better infiltration.
- Terminate cover crop as late as feasible while avoiding delays in planting of the cash crop, potential allelopathic (toxic) effects, soil moisture depletion, and/or nutrient immobilization.

Chad Rollofson's Agricultural Test Plots

PROJECT SUMMARY

The project is designed to compare the soil health and economics between cover cropped no-till plots with a wheat-corn-soybean rotation with intensively tilled plots with a corn-soybean rotation. The corn-soybean rotation is the most common rotation used in west central Minnesota.

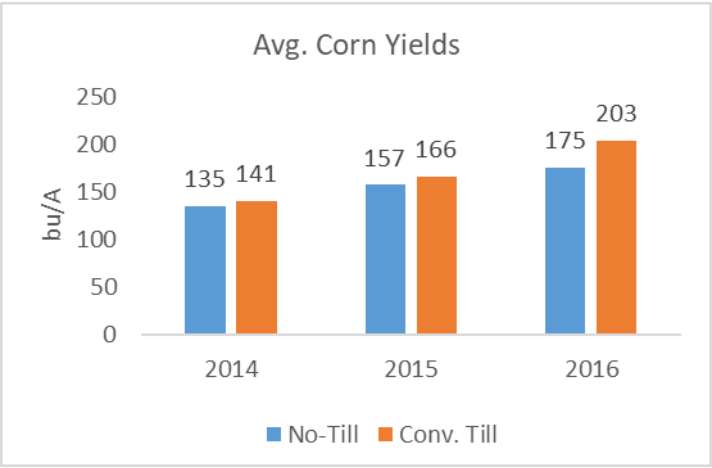
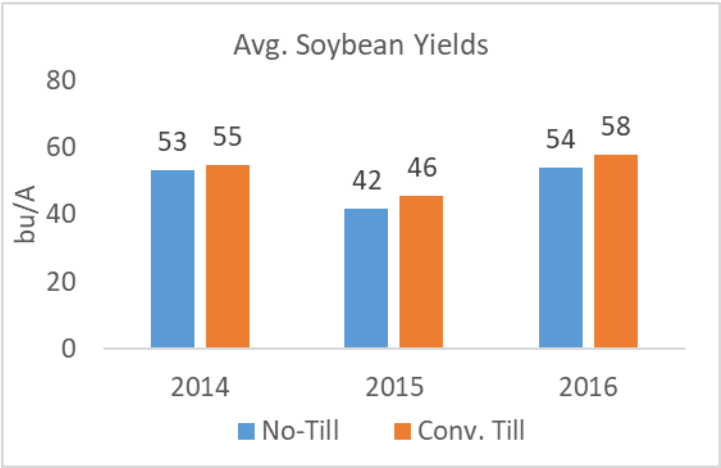
PLOT DESCRIPTION

There are 10 plots each roughly an acre in size that were established in 2014. Four of the plots are in a tilled corn soybean rotation. Six of the plots in a no-till wheat-corn-soy rotation with cover crops.

Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10
No-Till	Conv. Till	No-Till	No-Till	Conv. Till	Conv. Till	No-Till	No-Till	Conv. Till	No-Till

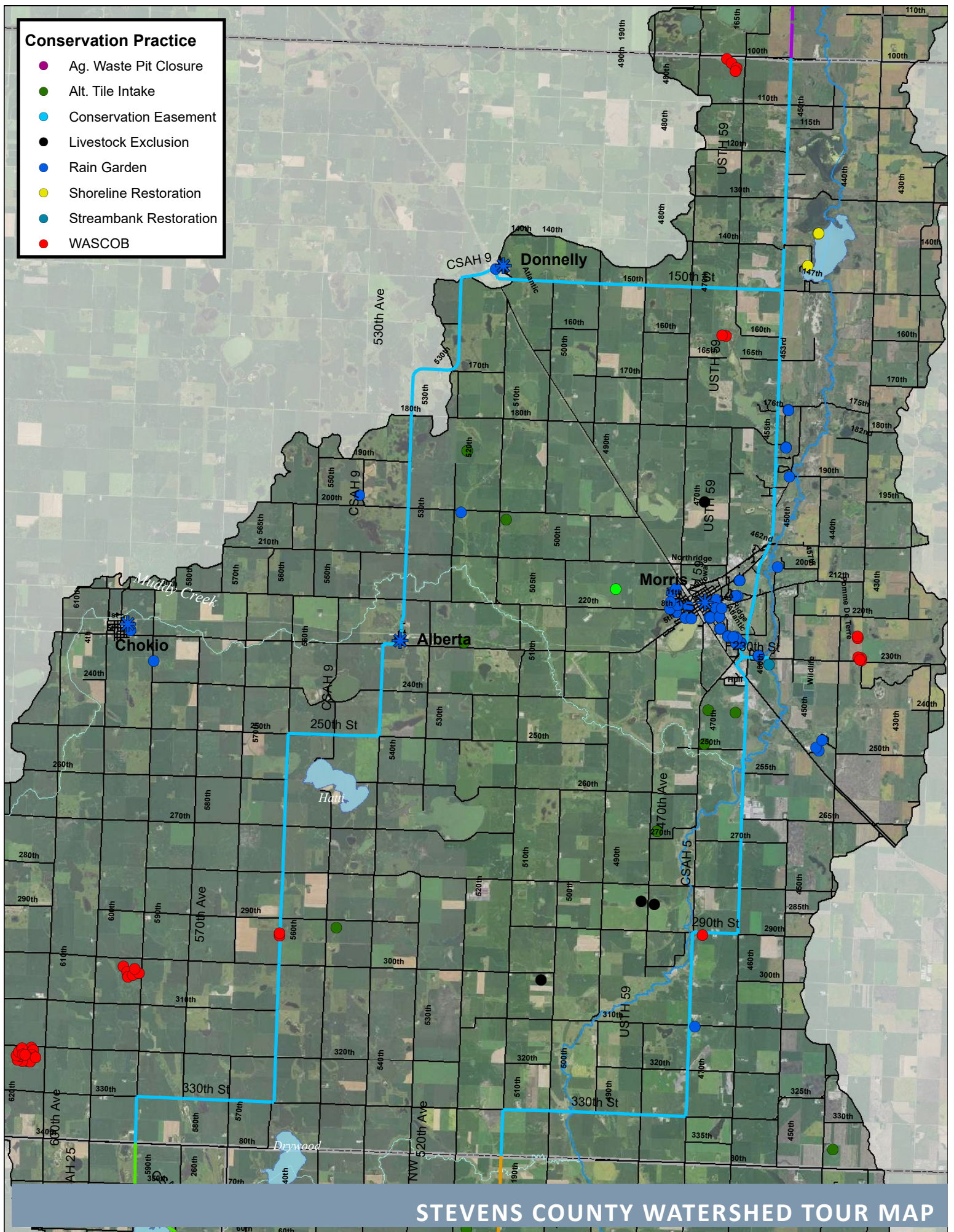


PRELIMINARY RESULTS



Conservation Practice

- Ag. Waste Pit Closure
- Alt. Tile Intake
- Conservation Easement
- Livestock Exclusion
- Rain Garden
- Shoreline Restoration
- Streambank Restoration
- WASCOP



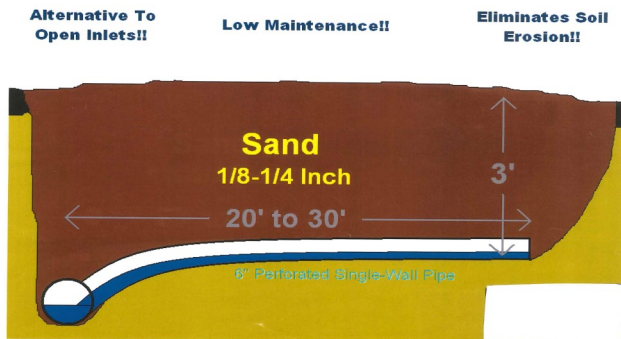
Stevens SWCD

ALTERNATIVE TILE INTAKES

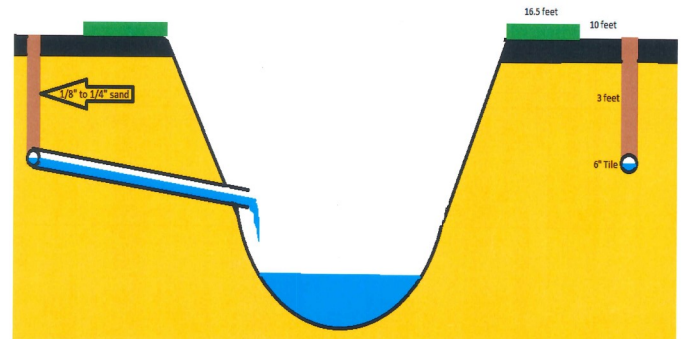
Surface inlets are sometimes used to remove excess water in agricultural fields. However, this creates a direct path for sediments and nutrients to enter surface waters. To help combat this, Alternative Tile Intakes take the surface inlet and buries it under gravel and sand to allow particulates to be filtered out.

2014 CLEAN WATER FUND (IN STEVENS COUNTY)

141 COMPLETED INLETS:	\$ 27,169.97
54 PROPOSED INLETS:	\$ 25,650.00



French Drain



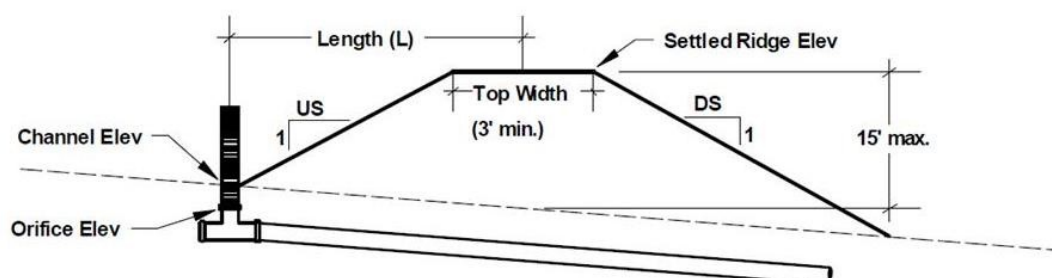
Side Inlet

WATER AND SEDIMENT CONTROL BASINS

Water and Sediment Control Basins (WASCOB) are used to fix gully erosion on agricultural fields. Essentially, the gully is filled in and a dam structure installed. On the up-slope side of the structure a special tile inlet is placed to slowly drain any water being held by the newly constructed basin. This allows particulates to settle out of and prevents the water from running across the surface of the field.

GRANT	# WASCOBS COMPLETED	FUNDS	# WASCOBS PROPOSED	FUNDS
2014 CWF	10	\$ 24,157.51	1	\$ 6,756.88
2014 Federal 319	6	\$ 12,613.79	8	\$ 10,317.46

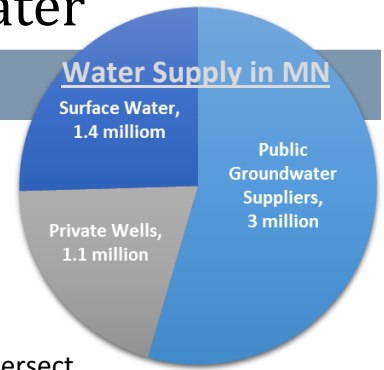
Typical WASCOB X-Section



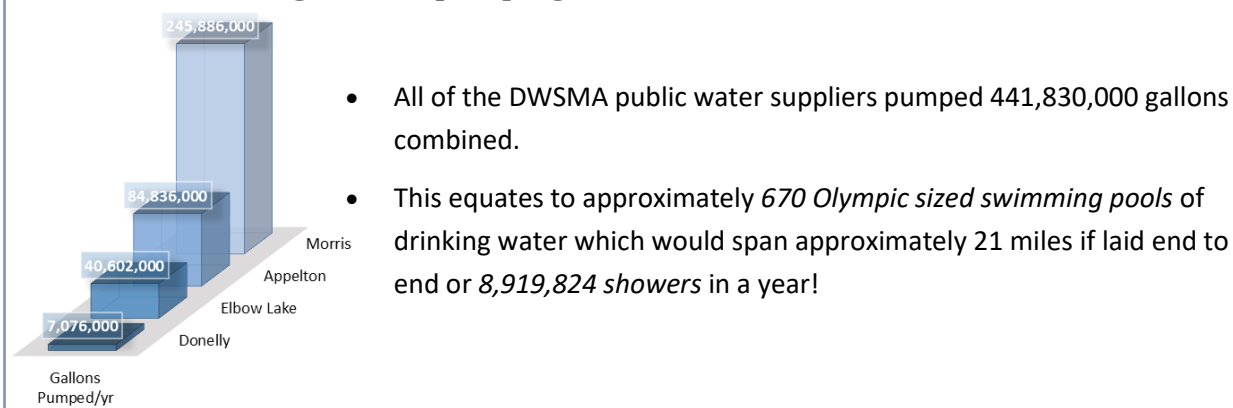
Minnesota Department of Health - Drinking Water

WHERE DOES DRINKING WATER COME FROM?

- In MN 1.1 million people get their drinking water from private wells, 1.4 million people drink water from surface water public water suppliers, and 3 million people get their drinking water from groundwater public water suppliers.
- **100% of drinking water in the Pomme De Terre is from groundwater.**
- General groundwater flow is from the NE to the SW.
- There are **9 Drinking Water Supply Management Areas (DWSMAs)** that are enclosed or intersect the Pomme De Terre Watershed which provide safe drinking water to just under 10,000 people.



According to 2016 pumping data from the DNR MPARS database:



AQUIFERS IN THE POMME DE TERRE

- Quaternary water table aquifer
- Quaternary buried artisan aquifer.
- Quaternary buried unconfined aquifer.

According to MDH hydrologist Trent Farnum.

Depending on where you are located you could have all or none of the aquifers. the Quaternary aquifers are like swiss cheese; the cheese is clayey-till and the holes of the cheese are the sandy aquifers. All of the pocket aquifers are basically pockets; small blobs of sand in a bigger mass of clayey-till. The aquifer pockets are not continuous as they only extend across a couple of miles and then it thins out and becomes clay. This happens all over at all sorts of depths. Like Swiss cheese, some sand blobs are big and some are small.

PROTECTING DRINKING WATER

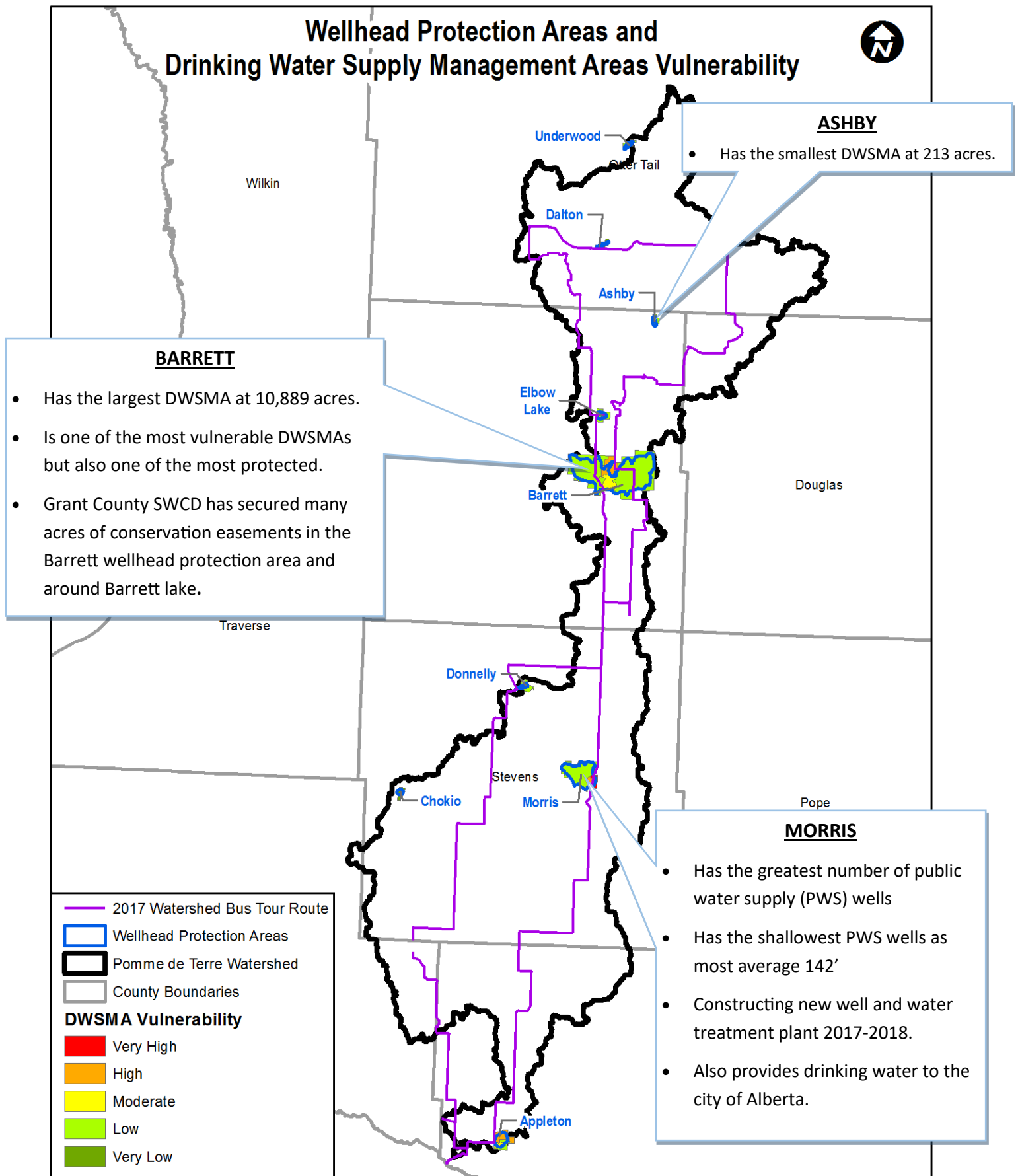
A wellhead protection plan involves 1) Defining a Drinking Water Supply Management Area (DWSMA), **2)** Assessing vulnerability of groundwater to contamination, **3)** Inventorying potential contaminants and developing management strategies to address them, and **4)** developing a contingency strategy in the event of a chemical or mechanical disruption to the water supply.

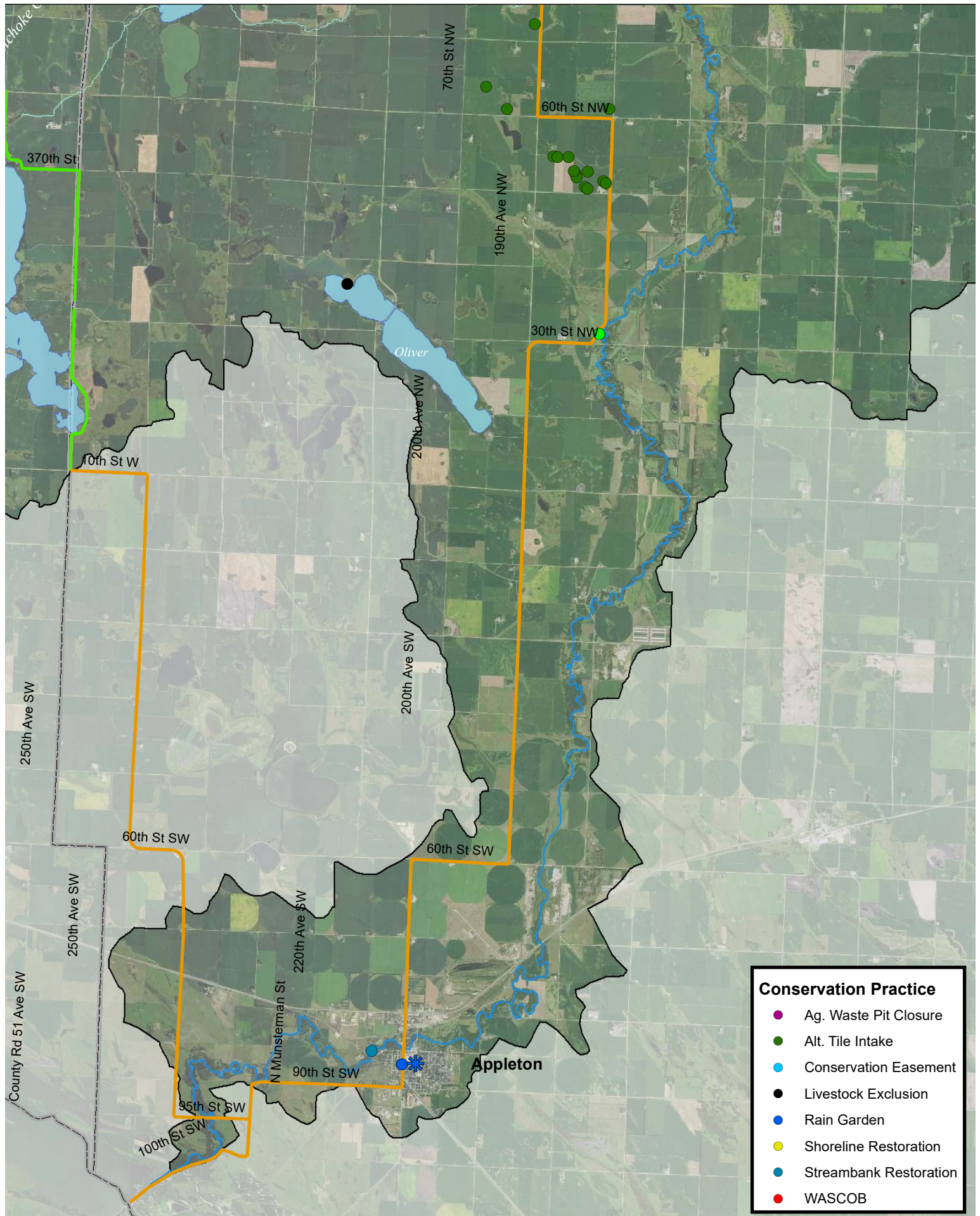
The most common ground water protection activity for all Wellhead protection plans is the sealing of unused wells. These unused wells short circuit the natural geologic protection (clay) and lead directly to the aquifer.

According to the County Well Index: There are 1,478 known drilled wells in the watershed. As MDH has records of approximately 1/3 of all wells drilled there could be around 4,400 wells that if not maintained properly are potential conduits of contamination.

DRINKING WATER SUPPLY MANAGEMENT AREAS (DWSMA)

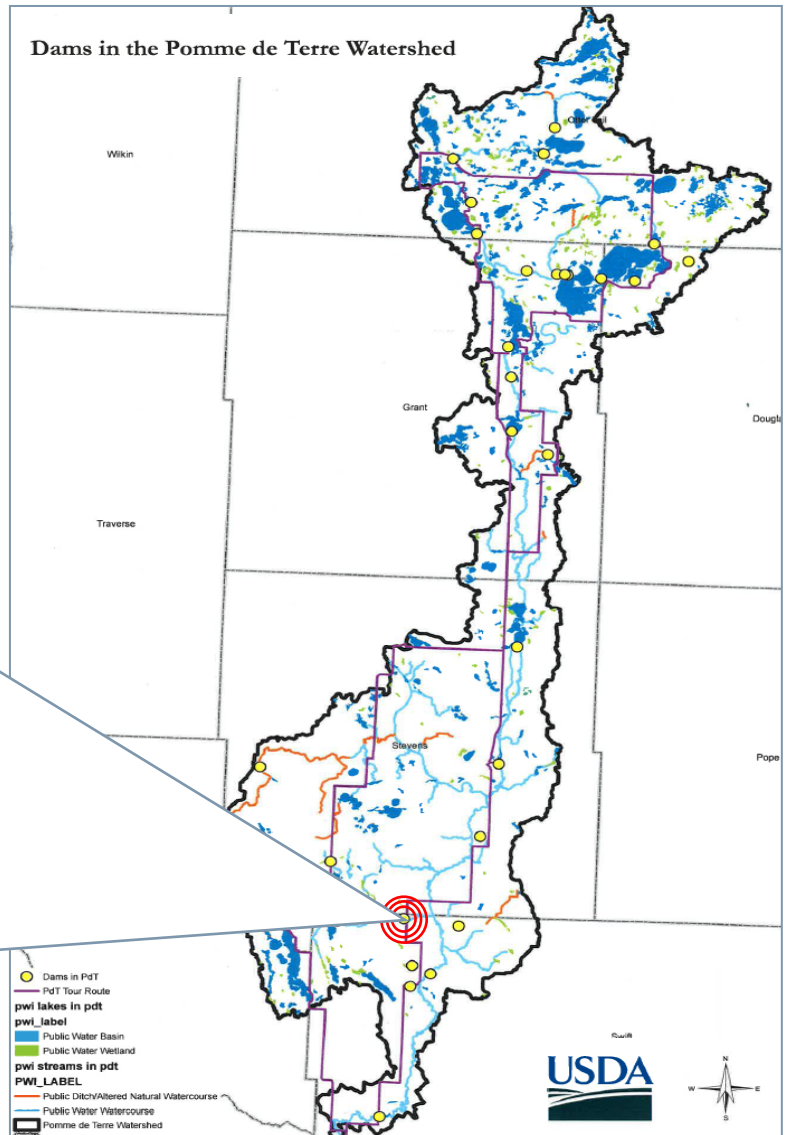
A **DWSMA** is a defined above and below ground area surrounding the public water supply well(s) that typically represents a ten year time of travel of groundwater flow to the public water supply wells. It is an area managed by the public water supplier to protect drinking water.





Drywood Creek Dam

- Dam originally constructed in 1972 as a fish barrier to keep rough fish out of Drywood Lake.
- Dam failed in 1997 causing severe bank erosion at each end of the dam resulting in more sediment being sent downstream.
- Pomme de Terre River Association, Swift SWCD, and B&S Properties funds for the removal of the dam for last three years
- **Project involves**
 - Remove the failed dam
 - Reshape Drywood Creek's historic channel
 - Build two rock riffle grade control structures
 - Reestablish floodplain along the restored channel.
 - Install channel plugs and toe wood-sod mat
 - Fill in the existing channel
- Cost: ~ \$127,579
- **Benefit:** Eliminate a large source of sedimentation, improve water quality, connectivity to the flood plan, a functional meander pattern, and enhanced aquatic habitat.



MN Pollution Control Agency

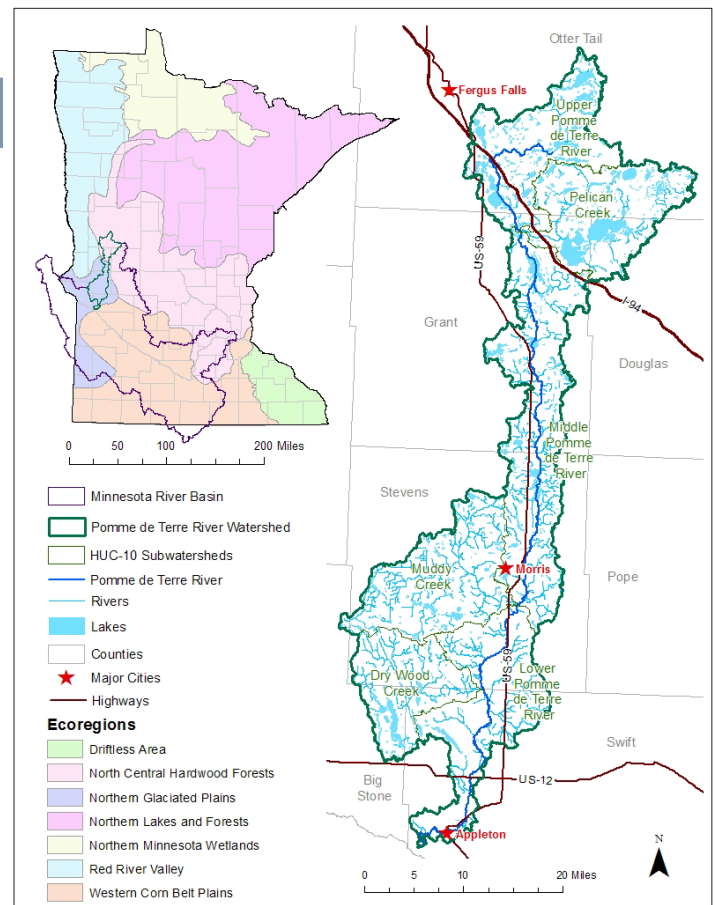
POMME DE TERRE WATER QUALITY

Pomme de Terre (PdT) River water quality changes dramatically as one moves from North to South.

The PdT River watershed has a lake dominated northern headwater region, characterized by good water quality both in lakes and streams.

As one travels downstream and South the landscape and land use change in the middle portion of the watershed, as does the water quality. A big change in water quality occurs south of Barrett Lake, where the ecoregion boundary exists, changing from the North Central Hardwood Forest (NCHF) ecoregion in the north to the Northern Glaciated Plains ecoregion in the middle and southern parts of the watershed.

The land use also transitions here, changing from cropland with large areas of lakes, wetlands, and forest, to mostly just a crop-dominated landscape.



Impairments are concentrated in this southern part of the watershed. Seven stream AUDs are non-supporting in the middle and lower parts of the watershed; two for aquatic recreation, five for aquatic life, and two for aquatic consumption. Four lakes are non-supporting of aquatic recreation, and twelve are non-supporting of aquatic consumption.

In 2007-08, 29 of the 68 stream reaches were monitored for impairments to aquatic recreation and/or aquatic life. Five of these were assessed as impaired for impacts to aquatic recreation and/or impacts to aquatic life, and 7 were assessed as supporting aquatic life (i.e. not impaired).

Of the 217 lakes, 30 were monitored for impairments to aquatic recreation. Four were assessed as impaired for impacts to aquatic recreation, and 7 were assessed as supporting of aquatic recreation. For purposes of better understanding water quality the PdT river is described as a series of smaller tributary watersheds called HUC-10's. There are 6 HUC-10's that make up the PdT River watershed. These six HUC-10 tributary watersheds have a name detailed on the map above.

What follows on the next page is a synopsis of each tributary's water quality....

Flow Weighted Mean Concentrations and percent exceedance of the standard for TSS and TP. In order to not be listed as impaired the standard must not be exceeded in more than 10% of the samples gathered in a year.

Pomme de Terre River Outlet, Total Phosphorus Flow Weighted Mean Conc. and % exceedance of the Standard									
	Standard	2008	2009	2010	2011	2012	2013	2014	2015
TSS Average Concentration PPM	65	72.7	42.4	41.1	21.7	69.8	49	50.8	59.8
TSS % exceedance of Standard	10%	36%	23%	39%	0%	58%	31%	37%	38%
TP Average Concentration PPM	0.15	0.192	0.211	0.249	0.234	ND	ND	0.179	0.152
TP % exceedance of Standard	10%	61%	41%	88%	58%	ND	ND	46%	45%
Nitrogen Ave. Concentration PPM	10	1.54	1.04	1.59	1.83	1.06	1.25	1.32	1.99
Nitrogen % exceedance of Standard	10%	0%	0%	0%	0%	ND	ND	0%	0%

% Exceedance of Standard = how frequent the standard was exceeded in a year (generally not to exceed 10%),

Standard = MN State Standard, TSS = Total Suspended Solids, TP = Total Phosphorus, NO2-3 = Nitrate+Nitrite Nitrogen



2017 Stream Monitoring sites



2017 Lake Monitoring site

Upper Pomme de Terre River:

- Rich with lakes, wetlands, forests, grasslands and meandering streams and for the most part has excellent water quality and steady stream flow.
- Monitoring of biological communities found that the watershed supported healthy communities of fish and aquatic invertebrates.
- North Turtle Lake is impaired due to high levels of phosphorus that the lake receives from its surrounding watershed.

Muddy Creek:

- Muddy Creek is classified as “Limited Resource Value water.” meaning that the standards that apply to the rest of the river (Aquatic life and recreation) are not as strict or do not apply.
- This tributary delivers some of the highest concentrations of phosphorus and e-coli bacteria sampled in the PdT.
- Previous bio-assessments failed to assess this region as there were no standards for ditched waterways, this will change in the 2017-18 assessment.
- Hattie Lake is the only lake found this watershed with sufficient data for assessment and is impaired by excessive levels of phosphorus.

Dry Wood Creek:

- The southern most tributary HUC-10 before the river outlets to the Minnesota River.
- This watershed’s primary land use is agriculture with no towns. More of the waterways are ditched than meandering.
- Dry Wood Creek is impaired for Turbidity (sediment), Dissolved Oxygen, Fish and Aquatic Macroinvertebrate
- Recent monitoring suggests that phosphorus and *E.coli* are exceeding the standard.

Pelican Creek:

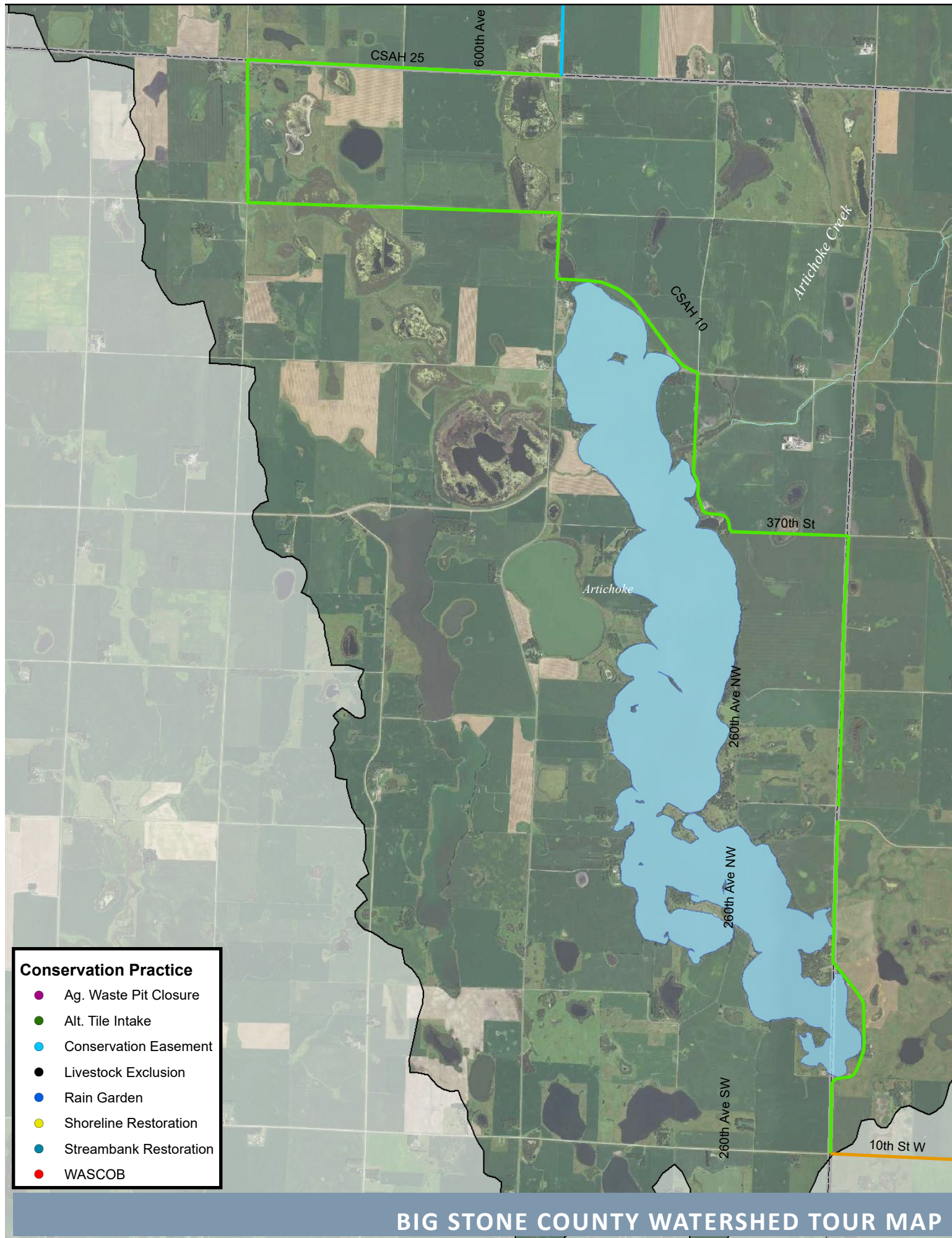
- This area for the most part has excellent water quality and steady stream flow.
- Lake Christina is impaired due to high levels of phosphorus received from its surrounding watershed.
- Monitoring of biological communities found that the watershed supported healthy communities of fish and aquatic invertebrates. Pelican Creek, however, is listed as impaired due to its poor macroinvertebrate assessment results. Monitoring over the past ten years has shown that this creek has problems with excessive bacteria and phosphorus levels.

Middle Pomme de Terre River:

- In this region, the landscape transitions from North Central Hardwood Forests to Northern Glaciated Plains. Perennial land covers give way to annual row cropping as one moves to the South as do meandering streams to ditches.
- As the river travels downstream the impairments accumulate. Downstream of Barrett Lake the river is impaired due to fish bio-assessments.
- Nitrogen and Total Suspended Solids are within the standard. Phosphorous and E-coli bacteria often exceed the standard.
- From this point downstream stream flow is characterized as prone to quick floods following rain and extended periods of low to no flow when there is little rain. The PdT River benefits from the steady flow released by more stable upstream regions.

Lower Pomme de Terre River:

- The last HUC-10 watershed representing the main Pomme de Terre River as it outlets to the Minnesota River.
- This region has a monitoring site that has been active since 1971. This reach of the river is impaired for Turbidity (sediment), Dissolved Oxygen, Fish and Aquatic Macroinvertebrate bio-assessments.
- Monitoring data also reports high level of phosphorus and E-coli bacteria.



Board of Water and Soil Resources (BWSR)

MISSION AND PURPOSE

Mission: Improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners

BWSR's mission is implemented through the following core functions:

- To function as the state soil conservation agency. (M.S. 103B.101)
- To direct private land soil and water conservation programs through the action of SWCDs, counties, cities, townships, watershed districts, and water management organizations. (M.S. 103C, 103D, 103F)
- To link water resource planning with comprehensive land use planning. (M.S. 103B)
- To provide resolution of water policy conflicts and issues. (M.S. 103A.211, 103A.305, 103A.315, 103A.311)
- To implement the comprehensive local water management acts. (M.S. 103B.201, 103B.255, 103B.301)
- To provide the forum (through the board) for local issues, priorities, and opportunities to be incorporated into state public policy. (M.S. 103B.101)
- To administer for the Wetland Conservation Act. (M.S. 103G)
- To coordinate state and federal resources to realize local priorities.

The local-state conservation delivery system provides an opportunity to partner state, federal, local, and private resources to private lands projects that help maintain water quality. These partnerships in service delivery ensure that the interest of state policy is implemented with local issues and problems in mind.



HISTORY

The Minnesota Board of Water and Soil Resources was created in 1987, when the Legislature combined the Soil and Water Conservation Board with two other organizations with local government and natural resource ties: the Water Resources Board (established in 1955) and the Southern Minnesota Rivers Basin Council (established in 1971).

STATE FISCAL YEAR 2014 - 2015 BIENNIAL BUDGET



The General fund is the State's primary revenue source fund, however the Board of Water and Soil Resources now receives the majority of its funding from the Clean Water Fund and Lessard-Sams Outdoor Heritage Council Fund. The Clean Water Land and Legacy Amendment was approved by voters in 2008.

"Grants to Local Government Units" is the amount of appropriations and revenue sources that will be granted to various local government units (LGUs) to spend on approved programs. The primary recipient LGUs are soil and water conservation districts (SWCD), counties, watershed districts, watershed management organizations, and cities.

Revenue for 2014-2015 biennium	
General Fund 18%	\$25,282
Clean Water Fund 47%	\$65,429
Outdoor Heritage Fund 15%	\$21,690
LCCMR (Env. Trust Fund) 3%	\$4,083
Other Funds 17%	\$24,114
Total	\$140,598
Expenditures for 2014-2015 biennium	
Grants to Local Government Units	\$120,042
Agency Operations	\$20,556
Total Estimated Expenditures	\$140,598

All of the dollar amounts in the tables above are in thousands.

Acronym Cheat Sheet

STATE, REGIONAL, AND LOCAL GOVERNMENT

BWSR.....	Board of Water and Soil Resources (state)
DNR	Minnesota Department of Natural Resources (state)
LGU.....	Local Governmental Unit (local)
MDA.....	Minnesota Department of Agriculture (state)
MDH.....	Minnesota Department of Health (state)
DNR	Minnesota Department of Natural Resources (state)
MPCA or PCA.....	Minnesota Pollution Control Agency (state)
SWCD	Soil and Water Conservation District (local)
JPB	Joint Powers Board (local)
TAC.....	Technical Advisory Committee
UM Ext.....	University of Minnesota Extension Service (state)
PDTRA.....	Pomme de Terre River Association

FEDERAL

COE.....	Army Corp of Engineers
EPA	U.S. Environmental Protection Agency
FEMA.....	Federal Emergency Management Agency
FSA	Farm Services Administration, USDA
NRCS	Natural Resources Conservation Service, USDA
USDA.....	U.S. Department of Agriculture
USF&WS	U.S. Fish & Wildlife Service
USGS.....	U.S. Geological Survey

ORGANIZATIONS

AMC.....	Association of Minnesota Counties
MASWCD.....	Minnesota Association of Soil and Water Conservation Districts

PROGRAMS

CLWP.....	Comprehensive Local Water
CRP	Conservation Reserve Program
CREP.....	Conservation Reserve Enhancement Program
EQIP.....	Environmental Quality Incentive Program
RIM.....	Reinvest in Minnesota Program
WCA.....	Wetland Conservation Act
1W1P.....	One Watershed, One Plan
MAWQCP.....	Minnesota Agricultural Water Quality Certification Program

OTHER TERMS

BOD	Biological Oxygen Demand
GIS	Geographic Information System
NPS	Nonpoint Source Pollution
TDML.....	Total Daily Maximum Load
CWF	Clean Water Funds
Fed. 319.....	Federal 319 (Section of the Clean Water Act)
WRAPS.....	Watershed Restoration and Protection Strategy
WASCOB.....	Water and Sediment Control Basin