Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Compliance Inspection Form

Existing Subsurface Sewage Treatment Systems (SSTS)

Doc Type: Compliance and Enforcement

Inspection results based on Minnesota Pollution Control Agency (MPCA) requirements and attached forms – additional local requirements may also apply.

Submit completed form to Local Unit of Government (LUG) and system owner within 15 days

For local tracking purposes:

System Status

System status on date (mm/dd/yyyy): 09/23/2020

☒ **Compliant – Certificate of Compliance**
(Valid for 3 years from report date, unless shorter time frame outlined in Local Ordinance.)

☐ **Noncompliant – Notice of Noncompliance**
(See Upgrade Requirements on page 3.)

Reason(s) for noncompliance *(check all applicable)*

- ☐ Impact on Public Health *(Compliance Component #1) – Imminent threat to public health and safety*
- ☐ Other Compliance Conditions *(Compliance Component #3) – Imminent threat to public health and safety*
- ☐ Tank Integrity *(Compliance Component #2) – Failing to protect groundwater*
- ☐ Other Compliance Conditions *(Compliance Component #3) – Failing to protect groundwater*
- ☐ Soil Separation *(Compliance Component #4) – Failing to protect groundwater*
- ☐ Operating permit/monitoring plan requirements *(Compliance Component #5) – Noncompliant*

Property Information

Parcel ID# or Sec/Twp/Range:

Property address: 9744 55th St N, Lake Elmo MN 55042
Reason for inspection: Transfer of ownership

Property owner: David and Gina Schad
Owner's phone:

or

Owner's representative:
Representative phone:

Local regulatory authority: Lake Elmo, MN
Regulatory authority phone:

Brief system description: Gravity flow to 2 Septic tanks and a gravity trench STA

Comments or recommendations:

The tanks were both pumped and the owner was replacing the less than 6" soil over the 20" manholes.

Certification

I hereby certify that all the necessary information has been gathered to determine the compliance status of this system. No determination of future system performance has been nor can be made due to unknown conditions during system construction, possible abuse of the system, inadequate maintenance, or future water usage.

Inspector name: David Gustafson
Certification number: L 1162

Business name: Woodland Engineering
License number: C 1481

Inspector signature: David Gustafson
Phone number: 612.251.4513

Necessary or Locally Required Attachments

☐ Soil boring logs ☐ System/As-built drawing ☐ Forms per local ordinance

☒ Other information (list): County letter and existing inspection for transfer of ownership

Property address: 9744 55th St N, Lake Elmo MN 55042 Inspector initials/Date: DMG | 09/24/2020 *(mm/dd/yyyy)*

1. Impact on Public Health – Compliance component #1 of 5

Compliance criteria:	
System discharges sewage to the ground surface.	☐ Yes ☒ No
System discharges sewage to drain tile or surface waters.	☐ Yes ☒ No
System causes sewage backup into dwelling or establishment.	☐ Yes ☒ No

Any "yes" answer above indicates the system is an imminent threat to public health and safety.

Verification method(s):

- ☒ Searched for surface outlet
- ☒ Searched for seeping in yard/backup in home
- ☐ Excessive ponding in soil system/D-boxes
- ☒ Homeowner testimony *(See Comments/Explanation)*
- ☐ "Black soil" above soil dispersal system
- ☐ System requires "emergency" pumping
- ☐ Performed dye test
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

Comments/Explanation:
The yard showed no signs of effluent surfacing

2. Tank Integrity – Compliance component #2 of 5

Compliance criteria:	
System consists of a seepage pit, cesspool, drywell, or leaching pit. *Seepage pits meeting 7080.2550 may be compliant if allowed in local ordinance.*	☐ Yes ☒ No
Sewage tank(s) leak below their designed operating depth. If yes, which sewage tank(s) leaks:	☐ Yes ☒ No

Any "yes" answer above indicates the system is failing to protect groundwater.

Verification method(s):

- ☐ Probed tank(s) bottom
- ☐ Examined construction records
- ☒ Examined Tank Integrity Form *(Attach)*
- ☐ Observed liquid level below operating depth
- ☒ Examined empty (pumped) tanks(s)
- ☐ Probed outside tank(s) for "black soil"
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

Comments/Explanation: Washington County form Completed by Pinky's Service L1673

3. Other Compliance Conditions – Compliance component #3 of 5

a. Maintenance hole covers are damaged, cracked, unsecured, or appear to be structurally unsound. ☐ Yes***** ☒ No ☐ Unknown

b. Other issues *(electrical hazards, etc.)* to immediately and adversely impact public health or safety. ☐ Yes***** ☒ No ☐ Unknown
****System is an imminent threat to public health and safety.***

Explain: Both lids were solid and buried with less than 12" of cover

c. System is non-protective of ground water for other conditions as determined by inspector . ☐ Yes* ☒ No
****System is failing to protect groundwater.***

Explain:

Property address: 9744 55th St N, Lake Elmo MN 55042 Inspector initials/Date: DMG | 09/24/2020 *(mm/dd/yyyy)*

4. Soil Separation – Compliance component #4 of 5

Date of installation: 1998 *(mm/dd/yyyy)* ☐ Unknown

Shoreland/Wellhead protection/Food beverage lodging? ☐ Yes ☒ No

Compliance criteria:

For systems built prior to April 1, 1996, and not located in Shoreland or Wellhead Protection Area or not serving a food, beverage or lodging establishment: Drainfield has at least a two-foot vertical separation distance from periodically saturated soil or bedrock.	☐ Yes ☐ No
Non-performance systems built April 1, 1996, or later or for non-performance systems located in Shoreland or Wellhead Protection Areas or serving a food, beverage, or lodging establishment: Drainfield has a three-foot vertical separation distance from periodically saturated soil or bedrock.*	☒ Yes ☐ No
"Experimental", "Other", or "Performance" systems built under pre-2008 Rules; Type IV or V systems built under 2008 Rules (7080. 2350 or 7080.2400 (Advanced Inspector License required) Drainfield meets the designed vertical separation distance from periodically saturated soil or bedrock.	☐ Yes ☐ No

Any "no" answer above indicates the system is failing to protect groundwater.

Verification method(s):

Soil observation does not expire. Previous soil observations by two independent parties are sufficient, unless site conditions have been altered or local requirements differ.

☐ Conducted soil observation(s) *(Attach boring logs)*
☒ Two previous verifications (A*ttach boring logs)*
☐ Not applicable *(Holding tank(s), no drainfield)*
☐ Unable to verify *(See Comments/Explanation)*
☐ Other *(See Comments/Explanation)*

Comments/Explanation:

Indicate depths or elevations

A. Bottom of distribution media	24"
B. Periodically saturated soil/bedrock	NA
C. System separation	36"+
D. Required compliance separation*	36"

*May be reduced up to 15 percent if allowed by Local Ordinance.

5. Operating Permit and Nitrogen BMP* – Compliance component #5 of 5 ☐ Not applicable

Is the system operated under an Operating Permit? ☐ Yes ☒ No **If "yes", A below is required**

Is the system required to employ a Nitrogen BMP? ☐ Yes ☒ No **If "yes", B below is required**

BMP = Best Management Practice(s) specified in the system design

If the answer to both questions is "no", this section does not need to be completed.

Compliance criteria

a. Operating Permit number: _____ Have the Operating Permit requirements been met?	☐ Yes ☐ No
b. Is the required nitrogen BMP in place and properly functioning?	☐ Yes ☐ No

Any "no" answer indicates Noncompliance.

Upgrade Requirements *(Minn. Stat. § 115.55) An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance. If the system is failing to protect ground water, the system must be upgraded, replaced, or its use discontinued within the time required by local ordinance. If an existing system is not failing as defined in law, and has at least two feet of design soil separation, then the system need not be upgraded, repaired, replaced, or its use discontinued, notwithstanding any local ordinance that is more strict. This provision does not apply to systems in shoreland areas, Wellhead Protection Areas, or those used in connection with food, beverage, and lodging establishments as defined in law.*

DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
GOVERNMENT CENTER
14949 62nd STREET NORTH P.O. BOX 6 STILLWATER, MN 55082-0006
Office: 651-430-6655 TTY: 651-430-6246 FAX: 651-430-6730

Washington County

Subsurface Sewage Treatment System Maintenance Permit

This section must be completed in its entirety to constitute a valid maintenance permit. This permit must be completed prior to performing maintenance activities and remain on-site for the duration of the maintenance activity.

Date of Maintenance: 9-22-20 Reason for Maintenance: Routine

Property Address: 9744 55th St N Property Owner's Name: Dave Schad

Municipality: Lake Elmo ZIP: 55042 Property Identification Number: _____

Maintenance Permit No: R0235d20679 Maintainer Name and License No. Pinky's Environmental Sewer Service/ L1673

Maintenance Performed	Tank Measurement (must be completed if tanks NOT pumped)
☑ Tank(s) Pumped ☐ Sludge and scum measured Do tanks need to be pumped? ☐ Yes ☐ No (if no provide measurements)	Liquid Level of Tank _____ in Sludge Level in Tank _____ in Scum Level in Tank _____ in Sludge + Scum _____ / Liquid Level _____ X 100 = % Sludge & Scum Tanks must be pumped if 25% or greater

1. **Access used to remove septage:** ☑ Maintenance Hole ☐ Other (enter authorization code)
2. **Were all covers securely replaced?** ☑ Yes ☐ No
3. **Is there evidence of tank leakage from a septic, holding, pretreatment or pump tank below the operating depth or evidence of damaged, cracked, or structurally unsound maintenance hole covers?** ☐ Yes ☑ No

Tank	Leaking Out	Leaking In	Cover Damage
Septic/Holding Tank #1	☐ Yes ☑ No	☐ Yes ☑ No	☐ Yes ☑ No
Septic/Holding Tank #2	☐ Yes ☑ No	☐ Yes ☑ No	☐ Yes ☑ No
Pretreatment Tank	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Pump Tank	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

4. **How many gallons of septage were removed?**
   Tank #1 150 gal Tank #2 100 gal Pretreatment tank _____ gal Pump Tank _____ gal
5. **Other information: List any troubleshooting, minor repairs conducted, tank safety concerns, or other concerns.**
   _____
   _____
6. Location of septage disposal: _____

Pinky's Environmental Sewer Service Inc.
PO Box 354
Afton MN 55001
P: 651-439-4847 License Number: L1673

Maintenance activities must be reported to the Department within 90 days.

Washington County

Department of Public Health and Environment

Lowell Johnson
Director

Sue Hedlund
Deputy Director

8/29/2013

Lori Gregory
9744 55thSt N
Lake Elmo MN, 55042

0302921210005

CERTFICATE OF COMPLIANCE OF EXISTING SYSTEM

On 8/29/2013 the Department received a Compliance Inspection For for the subsurface sewage treatment system (SSTS) located at 9744 55thSt N in Lake Elmo, Minnesota, GEO Code 0302921210005. The compliance inspection was conducted by Tom Trooien of All Saints Septic Service on 8/3/2013.

The Compliance Inspection Report by All Saints Septic Service indicates that the SSTS located at 9744 55thSt N presently meets minimum compliance criteria in Minnesota Rules, Chapter 7080.1500, Subp. 4, and Section 4.3 of the Washington County Development Code, Chapter Four, Subsurface Sewage Treatment System Regulations (Washington County Ordinance No. 179).

The Department concurs with the Compliance Inspection Report that the system located at 9744 55thSt N meets minimum compliance criteria. This correspondence will serve as the Certificate of Compliance and is valid for three (3) years from of the date of the inspection.

If you have any questions or comments, please contact me at 651-430-6676.

Sincerely,

P. Ganzel

Pete Ganzel
Senior Environmental Specialist

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Compliance Inspection Form

Existing Subsurface Sewage Treatment Systems (SSTS)

Doc Type: Compliance and Enforcement

Instructions: Inspection results based on Minnesota Pollution Control Agency (MPCA) requirements and attached forms – additional local requirements may also apply.

Submit completed form to Local Unit of Government (LUG) and system owner within 15 days

For local tracking purposes:

1118

System Status

System status on date (mm/dd/yyyy): 8-3-13

8/29/2013 - Rec.

☒ **Compliant – Certificate of Compliance**
(Valid for 3 years from report date, unless shorter time frame outlined in Local Ordinance.)

☐ **Noncompliant – Notice of Noncompliance**
(See Upgrade Requirements on page 3)

Reason(s) for noncompliance *(check all applicable)*

- ☐ Impact on Public Health *(Compliance Component #1) – Imminent threat to public health and safety*
- ☐ Other Compliance Conditions *(Compliance Component #3) – Imminent threat to public health and safety*
- ☐ Tank Integrity *(Compliance Component #2) – Failing to protect groundwater*
- ☐ Other Compliance Conditions *(Compliance Component #3) – Failing to protect groundwater*
- ☐ Soil Separation *(Compliance Component #4) – Failing to protect groundwater*
- ☐ Operating permit/monitoring plan requirements *(Compliance Component #5) – Noncompliant*

Property Information

Parcel ID# or Sec/Twp/Range: 03.029.21.21.0005.

Property address: 9741 55th St. N. Lake Elmo MN 55042

Reason for inspection: Property Transfer

Property owner: Lori Gregory

Owner's phone: 707-853-5781

or

Owner's representative:

Representative phone:

Local regulatory authority: Wash. County

Regulatory authority phone: 651-430-6677

Brief system description: 2 1000 Gallon Septic Tanks & Drainfield

Comments or recommendations:

Certification

I hereby certify that all the necessary information has been gathered to determine the compliance status of this system. No determination of future system performance has been nor can be made due to unknown conditions during system construction, possible abuse of the system, inadequate maintenance, or future water usage.

Inspector name: Tom Trooien

Certification number: 323

Business name: All State Septic Services

License number: 1568

Inspector signature: Tom T[signature]

Phone number: 612-599-4496

Necessary or Locally Required Attachments

☒ Soil boring logs ☒ System/As-built drawing ☐ Forms per local ordinance

☐ Other information (list):

Property address: 9941 55TH ST. N. Inspector initials/Date: TT 8-3-13

1. Impact on Public Health – Compliance component #1 of 5

Compliance criteria:	
System discharge sewage to the ground surface.	☐ Yes ☒ No
System discharge sewage to drain tile or surface waters.	☐ Yes ☒ No
System cause sewage backup into dwelling or establishment.	☐ Yes ☒ No
Any "yes" answer above indicates the system is an Imminent Threat to Public Health and Safety.	

Comments/Explanation:

Verification method(s):

- ☒ Searched for surface outlet
- ☒ Searched for seeping in yard/backup in home
- ☐ Excessive ponding in soil system/D-boxes
- ☒ Homeowner testimony *(See Comments/Explanation)*
- ☐ "Black soil" above soil dispersal system
- ☐ System requires "emergency" pumping
- ☐ Performed dye test
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

2. Tank Integrity – Compliance component #2 of 5

Compliance criteria:	
System consists of a seepage pit, cesspool, drywell, or leaching pit. *Seepage pits meeting 7080.2550 may be compliant if allowed in local ordinance.*	☐ Yes ☒ No
Sewage tank(s) leak below their designed operating depth.	☐ Yes ☒ No
If yes, which sewage tank(s) leaks:	
Any "yes" answer above indicates the system is Failing to Protect Groundwater.	

Comments/Explanation:

Verification method(s):

- ☒ Probed tank(s) bottom
- ☐ Examined construction records
- ☐ Examined Tank Integrity Form *(Attach)*
- ☐ Observed liquid level below operating depth
- ☐ Examined empty (pumped) tanks(s)
- ☐ Probed outside tank(s) for "black soil"
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

3. Other Compliance Conditions – Compliance component #3 of 5

a. Maintenance hole covers are damaged, cracked, unsecured, or appear to structurally unsound. ☐ Yes* ☒ No ☐ Unknown

b. Other issues *(electrical hazards, etc.)* to immediately and adversely impact public health or safety. ☐ Yes* ☒ No ☐ Unknown
System is an imminent threat to public health and safety

Explain:

c. System is non-protective of ground water for other conditions as determined by inspector ☐ Yes* ☒ No
System is failing to protect groundwater

Explain:

Property address: 9744 55TH ST. N. Inspector initials/Date: JT 8-3-13

4. Soil Separation – Compliance component #4 of 5

Date of installation: 1998 ☐ Unknown

Shoreland/Wellhead protection/Food Beverage Lodging? ☐ Yes ☒ No

Compliance criteria:

For systems built prior to April 1, 1996, and not located in Shoreland or Wellhead Protection Area or not serving a food, beverage or lodging establishment: Drainfield has at least a two-foot vertical separation distance from periodically saturated soil or bedrock.	☐ Yes ☐ No
Non-performance systems built April 1, 1996, or later or for non-performance systems located in Shoreland or Wellhead Protection Areas or serving a food, beverage, or lodging establishment: Drainfield has a three-foot vertical separation distance from periodically saturated soil or bedrock.*	☒ Yes ☐ No
"Experimental", "Other", or "Performance" systems built under pre-2008 Rules; Type IV or V systems built under 2008 Rules (7080.2350 or 7080.2400 (Advanced Inspector License required) Drainfield meets the designed vertical separation distance from periodically saturated soil or bedrock.	☐ Yes ☐ No

Any "no" answer above indicates the system is Failing to Protect Groundwater.

Verification method(s):

Soil observation does not expire. Previous soil observations by two independent parties are sufficient, unless site conditions have been altered or local requirements differ.

- ☒ Conducted soil observation(s) *(Attach boring logs)*
- ☐ Two previous verifications (Attach boring logs)
- ☐ Not applicable *(Holding tank(s), no drainfield)*
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other *(See Comments/Explanation)*

Comments/Explanation:

Indicate depths of elevations

A. Bottom of distribution media	24"
B. Periodically saturated soil/bedrock	N/A
C. System separation	36" +
D. Required compliance separation*	36"

*May be reduced up to 15 percent if allowed by Local Ordinance.

5. Operating Permit and Nitrogen BMP* – Compliance component #5 of 5 ☒ Not applicable

Is the system operated under an Operating Permit? ☐ Yes ☐ No **If "yes", A below is required**

Is the system required to employ a Nitrogen BMP? ☐ Yes ☐ No **If "yes", B below is required**

BMP=Best Management Practice(s) specified in the system design

If the answer to both questions is "no", this section does not need to be completed.

Compliance criteria

a. Operating Permit number: _____ Have the Operating Permit requirements been met?	☐ Yes ☐ No
b. Is the required nitrogen BMP in place and properly functioning?	☐ Yes ☐ No

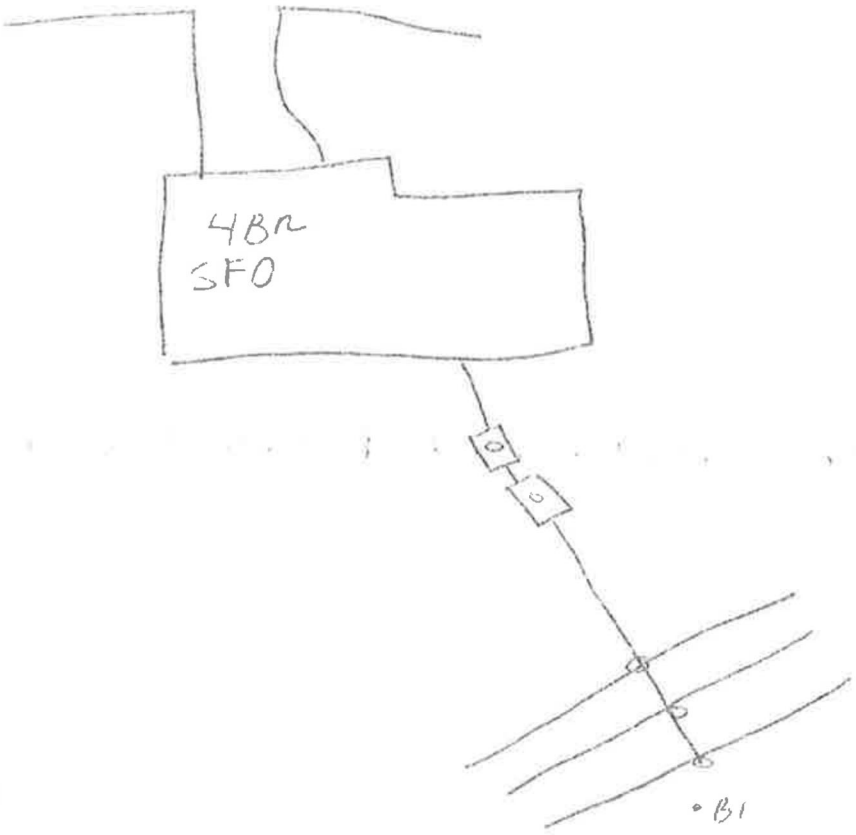
Any "no" answer indicates Noncompliance.

Upgrade Requirements *(Minn. Stat. § 115.55) An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance. If the system is failing to protect ground water, the system must be upgraded, replaced, or its use discontinued within the time required by local ordinance. If an existing system is not failing as defined in law, and has at least two feet of design soil separation, then the system need not be upgraded, repaired, replaced, or its use discontinued, notwithstanding any local ordinance that is more strict. This provision does not apply to systems in shoreland areas, Wellhead Protection Areas, or those used in connection with food, beverage, and lodging establishments as defined in law.*

9744 55TH ST. N.
LAKE ELMO, MN. 55042
8-3-13

B-1

0-6"	LOAM TOPSOIL	10YR 3/2
7-15"	LOAM	10YR 4/2
16-21"	SAND/LOAM	10YR 4/3
22-67"	MED/COURSE SAND	10YR 6/4



Map Scale: 1:641 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 16, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2020—Jul 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12D	Emmert gravelly loamy coarse sand, 15 to 25 percent slopes	1.0	48.4%
49B	Antigo silt loam, 2 to 6 percent slopes	0.3	14.0%
155C	Chetek sandy loam, 6 to 12 percent slopes	0.7	31.9%
507	Poskin silt loam	0.1	5.8%
Totals for Area of Interest		**2.1**	**100.0%**

EMMERT SERIES

The Emmert series consists of very deep, excessively drained soils that formed in sandy and sandy-skeletal glacial outwash on eskers, kames, terraces, and moraines. These soils have rapid or very rapid permeability. Their slopes range from 1 to 70 percent. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 40 degrees F.

TAXONOMIC CLASS: Sandy-skeletal, mixed, frigid Typic Udorthents

TYPICAL PEDON: Emmert loamy sand with a convex slope of about 40 percent on an esker under deciduous forest. (Colors are for moist soil unless otherwise stated.)

A--0 to 2 inches; very dark gray (10YR 3/1) loamy sand, dark gray (10YR4/1) dry; weak fine granular structure; very friable; about 10 percent gravel; slightly acid; abrupt smooth boundary. (1 to 4 inches thick)

E--2 to 12 inches, brown (7.5YR 5/3) gravelly loamy sand, light brown (7.5YR 6/3) dry; weak fine granular structure; very friable; about 15 percent gravel; slightly acid; gradual smooth boundary. (0 to 15 inches thick)

Bt1--12 to 19 inches, brown (7.5YR 4/4) gravelly loamy coarse sand; weak fine granular structure; about 20 percent gravel; common clay bridging between sand grains; neutral; gradual smooth boundary.

Bt2--19 to 37 inches, brown (7.5YR 4/4) gravelly coarse sand; weak fine granular structure; about 30 percent gravel, common clay bridging between sand grains, neutral; gradual smooth boundary. (combined thickness is 4 to 40 inches)

C--37 to 80 inches, dark brown (7.5YR 3/3) very gravelly coarse sand; single grain; loose; about 50 percent gravel; neutral.

TYPE LOCATION: Mille Lacs County, Minnesota; about 10 miles northeast of Milaca, 800 feet east and 1000 feet south of the northwest corner of Sec. 14, T. 40 N., R. 25 W..

RANGE IN CHARACTERISTICS: Depth to free carbonates is greater than 80 inches. The particle size control section has 35 to 90 percent by volume, of rock fragments commonly dispersed throughout the matrix, but in some pedons the

fragments are in distinct strata. They are mostly of igneous origin and commonly 0.5 to 10 cm in diameter.

The A horizon has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2. It is coarse sandy loam, sandy loam, fine sandy loam, loamy coarse sand, loamy sand, sand or coarse sand or their gravelly analogues. It is slightly acid to strongly acid.

The E horizon has hue of 10YR or 7.5YR hue; value of 4 to 6; and chroma of 1 to 3. It is coarse sandy loam, sandy loam, fine sandy loam, loamy coarse sand, sand or coarse sand or their gravelly analogues. It is slightly acid to strongly acid.

The Bt horizons have hue of 5YR to 10YR; value of 3 to 5; and chroma of 2 to 6. They are coarse sand, sand, loamy coarse sand, or loamy sand or their gravelly or very gravelly analogues. They are neutral to strongly acid.

Some pedons have a Bw horizon with colors and textures similar to the Bt horizon.

The C horizon has a hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6. It is sand or coarse sand in the fine-earth fraction and stratification is common. It is neutral to strongly acid.

COMPETING SERIES: These are the Boscawen, Hopkinton, Stonelake and Yellowdog series. The Boscawen soils do not have clay bridging in the upper part of the profile. Hopkinton soils are not currently in the OSD database. Stonelake soils have free carbonates at a depth above 60 inches. Yellowdog soils have a lithic contact at depths of 20 to 40 inches.

GEOGRAPHIC SETTING: These soils have convex and linear slopes on kames, eskers, moraines, and terraces. Slope gradients commonly are 9 to 18 percent but range from 1 to 70 percent. These soils formed in noncalcareous, sandy and sandy-skeletal outwash of Late Wisconsinan Age. The mean annual air temperature is approximately 35 to 45 degrees F. Mean annual precipitation is about 24 to 34 inches. Frost-free days range from 90 to 140 days. Elevation above sea level ranges from 700 to 1600 feet.

GEOGRAPHICALLY ASSOCIATED SOILS: The Emmert soils primarily are in association with the well drained Antigo, Rosholt, Sanburn, Cloquet, and Onamia soils and somewhat excessively drained Chetek soils all of which have a thicker loamy mantle. They also are associated in some places with the upland till soils.

DRAINAGE AND PERMEABILITY: Excessively drained. Surface runoff is low to medium. Permeability is rapid or very rapid.

USE AND VEGETATION: Mostly in forest and some is pastured. Native vegetation is mixed hardwoods and conifers.

DISTRIBUTION AND EXTENT: MLRA-90 and 93. Central and northern Minnesota and northern Wisconsin. The series is moderately extensive.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: St. Paul, Minnesota

SERIES ESTABLISHED: Mille Lacs County, Minnesota, 1927.

REMARKS: Diagnostic horizons and features recognized in this pedon are: ochric epipedon - the zone from o to 12 inches (A and E horizons); udic moisture regime.

The Bt horizons do not qualify for an argillic because the clay increase is less than 3 percent.

ADDITIONAL DATA: Refer to MAES Central File Code No. 742 for some results of laboratory analysis of the typical pedon.

National Cooperative Soil Survey
U.S.A.