the WATER HAULER'S BULLETIN

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WETLAND REPORTS RELEASED

On July 21, 1993, the Alberta Water Resources Commission released three reports related to its work on a wetland policy for Alberta:

- *Wetland Management in the Settled Area of Alberta: An Interim Policy;*
- *Beyond Prairie Potholes: A Draft Policy for Managing Alberta's Peatlands and Non-settled Area Wetlands; and*
- *Alberta's Peatlands and Non-settled Area Wetlands: A Background Report.*

Of most interest to the irrigation districts is the *Interim Policy,* says John Lilley, Research Director of Alberta Water Resources Commission. This policy addresses concerns about the loss of slough/marsh wetlands in the Settled (or White) Area of Alberta and the need for consistent direction in managing these wetlands. It is the product of three years of consultations and interdepartmental review.

Water in this slough, located in the SMRID, is supplied by irrigation works.

Sough/marsh wetlands are most common in central and southern Alberta.

Sough/marsh wetlands are shallow, depressional areas, permanently or periodically covered by water. Vegetation may range from floating or submerged plants in the center to cattails, rushes, sedges, grasses, willows and other shrubs along the margins. They may be found around open water and along streams. In the irrigation areas, many wetland areas receive intentional releases of water, often supplied outside peak irrigation demand periods, and commonly managed in conjunction with Ducks Unlimited. Others are caused by seepage from irrigation canals or receive return flows.

Wetlands are complex ecosystems which provide many economic, social and environmental benefits. These benefits may include forage production, water quality control, reduction of flooding and erosion, provision of wildlife habitat, groundwater recharge, and agricultural water supply.

Losses of slough/marsh wetlands in the dryland regions of southern Alberta have been significant — 60% or more in some areas since the turn of the century. Agricultural development, drought, urban expansion, and utility and transportation development have contributed to wetland loss and degradation.

As presented in these reports, the overall goal for wetland management is "to sustain the social, economic and environmental benefits that functioning wetlands provide, now and in the future."

The intents of the *Interim Policy* are, in descending order of preference, 1) to conserve slough/marsh wetlands in a natural state; 2) to mitigate degradation or loss of slough/marsh wetland benefits as near to the site of disturbance as possible; and 3) to enhance, restore or create slough/marsh wetlands in areas where wetlands have been depleted or degraded.

The *Interim Policy* provides guidance to provincial departments responsible for wetland management and denotes Alberta Environmental Protection as having primary responsibility for coordination of wetland management and policy implementation. Education about wetland functions, values and management is emphasized and private stewardship of wetlands will be promoted. Public consultation will be an integral part of wetland planning and management, and landowners, municipal governments, and irrigation districts will play an important role in developing regional management objectives and implementing policy. Drainage of wetlands will be guided by the policy and may be permitted; however, mitigation of lost wetland benefits may be required to meet regional wetland management objectives.

The *Interim Policy* has been approved by Cabinet; the word "interim" is used because, following public consultation on the draft policy for managing Alberta's peatlands and Non-settled Area wetlands, the two policy components will be combined to produce a comprehensive policy covering all wetlands in Alberta. Final Cabinet approval will be sought in mid-1994.

Meanwhile, an interdepartmental implementation committee is developing a process for determining and achieving regional wetland management objectives. The role of the irrigation districts in policy implementation is not yet clear. However, the irrigation districts, as major water managers, will have an important role in promoting the wetlands policy and its goal of sustaining the social, economic and environmental benefits which functioning wetlands provide.

For further information, please contact John Lilley, Research Director, Alberta Water Resources Commission, 910 Harley Court, 10045 - 111 Street, Edmonton, Alberta, Canada T5K 2M5. Telephone (403) 422-4232.

Canada geese rest on typical prairie slough.

LAKE COMMUNITY CONSTRUCTION

Man has sought to live near water since early times and continues to do so today. Construction on the first phase of a multi-million dollar, year-round, lakeshore community has begun on Lake Newell in the Eastern Irrigation District (EID). Located just six kilometres south of Brooks, the developer, H. Jager Developments Inc. of Calgary, received Southeast Regional Planning Commission subdivision approval to develop 380 lots of the potential 1200 that are planned.

Lake Newell's large 240,000 acre-foot storage capacity makes it the third largest irrigation reservoir in southern Alberta. It covers approximately 17,500 acres and has a length of 17 km. The reservoir is fed from the north by the East Branch Canal and from the west by the Bow Slope Spillway. It provides storage for the eastern part of the system. Beyond its storage role, the district has allowed the development of Kinbrook Island Provincial Park. The 59-acre park located on an isthmus provides camping, boating and swimming. A summer village of private cottages extends along the shore.

From the EID's perspective, says Jim Webber, district manager, the development is an excellent one. It centers on the multi use of irrigation water but its design will not adversely impact the operation of our reservoir. All lots are lake side and not lake front meaning that they do not encroach within our 16 to 30 metre right of way. The marina is designed to accommodate 300 slips for boat storage and launch.

Jager designed the resort to be environmentally friendly.

Storm runoff from the subdivision drains into man-made wildlife marshlands. Residential sewage will be treated on site. A water-treatment plant will draw water from Lake Newell. To maintain the natural prairie landscape, Jager is having a special grass-and-wildflower seed formulated for reseeding disturbed areas. The only lawn allowed are small patches next to a home. Strict architectural controls will be a feature of this development.

Construction begins on prairie oasis.

Webber states, "The district will do very well financially from the project but just as important is the economic diversity that will accrue to the region. All the economic spin-offs are not hard to imagine if the planned hotel with convention facilities and other project amenities comes to fruition."

For more information please contact Jim Webber, Manager, Eastern Irrigation District, P.O. Bag 8, 550 Industrial Road, Brooks, Alberta, Canada T1R 1B2. Telephone (403) 362-1400.■

AIPA CONFERENCE '93

"What is Water Conservation"

Registration forms are out for the very popular Alberta Irrigation Projects Association's Annual Conference to be held on November 22 and 23, 1993 at the Lethbridge Lodge Hotel. The conference theme speaker is Allen Powers from the United States Bureau of Reclamation. The banquet speaker is Alberta Report's Ted Byfield.

Stan Klassen, executive director, reminds everyone that because space is limited, only 300 delegates can be accommodated. Anyone registering before October 30 will save $25.00 on their registration fee. Those wishing further information may call (403) 328-3063.■

ELLIS SELF-CLEANING SCREEN

Automated Screen Saves Manpower

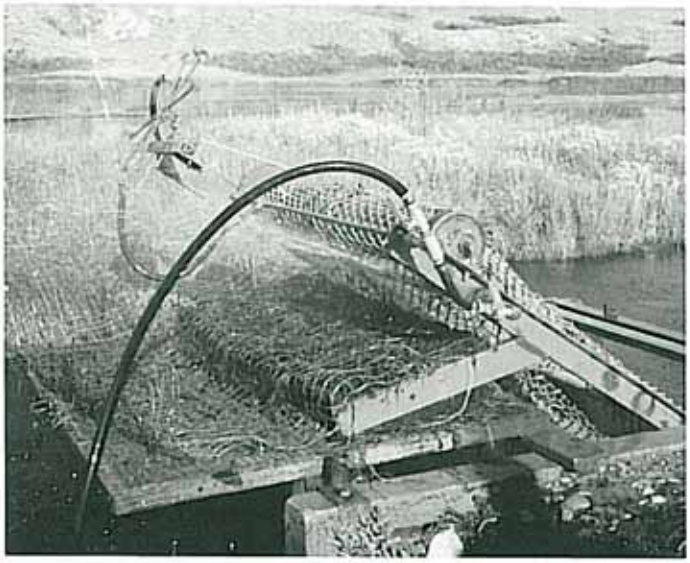
What does a five-generation-family-owned cattle ranch north of Medicine Hat, Alberta have in common with an irrigation farmer? The answer is simply aquatic weeds and filamentous-algae plugging their pump intake suction boxes. The Ellis family's many years of overcoming difficulties that arise in a ranching operation contributed to their success in solving their aquatic weed problems. This self-reliance is characterized in Terry Ellis' latest invention, a self-cleaning screen, designed and built from parts of equipment that were on the ranch.

The screen was built for a pump intake for a pivot sprinkler that irrigates 280 acres from a Ducks Unlimited Canada Project. Filamentous algae and floating vegetation from the impoundment were plugging up their suction boxes on their pumping units so badly that frequent cleaning was required to keep them running.

> *"In fact," says Ellis "we often had to clean the suctions boxes every two hours."*

The idea for the screen was simple says Leigh Morrison, irrigation specialist with Alberta Agriculture, Food and Rural Development. The Ellis's wanted something that would catch and lift the aquatic weeds out of the water before they became trapped on their suction box. The screen had to be self cleaning.

They designed and built a catenary-type screen measuring 2.4 metres long and 1.5 metres wide. It is placed in the channel narrows that separates the Ducks Unlimited impoundment and the dugout-sized pumpsite. Cast-in-place concrete wing-walls support the screen and maintain the channel. The drive mechanism is adapted from the water hydraulic drive of an old Heinzman pivot and the screening is 25-mm galvanized chain-link fencing. To supply power for rotation of the screen, a 25-mm diameter polyethylene



Ellis self-cleaning screen in operation.

hose diverts water from the sprinkler system supply line to pressurize two 5-mm diameter nozzles that drive the spinner arms from the Heinzman. The spinners drive through a 58-1 gear drive reduction. A chain drive connects the 200-mm diameter sprocketed top roller. The roller is supported on pillow blocks with greased bearings. Threaded rod is attached to the pillow blocks to adjust tension and alignment of the screen. Screen slippage and alignment problems are prevented by welding a sprocket in the centre of the roller. The submerged roller has sealed bearings.

As the loaded chain travels over the top, the weeds and debris fall off or are jetted off by the high velocity of the water emerging from the 3-mm holes in the spray bar. The spray bar is located near the top roller but inside the travelling screen. The weed pile that accumulates on the steel platform must be forked away.

Operated successfully for two seasons, the screen rotates continuously whenever the sprinkler system is running. "There has been no problem or breakdown, a record the Ellis family can be proud of," adds Morrison.

For more information please contact Leigh Morrison, Irrigation Specialist, Alberta Agriculture, Food and Rural Development, 1015 -30 Street S.W., Medicine Hat, Alberta, Canada T1B 3N3. Telephone, (403) 529-3616. ■

TIME SAVED / MONEY SAVED

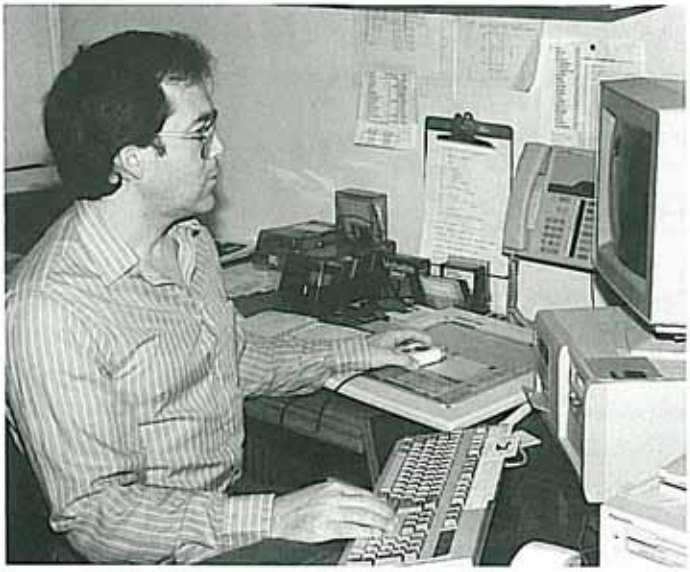
Time saved in doing a job is money saved. For Bow River Irrigation District (BRID) personnel to design a typical precast structure, prepare drawings using AutoCAD® and then produce a materials list, it would normally take 2.5 to 3 days. Using the district's new program developed by district computer specialist, Dave Brandley, it takes 10 minutes (excluding plotting).

The district produces many of their own precast concrete structures in various sizes. The drawings required to produce these are quite detailed and repetitive, thus making them perfectly suited to some type of computer automation.

Brandley uses a combination of programs and script files to accomplish his automation. The program starts with a batch file, loads the spreadsheet program Quattro Pro® and opens a worksheet. The worksheet provides a familiar interface in the form of a questionnaire, so the person wanting to design a vault structure simply fills in the blanks. The questions are about design elevations, number of holes, the diameters and inverts, etc. The worksheet uses this information to calculate how many vaults are required, their size, and the materials needed. Since each vault requires a different combination of drawings, the program computes which drawings are required from a list of 10 (base, vault w/ 1 to 4 holes or one w/ no holes, a vault w/ a bottom rectangular opening or a top rectangular opening, wing walls, trash rack, weed screen, check guides, and gates). When you are finished entering your data it prints out a design sheet, a materials list, a data file, and a script file.

The program then exits Quattro Pro® and loads AutoCAD®, a script file, and a program called Design Companion. It then opens the first drawing. Once the drawing is open, the script file loads the data file produced by Quattro Pro®. Design Companion then modifies the drawing based on the new parameters. Once all the modifications are made, the script file types any required details onto the drawing and sends a copy of the drawing to the plotter. The script file opens the next drawing and continues the process until all of the required drawings are completed.

"As a result," says Brandley, "you not only have an obvious savings in time, but you also have many other advantages. Training costs are minimal because each technologist doesn't have to learn all of the parameters required to design a structure. Errors in our precast shop are reduced because they receive drawings with a consistent look and familiarity. Material ordering errors are also significantly reduced. Anyone with a little computer training can run this program," concludes Brandley.



Dave Brandley demonstrates how drawings can be produced quickly with the district's newly-developed computer program.

For more information please contact Dave Brandley, Computer Specialist, Bow River Irrigation District, P.O. Box 140, Vauxhall, Alberta, Canada T0K 2K0. Telephone (403) 654-2111.■

AG FACTS

- Over one quarter of the 80 recognized irrigation reservoirs in Alberta have recreation developments.
- Every acre foot of water diverted into the irrigation delivery system, directly or indirectly, generates $524,00 in Gross Domestic Product within Alberta and every 1000 acre feet diverted generates 20 person-years of employment.

From: *Irrigation Impact Study.*■

AMOUNTS OF NATURAL PRECIPITATION COMPARED TO SPRINKLERS

Sprinkler application rates, whether by low-pressure pivot or side-roll system, can be compared to natural precipitation in Alberta, says Dick Heywood, irrigation water management specialist with the irrigation branch, Alberta Agriculture, Food and Rural Development. This comparison can help to determine if the amount of water applied poses a potential runoff hazard.

The intensity of natural precipitation information required for this comparison has been prepared by P. Dzikowski, climate and weather specialist with Alberta Agriculture, Food and Rural Development. The intensity of rainfall data from 100 sites in Alberta has been used in developing maps giving rainfall intensity and variability for the province. Heywood has calculated rainfall amounts from the Lethbridge intensity data to allow comparison to sprinkler applications.

Table 1, says Heywood, provides the natural rainfall expected once every 2, 5, 10 and 50 years for durations of 5 and 10 minutes and 8 and 12 hours. The sprinkler water applications for 3 and 9 minutes measured between the outer towers of a low pressure spray nozzle equipped 1/4-mile pivot and high pressure 1/2-mile machine respectively are compared to the 5 and 10-year natural rates. The applications of standard side-roll system are compared to the 8 and 12-hour amounts.

Table 1. Comparison in millimetres of natural rainfall and sprinkler applied irrigation.

Time Period	Amounts of Rain Expected 1 Time in Years				Sprinkler Amount
	2	5	10	50	
5 min.	7	13	17	25	10
10 min.	9	15	19	28	25
8 hours	30	43	52	72	100
12 hours	34	48	59	77	150

Nature provides short duration rainfall amounts that equal the pivot sprinkler applications samples every 5 to 10 years. Natural occurring runoff from irrigated land does not appear to be significant unless precipitation occurs at rates greater than that expected once in 50 years or slope or soil problems exist. Side-roll sprinkler applications from Table 1 result from two overlapping sets so the actual application rate will fall between that provided once every 10 and 50 years.

High Application Rates are possible with sprinklers.

The amount of infiltration into soil during application varies greatly between pivot and side-roll application. Infiltration during the 3-minute application of 10 mm of water is low while it accounts for a large part of the side-roll application. The dominant factor in short duration but rapid applications is the ability of the crop and soil to intercept water for later infiltration.

The crop in both field tests, says Heywood, was sugar beets where the risk of runoff would be greater than with many other crops. The 3-minute application of 10 mm was observed to cause surface water retention but no significant runoff. The 10-minute application of 25 mm caused only surface water retention.

Heywood indicates that, when planning sprinkler irrigation systems, the application expected for the planned modes of operation should be compared to the natural rainfall expected at Lethbridge. Short duration applications should not exceed the 1 in 50-year precipitation expectation for a comparable time period and in many cases a lower rate may be desired if bare soil is to be irrigated.

For more information please contact Dick Heywood, P. Ag., Irrigation Water Management Specialist, Irrigation Branch, Alberta Agriculture, Food and Rural Development, Agriculture Centre, Lethbridge, Alberta, Canada T1J 4C7. Telephone (403) 381-5871. ■

ALIGNMENT FORK

Holds Drainage Tubing in Place

Placing gravel filter material over corrugated plastic drainage tubing can be very frustrating. The very lightweight tubing will "snake" or jump off grade if the machine operator happens to dump his bucket of gravel just the slightest bit off-center, says Darrel Cox of G.W. Cox Construction Ltd. Even the best operators have problems. There didn't seem to be any commercially-made product that would solve our problem. We talked it up around the shop and came up with what we call our "alignment fork."

The fork, made of 12-mm diameter steel rod is bent into a U-shape having a diameter just a little larger than the plastic drainage tubing. The tines are long enough to allow penetration of the bed to a depth of 200 mm. The sharpened points allow easier penetration. Cox welds a T-shaped handle onto the top of the fork to make insertion and removal easier.

For more information please contact Darrel Cox at G.W. Cox Construction, 1210 - 31 Street North, Lethbridge, Alberta, Canada T1H 5J8. Telephone (403) 328-1346. ■

Alignment Forks placed 2 metres apart hold tubing in place while sand filter is placed.

UPDATE: CONDITION EVALUATION OF IREP PROJECTS

In 1990, at the request of Irrigation Council, the staff of the irrigation branch, Alberta Agriculture, Food and Rural Development, started to evaluate the present condition of all rehabilitated projects funded since 1969, under the Irrigation Rehabilitation and Expansion Program (IREP). Since this time, the Alberta government and the thirteen irrigation districts have invested approximately 427 million dollars to rehabilitate the existing distribution systems in southern Alberta. This program is cost shared, with the province paying 86% and the irrigation districts paying 14%.

Since the fall of 1990, final reports have been completed and presented to ten irrigation districts (Aetna Leavitt, Western, Raymond, Mountain View, Ross Creek, Magrath, Lethbridge Northern, United and Taber). The field work for St. Mary River Irrigation District has been completed and the report should be finished this fall after tabulation and analysis of the field data. The field work for Bow River Irrigation District is continuing and approximately 20% is completed to date.

The present condition of the rehabilitated projects within the above-mentioned districts is rated as "fair" to "very good" with a few isolated problems. Some of the problems typical to each district are: a never-ending problem of erosion, siltation, vegetative growth, poor or no vehicle access and the trampling of canal systems by livestock. All pipeline projects and associated structures are in good to excellent condition.

For more information please contact Zafar Iqbal, P. Eng., or Brian Taylor, Irrigation Branch, Alberta Agriculture, Food and Rural Development, Agriculture Centre, Lethbridge, Alberta, Canada T1J 4C7. Telephone (403) 381-5173. ■

The 25-year-old SMRID Lateral #20B concrete lined lateral remains in good condition because of annual maintenance.

REMOTE LEVEL READING UNIT

Saves time and possible injury

Climbing down a steep canal embankment in a deep cut to read a staff gauge isn't too bad when it's dry, says Larry Burr, a St. Mary River Irrigation District water supervisor. But when it's wet or there has been heavy dew, it can become a slide, terminating when one falls into the canal. At best it can be described as "wild and wet."

By designing and building a remote level measuring unit, he killed two birds with one stone. He avoids possible injury and saves time.

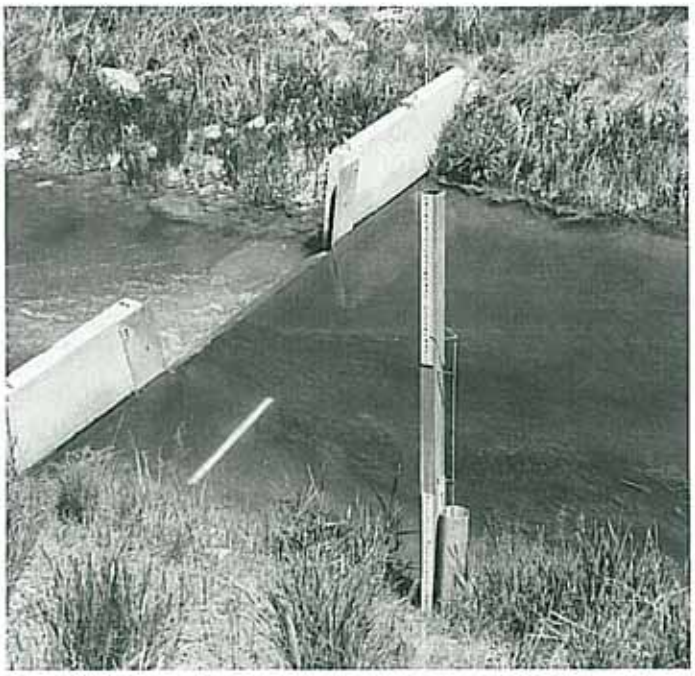
The unit is simple says Burr. It's built from ordinary hardware store-shelf items like aluminum rod and toilet-tank floats. A visit to any irrigation sprinkler dealer will provide you with the aluminum or PVC tubing for the stilling well.

Burr says, "The first step in installation is to excavate and get the horizontal inlet pipe below the crest of the structure. The vertical pipe is attached to the supporting square metal post and connected to the horizontal pipe. Inside the well, I install the toilet-tank float on a small diameter aluminum rod. I use aluminum rod because it's light and won't rust. Attached to the rod is an adjustable pointer. A standard staff gauge is riveted to the square tubing." The total cost for all the parts is under $100.00.

Calibration is easy says Burr. Water is turned into the canal so it just begins to trickle over the weir. The adjustable pointer is set at 0 on the staff gauge. No other adjustment is required.

Reading the gauge is as simple as standing on top of the canal bank and looking down at where the pointer is at and recording the adjacent number. He doesn't miss those early morning slides down the bank.

For more information please contact Larry Burr, Water Supervisor, St. Mary River Irrigation District, P.O. Box 278, Lethbridge, Alberta, Canada T1J 3Y7. Telephone (403) 328-4401. ■



Remote Level Reading Unit located in 4 metre deep cut is easily read from driving bank. ■

THE WATER HAULER'S BULLETIN

Designed to provide the operation and management personnel of Irrigation Districts with items of interst in their line of work. Comments are welcome.
Please contact Duncan Lloyd, editor, at Area Code (403) 381-5539, Lethbridge.

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