Executive Summary

Wascana – Upper Qu'Appelle Watersheds Environmental Scan 2013

Wascana Upper Qu'Appelle Watersheds Taking Responsibility Inc.
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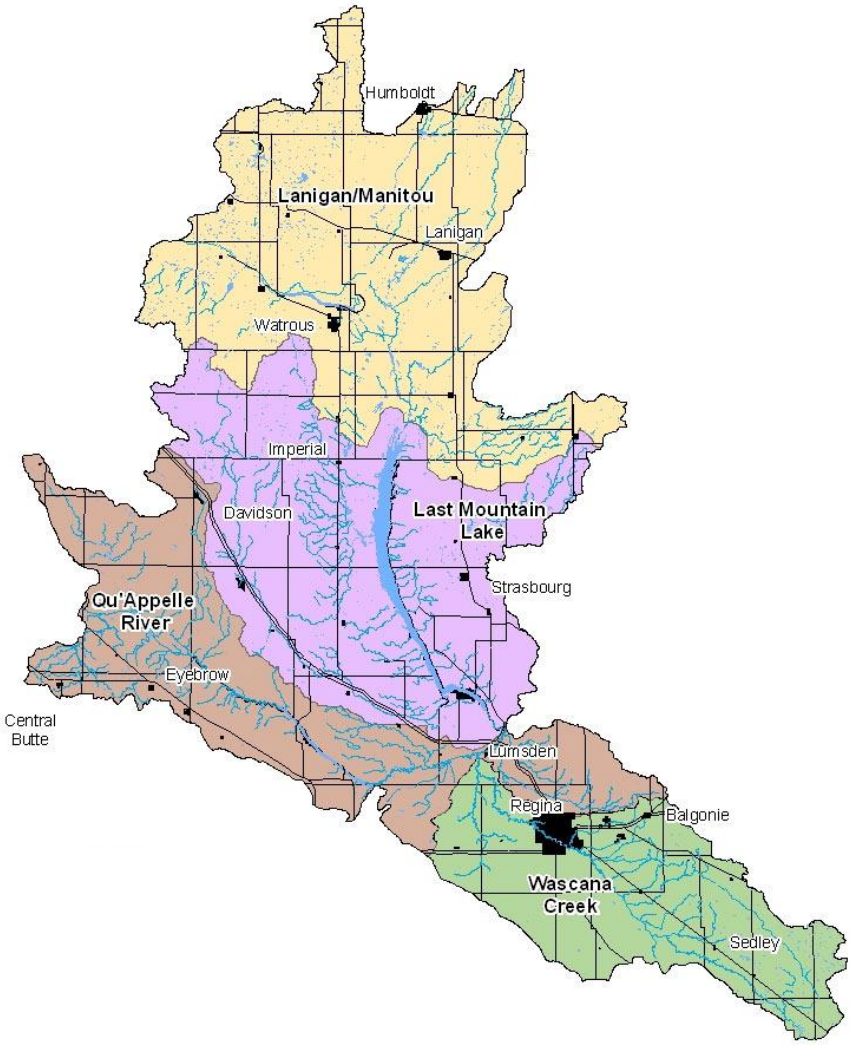
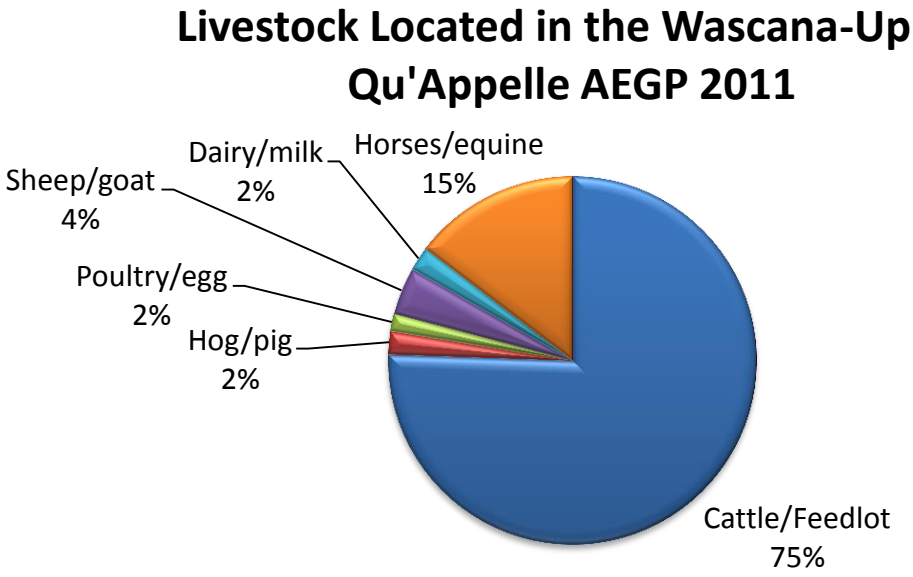


Executive Summary

The purpose of this environmental scan is to bring together all available data in order to assess the current state of the Wascana-Upper Qu'Appelle watershed as it pertains to agri-environmental management practices and water quality issues. It will also identify areas where information is lacking and help the Wascana-Upper Qu'Appelle Agri-Environmental Group Plan (AEGP) set its annual and five-year work plans. For a more detailed report including background information and maps please refer to the Wascana-Upper Qu'Appelle Environmental Scan 2013.

Livestock Production

Within the AEGP area, 75% of the livestock production is from cattle (6.6% of Saskatchewan's production), and two percent is hog and pig production (19.7% of the province's production). Manure from these two industries is spread in solid and liquid form respectively. Manure production and the location of livestock operations relative to waterbodies can pose risks to surface water quality and in some cases ground water quality. Agri-environmental stressors associated with livestock production also include alien invasive species and agricultural inputs.



Land Cover and Use

Within the AEGP area, approximately three quarters of the land is used for annual cropping and 15 percent remains as perennial cover (tame and native grass). Four percent of the land is comprised of wetlands, forest and shrub land (not including the major waterbodies in the watershed.) Wetlands are importance sinks in times of excess precipitation and a source of

water in times of drought. Agri-environmental stressors associated with cropland include erosion, agricultural inputs, and the potential loss of wetlands due to drainage.

Percent Land Cover Circa 2000 and Land Use 2011				
Landcover Circa 2000	**Wascana Creek Watershed**	**Upper Qu'Appelle River Watershed**	**Combined Landcover**	**Land Use 2011**
Water	1.1%	2.7%	2.4%	
Barren/exposed	0.1%	0.1%	0.1%	
Developed	2.8%	0.6%	1.0%	
Grassland	3.9%	5.7%	5.4%	14.9%
Perennial Crops and Pasture	10.4%	12.9%	12.5%	
Annual Cropland	79.9%	72.9%	74.1%	80.7%
Shrub Land	0.6%	0.6%	0.6%	4.4%
Wetland	0.6%	2.9%	2.5%	
Deciduous Forest	0.7%	1.1%	1.0%	
Coniferous Forest	0.0%	0.5%	0.4%	
Total	100.0%	100.0%	100.0%	100.0%

Watershed Stressor and Condition Indicators

The following is a break down the health of the watersheds based on agricultural stressor indicators as determined by the 2010 State of the Watershed Report. Stressors stem from management practices and affect the condition of a watershed. The overall condition of a watershed dictates its health.

Stressor Indicator Ratings for the Upper Qu'Appelle River and Wascana Creek Watersheds		
Stressor Indicator	**Upper Qu'Appelle River Watershed**	**Wascana Creek Watershed**
Invasive Alien Species	Moderate Intensity	Moderate Intensity
Livestock	Moderate Intensity	Moderate Intensity
Soil Erosion	Low Intensity	Low Intensity
Fertilizer Inputs	Moderate Intensity	Moderate Intensity
Pesticide Inputs	High Intensity	High Intensity
Manure Production	Moderate Intensity	Low Intensity
Wetland Loss	Low Intensity	Moderate Intensity

Rangeland and riparian health are indicators of the condition of the watershed as it pertains to agriculture. Agricultural practices (stressors) can affect rangeland and riparian health. For example, over grazing of grasslands, pastures and riparian areas can lead to decreased biodiversity, bare soil, erosion and the presence of undesirable and invasive plant species. Cropping too close to waterbodies can damage riparian areas by killing riparian plants through spray drift of herbicides and altering the stability of the banks of the waterbody or watercourse.

The risk of agricultural inputs entering waterbodies increases with riparian damage. Other condition indicators such as ground and surface water quality and aquatic benthic macro-invertebrates (an indicator of changes in the chemical and physical properties of water) are also influenced by agricultural practices as well as urban and industrial activities. The following table is a summary of the condition indicators and the health grade for the Wascana and Upper Qu'Appelle watersheds. On the whole and taking into account more than just agricultural stressors, the Wascana Creek and the Upper Qu'Appelle River watersheds have been rated as impacted and stressed respectively.

Condition Indicator Ratings for the Upper Qu'Appelle River and Wascana Creek Watersheds

Condition Indicator	Upper Qu'Appelle River Watershed	Wascana Creek Watershed
Surface Water Quality	Stressed	N/A-not available or not applicable
Ground Water Quality	Stressed	Stressed
Aquatic Benthic Macro invertebrates	Stressed	Impacted
Riparian Areas	Stressed	Stressed
Rangeland Health	Stressed	N/A-not available or not applicable
Environmental Acidification	N/A-not available or not applicable	N/A-not available or not applicable
Health Grade	Stressed	Impacted

Conclusions

The overall health of the Wascana Creek and Upper Qu'Appelle River watersheds are rated as impacted and stressed respectively by the 2010 State of the Watershed Report. When breaking down the area into certain stressors, agricultural stressors range from low intensity (erosion) to high intensity (pesticide use) with the majority being moderate in intensity (fertilizer inputs, presence of invasive species, livestock and manure production). Both the Upper Qu'Appelle River and the Wascana Creek watersheds had a high intensity rating for ground water usage and a stressed rating for ground water quality. Both had a stressed rating for riparian health. There is a lack of data for important indicators of health such as surface water quality and rangeland health in the Wascana Creek watershed.

The data collection for the Environmental Scan has identified the following issues that will be need to be considered and addressed in the five year and annual work plans.

- 74% of the land cover (80% of land use) of our watersheds is cultivated cropland, which may impact the environmental health of our watershed through fertilizer and pesticide/herbicide runoff and siltation. Increasing incidence of extreme weather events

including high precipitation and high runoff events may require a new focus on management tools like buffers and grassed waterways.

- Increased high runoff events arising from Climate Change may be placing more pressure on riparian areas, and highly erodible soils, leading to erosion.

- A large percentage of our rural and small urban populations rely on groundwater for their drinking water. Increased education and awareness of groundwater protection is a priority including the proper decommissioning of abandoned wells.

- Buffalo Pound Lake is the primary source water body for 25% of the Province's population, and agricultural activities have an impact on water quality.

- Last Mountain Lake, Buffalo Pound Lake and the Qu'Appelle River are important agricultural, environmental and recreational resources, including fisheries habitat. Their riparian areas perform a wide variety of essential functions for a large geographic area. The AEGP needs to identify specific areas where current management is having a concentrated impact, and try to address them with beneficial management practices (BMP) programming.

- The Wascana-Upper Qu'Appelle watershed contains 20% of Saskatchewan's hog production. The AEGP might to need to see if there are any identifiable impacts.

- Events like BSE and border closures may have led to consolidation in the cattle industry and increased herd sizes in individual operations. Has there been a management impact?

We have identified several major data gaps:

- There is not sufficient information about water quality, especially in the Wascana system and downstream in the Qu'Appelle system. Serious nutrient loading issues have been identified, especially with the City of Regina's waste water emissions. There is no information about nutrient contributions from agriculture.

- Data about riparian health is isolated and incomplete throughout the watershed, especially for our rivers and creeks (lotic). Lentic assessments may not be recent.

- Recent high precipitation years and increasing crop values have led to increased agricultural drainage. The current status of our wetlands is unknown. The last data available is from 1985-2001.

Through education and awareness of these issues and the implementation of BMPs, producers can help to improve the quality of the waters in the area and work towards a better overall health of the watershed. It is the goal of the AEGP to assist producers with implementing BMPs, and to increase watershed awareness for both rural and urban residents.

Acknowledgements

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