

## **APPENDIX A      LAND EVALUATION SITE ASSESSMENT SYSTEM**

Appendix A, the Land Evaluation Site Assessment (LESA) rating system will be used as a tool to assist decision makers in assessing agricultural land in Stearns County. The County is making an effort, based upon the goals of our Comprehensive Plan, to promote agricultural preservation and manage non-farm rural residential development.

LESA is a numeric rating system for scoring sites to help make land use decisions. The Land Evaluation Site Assessment (LESA) System was designed specifically to assess where the best farmlands are located locally. The system provides an objective and consistent tool for evaluating the relative importance of specific sites for continued agricultural use.

There are two components to the LESA system; the Land Evaluation (LE) portion of the system based on soils and their characteristics, and the Site Assessment (SA) portion of the system which rates other attributes affecting a site's relative importance for agricultural use.

**Factor** – This term is used to label a group of attributes for both the LE and SA portions of the LESA system. Examples are soil potential or soil productivity for the LE portion, and farm size or scenic quality for the SA portion of LESA.

**Soil Potential Rating (SPR)**- This term indicates the relative quality of a soil, compared with other soils in the area, for a particular crop and considering predicted yields, the relative cost of applying modern technology to minimize the effect of any soil limitation, and the cost of continuing limitations.

In Stearns County a 100 point-factor scale was developed for the LE & SA characteristics and corresponding weights were assigned.

**Weighting:** This term refers to assigning a weight (for example 0-100%) to each factor in order to recognize the relative importance of each factor in the LESA system. The weight assigned to all factors should add up to 100%

### **Land Evaluation**

Using a combination of LE factors (Soil Potential, Land Capability Class & Important Farmland designation) a factor scale was developed. This method yields a relative value for each soil on the site, which ranges between 0-100. The relative value approach is a deviation from the method described in the LESA manual, but more accurately reflects the local understanding of soil production capabilities in the County.

Using the combined factors to yield a relative value scale, the only weight to consider is that of the relative value. With the importance of protecting highly valued farm land and the right to farm as critical issues as determined by the Comprehensive Planning process it was agreed by LESA Committee that the LE portion should be considered equally across the County and represent ½ of the points within the LESA system (weight = 50%).

### **Site Assessment**

Site Assessment rates non-soil factors affecting a site's relative importance for agricultural use. Potential development sites in which a land use change is contemplated are evaluated against factors in three general categories (SA-1 through SA-3).

**SA-1 factors** measure non-soil site characteristics related to the potential for agricultural productivity or farming practices. The total weight assigned to the SA-1 factor is 25%.

***Compatibility with adjacent uses.*** Adjacent land uses affect the ability of a farmer to conduct normal farming practices without incurring complaints. The more compatible the adjacent uses are, the more flexibility a farmer has to change crops and practices and to remain in agricultural use. Therefore a farm with more compatible uses on the perimeter than another farm will rank higher on the SA scale. The SA Committee determined that *uses* would be either conflicting or non-conflicting. The determination of a somewhat conflicting use became too subjective and thus difficult to replicate.

***Compatibility with surrounding (non-adjacent) uses.*** This factor relates more to the character of area. Certain agricultural operations or practices may affect or may be affected by non-adjacent uses. Examples: Feedlots, spraying activities, night operations, moving equipment on roadways, for the farmer an increased problem with trespass or dogs harassing livestock.

A Conflicting use is considered to be a parcel that is classified by the tax system as residential, or a commercial or institutional property (non-agriculturally related) as determined upon site inspection.

All other uses would be considered non-conflicting such as agriculture, agriculturally related commercial/industrial, forestry (woodlands), power stations, mining or extractive use.

***Percent of site suitable to farm.*** This factor emphasizes the sites long-term agricultural resource value opposed to its current use. The more farmland available to farm the more likely the farm will remain viable.

***Relationship of property to feedlots and animal units.*** This factor compares the relationship of the property to the number of animal units within one (1) mile and the number of feedlots within one (1) mile. An increase in the number of residences in an agricultural area affects the ability of a farmer to conduct normal farming practices without incurring complaints. It was determined that both the number of animal units and the number of feedlots are directly linked to this relationship.

**SA-2 factors** measure development or conversion pressures on a site. The total weight assigned to the SA-2 factors is 17.5%.

***Compatible with Land Use Plan.*** This factor measures whether a site has been designated for agricultural in a land use program. The designation itself is a general measure of a site's relative value to remain in agriculture.

***Distance to public sewer and water.*** These factors assess the potential conversion of agricultural land based on the proximity of the site to public sewer and water. Because non-farm residential development is considered incompatible with agricultural uses, the number of potential conflicts in rural areas will be minimized when development occurs nearer a municipally serviced area.

***Type of Road Access.*** Access to a transportation system is a consideration in the location of all types of land uses. The higher the level of access the more potential for varied land uses. Locating residential development on higher level roads will allow for better circulation within the system. Allowing non-farm residential development along rural roads may necessitate the upgrading and widening of rural roads. This may result in the further loss of farmland, loss of rural character, and increased traffic on rural roads.

**SA-3 factors** measure the public values of a site, such as historic, cultural, scenic, or Environmental values. The total weight assigned to the SA-3 factors is 7.5%.

***Environmentally Sensitive Areas (ESA).*** This factor is designed to take into account engineering and design practices that will reduce development impacts on the environment. If the site under consideration has an ESA noted within one mile it is less likely to be converted to another use if protection of the resource is to the developers advantage.

***Percent of site mapped on the National Wetland Inventory.*** Areas mapped on the NWI will be calculated.

***Percent of site located within the Floodplain.*** There are limited uses for properties within a floodplain area. Farming is one of the few uses that may be compatible with retention of floodplain capacity to absorb and convey floodwaters. Therefore the more of a site that is located within a floodplain the more that the site should be retained in its agricultural use.

Using the worksheets of LESA score is calculated and compared to the **non- agricultural conversion threshold value of 65.**

### **Interpreting LESA Scores**

Land Evaluation Site Assessment scores are used as a tool to help set policy or to make land-use or other decisions. A LESA score of less than the threshold number means that the land is not as valued for agricultural preservation purposes, and may be converted to another land use. The LESA score only reflects its value as agricultural property; it does not necessarily reflect its value for any other land use.

Land Evaluation and Site Assessment: A guidebook for rating Agricultural Lands, Second Edition. Prepared for the NRSC by Pease & Coughlin, 1996 Ankeny, Iowa

## Site Assessment Summary

Property Owner \_\_\_\_\_ Date of Application \_\_\_\_\_

Township \_\_\_\_\_ Section \_\_\_\_\_ Acreage \_\_\_\_\_

### SA-1 Factors

**Measure of Productivity** Maximum points-25/50

1. Compatibility of existing agricultural land with Surrounding Land Uses
  - a.) Adjacent **Pts. Avail. 7.5** = \_\_\_\_\_
  - b.) Non-Adjacent **Pts. Avail. 5.0** = \_\_\_\_\_
2. Percent of Site Suitable to Farm **Pts. Available 5.0** = \_\_\_\_\_
3. Relationship of property to feedlots and animal units
  - a.) Animal units within 1 mile **Pts. Available 4.5** = \_\_\_\_\_
  - b.) Animal feedlots within 1 mile **Pts. Available 3.0** = \_\_\_\_\_

**SA – 1 Total** \_\_\_\_\_

### SA-2 Factors

**Measure Development Pressures Impacting a Site's Continued Agricultural Use.**

Maximum points-17.5/50

1. Compatible with Land Use Plan **Pts. Available 7.5** = \_\_\_\_\_
2. Distance to Public Services
  - a.) Water **Pts. Avail. 3.0** = \_\_\_\_\_
  - b.) Sewer **Pts. Avail. 3.0** = \_\_\_\_\_
3. Type of Road Access **Pts. Available 4.0** = \_\_\_\_\_

**SA – 2 Total** \_\_\_\_\_

### SA-3 Factors

**Public Values of a Site Supporting Retention in Agriculture.** Maximum points-7.5/50

1. Environmentally Sensitive Areas within one (1) mile **Pts. Available 2.5** = \_\_\_\_\_
2. Percent of Site mapped on the National Wetland Inventory **Pts. Available 2.5** = \_\_\_\_\_
3. Percent of Site located within the Floodplain **Pts. Available 2.5** = \_\_\_\_\_

**SA-3 Total** \_\_\_\_\_

**Total Site Assessment Score** = \_\_\_\_\_

## SITE ASSESSMENT WORKSHEET

**Total SA Points Available = 50**

### SA-1 Factors – Measure of Productivity (Points Available=25/50)

1. Compatibility of existing agricultural land with Surrounding Land Uses

Methods: on-site visit, tax classification **Maximum Points 12.5**

		<i>% of Points</i>		
	<i>Ratio</i>	<i>Available</i>	<i>(a)</i>	<i>(b)</i>
a.) Adjacent <b>Maximum Points: 7.5</b>				
Formula: $\frac{\text{\# of conflicting land uses}}{\text{Area of LESA site}} = \text{ratio}$	0	100	7.5	5.00
	0.01-0.05	90	6.75	4.50
	0.06-0.10	80	6.0	4.00
	0.11-0.15	70	5.25	3.50
	0.16-0.20	60	4.5	3.00
b.) Non-Adjacent* <b>Maximum Points: 5</b>	0.21-0.25	50	3.75	2.50
Formula: $\frac{\text{\# of conflicting land uses}}{\text{Area of LESA site}} = \text{ratio}$	0.26-0.30	40	3.00	2.00
	0.31-0.35	30	2.25	1.50
	0.36-0.40	20	1.50	1.00
	0.41-0.50	10	0.75	0.50
	>0.50	0	0	0

\* Within ½ mile of the edge of the property

2. Percent of Site Suitable to Farm **Maximum Points: 5**

Methods: Natural Resources Conservation Service

Farm #	Tract #	<i>Percent</i>	<i>Points</i>
		90-100%	5.0
		80-89%	4.5
		70-79%	4.0
		60-69%	3.5
		50-59%	3.0
		40-49%	2.5
		30-39%	2.0
		20-29%	1.5
		10-19%	1.0
		0-9%	0

Formula:  $\frac{\text{\# Acres suitable to farm}}{\text{Total site Acres}} (100) = \text{Percent}$

3. Relationship of property to feedlots and animal units **Maximum Points 7.5**  
Methods: Environmental Services Database

a.) Animal units within 1 mile **Max. Points: 4.5**

<u>Animal Units</u>	<u>Points</u>
0 - 350	0
351 - 700	1.3
701 - 1200	2.26
1201 - 1700	3.39
1701 +	4.5

b.) Animal feedlots within 1 mile **Max. Points: 3.0**

<u>Animal Feedlots</u>	<u>Points</u>
0 - 2	0
3 - 5	0.75
6 - 8	1.5
9 - 11	2.25
12 +	3.0

## SA-2 Factors – Measure Development Pressures Impacting a Site’s Continued Agricultural Use (Total Points Available=17.5/50)

### 1. Compatible with Land Use Plan **Maximum Points: 7.5**

Methods: (Twp/County) Comprehensive Plan

**Question:** *Is the site under consideration consistent with the Comprehensive Plan?* (If the site is shown as Agricultural on the Comprehensive Land Use Plan Map it is consistent)

<i>Answer</i>	<i>% of Points available</i>	<i>Points</i>
Yes	100	7.5
No	0	0

### 2. Distance to Public Services **Maximum points: 6**

Methods: check on general map check with local government

#### Availability of Municipal Water (3 points)

Group 1*	% of Points		Group 2**	% of Points	
<i>Distance (miles)</i>	<i>available</i>	<i>Points</i>	<i>Distance (miles)</i>	<i>available</i>	<i>Points</i>
>1.5	100	3.0	> 0.50	100	3.0
0.75-1.49	80	2.4	0.40-0.49	80	2.4
0.50-0.74	60	1.8	0.30-0.39	60	1.8
0.25-0.49	40	1.2	0.20-0.29	40	1.2
200’-0.24	20	.6	0.10-0.19	20	.6
<200’	0	0	<0.10	0	0

\* Group 1: Areas serviced by the St. Cloud Municipal Treatment System (St. Cloud, St. Joseph, Sartell, Waite Park)

\*\* Group 2 consists of all areas not serviced by the St. Cloud Municipal Treatment System

#### Availability of Municipal Sewer (3points)

Group 1*	% of Points		Group 2**	% of Points	
<i>Distance (miles)</i>	<i>Available</i>	<i>Points</i>	<i>Distance (miles)</i>	<i>available</i>	<i>Points</i>
>1.5	100	3.0	> 0.50	100	3.1
0.75-1.49	80	2.4	0.40-0.49	80	2.4
0.50-0.74	60	1.8	0.30-0.39	60	1.8
0.25-0.49	40	1.2	0.20-0.29	40	1.2
200’-0.24	20	0.6	0.10-0.19	20	.0.6
<200’	0	0	<0.10	0	0

3. Type of Road Access **Maximum Points: 4**

Methods: Transportation plan

<i>Road Type</i>	<i>% of Points available</i>	<i>Points</i>
Local (township, private)	100	4.0
Collector (arterial, county)	50	2.0
Arterial (trunk hwy, federal hwy)	0	0



## SA-3 Public Values of a Site Supporting Retention in Agriculture (Total Points Available-7.5/50)

1. Environmentally Sensitive Areas within one (1) mile **Maximum Points: 2.5**  
Methods: check with County Biological Survey

**Question:** *Is any part of the site listed on the County Biological Survey?*

Answer	Points
No	0
Yes	2.5

2. Percent of Site mapped on the National Wetland Inventory (NWI)  
Methods- NWI maps **Maximum Points: 2.5**

<i>Percent</i>	<i>% of Points available</i>	<i>Points</i>
<25%	0	0
> or = 25%	25	0.63
> or = 50%	50	1.25
> or = 75%	100	2.50

3. Percent of Site Located within the Floodplain  
Methods- floodplains maps **Maximum Points: 2.5**

<i>Percent</i>	<i>% of Points available</i>	<i>Points</i>
<25%	0	0
> or = 25%	25	0.63
> or = 50%	50	1.25
> or = 75%	100	2.50

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Soil Type	Name	agg	impfarm	Relative V	LE Value
25	Becker fine sandy loam	1	P	100	50
35	Blue Earth mucky slit loam	3	P(d)	84	42
36	Flom loam	3	P(d)	84	42
72	Shooker loam	3	P(d)	84	42
75	Bluffton loam	3	P(d)	84	42
109	Cordova loam	3	P(d)	84	42
114	Glencoe loam	3	P(d)	84	42
125	Beltrami loam	2	P	92	46
129	Cylinder loam	1	P	100	50
142	Nokay fine sandy loam	3	P(d)	84	42
181	Litchfield loamy sand	1	SW	100	50
183	Dassel sandy loam	6	P(d)	54	27
218	Watab loamy fine sand	6	O	54	27
236	Vallers loam	3	P(d)	84	42
255	Mayer loam	6	P(d)	54	27
260	Duelm loamy sand	1	O	100	50
261	Isan loamy sand	7	O	0	0
281	Darfur coarse sandy loam	3	P(d)	84	42
318	Mayer loam, depressional	6	P(d)	54	27
325	Prebish sandy loam, depressional	7	O	0	0
392	Biscay loam	6	P(d)	54	27
399	Biscay loam, depressional	6	P(d)	54	27
413	Osakis loam	1	SW	100	50
414	Hamel loam	3	P(d)	84	42
459	Corunna loam	3	P(d)	84	42
465	Kalmarville sandy loam, frequently flooded	7	O	0	0
511	Marcellon loam	2	P	92	46
525	Muskego muck	7	O	0	0
540	Seelyeville muck	7	O	0	0
541	Rifle mucky peat	7	O	0	0
543	Markey muck	7	O	0	0
544	Cathro muck	7	O	0	0
565	Eckvoll loamy sand	1	SW	100	50
566	Regal loam	6	P(d)	54	27
571	Coriff loam	3	P(d)	84	42
572	Lowlein sandy loam	4	P	81	40.5
582	Roliss loam	3	P(d)	84	42
597	Tara silt loam	2	P	92	46
848	Urban Land-Osakis complex	7	O	0	0
850	Urban Land-Dassel complex	7	O	0	0
873	Prebish-Nokay complex	6	P(d)	54	27
1013	Pits	7	O	0	0
1015	Psammments	7	O	0	0
1016	Udorthents	7	O	0	0
1018	Fordum	7	O	0	0

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1029	Pits	7	O	0	0
1055	Histosols and Haplaquolls, ponded	7	O	0	0
1064	Rock Outcrop-Lithic Eutrochrepts	7	O	0	0
1805	Blue Earth Variant	7	O	0	0
1828	Glencoe muck	3	P(d)	84	42
1879	Seelyeville muck, calcareous	7	O	0	0
1880	Martisco mucky silt loam	7	O	0	0
1892	Prebish fine sandy loam	6	P(d)	54	27
119B	Pomroy fine sand, 1 to 6 percent slopes	1	SW	100	50
133B	Dalbo loam, 2 to 8 percent slopes	2	P	92	46
144B	Flak sandy loam, 4 to 8 percent slopes	4	P	81	40.5
144C	Flak sandy loam, 8 to 15 percent slope	4	SW	81	40.5
144E	Flak sandy loam, 15 to 25 percent slopes	7	O	0	0
155B	Chetek sandy loam, 1 to 6 percent slopes	1	SW	100	50
156A	Fairhaven loam, 0 to 2 percent slopes	1	P	100	50
156B	Fairhaven loam, 2 to 6 percent slopes	1	P	100	50
159B	Anoka loamy sand, 2 to 8 percent slopes	1	SW	100	50
163B	Brainard fine sandy loam, 1 to 4 percent slopes	4	P	81	40.5
179B	Langola loamy sand, 1 to 4 percent slopes	1	SW	100	50
180A	Gonvick loam, 1 to 2 percent slopes	2	P	92	46
180B	Gonvick loam, 2 to 4 percent slopes	2	P	92	46
1825C	Seelyeville muck, sloping	7	O	0	0
1842F	Cushing and Flak sandy loams, steep	7	O	0	0
1843C	Cushing-Demontreville complex, 8 to 15 percent	5	SW	60	30
1843E	Cushing-Demontreville complex, 15 to 25 percent	7	O	0	0
1902B	Jewett silt loam, 2 to 8 percent slopes	2	P	92	46
200B	Holdingford sandy loam, 4 to 8 percent slopes	4	P	81	40.5
200C	Holdingford sandy loam, 8 to 15 percent slopes	4	SW	81	40.5
204B	Cushing sandy loam, 2 to 8 percent slopes	2	P	92	46
204C	Cushing sandy loam, 8 to 15 percent slopes	4	SW	81	40.5
204E	Cushing sandy loam, 15 to 25 percent slopes	7	O	0	0
207B	Nymore loamy sand, 2 to 8 percent slopes	1	O	100	50
207C	Nymore loamy sand, 8 to 15 percent slopes	1	O	100	50
207E	Nymore loamy sand, 15 to 25 percent slopes	7	O	0	0
233B	Growton sandy loam, 1 to 4 percent slopes	2	P	92	46
292B	Alstad sandy loam, 1 to 4 percent slopes	2	P	92	46
327A	Dickman sandy loam, 0 to 2 percent slopes	1	SW	100	50
327B	Dickman sandy loam, 2 to 6 percent slopes	1	SW	100	50
32B	Nebish sandy loam, 2 to 8 percent slopes	2	P	92	46
32C	Nebish sandy loam, 8 to 15 percent slopes	4	SW	81	40.5
32E	Nebish sandy loam, 15 to 25 percent slopes	7	O	0	0

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32F	Nebish sandy loam, 25 to 40 percent slopes	7	O	0	0
38B	Waukon loam, 2 to 6 percent slopes	2	P	92	46
38C	Waukon loam, 6 to 12 percent slopes	4	SW	81	40.5
38D	Waukon loam, 12 to 18 percent slopes	5	O	60	30
406B	Dorset sandy loam, 2 to 8 percent slopes	1	SW	100	50
406C	Dorset sandy loam, 8 to 15 percent slopes	1	O	100	50
406E	Dorset sandy loam, 15 to 25 percent slopes	7	O	0	0
41A	Estherville sandy loam, 0 to 2 percent slopes	1	SW	100	50
41B	Estherville loam, 2 to 6 percent slopes	1	SW	100	50
41C	Estherville sandy loam, 6 to 12 percent slopes	1	O	100	50
421B	Ves loam, 2 to 6 percent slopes	2	P	92	46
421C	Ves loam, 6 to 12 percent slopes	4	SW	81	40.5
446A	Normania loam, 1 to 3 percent slopes	2	P	92	46
446B	Normania loam, 3 to 5 percent slopes	2	P	92	46
453B	Demontreville loamy sand, 2 to 8 percent slopes	1	SW	100	50
453C	Demontreville loamy sand, 8 to 15 percent	1	O	100	50
454B	Mahtomedi loamy coarse sand, 2 to 8 percent	1	O	100	50
454C	Mahtomedi loamy coarse sand, 8 to 15 percent	1	O	100	50
454E	Mahtomedi loamy coarse sand, 15 to 25 percent	7	O	0	0
454F	Mahtomedi loamy coarse sand, 25 to 40 percent	7	O	0	0
461B	Koronis loam, 2 to 6 percent slopes	2	P	92	46
461C	Koronis loam, 6 to 12 percent slopes	4	SW	81	40.5
591B	Doland silt loam, 1 to 6 percent slopes	2	P	92	46
5A	Dakota loam, 0 to 2 percent slopes	1	P	100	50
5B	Dakota loam, 2 to 6 percent slopes	1	P	100	50
611C	Hawick loamy sand, 6 to 12 percent slopes	1	O	100	50
611D	Hawick loamy sand, 12 to 40 percent slopes	7	O	0	0
639A	Ridgeport sandy loam, 0 to 2 percent	1	SW	100	50
639B	Ridgeport sandy loam, 2 to 6 percent	1	SW	100	50
69B	Fedji loamy sand, 2 to 6 percent slopes	1	SW	100	50
7A	Hubbard loamy sand, 0 to 2 percent slopes	1	O	100	50
7B	Hubbard loamy sand, 2 to 6 percent slopes	1	O	100	50
7C	Hubbard loamy sand, 8 to 15 percent slopes	1	O	100	50
804D	Koronis-Estherville complex, 12 to 25 Percent	7	O	0	0
807D	Koronis-Sunburg complex, 12 to 25 percent	7	O	0	0
865B	Urban Land-Hubbard complex, 1 to 8 percent	7	O	0	0
875B	Estherville-Hawick complex, 2 to 6 percent	1	SW	100	50
954C	Ves-Stroden loams, 6 to 12 percent slopes	4	SW	81	40.5
954D	Ves-Stroden loams, 12 to 18 percent slopes	5	O	60	30

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999B	Ves-Estherville complex, 2 to 6 percent	4	SW	81	40.5
999C	Ves-Estherville complex, 6 to 12 percent	5	SW	60	30
999D	Ves-Estherville complex, 12 to 25 percent	5	O	60	30

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Stearns County LE Worksheet

Property Owner

Township:

Section(s)

Total Site Acreage:

**Formula = # of Acres/ Total Acres (Associated Soil Type Value)**

Soil Type	# Acres w/in soil type	Total Acres	Associated LE Value	Points
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!
			#N/A	#DIV/0!

**Total LE Score #DIV/0!**

## Appendix B

### Minnesota Public Utilities Commission

#### General Wind Turbine Permit Setbacks and Standards for Large Wind Energy Conversion System (LWECS) Permitted Pursuant to Minnesota Statute 216F.08

Resource Category	General Permit Setback	Minimum Setback
Wind Access Buffer (setback from lands and/or wind rights not under permittee's control)	Wind turbine towers shall not be placed less than 5 rotor diameters (RD) from all boundaries of developer's site control area (wind and land rights) on the predominant wind axis (typically north-south axis) and 3 rotor diameters (RD) on the secondary wind axis (typically east-west axis), without the approval of the permitting authority. This setback applies to all parcels for which the permittee does not control land and wind rights, including all public lands.	3 RD (760 – 985 ft) on east-west axis and 5 RD (1280 – 1640 ft) on north-south using turbines with 78 – 100 meter rotor diameters.
Internal Turbine Spacing	The turbine towers shall be spaced no closer than 3 rotor diameters (RD) for crosswind spacing (distance between towers) and 5 RD downwind spacing (distance between strings of towers). If required during final micro siting of the turbine towers to account for topographic conditions, up to 20 percent of the towers may be sited closer than the above spacing but the permittee shall minimize the need to site the turbine towers closer.	5 rotor diameters downwind spacing 3 rotor diameters apart for crosswind spacing
Noise Standard	Project must meet Minnesota Noise Standards, Minnesota Rules Chapter 7030, at all residential receivers (homes). Residential noise standard NAC 1, L50 50 dBA during overnight hours. Setback distance calculated based on site layout and turbine for each residential receiver.	Typically 750 – 1500 ft is required to meet noise standards depending on turbine model, layout, site specific conditions.
Homes	At least 500 ft <u>and</u> sufficient distance to meet state noise standard.	500 feet + distance required to meet state noise standard.
Public Roads and Recreational Trails	The turbine towers shall be placed no closer than 250 feet from the edge of public road rights-of-way. Setbacks from state trails and other recreational trails shall be considered on a case-by-case basis.	Minimum 250 ft
Meteorological Towers	Meteorological towers shall be placed no closer than 250 foot from the edge of road rights-of-way and from the boundaries of developer's site control (wind and land rights). Setbacks from state trails and other recreational trails shall be considered on a case-by-case basis.	Minimum 250 ft
Wetlands	No turbines, towers or associated facilities shall be located in public waters wetlands. However, electric collector and feeder lines may cross or be placed in public waters or public water wetlands subject to DNR, FWS and/or USACOE permits.	No setback required pending further PUC action.

<b>Native Prairie</b>	Turbines and associated facilities shall not be placed in native prairie unless approved in native prairie protection plan (see native prairie standard below). Native prairie protection plan shall be submitted if native prairie is present.	No setback required.
<b>Sand and Gravel Operations</b>	No turbines, towers or associated facilities in active sand and gravel operations, unless negotiated with the landowner.	
<b>Aviation (public and private airports)</b>	No turbines, towers or associated facilities shall be located so as to create an obstruction to navigable airspace of public and private airports in Minnesota or adjacent states and/or providences.	Setbacks or other limitations determined in accordance with MNDOT Department of Aviation and Federal Aviation Administration requirements.

### **Additional General Permit Standards**

#### **Pre-Application Project Size Determination.**

Pursuant to Minnesota Statute 216F.011, applications to a county for a LWECS permit are not complete without a project size determination provided by the Commissioner of the Minnesota Department of Commerce. Requests for size determination shall be submitted on forms provided by the Department of Commerce. Upon written request of a project developer and receipt of any supplemental information requested by the commissioner, the commissioner of commerce shall provide a written size determination within 30 days. In the case of a dispute, the chair of the Public Utilities Commission shall make the final size determination.

Pursuant to Minnesota Statute 216F.011, the total size of a combination of wind energy conversion systems for the purpose of determining what jurisdiction has siting authority must be determined according to the criteria below:

The nameplate capacity of one wind energy conversion system must be combined with the nameplate capacity of any other wind energy conversion system that:

- (1) is located within five miles of the wind energy conversion system;
- (2) is constructed within the same 12-month period as the wind energy conversion system; and
- (3) exhibits characteristics of being a single development, including, but not limited to, ownership structure, an umbrella sales arrangement, shared interconnection, revenue sharing arrangements, and common debt or equity financing.



**Wind Turbines Design Standards.** All turbines shall be commercially available, utility scale, not prototype turbines. Turbines shall be installed on tubular, monopole design towers, and have a uniform white/off white color. All turbine towers shall be marked with a visible identification number.

**Underground and Overhead Electric Collection and Feeder Lines.** The permittee shall place electrical lines, known as collectors, communication cables, and associated electrical equipment such as junction boxes underground when located on private property. Collectors and cables shall also be placed within or adjacent to the land necessary for turbine access roads unless otherwise negotiated with the affected landowner. This paragraph does not apply to feeder lines.

The permittee shall place overhead or underground 34.5 kV electric lines, known as feeders within public rights-of-way or on private land immediately adjacent to public rights-of-way if a public right-of-way exists, except as necessary to avoid or minimize human, agricultural, or environmental impacts. Feeder lines may be placed on public rights-of-way only if approval or the required permits have been obtained from the governmental unit responsible for the affected right-of-way. In all cases, the permittee shall avoid placement of feeder lines in locations that may interfere with agricultural operations. Notwithstanding any of the requirements to conduct surveys before any construction can commence, the permittee may begin immediately upon issuance of a LWECS site permit to construct the 34.5 kV feeder lines that will be required as part of the project.

Any guy wires on the structures for feeder lines shall be marked with safety shields.

**Topsoil and Compaction.** The permittee must protect and segregate topsoil from subsoil on all lands unless otherwise negotiated with affected landowner. Must minimize soil compaction of all lands during all phases and confine soil compaction to as small area as possible.

**Fences.** The permittee shall promptly repair or replace all fences and gates removed or damaged during project life and provide continuity of electric fence circuits.

**Drainage Tile.** The permittee shall take into account, avoid, promptly repair or replace all drainage tiles broken or damaged during all phases of project life unless otherwise negotiated with affected landowner.

**Equipment Storage.** The permittee shall negotiate with landowners to locate sites for temporary equipment staging areas.

**Public Roads.** The permittee shall identify all state, county or township roads that will be used for the LWECS Project and shall notify the permitting authority (PUC or county) and the state, county or township governing body having jurisdiction over the roads to determine if the governmental

body needs to inspect the roads or issue any road permits prior to use of these roads. Where practical, existing roadways shall be used for all activities associated with the LWECS. Where practical, all-weather roads shall be used to deliver cement, turbines, towers, assembled nacelles and all other heavy components to and from the turbine sites.

Prior to construction, the permittee shall make satisfactory arrangements (including obtaining permits) for road use, access road intersections, maintenance and repair of damages with governmental jurisdiction with authority over each road. The permittee shall notify the permitting authority (PUC or county) of such arrangements upon request.

**Turbine Access Roads.** The permittee shall construct the smallest number of turbine access roads it can. Access roads shall be low profile roads so that farming equipment can cross them and shall be covered with Class 5 gravel or similar material. When access roads are constructed across streams and drainage ways, the access roads shall be designed in a manner so runoff from the upper portions of the watershed can readily flow to the lower portion of the watershed.

**Private Roads.** The permittee shall promptly repair private roads, driveways or lanes damaged unless otherwise negotiated with landowner.

**Soil Erosion and Sediment Control.** Prior to commencing construction, the Permittee shall submit its National Pollution Discharge Elimination System (NPDES) construction permit issued by the Minnesota Pollution Control Agency (MPCA) to the permitting authority (PUC or county).

**Cleanup.** The permittee shall remove all waste and scrap that is the product of construction, operation, restoration and maintenance from the site and properly dispose of it upon completion of each task. Personal litter, bottles, and paper deposited by site personnel shall be removed on a daily basis.

**Tree Removal.** The permittee shall minimize the removal of trees and shall not remove groves of trees or shelter belts without the approval of the affected landowner.

**Site Restoration.** The permittee shall, as soon as practical following construction of each turbine, considering the weather and preferences of the landowner, restore the area affected by any LWECS activities to the condition that existed immediately before construction began, to the extent possible. The time period may be no longer than eight months after completion of construction of the turbine, unless otherwise negotiated with the landowner. Restoration shall be compatible with the safe operation, maintenance, and inspection of the LWECS.

**Hazardous Waste.** The permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of hazardous wastes generated during any phase of the project's life.

**Application of Herbicides.** Restrict use to those herbicides and methods approved by the Minnesota Department of Agriculture. The permittee must contact landowner prior to application.

**Public Safety.** The permittee shall provide educational materials to landowners within the site boundaries and, upon request, to interested persons, about the Project and any restrictions or dangers associated with the LWECS Project. The permittee shall also provide any necessary safety measures, such as warning signs and gates for traffic control or to restrict public access to turbine access roads, substations and wind turbines.

**Fire Protection.** Prior to construction, the permittee shall prepare a fire protection and medical emergency plan in consultation with the fire department having jurisdiction over the area prior to LWECS construction. The permittee shall register the LWECS in the local government's emergency 911 system.

**Native Prairie.** Native prairie plan must be submitted if native prairie is present and will be impacted by the project. The permittee shall, with the advice of the DNR and any others selected by the permittee, prepare a prairie protection and management plan and submit it to the county and DNR Commissioner 60 days prior to the start of construction. The plan shall address steps to be taken to identify native prairie within the Project area, measures to avoid impacts to native prairie, and measures to mitigate for impacts if unavoidable. Wind turbines and all associated facilities, including foundations, access roads, underground cable and transformers, shall not be placed in native prairie unless addressed in the prairie protection and management plan. Unavoidable impacts to native prairie shall be mitigated by restoration or management of other native prairie areas that are in degraded condition, or by conveyance of conservation easements, or by other means agreed to by the permittee, DNR and PUC or county.

**Electromagnetic Interference.** Prior to beginning construction, the permittee shall submit a plan for conducting an assessment of television signal reception and microwave signal patterns in the Project area prior to commencement of construction of the Project. The assessment shall be designed to provide data that can be used in the future to determine whether the turbines and associated facilities are the cause of disruption or interference of television reception or microwave patterns in the event residents should complain about such disruption or interference after the turbines are placed in operation. The assessment shall be completed prior to operation of the turbines. The permittee shall be responsible for alleviating any disruption or interference of these services caused by the turbines or any associated facilities.

The permittee shall not operate the LWECS and associated facilities so as to cause microwave, television, radio, telecommunications or navigation interference contrary to Federal Communications Commission (FCC) regulations or other law. In the event the LWECS and its associated facilities or its operations cause such interference, the permittee shall take timely measures necessary to correct the problem.

**Turbine Lighting.** Towers shall be marked as required by the Federal Aviation Administration (FAA). There shall be no lights on the towers other than what is required by the FAA.

**Pre-Construction Biological Preservation Survey:** The permittee, in consultation with DNR and other interested parties, shall request a DNR Natural Heritage Information Service Database search for the project site, conduct a pre-construction inventory of existing wildlife management areas, scientific and natural areas, recreation areas, native prairies and forests, wetlands, and any other biologically sensitive areas within the site and assess the presence of state- or federally-listed or threatened species. The results of the survey shall be submitted to the permitting authority (PUC or county) and DNR prior to the commencement of construction.

**Archeological Resource Survey and Consultation:** The permittee shall work with the State Historic Preservation Office (SHPO) at the Minnesota Historical Society and the State Archaeologist as early as possible in the planning process to determine whether an archaeological survey is recommended for any part of the proposed Project. The permittee will contract with a qualified archaeologist to complete such surveys, and will submit the results to the permitting authority (PUC or county), the SHPO and the State Archaeologist. The SHPO and the State Archaeologist will make recommendations for the treatment of any significant archaeological sites which are identified. Any issues in the implementation of these recommendations will be resolved by permitting authority (PUC or county) in consultation with SHPO and the State Archaeologist. In addition, the permittee shall mark and preserve any previously unrecorded archaeological sites that are found during construction and shall promptly notify the SHPO, the State Archaeologist, and the permitting authority (PUC or county) of such discovery. The permittee shall not excavate at such locations until so authorized by the permitting authority (PUC or county) in consultation with the SHPO and the State Archaeologist.

If human remains are encountered during construction, the permittee shall immediately halt construction at that location and promptly notify local law enforcement authorities and the State Archaeologist. Construction at the human remains location shall not proceed until authorized by local law enforcement authorities or the State Archaeologist.

If any federal funding, permit or license is involved or required, the permittee shall notify the MHS as soon as possible in the planning process to coordinate section 106 (36 C.F.R 800) review.

Prior to construction, construction workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If any archaeological sites are found during construction, the permittee shall immediately stop work at the site and shall mark and preserve the site and notify the permitting authority (PUC or county) and the MHS about the discovery. The permitting authority (PUC or county) and the MHS shall have three working days from the time the agency is notified to conduct an inspection of the site if either agency shall choose to do so. On the fourth day after notification, the permittee may begin work on the site unless the MHS has directed that work shall cease. In such event, work shall not continue until the MHS determines that construction can proceed.

**Project Energy Production:** The permittee shall, by July 15 of each year, report to the PUC on the monthly energy production of the Project and the average monthly wind speed collected at one permanent meteorological tower selected by the PUC during the preceding year or partial year of operation.

**Site Plan:** Prior to commencing construction, the permittee shall submit to the permitting authority (PUC or county) a site plan for all turbines, roads, electrical equipment, collector and feeder lines and other associated facilities to be constructed and engineering drawings for site preparation, construction of the facilities, and a plan for restoration of the site due to construction. The permittee may submit a site plan and engineering drawings for only a portion of the LWECS if the permittee is prepared to commence construction on certain parts of the Project before completing the site plan and engineering drawings for other parts of the LWECS. The permittee shall have the right to move or relocate turbine sites due to the discovery of environmental conditions during construction, not previously identified, which by law or pursuant to this Permit would prevent such use. The permittee shall notify the permitting authority (PUC or county) of any turbines that are to be relocated before the turbine is constructed on the new site.

**Pre-construction Meeting:** Prior to the start of any construction, the permittee shall conduct a preconstruction meeting with the person designated by the permitting authority (PUC or county) to coordinate field monitoring of construction activities.

**Extraordinary Events:** Within 24 hours of an occurrence, the permittee shall notify the permitting authority (PUC or county) of any extraordinary event. Extraordinary events include but shall not be limited to: fires, tower collapse, thrown blade, collector or feeder line failure, injured LWECS worker or private person, kills of migratory, threatened or endangered species, or discovery of a large number of dead birds or bats of any variety on site. In the event of extraordinary avian mortality the DNR shall also be notified within 24 hours. The permittee shall, within 30 days of the occurrence, submit a report to the permitting authority (PUC or county) describing the cause of the occurrence and the steps taken to avoid future occurrences.

**Complaints:** Prior to the start of construction, the permittee shall submit to the permitting authority (PUC or county) the company's procedures to be used to receive and respond to complaints. The permittee shall report to the permitting authority (PUC or county) all complaints received concerning any part of the LWECS in accordance with the procedures provided in permit.

**As-Built Plans and Specifications:** Within 60 days after completion of construction, the permittee shall submit to the county and PUC a copy of the as-built plans and specifications. The permittee must also submit this data in a geographic information system (GIS) format for use in a statewide wind turbine database.

**Decommissioning Plan.** As part of its permit application, the permittee must submit a decommissioning plan describing the manner the permittee plans on meeting requirements of Minnesota Rule 7836.0500, subpart 13.

**Special Conditions:** Pursuant to Minnesota Statute 216F.04 and Minnesota Rule 7836.1000, the permitting authority (PUC or county) may adopt special permit conditions to LWECS site permits to address specific issues on a case-by-case basis.



## **Appendix C**

NATIVE PLANT COMMUNITIES



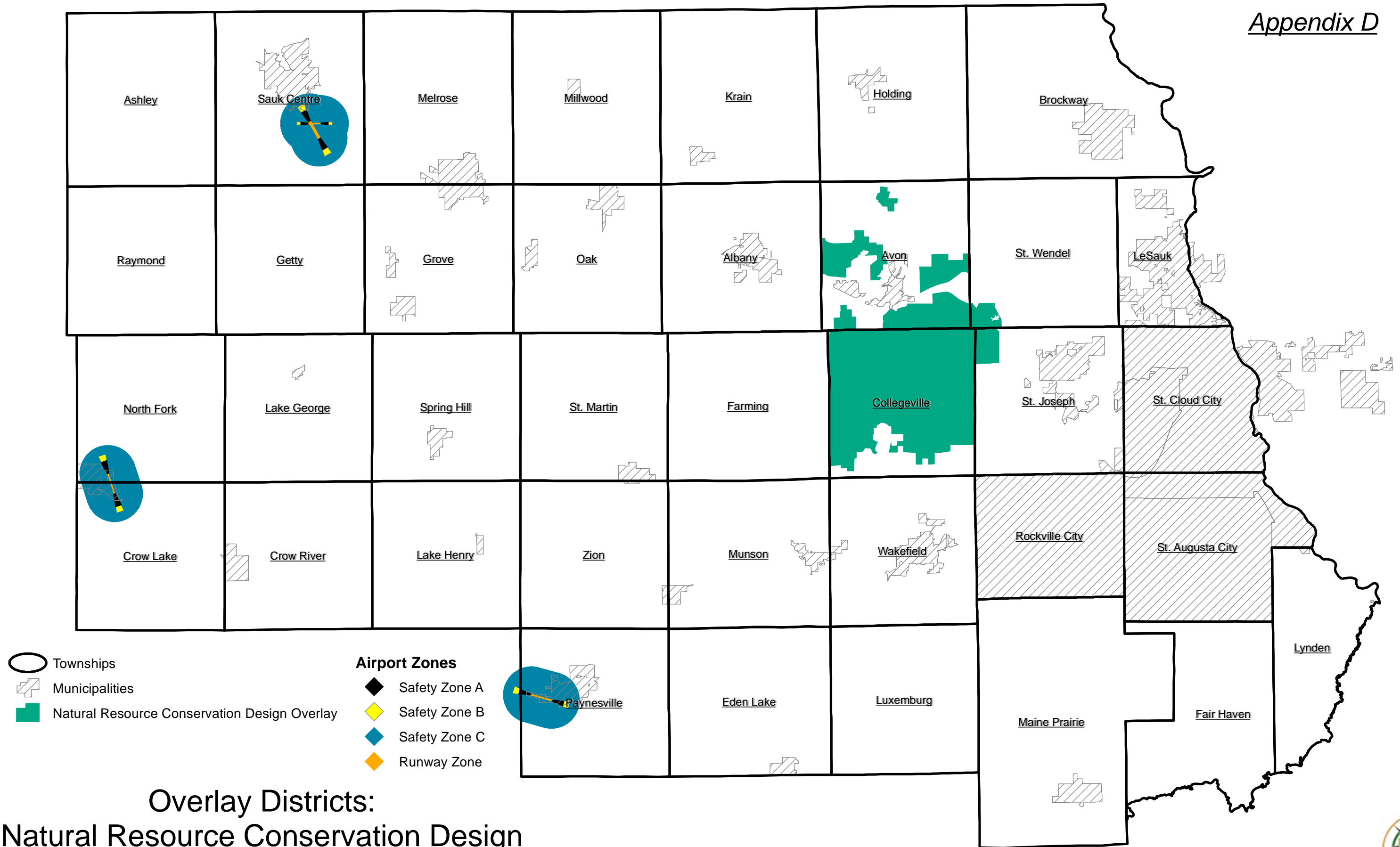
#### RARE SPECIES AND ANIMAL AGGREGATIONS

HYUN

- [illegible]

Funding for this project approved by the Minnesota Legislature with partial funding (Mn, 1997, Chapter 21A, Sec. 13 Subd. 2 (ii)) as recommended by the Legislative Commission on Minnesota Resources from the Government and Natural Resources Trust Fund.





- Townships
  - Municipalities
  - Natural Resource Conservation Design Overlay
- Airport Zones**
- Safety Zone A
  - Safety Zone B
  - Safety Zone C
  - Runway Zone

## Overlay Districts: Natural Resource Conservation Design & Airports





## **Appendix E**

### **Stearns Zoning Graphics & Illustrations**

#### **Agricultural Development Process..... 2**

Ag Dev Process All

Ag Dev Process 1 - 5

#### **Conservation Design..... 3**

Conservation Design All

Conservation Design 1 - 5

#### **Transfer of Development Rights**

#### **Sending & Receiving..... 4**

Sending Parcel as of Right

Sending Parcel Existing

Sending Parcel Protected

Receiving Parcel as of Right

Receiving Parcel Existing

Receiving Parcel with Transfer

#### **Other..... 5-8**

Building Envelope

Equivalent Land Area

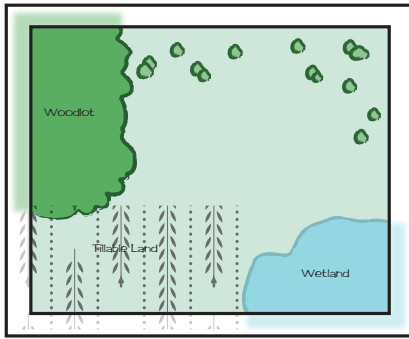
Ghost Plat

Transfer of Development Rights

Dev Process A-40

Dev Process NR Overlay Chart

**Agricultural Conservation Design Development Process**  
*Section 7.5 of this Ordinance*



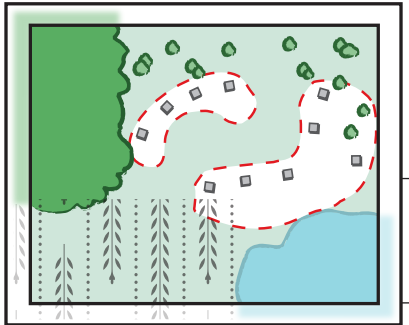
**Agricultural Development  
 Process 1**

*Map conservation areas and resources*



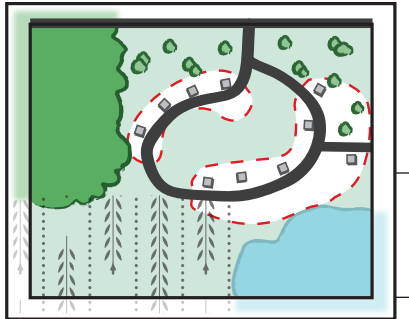
**Agricultural Development  
 Process 2**

*Available building site area*



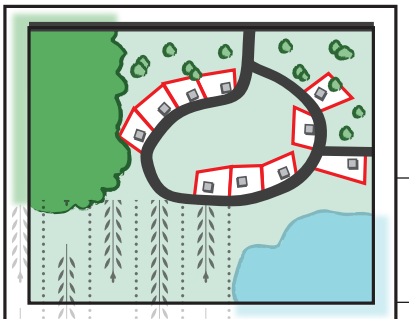
**Agricultural Development  
 Process 3**

*Identify building locations*



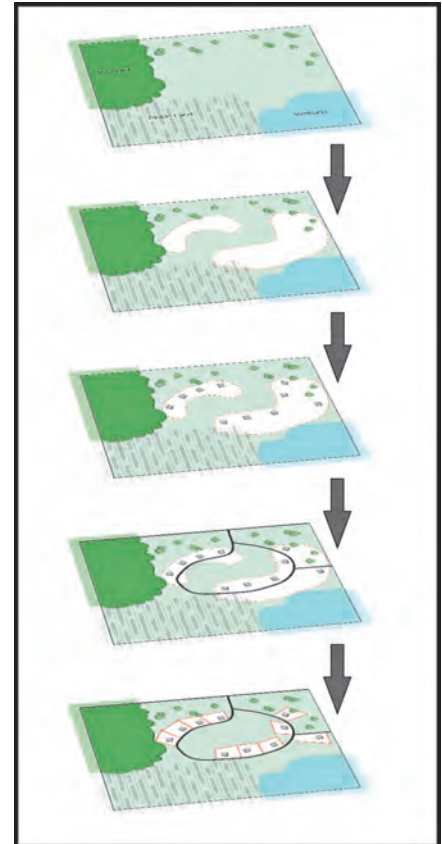
**Agricultural Development  
 Process 4**

*Identify street, infrastructure locations*



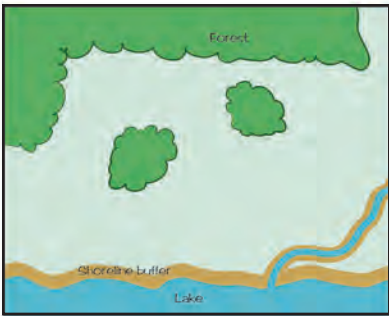
**Agricultural Development  
 Process 5**

*Draw lot lines*

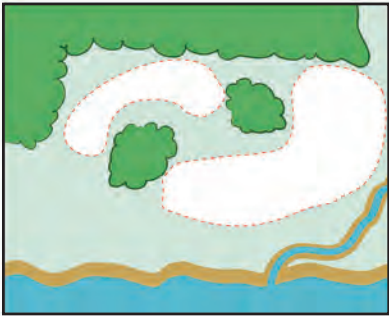


**Agricultural Development  
 Process Sequence**

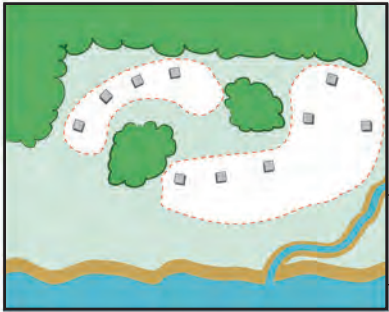
Natural Resource Conservation Design Process  
Section 7.6 of this Ordinance



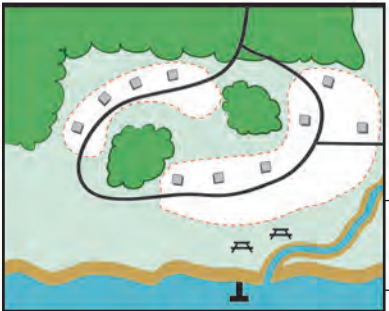
**Conservation Design 1**  
*Map conservation areas and resources*



**Conservation Design 2**  
*Available building site area*



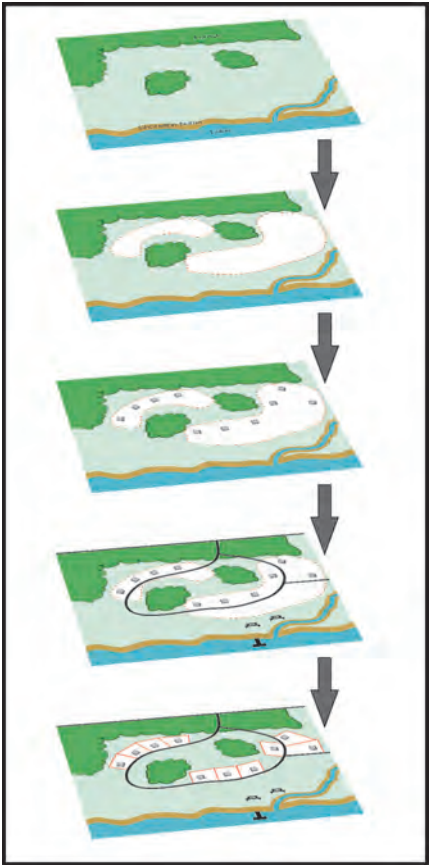
**Conservation Design 3**  
*Identify building locations*



**Conservation Design 4**  
*Identify street, infrastructure locations*

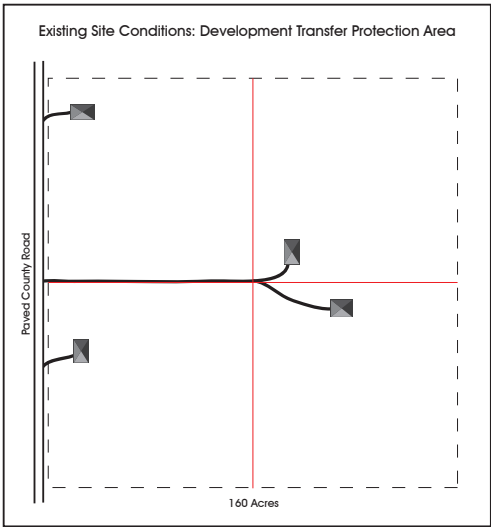


**Conservation Design 5**  
*Draw lot lines*

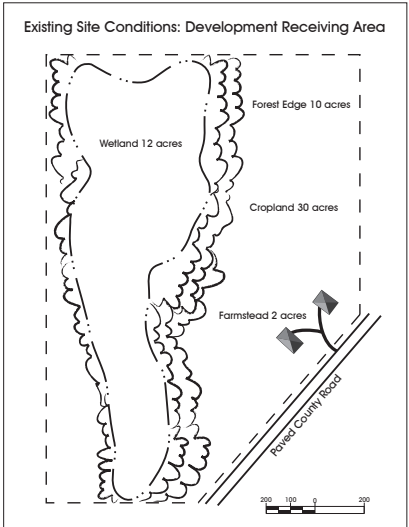


**Conservation Design  
Sequence**

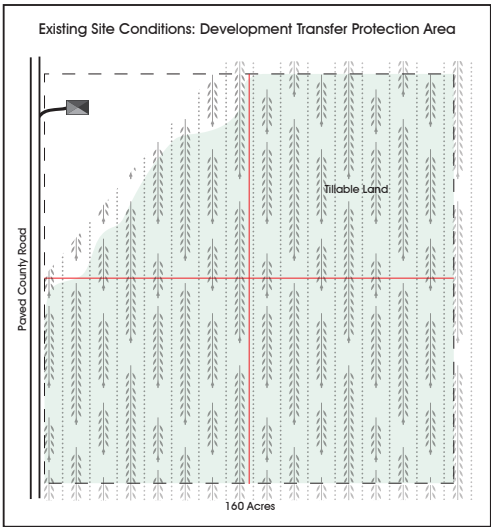
**Sending and Receiving-Section 11**



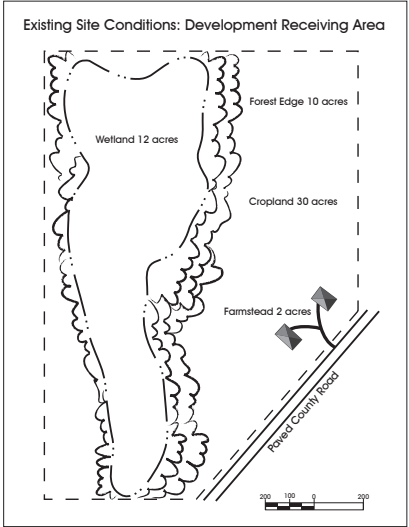
*Sending Parcel as of Right*



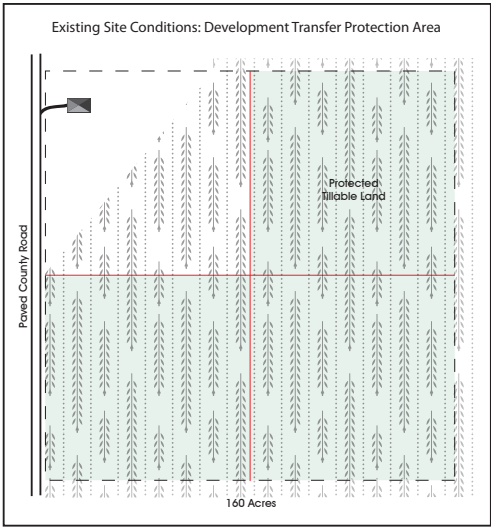
*Receiving Parcel as of Right*



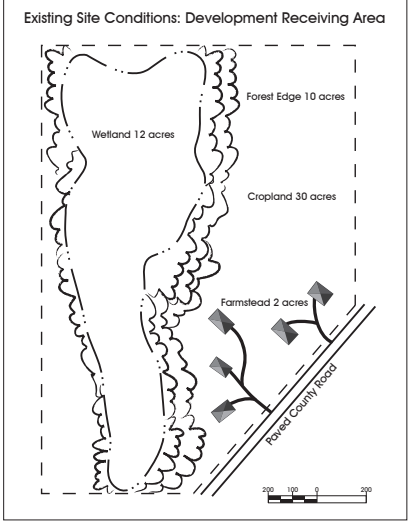
*Sending Parcel Existing*



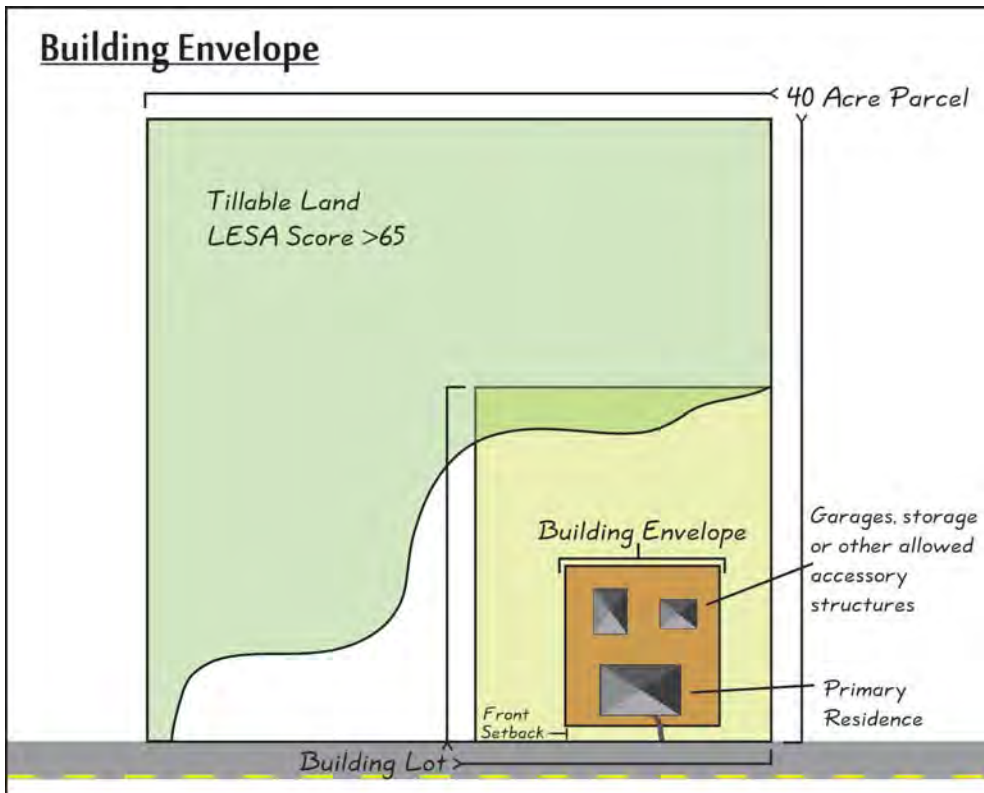
*Receiving Parcel Existing*



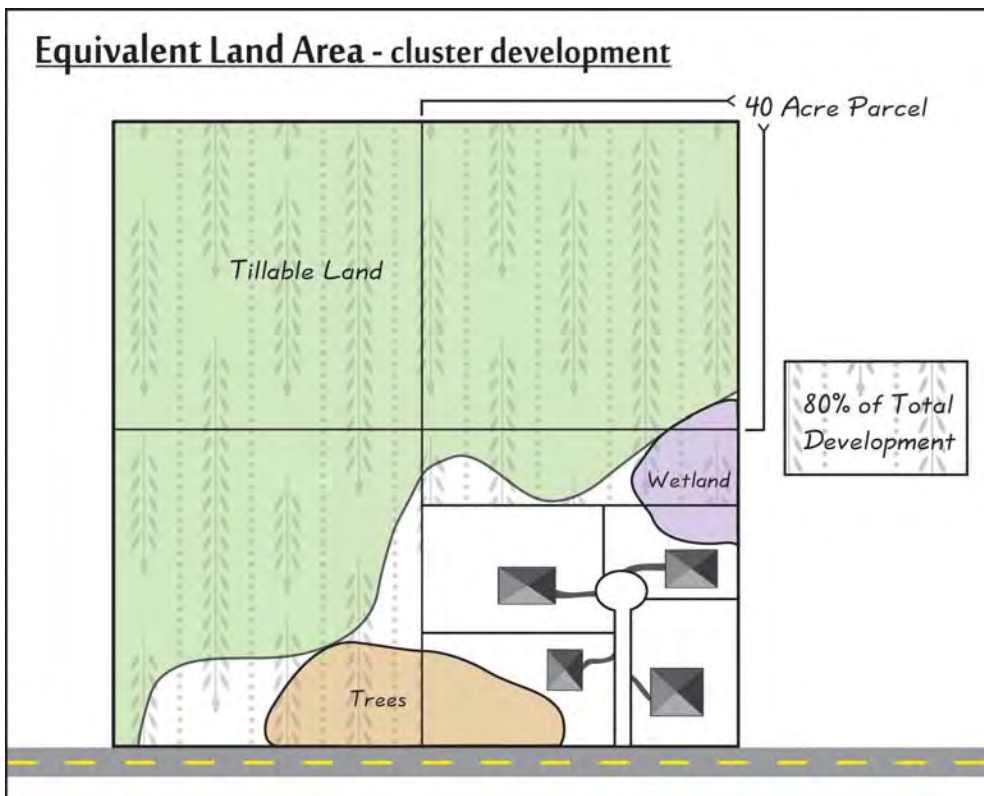
*Sending Parcel Protected*



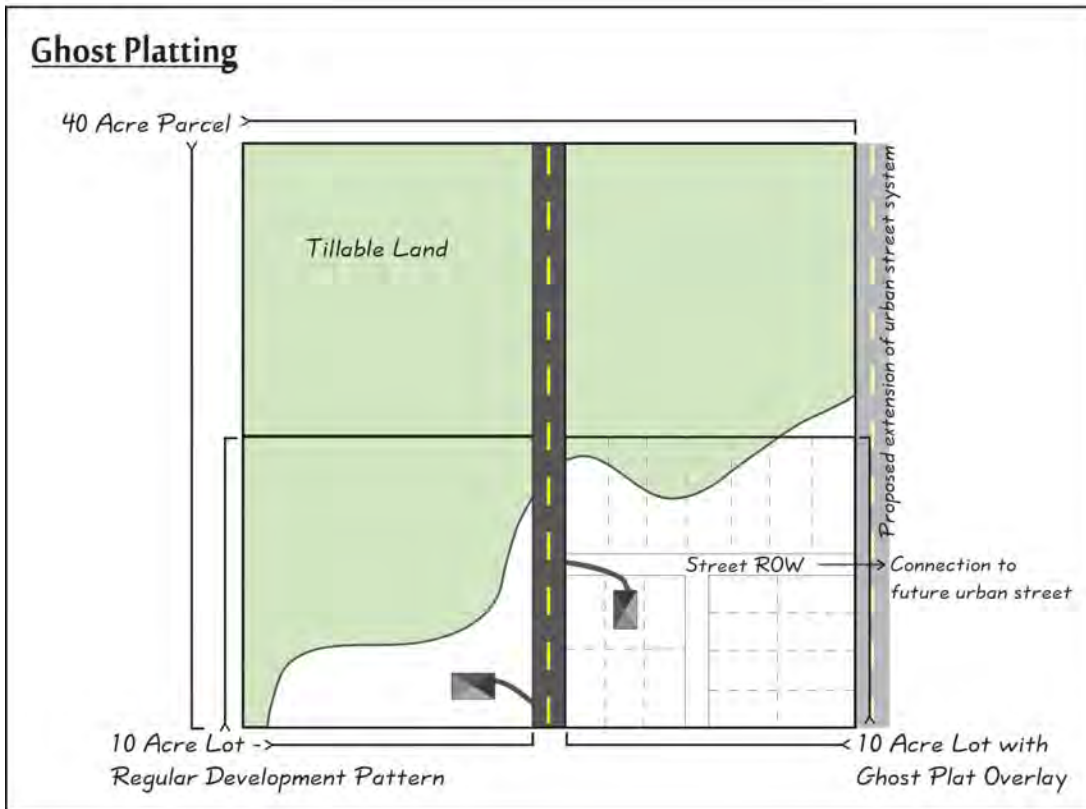
*Receiving Parcel with Transfer*



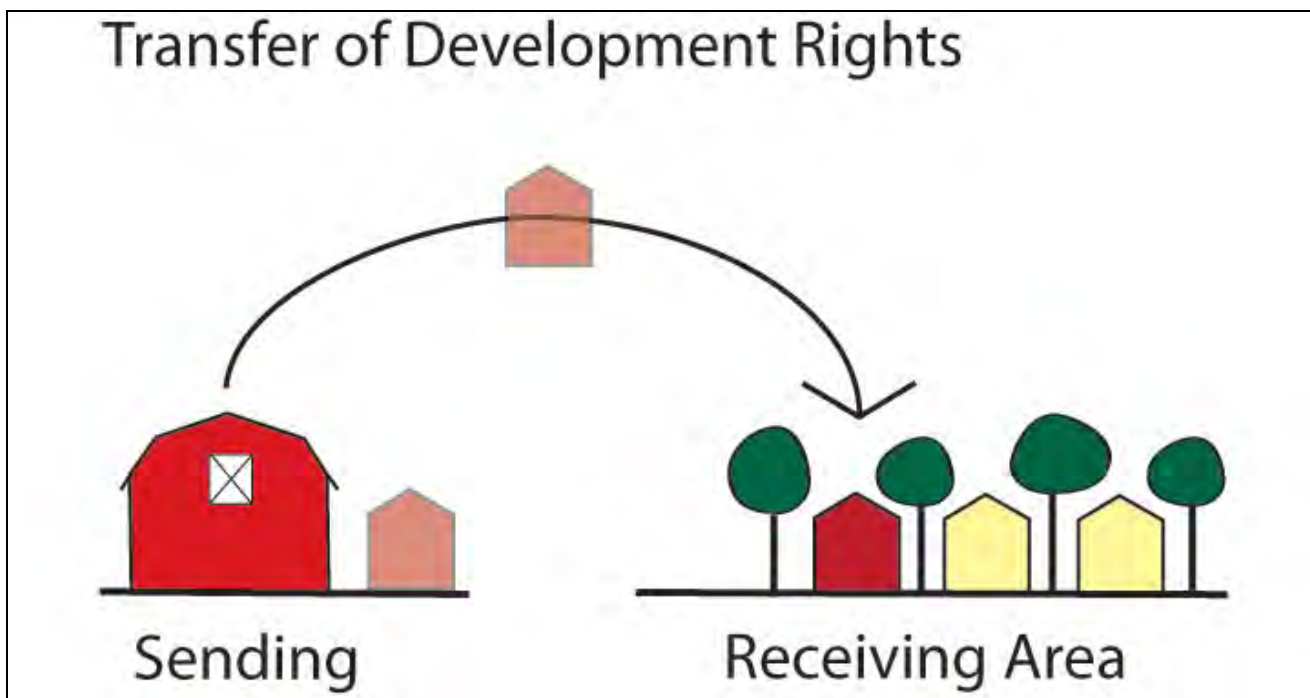
Building Envelope – Section 7.32



Cluster Development – Section 7.4



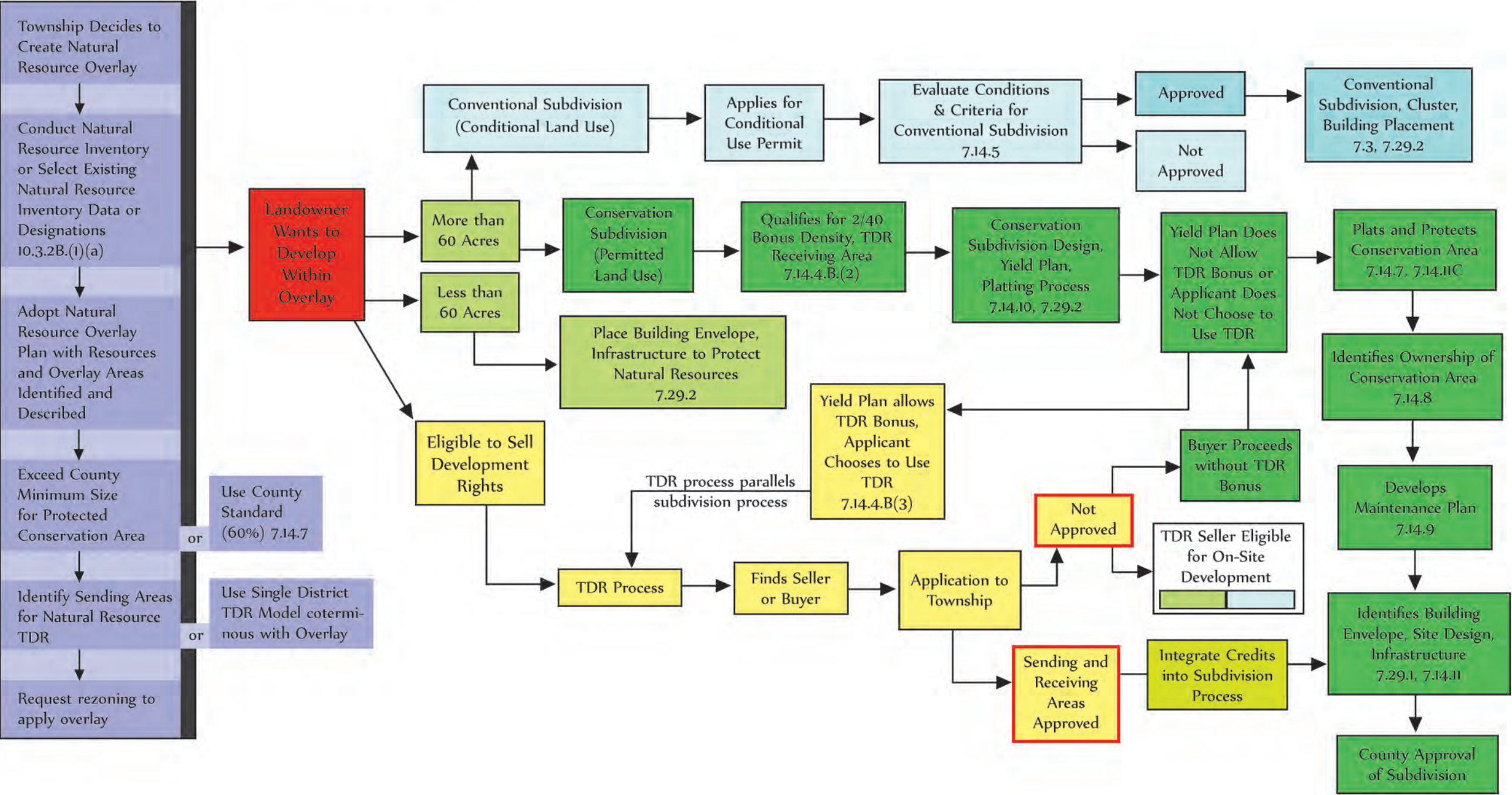
Ghost Plat – Section 9.15



Transfer of Development Rights – Section 11



Development Process in Natural Resource Overlay



## Development Process in A-40 Zoning District

