

Data Source(s): Westwood (2020); ESRI WMS World Imagery Basemap (Accessed 2020); Census Bureau (2019); U.S. Department of Agriculture, Natural Resources Conservation Service (2020).

**Legend**

- |                            |                          |                     |                 |
|----------------------------|--------------------------|---------------------|-----------------|
| Project Area               | Major Watershed Boundary | Hydro Drainage Area | PWI Watercourse |
| Major Road                 | Minor Watershed Boundary | Drainage Ditch      | PWI Basin       |
| 1-Mile Project Area Buffer | Flow Direction Line      | NWI Wetland         | NHD Flowline    |
| Municipal Boundary         | FEMA Floodplain          | NHD Waterbody       |                 |



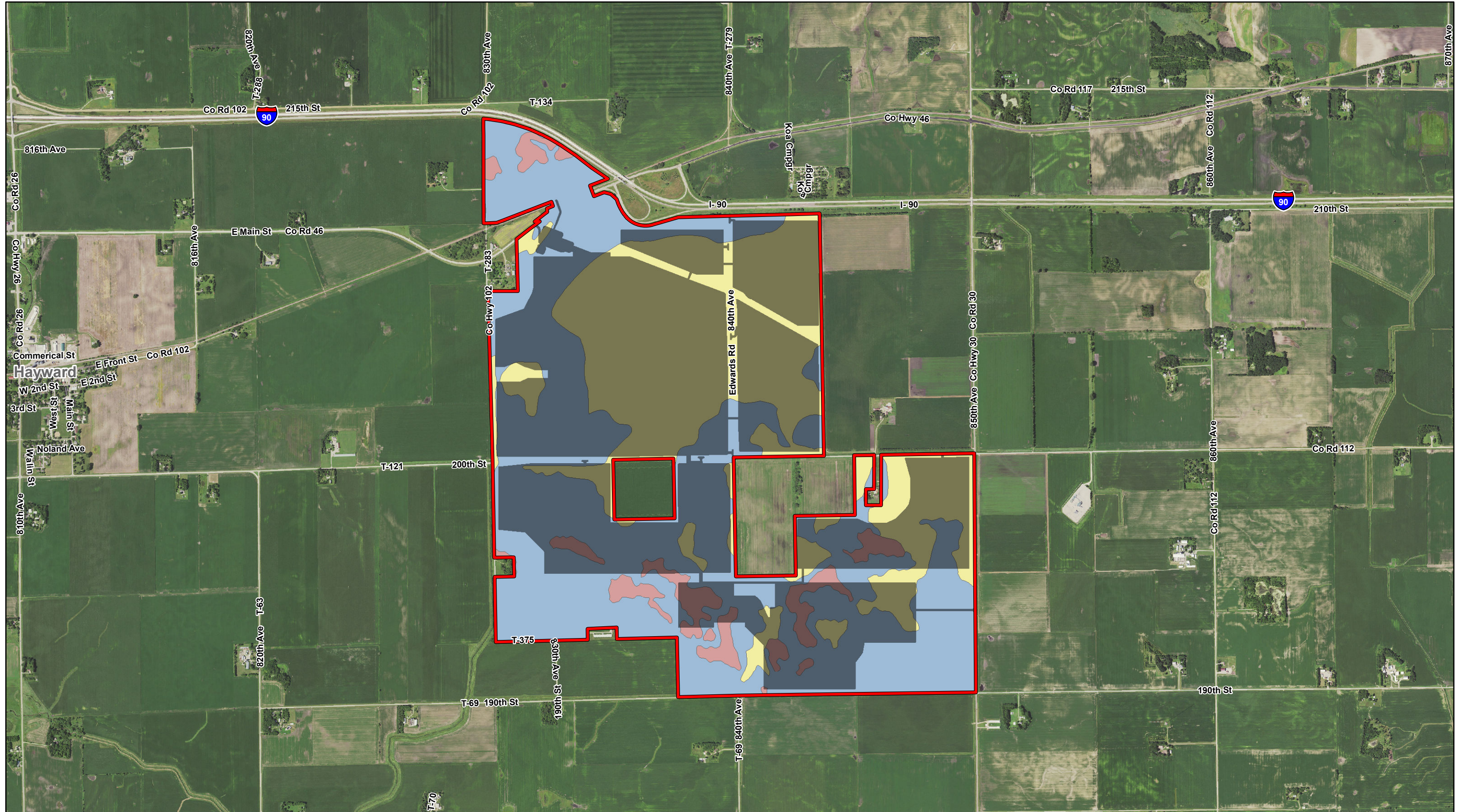
**Hayward Solar Project**

Freeborn County, Minnesota

**Surface Waters & Watersheds of Project Area**

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Data Source(s): Westwood (2021); Minnesota NAIP Imagery (2019); Census Bureau (2019); U.S. Department of Agriculture, Natural Resources Conservation Service (2020).

**Legend**

-  Project Area
-  Preliminary Development Area

**Prime Farmland Classifications (Acreages & %'s of Preliminary Development Area)**

-  All areas are prime farmland - 58.05 Acres (4.56%)
-  Farmland of statewide importance - 623.71 Acres (49.02%)
-  Prime farmland if drained - 590.57 Acres (46.42%)



**Hayward Solar Project**

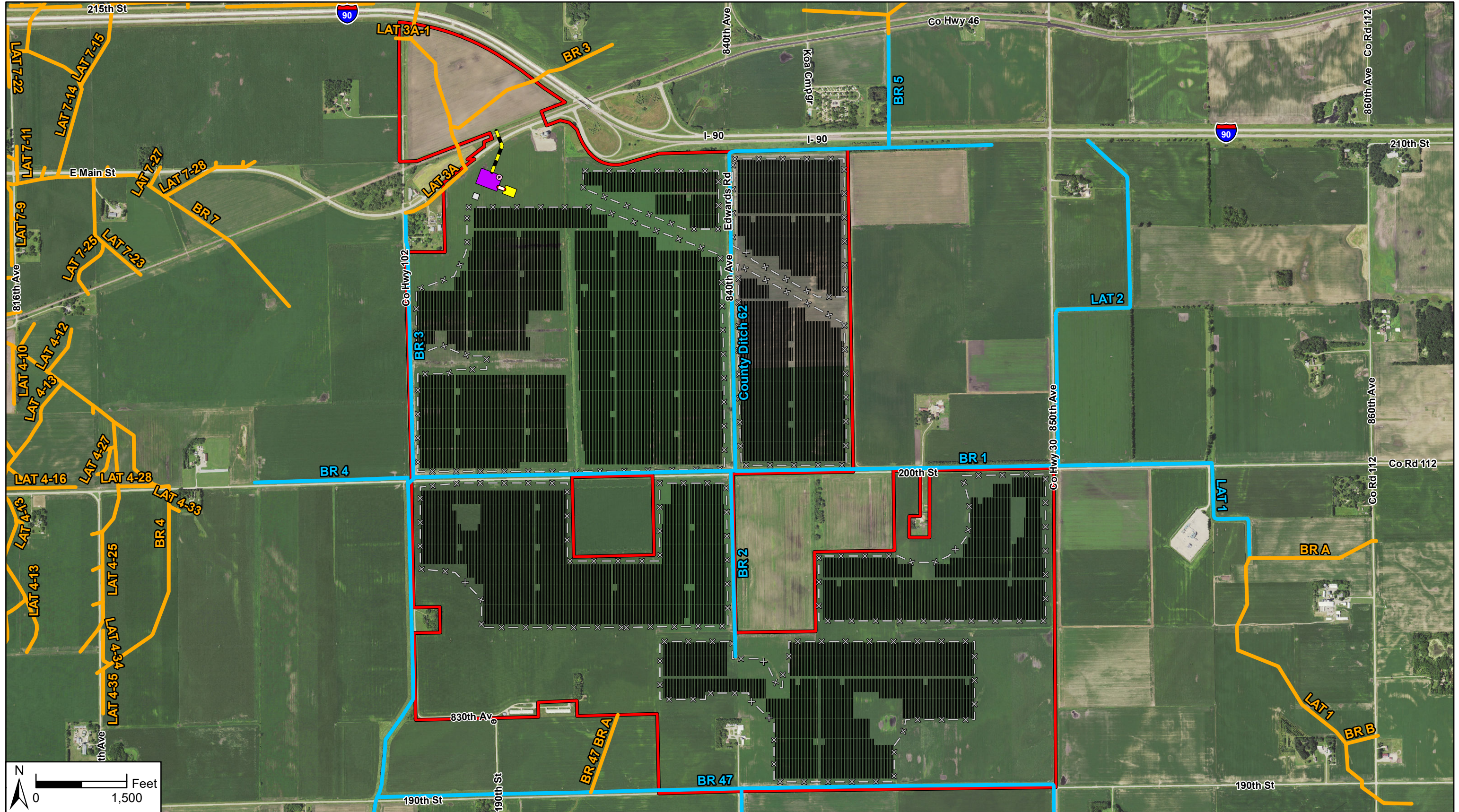
Freeborn County, Minnesota

Project Prime Farmland

**Westwood**

Toll Free (888) 937-5150 westwoodsps.com  
Westwood Professional Services, Inc.





Data Source(s): Westwood (2021); Minnesota NAIP Imagery (2019); Census Bureau (2019); Freeborn County (2020).

**Legend**

- Project Area
- Proposed Project Substation
- SMMPA Switchyard
- Proposed Project Fence Boundary
- Proposed Project O&M Building
- POI
- SMMPA Line Tap
- Project Gen-Tie Line
- Freeborn County Drain Tile
- Freeborn County Ditch

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**Hayward Solar Project**  
Freeborn County, Minnesota

**Drain Tiles & Ditches**

Map Document: N:\0026599.00\GIS\AMP\_Figures\Hayward\_AIMP\_EB\_DrainTiles&DitchesMap\_210427.mxd 4/27/2021 9:38:33 AM radevito



# **Appendix A**

## **Selected Soil Physical Features, Classifications, and Interpretations and Limitations**

**Hayward Solar Project  
Agricultural Impact Mitigation Plan  
Freeborn County, Minnesota**

**Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations**

Feature Type	Acres <sup>2</sup>	Map Unit Symbol <sup>3</sup>	Map Unit Name <sup>3</sup>	Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
				Particle Size Family <sup>3</sup>	Slope Range <sup>4</sup>	Drainage Class <sup>5</sup>	Topsoil Thickness <sup>6</sup>	Prime Farmland <sup>3</sup>	Land Capability Classification <sup>3</sup>	Hydric Soil Rating <sup>3</sup>	Highly Erodible Water <sup>7</sup>	Highly Erodible Wind <sup>8</sup>	Compact Prone <sup>9</sup>	Rutting Hazard <sup>10</sup>	Droughty <sup>11</sup>
Access Road	1.76	392	Biscay clay loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.47	L78A	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.50	300	Dassel mucky loam	coarse-loamy	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	2.11	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.51	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	39.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	4.44	282	Hanska loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	34.11	L13A	Klossner muck, 0 to 1 percent slopes	loamy	0-5	Very poorly drained	9.00	Farmland of statewide importance	3w	Yes	No	Yes	Yes	Severe	No
Access Road	3.81	239	Le Sueur loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	14.00	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Access Road	0.50	227	Lemond loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	18.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.58	247	Linder sandy loam, 0 to 3 percent slopes	coarse-loamy	0-5	Somewhat poorly drained	12.00	All areas are prime farmland	2s	No	No	No	Yes	Severe	No
Access Road	2.24	136	Madelia silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.08	252	Marshan silt loam	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	15.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.49	253	Maxcreek silty clay loam	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.54	940	Maxcreek-Barbert complex	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	3.34	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.94	134	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	33.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	0.80	391	Spicer silt loam, depressional	fine-silty	0-5	Very poorly drained	20.00	Farmland of statewide importance	3w	Yes	No	No	Yes	Severe	No
Access Road	2.80	140	Spicer silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	8.33	386	Wacousta mucky silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	4.55	400	Wacousta silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	1.81	392	Biscay clay loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	2.66	L78A	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.86	300	Dassel mucky loam	coarse-loamy	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.26	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	1.32	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	39.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	3.50	282	Hanska loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No

**Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations**

Feature Type	Acres <sup>2</sup>	Map Unit Symbol <sup>3</sup>	Map Unit Name <sup>3</sup>	Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
				Particle Size Family <sup>3</sup>	Slope Range <sup>4</sup>	Drainage Class <sup>5</sup>	Topsoil Thickness <sup>6</sup>	Prime Farmland <sup>3</sup>	Land Capability Classification <sup>3</sup>	Hydric Soil Rating <sup>3</sup>	Highly Erodible Water <sup>7</sup>	Highly Erodible Wind <sup>8</sup>	Compact Prone <sup>9</sup>	Rutting Hazard <sup>10</sup>	Droughty <sup>11</sup>
Collection Line	29.17	L13A	Klossner muck, 0 to 1 percent slopes	loamy	0-5	Very poorly drained	9.00	Farmland of statewide importance	3w	Yes	No	Yes	Yes	Severe	No
Collection Line	1.97	239	Le Sueur loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	14.00	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Collection Line	0.10	227	Lemond loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	18.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	1.35	136	Madelia silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.12	252	Marshan silt loam	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	15.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.12	253	Maxcreek silty clay loam	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.28	940	Maxcreek-Barbert complex	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	2.42	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.09	134	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	33.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.07	391	Spicer silt loam, depressional	fine-silty	0-5	Very poorly drained	20.00	Farmland of statewide importance	3w	Yes	No	No	Yes	Severe	No
Collection Line	1.20	140	Spicer silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	5.50	386	Wacousta mucky silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	2.63	400	Wacousta silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.19	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	33.74	392	Biscay clay loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	38.21	L78A	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	0.09	129	Cylinder loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat poorly drained	19.00	All areas are prime farmland	2s	No	No	No	Yes	Severe	No
Fenced Area	4.92	5	Dakota loam, 0 to 2 percent slopes	fine-loamy	0-5	Well drained	8.00	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fenced Area	4.33	183	Dassel loam	coarse-loamy	0-5	Very poorly drained	23.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fenced Area	30.52	300	Dassel mucky loam	coarse-loamy	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fenced Area	7.72	123	Dundas silt loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	10.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	11.47	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	16.62	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	39.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fenced Area	34.82	282	Hanska loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	530.41	L13A	Klossner muck, 0 to 1 percent slopes	loamy	0-5	Very poorly drained	9.00	Farmland of statewide importance	3w	Yes	No	Yes	Yes	Severe	No
Fenced Area	38.92	239	Le Sueur loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	14.00	All areas are prime farmland	1	No	No	No	Yes	Severe	No

**Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations**

Feature Type	Acres <sup>2</sup>	Map Unit Symbol <sup>3</sup>	Map Unit Name <sup>3</sup>	Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
				Particle Size Family <sup>3</sup>	Slope Range <sup>4</sup>	Drainage Class <sup>5</sup>	Topsoil Thickness <sup>6</sup>	Prime Farmland <sup>3</sup>	Land Capability Classification <sup>3</sup>	Hydric Soil Rating <sup>3</sup>	Highly Erodible Water <sup>7</sup>	Highly Erodible Wind <sup>8</sup>	Compact Prone <sup>9</sup>	Rutting Hazard <sup>10</sup>	Droughty <sup>11</sup>
Fenced Area	5.44	227	Lemond loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	18.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	7.75	247	Linder sandy loam, 0 to 3 percent slopes	coarse-loamy	0-5	Somewhat poorly drained	12.00	All areas are prime farmland	2s	No	No	No	Yes	Severe	No
Fenced Area	17.82	136	Madelia silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	5.13	252	Marshan silt loam	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	15.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	21.66	253	Maxcreek silty clay loam	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	8.77	940	Maxcreek-Barbert complex	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	46.31	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	32.84	134	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	33.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fenced Area	16.40	391	Spicer silt loam, depressional	fine-silty	0-5	Very poorly drained	20.00	Farmland of statewide importance	3w	Yes	No	No	Yes	Severe	No
Fenced Area	37.80	140	Spicer silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fenced Area	75.50	386	Wacousta mucky silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fenced Area	88.56	400	Wacousta silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fenced Area	1.25	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.02	392	Biscay clay loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.02	L78A	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.01	300	Dassel mucky loam	coarse-loamy	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Inverter	0.01	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	39.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Inverter	0.01	282	Hanska loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.29	L13A	Klossner muck, 0 to 1 percent slopes	loamy	0-5	Very poorly drained	9.00	Farmland of statewide importance	3w	Yes	No	Yes	Yes	Severe	No
Inverter	0.01	239	Le Sueur loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	14.00	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Inverter	0.04	136	Madelia silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.01	252	Marshan silt loam	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	15.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.01	940	Maxcreek-Barbert complex	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.04	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.01	140	Spicer silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.07	386	Wacousta mucky silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No

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Feature Type	Acres <sup>2</sup>	Map Unit Symbol <sup>3</sup>	Map Unit Name <sup>3</sup>	Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
				Particle Size Family <sup>3</sup>	Slope Range <sup>4</sup>	Drainage Class <sup>5</sup>	Topsoil Thickness <sup>6</sup>	Prime Farmland <sup>3</sup>	Land Capability Classification <sup>3</sup>	Hydric Soil Rating <sup>3</sup>	Highly Erodible Water <sup>7</sup>	Highly Erodible Wind <sup>8</sup>	Compact Prone <sup>9</sup>	Rutting Hazard <sup>10</sup>	Droughty <sup>11</sup>
Inverter	0.01	400	Wacousta silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
O&M Building	0.78	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
O&M Building	0.08	391	Spicer silt loam, depressional	fine-silty	0-5	Very poorly drained	20.00	Farmland of statewide importance	3w	Yes	No	No	Yes	Severe	No
Stormwater Basin	0.89	300	Dassel mucky loam	coarse-loamy	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Stormwater Basin	0.85	282	Hanska loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Stormwater Basin	11.27	L13A	Klossner muck, 0 to 1 percent slopes	loamy	0-5	Very poorly drained	9.00	Farmland of statewide importance	3w	Yes	No	Yes	Yes	Severe	No
Stormwater Basin	0.00	940	Maxcreek-Barbert complex	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Stormwater Basin	0.28	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Stormwater Basin	0.04	134	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	33.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Stormwater Basin	0.33	386	Wacousta mucky silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Substation	1.67	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Switchyard	2.85	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Switchyard	1.14	391	Spicer silt loam, depressional	fine-silty	0-5	Very poorly drained	20.00	Farmland of statewide importance	3w	Yes	No	No	Yes	Severe	No
Transmission Line	0.80	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	38.95	392	Biscay clay loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	14.66	L78A	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	0.99	129	Cylinder loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat poorly drained	19.00	All areas are prime farmland	2s	No	No	No	Yes	Severe	No
Undeveloped Area	1.92	183	Dassel loam	coarse-loamy	0-5	Very poorly drained	23.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	20.87	300	Dassel mucky loam	coarse-loamy	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	73.80	160	Fieldon loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	7.70	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	39.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	9.52	282	Hanska loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	0.62	380	Havana silt loam	fine-loamy	0-5	Poorly drained	17.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	7.81	190	Hayfield silt loam, 1 to 3 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat poorly drained	9.00	All areas are prime farmland	2s	No	No	No	Yes	Severe	No
Undeveloped Area	113.22	L13A	Klossner muck, 0 to 1 percent slopes	loamy	0-5	Very poorly drained	9.00	Farmland of statewide importance	3w	Yes	No	Yes	Yes	Severe	No



**Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations**

Feature Type	Acres <sup>2</sup>	Map Unit Symbol <sup>3</sup>	Map Unit Name <sup>3</sup>	Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
				Particle Size Family <sup>3</sup>	Slope Range <sup>4</sup>	Drainage Class <sup>5</sup>	Topsoil Thickness <sup>6</sup>	Prime Farmland <sup>3</sup>	Land Capability Classification <sup>3</sup>	Hydric Soil Rating <sup>3</sup>	Highly Erodible Water <sup>7</sup>	Highly Erodible Wind <sup>8</sup>	Compact Prone <sup>9</sup>	Rutting Hazard <sup>10</sup>	Droughty <sup>11</sup>
Undeveloped Area	17.77	239	Le Sueur loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	14.00	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Undeveloped Area	1.74	247	Linder sandy loam, 0 to 3 percent slopes	coarse-loamy	0-5	Somewhat poorly drained	12.00	All areas are prime farmland	2s	No	No	No	Yes	Severe	No
Undeveloped Area	61.51	136	Madelia silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	19.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	10.14	252	Marshan silt loam	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	15.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	40.09	253	Maxcreek silty clay loam	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	0.93	83	Maxcreek silty clay loam, swales	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	13.02	940	Maxcreek-Barbert complex	fine-silty	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	53.49	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	21.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	0.67	318	Mayer loam, swales	fine-loamy over sandy or sandy-skeletal	0-5	Very poorly drained	21.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	15.75	377	Merton silt loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	16.00	All areas are prime farmland	1	No	No	No	No	Severe	No
Undeveloped Area	0.13	381	Newry silt loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	8.00	All areas are prime farmland	1	No	No	No	No	Severe	No
Undeveloped Area	5.44	L85A	Nicollet clay loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	17.00	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Undeveloped Area	31.06	134	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	33.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	13.68	391	Spicer silt loam, depressional	fine-silty	0-5	Very poorly drained	20.00	Farmland of statewide importance	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	77.74	140	Spicer silty clay loam, 0 to 2 percent slopes	fine-silty	0-5	Poorly drained	16.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	8.51	393	Udolpho silt loam	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	14.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Undeveloped Area	18.72	386	Wacousta mucky silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	10.97	400	Wacousta silt loam	fine-silty	0-5	Very poorly drained	12.00	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Undeveloped Area	15.01	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	20.00	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No

1. Project Area include soils under Elk Creek Solar lease but that are not anticipated to be disturbed during construction or operations.  
 2. Data obtained by merging facility polygons with the SSURGO spatial data in ArcGIS. Summations were performed in Microsoft Excel.  
 3. Obtained directly by query of the SSURGO geospatial database.  
 4. Representative slope values are taken directly from the SSURGO database. The SSURGO2 database provides representative slope values for all component soil series. Slope classes represent the slope class grouping in percent that contains the representative slope value for a major component soil series. For example, a soil mapped in the 2-6% slope class has an average slope of 4%, which is within the 0-5% slope range.  
 5. Drainage class as taken directly from the SSURGO database. ED, PD, and VPD indicate Excessively Drained, Poorly Drained, and Very Poorly Drained soils, respectively.  
 6. Topsoil thickness is the aggregate thickness of the A horizons described in the SSURGO database.



**Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations**

Feature Type	Acres <sup>2</sup>	Map Unit Symbol <sup>3</sup>	Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
			Map Unit Name <sup>3</sup>	Particle Size Family <sup>3</sup>	Slope Range <sup>4</sup>	Drainage Class <sup>5</sup>	Topsoil Thickness <sup>6</sup>	Prime Farmland <sup>3</sup>	Land Capability Classification <sup>3</sup>	Hydric Soil Rating <sup>3</sup>	Highly Erodible Water <sup>7</sup>	Highly Erodible Wind <sup>8</sup>	Compact Prone <sup>9</sup>	Rutting Hazard <sup>10</sup>

- 7. Includes soils in land capability classes 4e through 8e or that have a representative slope value greater than or equal to 9%.
- 8. Includes soils in wind erodibility groups 1 and 2.
- 9. Includes soils that are somewhat poorly drained to very poorly drained soils in loamy sands and finer textural classes.
- 10. Rutting potential hazard based on the soil strength as indicated by engineering texture classification, drainage class, and slope. In general, soils on low slopes in wetter drainage classes, and comprised of sediments with low strength will have potential rutting hazards.
- 11. Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.



# **Appendix B**

## **Soil Map**

**Hayward Solar Project  
Agricultural Impact Mitigation Plan  
Freeborn County, Minnesota**








## 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.

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: Freeborn 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: Jul 1, 2013—Feb 17, 2017

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
5	Dakota loam, 0 to 2 percent slopes	4.9	0.3%
83	Maxcreek silty clay loam, swales	0.9	0.0%
123	Dundas silt loam, 0 to 2 percent slopes	7.7	0.4%
129	Cylinder loam, 0 to 2 percent slopes	1.1	0.1%
134	Okoboji silty clay loam, 0 to 1 percent slopes	66.1	3.4%
136	Madelia silty clay loam, 0 to 2 percent slopes	83.0	4.2%
140	Spicer silty clay loam, 0 to 2 percent slopes	119.6	6.1%
160	Fieldon loam, 0 to 2 percent slopes	93.4	4.8%
183	Dassel loam	6.3	0.3%
190	Hayfield silt loam, 1 to 3 percent slopes	7.8	0.4%
227	Lemond loam, 0 to 2 percent slopes	6.0	0.3%
239	Le Sueur loam, 1 to 3 percent slopes	62.5	3.2%
247	Linder sandy loam, 0 to 3 percent slopes	10.1	0.5%
252	Marshan silt loam	15.6	0.8%
253	Maxcreek silty clay loam	63.2	3.2%
255	Mayer loam, 0 to 2 percent slopes	106.0	5.4%
282	Hanska loam, 0 to 2 percent slopes	53.2	2.7%
300	Dassel mucky loam	54.6	2.8%
318	Mayer loam, swales	0.7	0.0%
377	Merton silt loam, 1 to 3 percent slopes	15.7	0.8%
380	Havana silt loam	0.6	0.0%
381	Newry silt loam, 1 to 3 percent slopes	0.1	0.0%
386	Wacousta mucky silt loam	108.2	5.5%
391	Spicer silt loam, depressional	32.1	1.6%
392	Biscay clay loam, 0 to 2 percent slopes	76.4	3.9%



Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
393	Udolpho silt loam	8.5	0.4%
400	Wacousta silt loam	106.7	5.4%
940	Maxcreek-Barbert complex	23.6	1.2%
L13A	Klossner muck, 0 to 1 percent slopes	718.6	36.7%
L78A	Canisteo clay loam, 0 to 2 percent slopes	57.1	2.9%
L83A	Webster clay loam, 0 to 2 percent slopes	16.5	0.8%
L84A	Glencoe clay loam, 0 to 1 percent slopes	26.2	1.3%
L85A	Nicollet clay loam, 1 to 3 percent slopes	5.5	0.3%
<b>Totals for Area of Interest</b>		<b>1,958.4</b>	<b>100.0%</b>