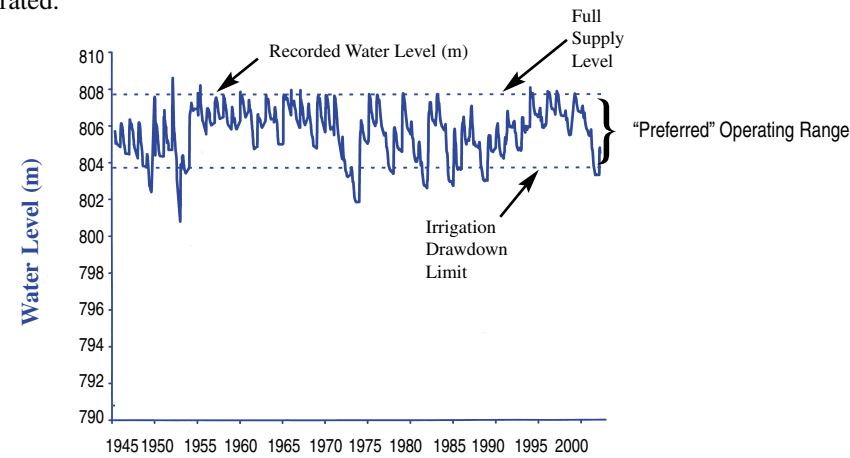


Water Level in Reid Lake

Duncairn Reservoir is the first major infrastructure component in the water supply system for Swift Current Creek, and as such, is also the subject of many questions and opinions relating to water management. This article is intended to provide an historic context for the water level in the reservoir and the management policy under which it is operated.



This graph illustrates the water level of Duncairn Reservoir from the mid 1940's to the present. The parameters for the "preferred" operating range shown on the graph were established in the early 1980's through public consultation. The range is bounded on the top by the Full Supply Level of the reservoir (870.72 meters or 85,124 acre feet), and on the bottom by the Irrigation Drawdown Limit (803.72 meters or 32,156 acre feet). The Irrigation Drawdown Limit is the point below which irrigation water deliveries from the reservoir are curtailed. To establish this limit consideration was given to demands from agricultural, municipal, recreational, fisheries, and domestic uses. Since the establishment of the operating policy the reservoir has largely met all of the demands from within the preferred operating range. Water levels have dropped slightly below the Irrigation Drawdown Limit on three occasions since the policy was established, primarily during periods of extended drought.

Periods of Interest:

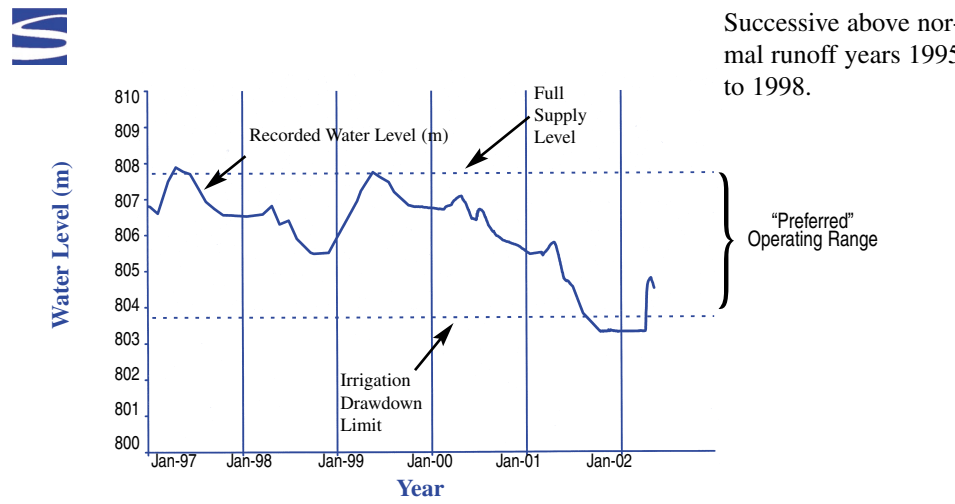
In 1952, Swift Current Creek experienced its largest flood on record. The flood caused the failure of the chute section of the dam spillway at Duncairn Dam and flood plain inundation; however extensive flooding was minimized. The spillway was later repaired and upgraded.

Development for the large large irrigation projects (Rushlake, Herbert, and Waldeck) occurred during the 1950's, whereas development of the smaller, individual irrigation projects occurred in the 1970's.

Irrigation development moratorium was established in 1981.

Water management policy established in 1984.

Successive drought years experienced 1987 to 1990.



Water levels in the reservoir tends to follow a predictable pattern within a given year; peaking in the spring and dropping as releases are made for irrigation and other uses. The releases are made in a manner consistent with operating policy that does not change from year to year. Refilling of the reservoir is dependent on annual precipitation, particularly winter snowfall. It is important to remember that operating policy can manage available supply but it is the variability in natural inflow that results in differing water

Riparian Zones

The streambank plus its floodplain create a transition zone between water and uplands called the riparian zone. Plants in riparian areas tend to love moisture and grow vigorously in response to the water availability of moisture and nutrients. Recharged regularly with new soil nutrients and moisture by flooding, floodplains support vigorous plant growth. Healthy riparian areas provide many benefits such as: water purification (sediment and nutrient rich organic matter are filtered out by plant material on the streambank), recharging ground water (above-ground vegetation reduces the velocity of flood water and surface runoff), reducing excessive erosion (deep-rooted plants prevent slumping) and producing abundant, high quality forage for livestock and wildlife.

If functioning properly, healthy riparian areas share common characteristics:

A narrow, meandering channel with a broad floodplain

Overhanging vegetation including woody, deep-rooted plants such as willow as well as grasses, sedges and rushes

Some signs of a degraded riparian area are: Shallow-rooted vegetation with relatively low productivity lacking woody species

Lacking shade and overhanging vegetation

Streambank collapse and excessive down cutting

A wide stream channel with shallow muddy water

Exposed soil on bank or flood plain



The riparian area (the dark area in the valley) includes the streambank and the floodplain.

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Swift Current Creek Watershed Stewards

Know Your Watershed

Volume 1 #1

Know Your Watershed

Summer 2002

Swift Current Creek Water Supply System

By Rob Wiebe, Sask Water

Swift Current Creek and the people it serves provide a classic example of an integrated water supply system. Water arising within the Swift Current Creek serves upwards of 16,000 individuals, 17,000 acres of irrigation, thousands of head of livestock, as well as water for recreation by way of fishing, boating and cottage resort development. Water supply demands are met with a relatively high degree of reliability. Municipal and domestic uses and to a large extent recreational demands are met 100% of the time. Irrigation demands have historically been met in excess of 85% of the time. Quite often the demands imposed by this wide variety of uses occur at a similar time during the year, usually in the summer, and as a result create competition for available water. Nonetheless, even in years such as this one, following a three year period of limited runoff, Swift Current Creek continues to supply the majority of demands which are asked of it.

Did you ever wonder how that is possible, given that the creek under natural conditions would have diminished to a mere trickle during many summer months? Water supply infrastructure and operation and water management planning are three critical components which help provide the assurity of supply that everyone has become accustomed to for the water from their tap, water for crops and livestock, and water for a vibrant fishery. The Federal Government, through the Prairie Farm Rehabilitation Administration (PFRA) has, since the early 1940's, constructed a series of dams, canals, and

diversion works which physically capture water when surpluses occur within the Swift Current Creek watershed. Duncairn Dam, Swift Current Reservoir, the Swift Current Main Canal and Highfield Reservoir are some of the major infrastructure works. PFRA operates and maintains these works on a daily basis and more intensively on a seasonal basis to capture water which would otherwise pass through Swift Current Creek and on to the South Saskatchewan River. Captured water is then delivered in a regulated manner throughout the watershed during periods in which quantities of water would not otherwise be available.

Without regulating the demands, the available storage capacity could be depleted within a few years, assuming little to no runoff were to occur. Reservoir levels during those years would also be less than desirable for many uses. What happens to continuing demands once water supplies are depleted? If left unregulated what happens if demands are allowed to increase without limitations? The Province of Saskatchewan retains the responsibility for, and ownership of, the water resource of the Province and Sask Water serves as the resource manager. Sask Water provides investigation, assessment and determination of reservoir operating rules, allocation limitations, and decision processes for water use during critical water short periods. Through public consultation, measurement and hydrological evaluation Sask Water has established operating rules for Duncairn and Highfield Reservoirs which limit the amount of water that may be

withdrawn for irrigation and identifies water levels to be maintained that will assure municipal, domestic, and livestock interests can continue with a high degree of assurity. Recreational interests also benefit from the controlled water levels. The amount of water available to be allocated for purposes of irrigation and municipal uses is regulated, monitored and controlled to ensure that over allocation does not occur. In the Swift Current Creek Watershed, a moratorium on new irrigation development resulting in increased acreage has been in place since 1981.

Together Sask Water and PFRA cooperate on an ongoing basis to ensure that the infrastructure that is available is operated to provide an optimum water supply availability that is consistent with the operating plans and management practices that have been established for the Swift Current Creek Watershed. Water is a difficult and controversial resource to manage. User group and individual interests are considered in water management planning, however it is also understood that not all interests can be met in all instances. Understanding how your watershed works and what the interests of others are is important to be able to understand the overall integrated water management strategy within the Swift Current Creek Watershed. The Swift Current Creek Watershed Stewards (SCCWS) provide an excellent avenue for you to begin to understand and provide your input into past, present and future water management practices.

What is a Watershed?

A watershed can be defined as the area of land that drains water into a creek system. Watershed boundaries are outlined geographically by the points of highest elevation, such that to one side of a high-elevation ridge water drains in one direction and to the other side of the same ridge, water drains in the opposite direction.

Watersheds do not usually share boundaries with political entities such as cities, towns, RM's or provinces, but may contain several communities and land uses and will most certainly contain many different water uses and competing interests. Yet watersheds are changing, dynamic systems that form part of our community. Without healthy watersheds and the ecosystems they support, our communities would look very different.



Swift Current Creek snakes its way across the floodplain.

What is the Swift Current Creek Watershed?

The Swift Current Creek watershed is the area of land that drains water into Swift Current Creek, beginning just northeast of Eastend and emptying into the South Saskatchewan River north of Stewart Valley. The watershed naturally includes:

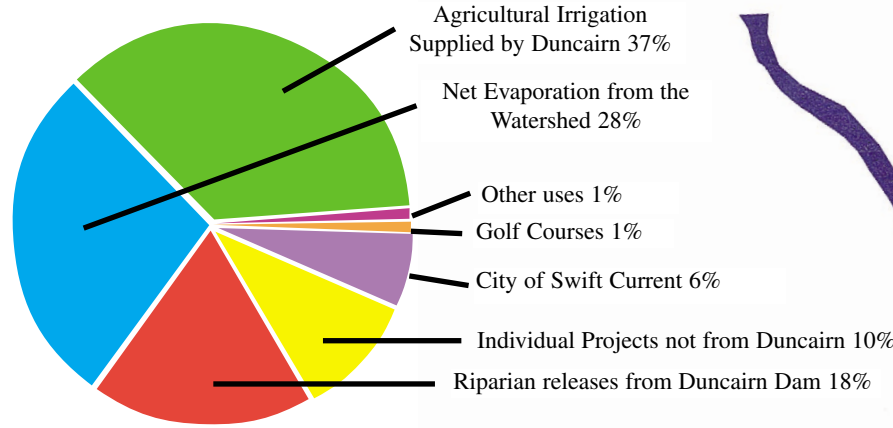
Bone Creek	Duncairn Dam (Reid Lake)
Rock Creek	Lac Pelletier
Jones Creek	Swift Current Reservoir
Swift Current Creek	
Pelletier Creek	

Since the 1950's, significant amounts of water have been transferred to the Rush Lake Creek watershed for irrigation. Thus, for water management purposes, the Swift Current Creek watershed also includes Rush Lake Creek, Highfield Reservoir, Herbert Reservoir, and Reed Lake.

WHO USES WATER AND HOW MUCH DO THEY USE?

All of the water that drains into a creek system is used in one way or another. Some of the uses are non-consumptive or in-stream uses, meaning that all of the water remains within the stream channel. Examples of non-consumptive water use are boating, swimming or fishing. Alternatively, some of the uses are consumptive, meaning that at least part of the water is consumed or used-up and does not return directly as flow into the creek. Examples of consumptive use are drinking water for humans and animals, irrigation, and industrial water use.

In the Swift Current Creek system, there are non-consumptive and consumptive water uses:



Agricultural Irrigation supplied from Duncairn Reservoir. This category includes all of the irrigation directly from Reid Lake, Swift Current Creek downstream of Reid Lake and from Swift Current Main Canal, as well as the Waldeck Irrigation Project and all irrigation that receives water from Highfield Reservoir.

Net Evaporation losses from reservoirs. This category accounts for the amount of water that is lost due to evaporation from Duncairn, Highfield, Herbert and Swift Current Reservoirs.

Riparian releases from Duncairn Reservoir. This category includes a year-round base flow of water to provide for the demand from the City of Swift Current and to meet requirements for riparian flow, meaning that there is enough water for a 'live' stream channel for fish, plant and wildlife values. Also, this riparian flow provides water for on-farm uses downstream of the City of Swift Current.

Individual Irrigation Projects not supplied by Duncairn Reservoir. This category includes all of the projects within the Swift Current creek watershed upstream of Duncairn Reservoir and off-stream of the main channel (Swift Current Creek or Swift Current Main Canal).

The City of Swift Current. This category represents the average annual amount of water that is treated for the City of Swift Current.

Golf Courses. This category accounts for water that is taken from Swift Current Creek in order to water the golf courses within City limits.

Other uses. When added together, all of the other uses, such as the water supply to the Town of Herbert and the RM of Lac Pelletier, account for less than one percent of the total water use in the watershed.

DID YOU KNOW THAT...



Swift Current Creek is the largest tributary to the South Saskatchewan River in Saskatchewan.

Swift Current Creek supplies water for irrigation, municipal, on-farm, recreational, fish, waterfowl and wildlife use.

Water licences in our watershed are issued to an individual owner for a specified term (usually 10 years) and are attached to the land during that term. If the land is sold during the term, the new owner is not required to reapply for a licence. However, the licence must be renewed at the end of the term.

Saskatchewan Environment performs water quality testing at two sites downstream of the City of Swift Current (toward Sask Landing), at one site in Swift Current and several sites upstream of the city.

The flow released from the Duncairn reservoir must be doubled in the winter to provide an adequate water supply to the City of Swift Current. The increased flow is necessary to stop the creek from freezing solid during cold periods.

In most years, irrigation water is supplied to approximately 7,000 hectares or 17,000 acres of land.

Evaporation is one of the largest consumers of water in the watershed! Net evaporation loss from reservoirs alone exceeds the average annual water consumption of the City of Swift Current by FOUR times.

STEWARDSHIP PROJECTS

Stewardship, or taking care of land and water resources, is part of Saskatchewan communities. Here are some examples of groups and projects that are participating in good stewardship practices in our watershed, at various scales from the federal to provincial to municipal government and private organizations:



The Prairie Farm Rehabilitation Administration (PFRA) and Saskatchewan Wetlands Conservation Corporation (SWCC) provide assistance for on-farm projects entailing pasture seeding, fencing, water sourcing and development, shelterbelts, buffer strips, and corral relocation.



Organizations such as the Saskatchewan Wildlife Federation, The Nature Conservancy, and Nature Saskatchewan buy or lease land to encourage sustainability of land, water, plant and wildlife resources.



The City of Swift Current is considering alternatives for environmentally sound disposal of its wastewater and has undertaken two initiatives: the Effluent Irrigation Project and the Snowfluent Wastewater Treatment Project.



Good stewardship practices include leaving a buffer strip between cultivated land and the stream as well as planting riparian vegetation.

