

WIND ENERGY CONVERSION SYSTEMS (WECS)

Amendment to
Bylaw 1808

1. DEFINITIONS

The following definitions apply to this part:

Blade – A part of a WECS rotor which acts as a single airfoil, to extract kinetic energy directly from the wind.

Blade Clearance – The distance from grade to the bottom of the rotor's arc.

Horizontal Axis Rotor – A wind energy conversion system, typical of conventional or traditional windmills.

Operator means, for the purposes of this Bylaw, the holder of a license, approval or permit issued by the Alberta Utilities Commission for the purposes related to the carrying on of activity on or in respect to a specified land.

Parcel Boundary, External – The property boundary for the subject lands which refers to the boundary adjacent to a road allowance.

Parcel Boundary, Internal – The side and rear property boundary for the subject lands.

Project Footprint means all the lands which are part of an approved application as well as any residual lands within a titled parcel, whether or not the lands are leased by an operator.

Rotor's Arc – The largest circumferential path travelled by a WECS' blade.

Shadow or Flicker means the repetitive moving shadows or reflection cast from the rotor blades as they pass through the sunlight.

Total Height – The height from grade to the highest vertical extension of a WECS. In the case of a WECS with a horizontal axis rotor, total height includes the distance from grade to the top of the tower, plus the distance from the top of the tower to the highest point of the rotor's arc.

Towers – The structure which supports the rotor above grade.

Vertical Axis Rotor – A wind energy conversion system where the rotor is mounted on an axis perpendicular to the earth's surface.

Visual Impact Analysis means a visual representation depicting the WECS from:

- I. no further than 5 km (3.1-miles) away;
- II. each accessible residence within 3.2 km (2-miles) of the WECS boundaries;
- III. any significant sites as determined by the Development Authority;
- IV. scale elevations

- V. photographs and/or digital information of the proposed WECS showing total height, tower height, rotor diameter, colour, and the existing topography vs. proposed grade changes, and
- VI. visual representation of the entire project both day and night, and
- VII. photographs and/or digital information modeled on ideal visual conditions both day and night;
- VIII. an analysis of the visual impact of above ground transmission lines to and from the property or parcel if above ground transmission lines are proposed for the development.

Wind Energy Conversion System (WECS) Small Scale, (Category 1) – A wind energy conversion system less than 6.1 m (20 feet) in height consisting of a single structure with the capacity to generate electricity only for the property owner’s use on the site it is located, and not supplying power to the grid.

Wind Energy Conversion System (WECS) (Category 2) – A wind energy conversion system of one or more structures designed primarily for the property owner’s use but capable of producing excess power supplying the provincial grid system.

Wind Energy Conversion System (WECS) (Category3) – A wind energy conversion system of one or more structures designed to convert wind energy into mechanical or electrical energy on one or more parcels of land for commercial purposes.

2. INFORMATION REQUIREMENTS

All development applications for a WECS, depending on category, shall be required to be accompanied by the following:

	Category 1	Category 2	Category 3
(a) a site plan showing and labeling the information outlined in this bylaw, and the location of overhead utilities on or abutting the subject lot or parcel;	✓	✓	✓
(b) a detailed public consultation process, complete with a summary report;			✓
(c) an analysis of the visual impact of the project with respect to the scenic qualities of the municipal landscape, including the cumulative impact of other WECS in the area and the impact of overhead collection lines;			✓
(d) scale elevations or photographs of the proposed WECS showing total height, tower height, rotor diameter, and colour;	✓	✓	✓
(e) the manufacturer's specifications indicating: <ul style="list-style-type: none"> • the WECS rated output in kilowatts; • the safety features and sound characteristics; • the type of material used in the tower, blade, and/or rotor construction; 	✓	✓	✓
(f) a noise analysis at the site of the installation and the boundary of the property containing the development, to ensure consistency with AUC Rule 12		✓	✓
(g) specifications on the foundations and/or anchor design, including location and anchoring of any guy wires;	✓	✓	✓
(h) proof of the applicant's circulation to required regulatory agencies and government departments;		✓	✓
(i) information regarding general public safety, including methods to secure towers from vandalism or unauthorized access;	✓	✓	✓
(j) impacts to the local road system including required approaches from public roads & roads to be used to bring construction materials & equipment to the property;		✓	✓
(k) a plan outlining site decommissioning and reclamation;			✓
(l) a description of potential impacts on existing or nearby WECS and wind infrastructure on adjacent properties.		✓	✓
(m) a copy of the AUC approval for the project			✓

3. REFERRALS

Prior to making a decision on a development application for a WECS, Administration will refer the application to the adjacent landowners within a 2-mile radius of each turbine as well as the agencies noted below. Due to the site-specific nature of each development, the list noted below is not exhaustive and ministry names are subject to change from time to time. The Municipal Planning Commission will consider all information received as part of the decision process.

- Alberta Arts, Culture and Status of Women – Historic Resources,
- Alberta Electric System Operator (AESO),
- Alberta Environment and Protected Areas,
- Alberta Transportation and Economic Corridors,
- Alberta Utilities Commission,
- Innovation, Science and Economic Development Canada,
- NAV Canada, and
- Alberta Air Ambulance
- Alberta Health Services

4. SETBACKS

- (1) A WECS shall be located a minimum distance of 1.6 km (1 mile) from any dwelling not belonging to the owner of the land on which the WECS is located or at the distance established by the 'AUC Rule 12: Noise Control' whichever is greater.
 - The current owner of a dwelling or subdivided residential property not belonging to the owner of the land on which a proposed WECS is located may waive the 1.6 km (1 mile) required setback by providing notice in writing to the Development Authority.
- (2) A WECS shall be located so that the setback is a minimum of 100 metres (328 feet) from any side and rear property lines.
- (3) The setback for a WECS shall be a minimum of 400m (1312 feet) from a municipal road allowance.
- (4) A WECS shall be setback a minimum of 3.2 km (2-miles) from the boundary of a village, town or hamlet that falls within the borders of Kneehill County.
- (5) A WECS adjacent to a provincial highway must have the approval of Alberta Transportation and it will be mandatory to meet their setbacks requirements.
- (6) No WECS shall be located within the flight path of an existing airport as recognized by NAV Canada, a private runway, helipad, or other aviation-related use.
- (7) In order to protect habitat for birds of prey and waterfowl, no WECS shall be located within two miles of the following significant water bodies:
 - Red Deer River

- Keiver's Lake – (Lake No. 2)
- Bigelow Dam
- Lake 19 – (Ducks Unlimited Loc 840434)
- Kneehills Creek
- Three Hills Creek
- Ghostpine Creek
- Lonepine Creek
- Rosebud River
- Swalwell Dam
- Braconnier Dam

5. MINIMUM BLADE CLEARANCE

The minimum vertical blade clearance from grade shall be 7.6 m (25 feet) for a WECS employing a horizontal axis rotor unless otherwise required by the Municipal Planning Commission.

6. COLOUR AND FINISH

- (1) A WECS shall be finished in a non-reflective matte and colour which minimizes the obtrusive impact of a WECS, to the satisfaction of the Municipal Planning Commission.
- (2) The wind turbines may display the developer's and/or manufacturer's logos and identification lettering on the structure but cannot be used for other advertising purposes.

7. NUMBER OF WECS

- (1) Two or more WECS on a parcel or lot will be considered a multiple WECS for the purposes of this bylaw.
- (2) The Municipal Planning Commission may approve multiple WECS on a case-by-case basis having regard for:
 - (a) proximity to other immediate land uses,
 - (b) density of WECS,
 - (c) underlying utilities,
 - (d) information received through the circulation process and at the planning commission meeting regarding the development.

8. ADDITIONAL REQUIREMENTS

- (1) During construction all equipment that moves from field to field will be required to be thoroughly cleaned prior to entering a new field in order to reduce or eliminate weed and/or disease transference.
- (2) The applicant to provide proof of insurance.
- (3) An analysis of the potential for electromagnetic interference to other WECS, radio, telephone, wireless, satellite, micro-wave, radar, or other electronic communication systems;
- (4) If a non-tubular design is proposed, the anchor design, location of any guy wire anchors, and how the tower is to be secured from unauthorized access or use.

- (5) A foundation plan with specifications.
- (6) An Emergency Response Plan prepared by a qualified professional and approved by the County's Emergency Management Department prior to the project commencement.
- (7) If the WECS is to be developed in stages, a phasing plan.
- (8) The Applicant/Developer will be required to enter into a Road Use Agreement and a Development Agreement with the Municipality.
- (9) A security deposit shall be posted during the construction period in a form and amount determined to be appropriate by the Development Authority. Any damage to roads and/or other infrastructure during this period that is not rectified by the Applicant/Developer, will be remedied by the Municipality and the damage deposit (or a portion thereof) will be forfeit.
- (10) "As Built" plans will be required to be submitted to the municipality once the project is complete. The project will be required to register with Utility Safety Partners (previously First Call) in order to ensure the lines can be located when work is being done in the area.
- (11) A post construction and decommissioning plan detailing removal of all WECS structures and the reclamation of the land back to its natural state or equivalent land capability as required by the Conservation and Reclamation Directive for Renewable Energy Operations (Alberta Environment 2018/09/14)
 - i. A cost estimate prepared by a qualified professional that details the costs of decommissioning the full installation and reclamation of the entire subject lands. Proof of security must be submitted to the satisfaction of the Municipality and may be subject to third party review completed by a qualified professional, at the cost of the Applicant.
 - ii. If the WECS is out of service or not producing energy for a period of two-years, it will be deemed non-operational and decommissioning, removal, and reclamation will need to commence in accordance with the decommission and reclamation plan submitted with the application.
- (12) A private wind energy conversion system may be considered as a discretionary use in any Land Use District (except the Manufactured Home District). They will be subject to the height restrictions of the district; they cannot exceed one and a half times the height restrictions.

9. PUBLIC CONSULTATION

- (1) The applicant, or agent, shall advertise and host at least one open house or public meeting, in the general area of the site proposed for development, and provide proof of the meeting with a summary of the findings, to the municipality prior to the Municipal Planning Commission meeting, where the application will be heard.

10. CHANGES TO WECS

- (1) Any upgrades to an existing WECS that trigger an amendment or a new permit from the AUC will also require a new development permit from Kneehill County.
- (2) Any significant changes to the approved site plan will require a new development permit from Kneehill County.

SOLAR ENERGY SYSTEMS

1. DEFINITIONS

The following definitions apply to this part:

Operator means, for the purposes of this Bylaw, the holder of a license, approval or permit issued by the Alberta Utilities Commission for the purposes related to the carrying on of an activity on or in respect of a specified land.

Parcel Boundary, External means the property boundary for the subject lands and refers to the parcel boundary adjacent to a municipal road allowance.

Parcel Boundary, Internal means the side and rear property boundaries of the subject lands.

Project Footprint means all the lands which are a part of an approved application as well as any residual lands within a titled parcel, whether or not the lands are leased by an operator.

Solar Energy System, Agricultural, is a system using solar panels to collect solar energy from the sun and convert it to energy to be used for on-farm purposes, agricultural production or processing and on-site consumption. These energy systems are connected to the power grid and may augment the grid from time to time.

Solar Energy System, Commercial/Industrial, is a system using solar technology to collect energy from the sun and convert it to energy to be used for off-site consumption, distribution to the marketplace, or a solar energy system not meeting the definition of solar energy systems, private.

Solar Energy System, Private, is a system using solar panels to collect solar energy from the sun and convert it to energy to be used for a single landowner, resident, business, or occupant of a site, for personal, domestic, and/or business use(s), onsite. Annual electricity produced for the site is generally expected to be equal to consumption.

2. SOLAR ENERGY SYSTEM, PRIVATE/AGRICULTURAL APPLICATIONS

- (1) Applications for a private use solar energy system with ground-mounted arrays may be considered in any district except the Manufactured Home District (MHD).
- (2) Solar energy systems with ground-mounted arrays and associated equipment will require a development permit and will need to meet setbacks for the district.
- (3) Solar arrays may be installed on the roof of any building or may be ground-mounted in a rear or side yard. Private use roof installed solar arrays will not require a development permit.
- (4) If a solar array is being mounted on a tower/pole, the applicant will have to adhere to the height requirements of the applicable district as stated in the Bylaw.
- (5) There shall be no aboveground portion of an alternative energy structure located in a front yard of a residential district. A solar array may be ground-mounted in a side yard, provided the structure complies with the minimum side yard setback requirements of the district.

- (6) A Roadside Development permit may be required to be submitted to Alberta Transportation.
- (7) Development and/or Safety Code Permit applications for a solar energy system, private, shall be accompanied by the following information:
 - (a) documentation showing the system is designed to produce energy for the onsite sole use and consumption by the landowner, resident or occupant;
 - (b) manufacturer's specifications for system design, installation and output capacity;
 - (c) orientation and placement of solar panels on the site including setbacks from property lines;
 - (d) manufacturer's specification and design drawings for panels mounted to the roof or walls of a building or accessory structure, including how the panels are to be affixed, maximum projection from the roof or wall, and structural capacity of the roof or wall to support the proposed development;
 - (e) for free-standing solar panels, a description of the proposed ground mount design and maximum height from the existing grade; and
 - (f) documentation showing all systems for mounting and securing meet Safety Code requirements.
- (8) Solar energy system, private, shall adhere to the following:
 - (a) Panels shall be located so they do not create a glare on or impact neighbouring parcels or public roadways, or unduly affect the amenities of the neighbourhood, or present a danger to the travelling public.
 - (b) Panels mounted to a roof of a building or accessory structure shall not extend beyond the outermost edge of the roof.
 - (c) Panels mounted to a roof or wall of a building or accessory structure shall not project more than 0.45 m (1.5 feet) from the surface.
 - (d) The maximum height of a free-standing solar panel shall not exceed 2.44 m (8 feet).
 - (e) Setbacks prescribed in the land use district, or those setbacks established by a condition applied to a development permit shall prevail; and
 - (f) The maximum number of panels per parcel shall be regulated by the Development Authority, subject to the existing use of the parcel and the current use of adjacent parcels.

3. SOLAR ENERGY SYSTEM, COMMERCIAL/INDUSTRIAL APPLICATIONS

Solar energy systems, Commercial/Industrial are those developments that feed power back into the general provincial power grid, are distributing to other properties, or are selling power for a profit at an industrial scale.

- (1) Development applications for a solar energy system, commercial/industrial, shall be accompanied by the following information:

3.1 Site Information

- (a) A detailed site plan including elevations, and accessibility to a road, showing the titled parcel(s) location of the solar energy system, required setbacks, existing structures, distance from adjacent land and road allowance.
- (b) Location of overhead utilities on or adjacent to the subject parcel.
- (c) Location and identification of environmentally sensitive areas on the parcel where the panels are to be located.
- (d) Solar Energy System, Commercial/Industrial shall be setback a minimum of 3.2 km (2-miles) from the boundary of a village, town or hamlet that falls within the borders of Kneehill County.
- (e) In order to protect habitat for birds of prey and waterfowl, no Solar Energy System, Commercial/Industrial shall be located within two miles of the following significant water bodies:
 - Red Deer River
 - Keiver's Lake – (Lake No. 2)
 - Bigelow Dam
 - Lake 19 – (Ducks Unlimited Loc 840434)
 - Rosebud River
 - Swalwell Dam
 - Braconnier Dam
- (f) A landscaping and screening plan showing how the installation will be visually screened from neighbouring parcels and adjacent roadways is to be submitted to the satisfaction of the County and will include sufficient construction details, plant lists and minimum sizes.

3.2 Specific to Development

- (a) Details regarding the system type, number of structures, height of structures, energy process, grid connection and rated output.
- (b) Details regarding signage, public safety, and security measures.

3.3 Specific to Land

- (a) Site suitability analysis, including but not limited to, topography, soils characteristics and classification, storm water drainage collection and management for a 1:50 year storm event, road accessibility, grading and drainage plan, availability of water supply, sewage disposal and solid waste disposal if required, compatibility with surrounding land uses, potential impacts on agricultural land, potential visual impacts, and consistency with the Municipal Development Plan.
- (b) Environmental impact assessment prepared by a qualified professional demonstrating site suitability, impact mitigation reclamation requirements.
- (c) Stormwater cannot be released into a natural drainage system thus the applicant should have alternative management options.

3.4 Specific to Construction

- (a) Impacts on the proposed access roads including approaches.
- (b) A soils erosion, topsoil and soil stockpile management plan to address:
 - Any proposal to strip and stockpile topsoil during the construction/erection period and the rationale or need for doing so, and
 - the details on proposed soil management practices and erosion control due to both wind and water; for the period of both construction and post-construction.
 - Surface drainage and erosion control must also adequately address and account for impacts associated with the impervious nature of the collectors.
- (c) Detailed information regarding a construction traffic management plan including estimated number of trips, parking and staging areas and any potential impacts to public roads. A Road Use Agreement will be required, and the County must approve any haul route as well as any staging areas that fall outside of the proposed site and utilizes our road network.
- (d) The Applicant shall provide proof of insurance.
- (e) During construction all equipment that moves from field to field will be required to be thoroughly cleaned prior to entering a new field in order to reduce or eliminate weed and/or disease transference.
- (f) A security deposit shall be posted during the construction period in a form and amount determined to be appropriate by the Development Authority. Any damage to roads and/or other infrastructure during this period that is not rectified by the Applicant/Developer, will be remedied by the Municipality and the damage deposit (or a portion thereof) will be forfeit.

3.5 Post Construction

- (a) Post construction and decommissioning plan detailing removal of all solar energy structures and the reclamation of the land back to its natural state or equivalent land capability as required by the Conservation and Reclamation Directive for Renewable Energy Operations (Alberta Environment (2018/09/14)).
 - i. A cost estimate prepared by a qualified professional that details the costs of decommissioning the full installation and reclamation of the entire subject lands. Proof of security must be submitted to the satisfaction of the Municipality and may be subject to third party review completed by a qualified professional, at the cost of the applicant.
 - ii. If the solar power system is out of service or not producing energy for a period of two-years it will be deemed non-operational and decommissioning, removal, and reclamation will need to commence in accordance with the decommission and reclamation plan submitted with the application.
- (b) A vegetation, weed and pest management plan that addresses how invasive plants, weeds, and pests such as Richardson Ground Squirrels will be controlled during the construction period and the projected lifespan of the development, to be submitted for review and approval by the Kneehill County Agricultural Fieldman.

3.6 Fire & Emergency Management

- (a) A Fire Safety Plan submitted with the application for review and approval by the Fire Safety Codes Officer prior to project commencement.
- (b) A Fire Mitigation Strategy submitted for review and approval by the Kneehill County Fire Services Department (KCFS). Any changes to the fire mitigation plan, the solar installation layout, spacing between solar collectors, the screening plan or any other aspect of the project as requested by the KCFS must be undertaken and resubmitted to the satisfaction of KCFS prior to project commencement.
- (c) An Emergency Response Plan prepared by a qualified professional and approved by the County's Emergency Management Department prior to project commencement.

4. PUBLIC CONSULTATION

- (1) The applicant, or agent, shall advertise and host at least one open house or public meeting, in the general area of the site proposed for development, and provide proof of the meeting with a summary of the findings, to the municipality prior to the Municipal Planning Commission meeting, where the application will be heard.

5. ADDITIONAL APPROVALS

- (1) Copies of regulatory approvals, utility permits and any other approvals required by the federal and/or provincial government shall be provided to the municipality.

6. PROTECTION OF AGRICULTURAL LANDS

- (1) In order to minimize the impact on agricultural lands, the:
 - (a) siting of solar energy systems, commercial/industrial should take place on lands considered to be poor agricultural land with a Canada Land Inventory (CLI) soil classification of 4 through 7.
 - (b) use of irrigated land, native prairie grassland, and high-quality agricultural soils with a Canada Land Inventory (CLI) soils classification of 1 through 3, shall be prohibited. These lands are defined on the attached map noted as "Schedule A".
 - (c) Topsoil must remain on the property it originated on and may be stockpiled but must be managed in a way that it can be utilized for reclamation. Stockpiles are to be kept under suitable weed free vegetative cover (minimum 80%) to prevent soil erosion. The vegetative cover must be established immediately upon completion of stockpiling and maintained for the life of the stockpile.

7. NOTIFICATION

- (1) Development applications shall be referred to:
 - (a) Provincial and Federal agencies, the list noted below is not exhaustive and ministry names are subject to change from time to time:
 - Alberta Agriculture and Forestry
 - Alberta Arts, Culture and Status of Women – Historical Resources
 - Alberta Energy Systems Operator (AESO)
 - Alberta Environment and Protected Areas

- Alberta Transportation and Economic Corridors Alberta Utilities Commission
- Innovation, Science & Economic Development Canada
- NAV Canada
- Transport Canada

(b) Adjacent municipalities if required in an Intermunicipal Development Plan.

(c) Landowners within 3.2 km (2 miles) of the proposed site or in accordance with an existing Intermunicipal Development Plan.

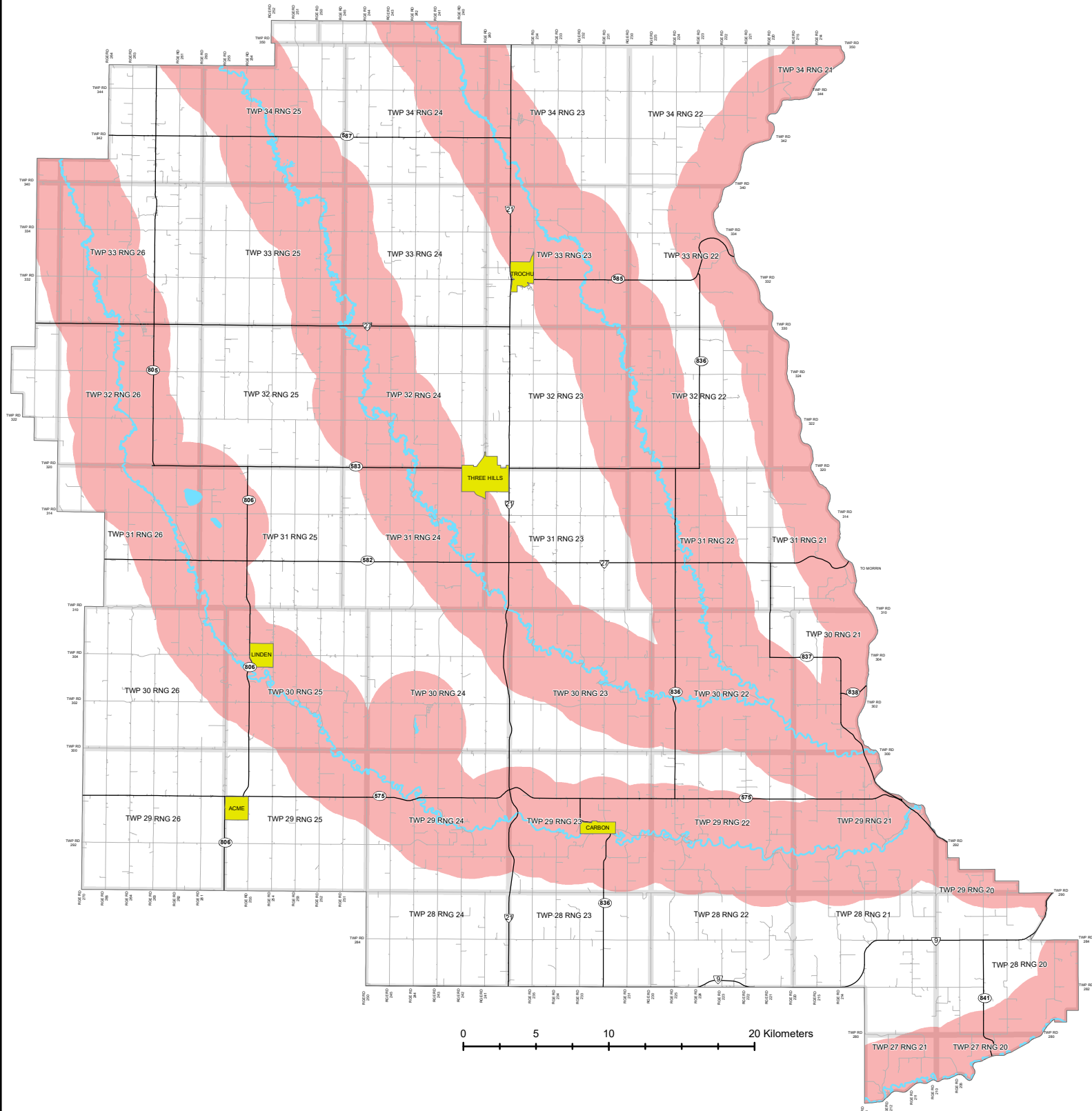
8. ADDITIONAL CONDITIONS

(1) Depending on the size, type and site of the project being proposed, the designated officer or Municipal Planning Commission may require the applicant to comply with any or all of the following standards or conditions:

(a) A Road Use Agreement will be required to be entered into with Kneehill County.

(b) A Development Agreement shall be entered into and registered on the title of the lands where the project is sited.

Wind Energy Conversion System Setbacks to Water Courses



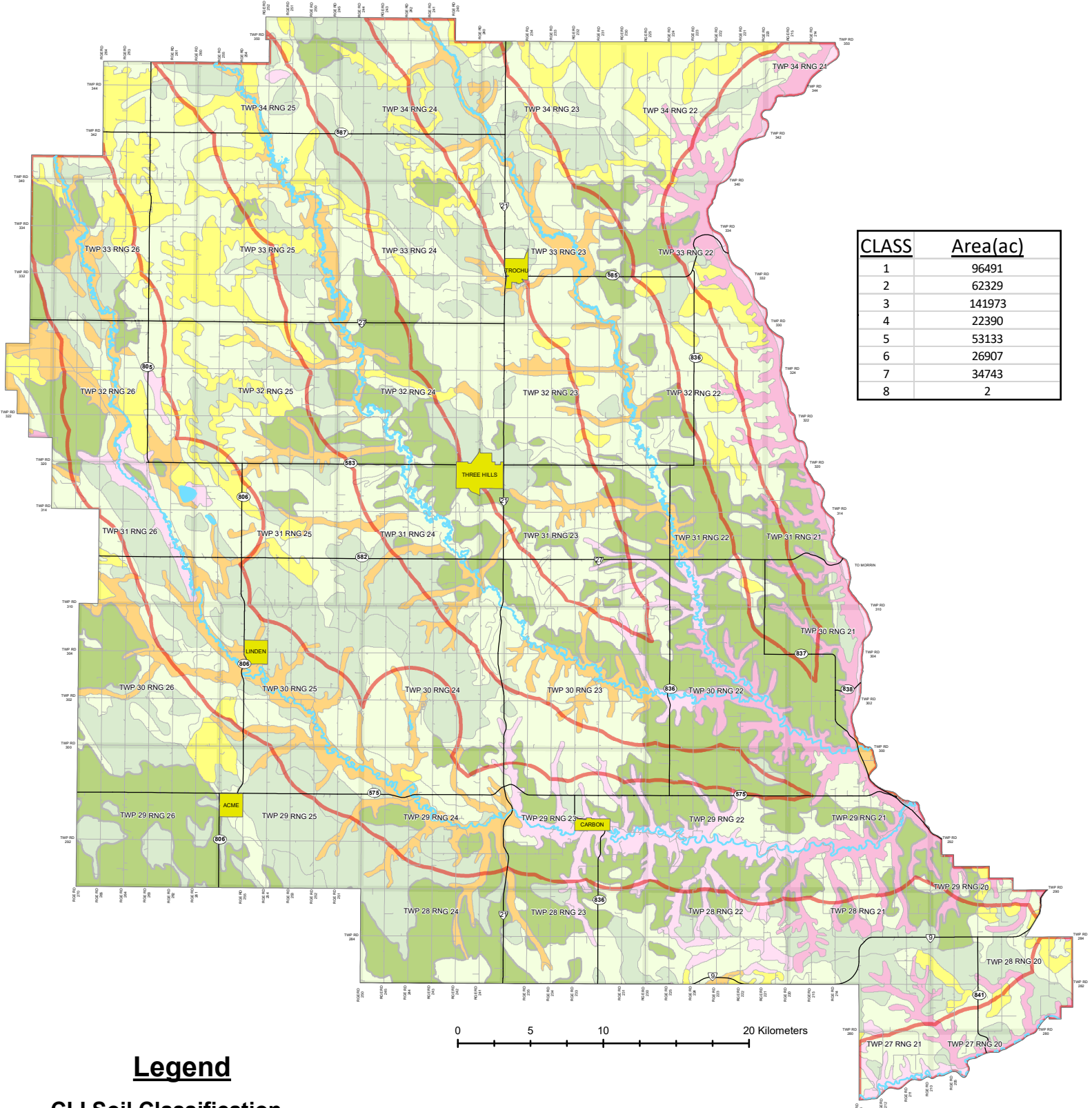
0 5 10 20 Kilometers

2- Mile Setback

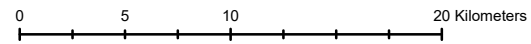
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Wind Energy Conversion System Setbacks to Water Courses



CLASS	Area(ac)
1	96491
2	62329
3	141973
4	22390
5	53133
6	26907
7	34743
8	2



Legend

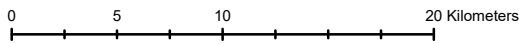
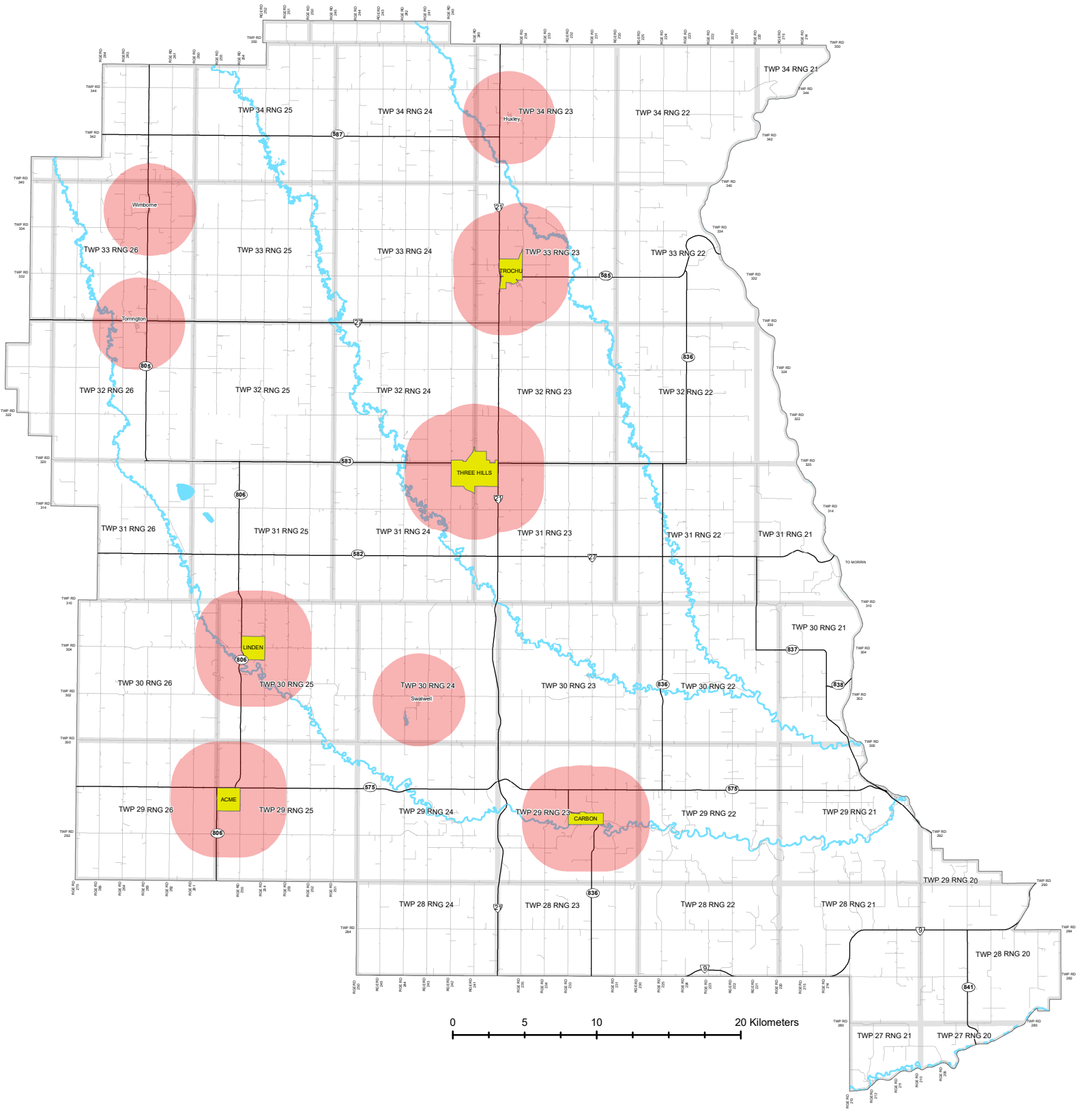
CLI Soil Classification

	1		4		7
	2		5		8
	3		6		0

2- Mile Setback

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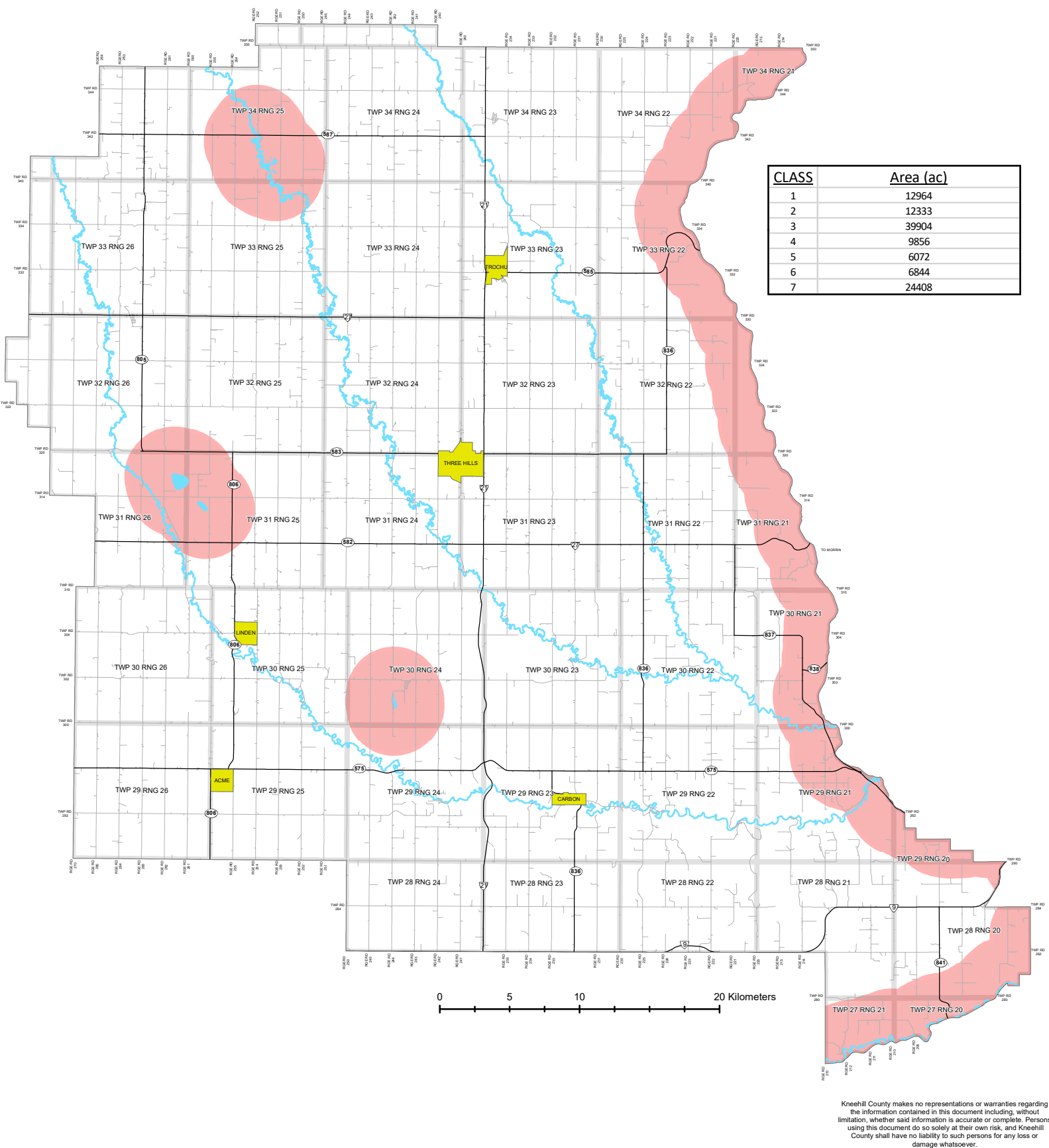
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2-mile Setback

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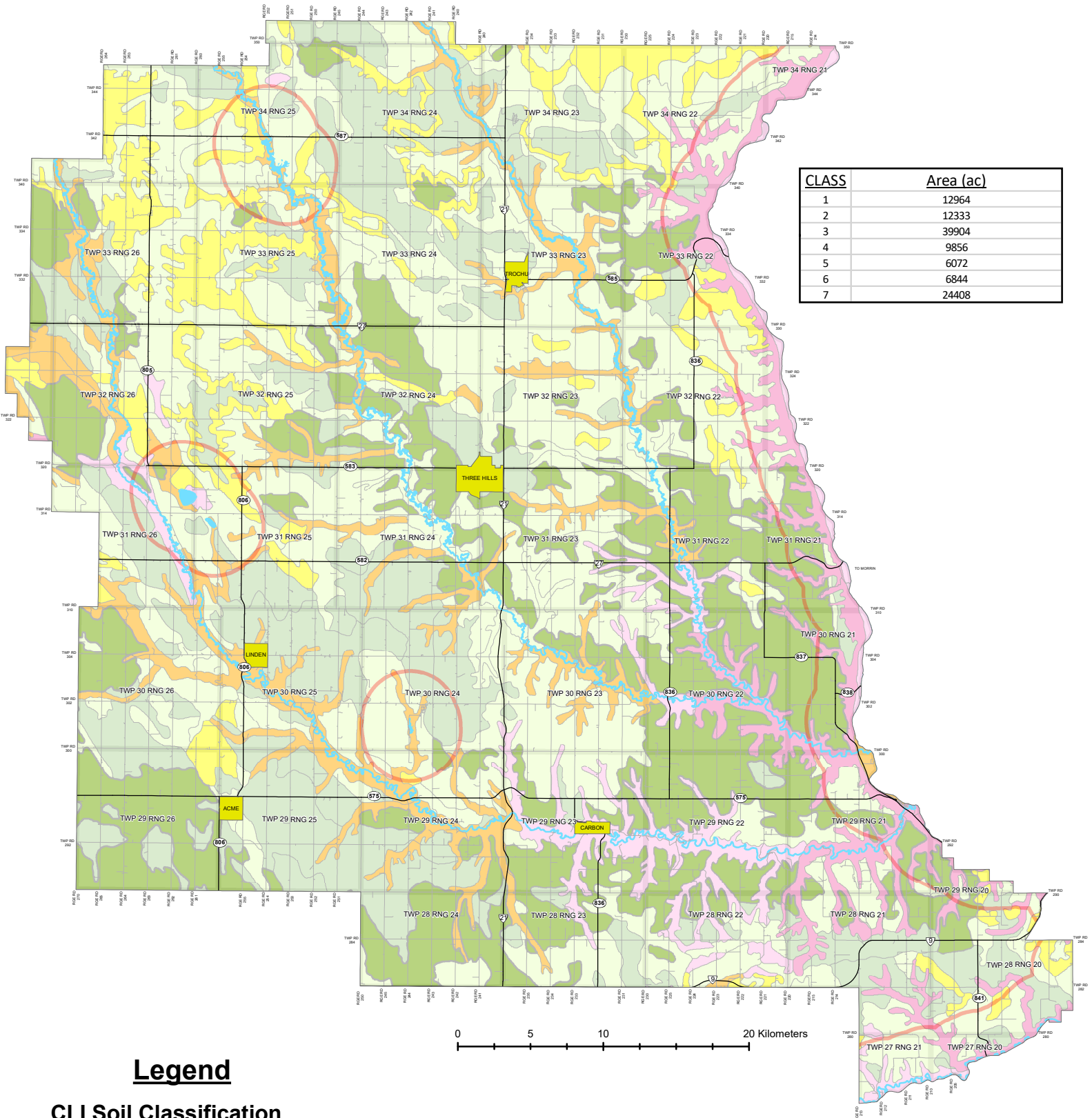
CLASS	Area (ac)
1	12964
2	12333
3	39904
4	9856
5	6072
6	6844
7	24408

0 5 10 20 Kilometers

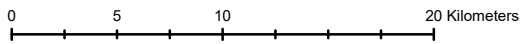
2-Mile Setback

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CLASS	Area (ac)
1	12964
2	12333
3	39904
4	9856
5	6072
6	6844
7	24408



Legend

CLI Soil Classification

	1		4		7
	2		5		8
	3		6		0

2-Mile Setback

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