Saskatchewan Agriculture, Food and Rural Revitalization

Saskatchewan Watershed Authority

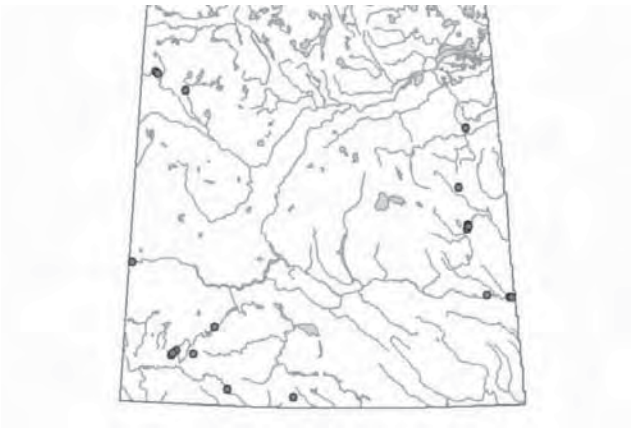
Stewardship and Economics of Cattle Wintering Sites

Cattle producers as stewards of the land

Across southern Saskatchewan's landscape of cropland, creeks, prairie and bush, ranchers and farmers are the stewards of our natural resources. These people make a living from an environment which provides clean water and air as well as wildlife habitat benefiting society in general. Water quality and quantity have become particularly important to cattle producers who understand the day-to-day need for good quality stock water and moisture for forage production.

Areas along creeks and rivers have always been important to cattle producers. The first settlers were drawn to creeks and rivers for shelter and easy access to water. Cattle producers are naturally interested in protecting this important resource. The challenge, therefore, for producers is to find balance between sustaining the environment and maintaining profitability in an increasingly demanding global market economy. The industry will require a continued commitment by cattle producers to the sustainable management of water resources. Cattle producers throughout the province have become increasingly aware of water issues. They have been leaders in working with agencies such as Ducks Unlimited Canada (DUC), Agriculture and Agri-Food Canada's Prairie Farm Rehabilitation Administration (PFRA), the Saskatchewan Watershed Authority (SWA) and Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR) to manage water resources.

Areas along creeks and rivers have always been important to cattle producers. (Photo credit Saskatchewan Archives Board)



Landowners throughout the province have cooperated with Sask. Watershed Authority and other agencies to implement wintering site stewardship projects.

The challenge of wintering cattle

During winter, cattle need shelter, water and feed. Typically, these basic needs are met by providing a cattle-wintering site. Cattle-wintering sites can be corrals, a small fenced area, or feeding areas in larger areas (pastures, cropland, etc.). Some sites may include a separate calving area. Wintering sites often utilize existing naturally sheltered areas near the farmstead and may include low areas, watercourses or south-facing slopes protected by natural trees or constructed shelter. Ultimately, the type of wintering strategy used depends on the unique conditions and goals of each operation.

Wintering cattle represents a primary challenge for cow-calf producers in Saskatchewan. Cost of production data collected by the Western Beef Development Centre for 2001 shows that wintering costs represent one of the largest price components of variable costs in calf production. Winter feed and bedding costs for one year were $174.89 and $11.49 per cow respectively. These costs alone account for 34 percent of the total cost of production. Furthermore, these estimates

do not include the basic costs of providing a wintering site (yardage). A study of 38 cow-calf operations in north-central Alberta determined that the total yardage cost for wintering cows was $0.67 per head per day. The type of wintering site used can affect the costs of wintering cattle. For example, adequate shelter and bedding can increase feed efficiency and thus reduce costs.

Wintering cattle in corrals is a common practice in Saskatchewan.

Some cattle wintering sites are located near the riparian areas of rivers and streams. These locations provide shelter and water, but can affect water and land resources through the confinement of cattle and the resulting concentration of animals.

Stewardship of cattle wintering sites

Stewardship of wintering sites for optimal production and water protection is a challenge for the cattle industry in Saskatchewan. There are over 80,000 kilometres of stream course in Saskatchewan, along which many cattle operations are situated.

To estimate the number of producers who winter cattle along streams and rivers in the province, surveys were conducted in two watersheds, - one in the grassland region and the other in the parkland region, during the winter of 2001.

Cattle wintering yards up to one half mile (800m) from streams were counted, and yard distance from surface water estimated. In both watersheds, cattle wintering sites were situated every three to four kilometres of stream. In the parkland watershed, average distance from streambank was over 500 metres. In the southern grassland watershed, average cattle wintering site distance from water was 132 metres. By combining the average distance from the water course, the density of cattle wintering yards and kilometers of stream in Saskatchewan, the number of cattle wintering sites along streams and rivers was estimated. This preliminary estimate would suggest that as many as 10,000 producers winter cattle along watercourses in Saskatchewan.

In some cases, cattle have traditionally been wintered near creeks and streams. (Photo credit Saskatchewan Archives Board)

Cattle wintering sites can be managed to meet production goals and protect water resources through the adoption of common-sense practices that reduce runoff and maintain healthy riparian areas. Partnerships are the key to success . Producers, conservation agencies and regulators can work together to find workable solutions at the farm level. The first step in these partnerships is to understand the surface and ground water issues involved.

Saskatchewan has over 80,000 kilometres of streamcourse.

Surface water quality

Surface water (water in sloughs, rivers or creeks) can be impacted by runoff, which occurs during spring melt and seasonal rainfall events. Uncontrolled runoff from wintering sites can transport nutrients and pathogens to surface water. Runoff from wintering sites is affected by slope, precipitation, soil type, drainage patterns, vegetative cover and flooding hazard. Runoff can pick up nutrients from manure and erosion. Erosion occurs on wintering sites where water from rapid snowmelt or heavy rain storms passes over bare ground, picking up soil particles which are then deposited into water bodies. The resulting sediment can affect water quality as it tends to be nutrient-rich. When excess nutrients (particularly nitrogen and phosphorous) are deposited into surface water, they can result in the increased production of algae and other aquatic plants, adversely affecting water quality. Excess nitrogen can also impact fish that are sensitive to ammonia levels.

All manure contains bacteria, viruses, protozoa and parasites, some of which may be pathogenic (cause disease) for humans. Pathogens can be found in feces of all animals, including humans. Young animals have higher shedding rates of organisms like cryptsporidium and giardia, so it is particularly important to manage the runoff from calving areas and to be careful about hygiene during calving season.

Wintering sites located where cattle have access to riparian areas and stream banks may pose higher risks to surface water quality. Healthy riparian areas provide a buffer between the wintering area and surface water. Runoff is captured as it passes through a well-vegetated riparian zone which can utilize the nutrients in the runoff water.

Slope and runoff risk

Although a number of factors influence runoff and erosion, slope is often easily observed.

- *flat* ground (less than two percent slope) has the least chance of runoff. Where there is adequate vegetative cover and good management, these areas should require no or minimum alterations.
- *slight* (two to 10 percent) to moderate slopes (10 to 15 percent) have a greater chance of runoff and may pose risks to either surface water and/or groundwater. Improvements may be required but may not be extensive.
- *steep* slopes (over 15 percent) have the greatest chance of runoff and may pose significant risk to either surface water and/or groundwater. Since factors such as slope, precipitation and flood hazard are uncontrollable, high risk locations require significant changes or should be abandoned.

Protecting groundwater

Groundwater quality can be impacted by cattle wintering sites through the process of leaching. Surface geology is the most important factor influencing leaching. Leaching occurs when runoff collects in ditches, low spots, sloughs or buffer strips where there is insufficient vegetation to capture and tie up nutrients. Water may collect on wintering sites following spring

runoff and seasonal rainfall, allowing nutrients and pathogens to leach into groundwater, especially on porous soils.

Among the nutrients which may reach groundwater from wintering sites, nitrogen is probably the most important. Although nitrate levels are very low in manure, it is highly soluble in water and, unlike phosphorus, is not bound by soil particles. As excess water moves down through the soil profile, it can carry with it any nitrate present. The risk of groundwater contamination will be influenced by the amount of nitrate in the soil, the amount of water moving through the soil, the texture of the soil and the distance to the water table.

Natural depressions that collect runoff water often drain to groundwater sources. These are called recharge areas, and it is important to ensure that runoff water is diverted from these areas.

In addition, although the soil tends to act as a natural filter protecting groundwater from contamination by pathogens, there is a risk of micro-organisms moving through the soil profile to groundwater where the water table is shallow and overlaid by coarsely textured material. Water wells or an abandoned well can also be direct pathways from the land to groundwater.

What makes a good wintering site?

Ideally, wintering sites should both protect water sources and achieve production objectives. Good sites should:

- have naturally elevated areas for bedding best located on upland areas that do not drain directly into water or areas on slight slopes located some distance from water with a good vegetative buffer between;
- divert runoff if located near water;
- avoid high water tables;
- avoid sites on porous soils such as sands, gravels and shales - clay soils are less porous;
- avoid flood-prone areas (this is the general statement, this discussion will focus on the surface water info); and
- ensure wells and other water sources are properly protected and/or abandoned.

Practical solutions to managing wintering sites

Cattle wintering sites are often not ideally located and issues related to surface and ground water and riparian health may exist. In the event that operations must be relocated, site selection as noted above should be a key factor in the decision. In most cases, however, producers across Saskatchewan are applying practical solutions to address these issues. These solutions include:

- reducing the concentration of animals;
- water development;
- runoff and erosion control;
- buffer strips;
- manure management;
- controlled access; and
- relocation.

Each of these solutions is briefly discussed herein. It is, however important to recognize that no two wintering sites are identical. A number of case studies are presented to illustrate the application of these practical solutions. Even though each situation is different, each producer was able to apply a solution that suited his land, cattle and operating budget.

Reduce the concentration of animals:
One of the most direct approaches to managing wintering sites is to feed cattle in a way that reduces concentration of animals. Winter grazing pasture or swath grazing can lessen the time on any one site, thereby reducing the potential impact. Practices that regularly change location of the feeding site such as bale grazing, stubble grazing or feeding using a bale processor

can also reduce the concentration of animals. It is important to note that the location of these activities is imperative. For example, if animals are fed close to a creek or river, additional steps should be taken to reduce potential impacts. Portable windbreaks can be used to provide shelter for livestock away from riparian areas.

Alternative options for winter feeding are discussed in the Sask Ag. and Food publication *Winter Grazing and Alternate Feeds for Cattle in Saskatchewan*.

Water development:
If cattle water from a creek, stream or lake during the winter, an area of high impact may be created. Developing a water source away from such a body will help to reduce these impacts. Winter watering systems include conventional water bowls, nose pumps or solar watering systems.

Winter watering options include solar systems where the bowl drains down a wet well from a dugout to prevent freezing.

Barry Cocks implemented a winter water development that included a trough covered by an insulated shack.

Case study: winter water development along the Red Deer River

Barry Cocks traditionally wintered his cattle along the Red Deer River. This wintering site provided a convenient water source, but presented water quality concerns. Barry tackled this problem by developing an alternative winter watering site. The water source consists of a shallow well, solar powered pump and a trough housed in an insulated shack. A propane heater keeps the trough from freezing. Cattle can drink from the trough through a hinged flap in the shack. This new water source eliminates the necessity of opening a water hole and the risk of losing animals through the ice.

Control access to riparian areas: Wintering site impacts are reduced by restricting cattle's access to bodies of water. Cattle tend to congregate around lowlands. If shelter, water and feed can be situated elsewhere, restriction will minimize negative impacts. Use of fencing can control time of use and keep cattle out of sensitive areas.

Case study: exclusion of cattle access along a tributary of the Whitesand River

Ivan and Phyllis Olynyk's wintering site is adjacent to a tributary of the Whitesand Creek. Ivan relocated his wintering grounds to an upland area away from the tributary, and a fence now restricts cattle access to the stream. He controls runoff from the wintering grounds with buffer strips and a berm. An additional watering bowl and restricted cattle access to the tributary will improve the condition of the riparian area while increasing its ability to trap sediments and absorb nutrients.

Buffer strip: Buffer strips are bands of perennial vegetation that filter runoff before it enters a river or creek. A properly designed buffer strip placed down-slope of a wintering

Restricting cattle access improved a cattle wintering site for Ivan Olynyk.

site can help filter contaminated runoff. The larger the vegetative cover, the more effective the buffer. Buffer strips are often effective situated between the feeding site and the watercourse. A healthy mixed grass stand, a natural wetland or treed buffer strip can make use of runoff nutrients and later be harvested as a quality nutritious feed.

Case study: buffer strip along the Qu'Appelle River

Jean DeCorby winters cattle in his farm yard on the north side of the Qu'Appelle Valley near Rocanville. The Qu'Appelle Valley in this area has many spring-fed streams, one of which through Jean's previous wintering site. To improve water quality for downstream users, Jean relocated his corrals to a site west of his yard. Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR) helped Jean choose a new location for the corrals. Site selection was based on soils, topography and distance from the Qu'Appelle River, thereby ensuring protection of water quality. The new location has nearly a half-mile (800m) of perennial vegetation between the wintering site and the Qu'Appelle River. This vegetation acts as a filter that removes nutrients and contaminants from runoff. Jean's project is a large undertaking, but has resulted in newer facilities and the opportunity to expand.

Runoff control: One of the largest potential water quality risks from cattle wintering sites is contaminated runoff water leaving the property and entering a water body. Ideally, sites should be located where runoff and erosion potential are low. Where this is not possible, producers can divert runoff water around the wintering site by constructing impermeable earthen dikes or using natural or man-made grassed waterways or ditches. Through the use of control structures, runoff can be redirected into buffer strips that will slow and absorb the flow or into holding

Jean DeCorby and Tom Harrison discuss the relocation of his wintering site to a location with a buffer strip.

ponds. Producers should always ensure that runoff is diverted away from wells and other water sources and that wells are properly maintained, protected and decommissioned. Potentially contaminated runoff should be contained on the property of the livestock owner. A fact sheet entitled *Holding Pond Site Selection and Design* is available from SAFRR. .

Case study: diversion dikes along the Poplar River

Don and Beth Semeniuk of Rockglen have their yardsite along a tributary of the West Poplar River. In the fall of 2001, they undertook a project to modify their winter feeding practices. Cattle were traditionally wintered in corrals near the convergence of two intermittent creeks. This location had a shallow water table and was near a dugout, posing a risk to their water supply.

Don Semeniuk explains his new watering system during a field day in January 2002.

The existing wintering facilities were dismantled and relocated away from the creeks. Two runoff diversion/containment dikes were constructed to contain surface runoff from the corral. The dugout was fenced to exclude cattle and a wet well constructed to provide a water source. This project allows the Semeniuks to build new facilities while protecting their own water supply.

Manure management

All wintering sites involve some degree of manure management. Increasing the distance between manure sources, such as bedding and feeding areas, and the watercourse will reduce manure accumulation. Moving the feeding site regularly during the winter will also minimize manure build-up. Manure accumulated in the wintering sites should be removed and spread as soon as the cattle leave the area. Any remaining manure and straw can be harrowed into the soil. Consider alternating several sites from winter to winter to minimize nutrient build-up. Another method of addressing manure concentrations is to swath-graze or vary feeding locations on a pasture, allowing the manure to be distributed naturally. In the event that manure has to be hauled away for spreading, it should be applied at rates to meet crop nutrient requirements and account for topography, soils and season of application.

Case study: manure management along a tributary of Bone Creek

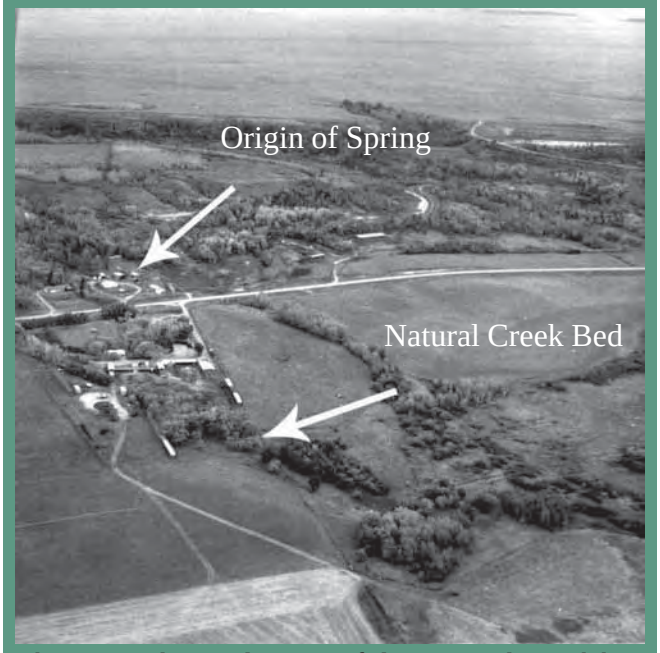
Jason and Karmen McNabb's wintering grounds for backgrounding calves were previously located on a tributary of the Bone Creek. The McNabbs relocated their wintering site to an upland area where contaminants could be prevented from entering the tributary. Manure from the new corral locations is spread on nearby forage lands. As part of the approval process with Agriculture and Food, the McNabbs developed a manure management plan that determined appropriate applications sites and rates. The McNabbs projected a yearly production of 3,664 Kg of manure nitrogen and required 17 ha a year for spreading. A total of 219 ha of forage were identified for spreading, providing more than enough land considering their expected three-year application frequency.

McNabb Ranch Ltd. took an integrated approach to modifying their wintering practices by relocating corrals and developing a manure management plan.

Innovative site-specific solutions: Each wintering site is unique and requires an individual approach. Innovative solutions sometime arise out of the challenges presented by unique wintering sites.

Case study: corral modification along the Qu'Appelle River

George (Chico) DeCorby raises cattle along the Qu'Appelle River near Rocanville. His family has been on this farmsite since the 1890s when they arrived with French missionaries. Plentiful water was one of the family's reasons for choosing this farmsite. Spring-fed streams flow from the Qu'Appelle Valley wall through Chico's yard and into the Qu'Appelle River. Because corrals were previously located along two of these spring-fed streams, Chico was concerned about the impact on water quality for his family and livestock. Chico devised an



Chico DeCorby piped a spring-fed stream underneath his yard and corrals to protect water quality.

innovative solution to tackle this problem. Weeping tile was installed at the source of the stream which fed into a two-inch pipe. Water from this source serves as house water and feeds energy-free watering bowls. Cribs sunk near the sources of both creeks collect all water and divert it into an eight-inch pipe. This pipe was sealed and buried eight feet underneath two sets of corrals which then drains below the farmyard into the natural creek bed. A tour of Chico's yard in July 2002 left neighbours impressed at Chico's ingenuity and hard work.

Relocation: Relocation of wintering sites away from stream or river banks is an option if no other practices are possible. This can be an expensive option as it will typically require installing power and water lines and constructing new facilities. However, the advantage of relocating a wintering site is that new facilities can be built (often when the life of old facilities has been expended) and increase opportunities for expansion of the operation.

Winter feeding relocation along the Whitesand River

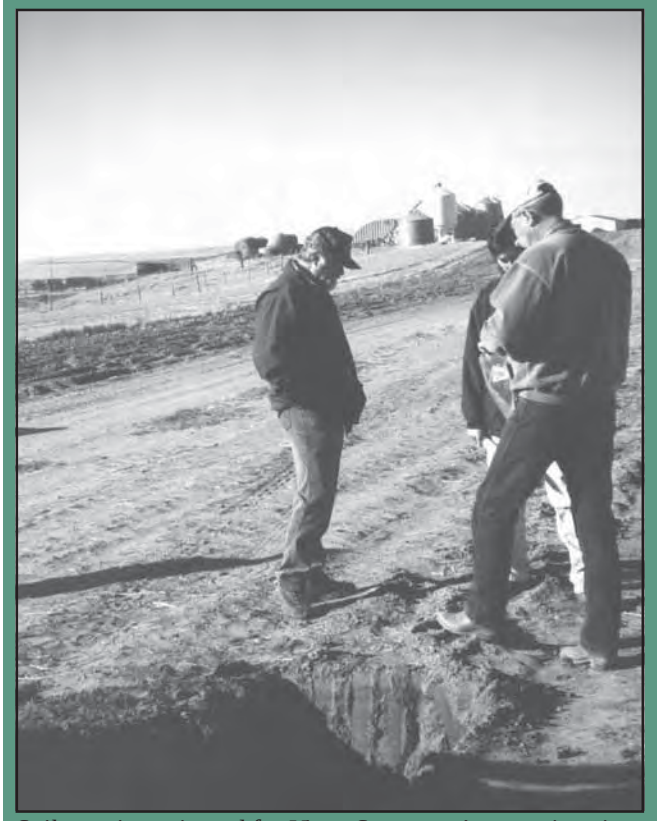
Jim, Richard and Clint Kopelchuk operate a grain and livestock feeder operation along the banks of the Whitesand River south of Canora. A herd of 85 cows and calves was wintered in the flood plain of the river. The Kopelchuks wanted to ensure that contaminated runoff did not enter the river. They also wanted to stop crossing the highway in order to feed at the old location. The solution they came up with was to establish a new wintering area. Development of the new wintering area included planting two new shelterbelts and deepening a 3.7m well to 9m. They also installed two winterized water bowls that draw water from the rejuvenated well. Shelter is provided by new windbreak fencing and a pole shed.

Jim Kopelchuk relocated his corrals to protect his water supply and that of downstream users.

Site selection: An important step when relocating a wintering site is choosing an appropriate site. The site must meet producer needs and have suitable soils, hydrology and topography. Agriculture and Food's Agricultural Operation or Livestock Development branches can help producers investigate soils, hydrology and topography of a site to determine suitability for a wintering site.

Case study: site selection along Rock Creek

Vince Stevenson ranches along Rock Creek. His corrals were located on the creek's flood plain, potentially causing water quality concerns from surface runoff. The corrals were relocated from the riparian area to the adjacent upland. This involved building a new calving shelter and slab wall fencing. The new corrals provide excellent conditions for cattle and opportunities for expansion. As part of the relocation process, Vince worked with Prairie Farm Rehabilitation Association, the Sask. Watershed Authority and Sask. Agriculture and Food to select and design a wintering site that would minimize the risk to water quality. The new site was selected for topography and soils that would control runoff and reduce the risk of leaching and flooding.



Soils are investigated for Vince Stevenson's new wintering site.

Regulations: how do they affect cow-calf producers?

Cattle wintering sites in Saskatchewan may be regulated by *The Agricultural Operations Act*. The Act is designed to ensure livestock operations develop and operate in a manner that protects surface and groundwater. It requires certain types of *Intensive Livestock Operations* to obtain plan approval. An Intensive Livestock Operation is defined as the confining of one animal unit (a.u.) in less than 370 m^2 (4000 ft^2) of space. Cattle in corrals and livestock/poultry in barns generally have a stocking density greater than this threshold of one a.u. per 370 square metres. For practical purposes, approval is required from Sask. Agriculture and Food when:

- cattle are kept at densities exceeding 25 head per ha (25 head / ha) within 300 metres of a surface water body that is not contained on the operator's own land;
- within 30 metres of a well not controlled by the operator; or
- for more than 300 animal units.

Surface water is defined as "water that is above the surface of the land and in a river, stream, lake, creek, spring, ravine, coulee, marsh or other watercourse or body of water." Surface water that is contained within one's own property does not normally trigger the need for plan approval.

The self-evaluation found at the back of this publication is intended to assist livestock and poultry producers to determine if an approval is required. Producers who require plan approval for their operations are required to submit plans outlining how they will store manure, how the

manure nutrients will be utilized and how they will handle and dispose of dead animals.

The Agricultural Operations Act is administered by Sask. Agriculture and Food staff located in Rural Services Centres in Saskatoon, Weyburn and Yorkton. The approach to administering the Act has been pro-active and the policy is to work with producers to address on-site issues and apply principles of good site selection to new and expanding operations. Sask. Agriculture and Food specialists with the Livestock Development Branch are also available to assist producers with manure management planning, site selection and management and production options.

Producers need to be aware of potential impact on surface and ground water and the importance of evaluating their sites and taking any necessary corrective actions to protect these resources. Data showing kilometres of stream course and survey data from two flights were combined with 1996 Agricultural Census data to estimate the number of cattle wintering sites in the province. This number was significant enough to prompt tabling of the act. Of approximately 21,000 cattle operations in Saskatchewan, there are an estimated 10,000 that could require approval under the Act, with the largest percentage occurring in the grassland regions of the province. This number is at best preliminary as it is based on a survey of only 300 kilometres along major water courses.

Economics of modifying wintering sites

Modifying or relocating wintering sites can be expensive. A study of nine operations that modified wintering sites to comply with *The Agricultural Operations Act* showed an **average cost of $33,000**. Costs ranged from $13,000 to $67,000. These costs are associated mainly with installing water and power lines to new wintering sites. However, many producers reach compliance for much lower costs.

While costs may be high, there are many potential benefits for producers from modifying wintering sites. Possibly the most important benefit is improved water quality through source water protection, and ultimately cleaner water for livestock. Research has shown that improved water quality can improve production in three ways: weaning weights, calf crop and feed efficiency. Using conservative assumptions about production improvements, hypothetical income increases were modeled for the nine operations that modified their wintering sites. Costs of production were taken from the Saskatchewan Cost and Returns Survey in 1999 which had an average cow herd size of 122 head. The hypothetical income improvements are shown at the bottom of the page.

While these income improvements are substantial, they do not cover the $33,000 investment in modifying the site. For wintering site improvements to be profitable, they must depend on other advantages besides simply improved water quality. These might include better herd health, less labour required for feeding/watering cows, less manure removal, lower bedding costs and opportunities for expansion. In fact, even under the best-case scenario of calf crop improving from 87 percent to 89 percent an additional $13,554 in these other benefits is needed for the investment to pay for itself.

When producers make wintering site modifications, they are providing benefits for themselves and creating environmental

	Production Improvements	Yearly income improvement
Higher weaning weights	572 lb. to 582 lb.	$ 1332
Higher percent calf crop	87 % to 89 %	$ 2243
Feed efficiency increases (lower winter feeding costs)	$27,997 to 27,717	$ 279

Environmental benefits have an economic worth which is difficult to determine.

improvements for society in general. These improvements include protection of water quality and wildlife habitat. Their economic value, however, is difficult to determine. One of the methods economists use to determine value is called the "willingness to pay "method. The general public is surveyed to determine what they would be willing to pay for environmental improvements in a hypothetical situation.

In order to determine the worth of these wintering site improvements, a survey was conducted of 300 Saskatchewan households. Randomly selected individuals were asked what they would be willing to pay for improved water quality by modifying cattle wintering sites. Saskatchewan households were willing to pay $160 as a one-time payment to help modify cattle wintering sites. When this number is multiplied across the entire Saskatchewan population, environmental improvements from cattle wintering sites would appear to be worth $22 million to Saskatchewan residents.

Thanks to producers like Jason and Karmen McNabb, cattle producers are rising to the challenge of wintering site stewardship.

Cost-benefit analysis

While stewardship of cattle wintering sites on individual operations is a challenge, the challenge is even greater when seen across the entire province. It has been estimated that 10,000 cattle wintering yards are located along riparian areas in this province. Using the low end cost of modification ($13,000), the total cost would be approximately $135 million. The total cost to solve this problem is much larger than the public willingness to pay. It may also be true that the public willingness to pay underestimates the true value of the environmental improvements from wintering site improvements.

Fortunately, producers are working together with Sask. Agriculture and Food and other agencies to address this challenge. With a co-operative approach, solutions can be found which benefit both the public and individual producers. Funding and technical assistance to modify cattle wintering sites can be found through the following agencies:

Saskatchewan Agriculture, Food and Rural Revitalization
Agricultural Operations Unit: Regional Specialists

Yorkton Rural Service Centre
(306) 786-1505

Saskatoon Rural Service Centre
(306) 933-8343

Weyburn Rural Service Centre
(306) 848-2833

Saskatchewan Agriculture, Food and Rural Revitalization
Livestock Development Branch

Karen Bolton
Provincial Manure Management Specialist
(306) 787-9183

Russel Johnson
Environmental Engineer
(306) 933-5357

Saskatchewan Watershed Authority

Tom Harrison
Director of Projects and Partnerships
(306) 731-4404

Agriculture and Agri-Food Canada's PFRA (AAFC-PFRA)

Contact your local AAFC-PFRA office.

SaskPower

Solar and wind power livestock water pumping incentive program

Call 1-888-SKPOWER

Suggested reading

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Consult the PFRA website www.agr.gc.ca/pfra for a variety of useful fact sheets on cattle and water quality.

Acknowledgements

Portions of this document are taken in part or whole from:

West, B. Cattle wintering sites, managing for good stewardship. Alberta Agriculture, Food and Rural Development, Alberta Beef Producers, and Agri-Food Canada - Prairie Farm Rehabilitation Administration.

Saskatchewan Agriculture, Food and Rural Revitalization. Self evaluation for approval of plans under *The Agricultural Operations Act* Regina, SK. 2 pp.

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Evaluating your Wintering Site

This worksheet is intended to help producers evaluate their wintering site. Complete the worksheet by assigning a rating to each of the factors.

- **Rating of 1 - Preferred**: With continued good management, your site will generally not require any alteration or change of practice.
- **Rating of 2/3 – Within Acceptable Limits**: Sites that fall into this category may have some risks associated with surface of ground water. Some alteration of the site or change of practice will likely be necessary to reduce these risks. Depending on the factor, these improvements may be minor.
- **Rating of 4 – Needs Improvement**: Sites that fall into this category have a great potential to impact surface and or groundwater. There are likely a number of factors that need to be addressed on a site that falls into this category. As factors, such as slope, soil type and flood hazard can not be controlled, it may be necessary, in some cases, to consider relocating the site to a lower risk area.

Once you have completed the evaluation, circle any areas that score 3 or higher. These site conditions, activities or practices should be addressed.

	1 Preferred	2	3	4 Needs Improvement	Your rating
Site Management					
Cattle Density	< 10 cow/ac			>10 cows/ac	
If your operation is considered intensive (see self evaluation) do you have an approval under the Agricultural Operations Act?	Yes			No	
Confined feeding period	< 3 months		3 - 5 months	> 5 months	
Confined wintering site location	New site every year		Rotate site every other year	Use same site every year	
Feeding	Swath grazing or stockpiling or move feed daily to a clean site			One feeding site	
Bedding	Frequent moving of bedding area		Bedding moved once or twice per winter	One bedding pack	
Watering	No direct access to surface water, off site watering	Controlled access to surface water		Uncontrolled access to surface water	
Vegetative ground cover on field sites	Good cover		Medium cover	Low cover	
Water Protection					
Soil type in wintering area	Clay			Sand or gravel	
Runoff water entering site	Runoff water does not pass through site or is completely diverted		Runoff water is partially diverted	Runoff water passes through site	
Runoff Containment	Completely contained in holding pond	Combination of holding pond and vegetative filter strip		No containment	
Distance to watercourse to which runoff may flow	> 300 m			< 30 m	
Slope	Flat	Slight	Moderate	Steep	
Buffer Zone or Riparian Zone between feeding area and watercourse	Well treed and high undergrowth, no bare spots	Well developed grass buffer, no bare spots	Some grass, poor condition, lots of bare spots or stubble	Bare ground	
Flooding	No flooding potential	Flooding occurs less than once in 50 years	Flooding occurs once in 10 years	Flooding occurs more than once in 3 years	
Manure handling	Bedding area cleaned and used for crop production every year		Bedding area cleaned and stockpiled	Bedding area not cleaned	
Manure application	Spread after spring thaw			Spread on frozen ground	
Depth to useable water source at corral site	>15 m			<15 m	
Nearest well to feeding area	>30 m			<30 m	