

IMPROVING WATER MANAGEMENT: LESSONS LEARNED FROM CANADIAN BEEF CATTLE PRODUCERS



Bluestone Stock Farms, located near Mortlach and Parkbeg, Saskatchewan, has faced significant water management challenges due to drought and changing weather patterns over the past several years. Bluestone is a family business, and together **the Hicks family manages 15,000 acres spread over 3 sites. The farm is also VBP+ certified**, and Karla sits on the provincial VBP+ committee in Saskatchewan. With a herd of over 800 Black Angus cows, the farm relies on rotational grazing to maximize pasture health and grazing opportunities, fulfilling 90% of their feed requirements with homegrown feed and pasture.

Visit the BCRC website to learn more about this resource:

beefresearch.ca/water



In banner photo (from left to right): The Hicks family, including Tyrell and Nicole Hicks, Jason and Karla Hicks, and Lexi and William Macza.

WATER SYSTEMS BEFORE THE DROUGHT

Prior to the drought of 2019, Bluestone Stock Farms had a well-established water system that included a solar-powered setup with a turbine, ten dugouts, and two spring-fed water sources. The land, with its gently rolling topography and natural sloughs, provided an abundant water supply during the winter and early spring months, with only occasional challenges. The farm operated under the assumption that the natural cycles of snow, rain, and sun were enough to keep the cattle healthy and hydrated. However, with little snow during the winter of 2018 to 2019 and no rain in the spring, the land started to dry up, and water sources began to fail. The family didn't initially realize the extent of the problem and attributed lighter cows that year to other environmental stress caused by drought conditions.

THE CRISIS CONTINUES

By the next winter (2019 to 2020), Bluestone's water situation worsened.

The dugouts and sloughs were drying up, and the small amount of snow that fell in the winter didn't provide enough water replenishment. No spring rain led to no refills for the smaller bodies of water and even large bodies of water that hadn't been dry in decades started to recede. The pasture growth was sparse, and no wildlife tracks were seen near the water bodies; another change from previous years. Most concerning, the cattle showed signs of distress: weight loss, rough appearance and severe diarrhea.

The family began testing their water sources and discovered **high levels of sulfates**, with some water sources testing dangerously high, in the 19,000 ppm range—well above the safe threshold for cattle consumption and causing severe health effects (see the [*Interpretation of Water Analysis Results for Beef Cattle*](#) for more information on guidelines). In response, the ranch began using chelated mineral supplements to help mitigate these effects and limited usage of the water sources with the highest sulfate levels.

On the right: Digging a new dugout in 2021 with the excavator. Though the dugout self-filled, the water tested too high in sulfates and magnesium for immediate use.

INNOVATIONS IN WATER MANAGEMENT

Drought conditions persisted, and by 2021 conditions had not improved. Natural water sources and dugouts were not replenished due to lack of spring rain and soil moisture was completely depleted. Determined to make it through another hard season, and seeing the long-term value in making the farm more resilient to future water issues, Bluestone invested in new equipment, including an **excavator, water truck, and three new solar-powered water systems. They added wind turbines and batteries** to supplement the solar systems in case of power shortages. The family hauled water to multiple pastures every day, with cows and wildlife flocking to the water truck. **Eleven new dugouts** were added, each designed to collect rainwater and provide a reliable water source for the cattle, and expanded a free running spring. Although these changes allowed the ranch to meet the cattle's water needs, the new systems and hauling water required constant maintenance and work.



In 2022, the family faced another tough year with extreme heat and ongoing drought, but they continued to improve the systems including three additional dugouts and refinement of their existing systems.

TESTING AND MONITORING WATER QUALITY

Water quality testing became a crucial part of Bluestone's strategy to ensure their cattle's health. Prior to the drought, the family had not considered regular water testing, but the crisis pushed them to adopt it as a regular practice. They began testing multiple sources and sites, including testing the same source several times throughout the year to keep track of the declining water quality. **Testing revealed that sulfates were consistently high** in several of their water sources. With the help of an extension specialist from the Saskatchewan Ministry of Agriculture, they were able to ask questions, interpret the results, and act to avoid or mitigate the effects of poor water quality.

Regular testing enabled the family to make informed decisions about which water sources to use and which ones to avoid. They also began blending poor-quality water with better water, trucked in from other sources, to dilute the contaminants and provide safer hydration for their cattle.

On the right: One of the larger systems on the farm, with solar power and wind power.



INVESTING IN WATER SECURITY FOR THE FUTURE

A diverse network of sloughs, dugouts, and natural springs—supported by solar-powered and generator-backed systems—ensures a **steady water supply, no matter the conditions**. Yet, the task of maintaining remote water sources remains relentless, demanding both foresight and persistence.



“It was a big investment in a short time, but we have no regrets,” Karla reflects. “We will be wealthy in water, and that peace of mind is priceless. Now, my grandchildren will be ready for the next one.”



As weather patterns grow more unpredictable, **Bluestone Stock Farms remains vigilant in managing its water systems**, still utilizing water testing and expert advice. Despite the challenges of hot summers, strategic improvements and hard-earned knowledge have fortified the farm against water scarcity.

KEY TAKEAWAYS

- Regular water quality testing helps detect issues like high sulfates or contamination before problems become severe.
- In areas with inconsistent rainfall or drought, it's crucial to develop multiple water sources, such as dugouts, springs, and solar-powered systems, to ensure a reliable supply.
- Be prepared for maintenance: some water systems require frequent monitoring and maintenance to ensure they are functioning properly, especially during periods of extreme weather.
- Pay close attention to the health and behavior of cattle. If they show signs of dehydration or illness, investigate water quality issues immediately.
- Know when to seek help: Consult advisors, government programs, and neighboring farmers to help with water management decisions.