

water matters

A newsletter from
the Black Mountain
Irrigation District

Issue Number 7
June, 1998

Trustees to decide soon on \$2 million treatment project

Responding to poor water quality caused by last year's excessive run-off, Black Mountain Irrigation District embarked on a pilot project in April to test the effectiveness of an affordable treatment system recommended by Reid Crowther and Partners Ltd. The pilot is now complete, and test results show the proposed system will reduce turbidity, remove colour, and reduce the amount of chlorine needed. The next step is for trustees to decide whether or not the \$2-million price tag is something BMID customers can afford. If the board decides to proceed, construction could commence as soon as October and be completed in 1999.

"Our mandate for this project is improved water quality at a price BMID is able to pay," says Reid Crowther's Bob Hrasko. "We're shooting for 80 percent improvement in water quality for 20 percent the cost of a full-scale treatment plant.

"The system also provides health benefits," Bob continues. "By settling out most of the organic compounds such as plant and animal materials, we can



Engineering project manager Bob Hrasko of Reid Crowther oversaw the design, development, and assessment of the coagulation/floculation treatment system proposed to improve BMID water quality, particularly during spring run-off. Using conventional technology (coagulation/floculation) in an unconventional way (for a large volume of water with extended settling time), Bob and his co-workers have designed a system that will reduce turbidity, remove colour, and decrease the amount of chlorine needed.

reduce the amount of chlorine needed before distribution. This reduces the levels of trihalomethanes (known carcinogens)

produced when organic compounds are mixed with chlorine. Our tests show that if we cut the amounts of organic material by 50 percent, we can reduce the amount of chlorine by 50 percent, too. Preliminary results show a 75 percent reduction in trihalomethanes, which is a significant health benefit."

The proposed process will also reduce levels of waterborne cysts such as Giardia and Cryptosporidium, although not to the extent

provided by a system that incorporates filtration. Research suggests that reduction of waterborne cysts using coagulation and floculation alone range from 68.4% to 96.8%. Extended contact time with chlorine at the tail end of the treatment process will provide 99.9% inactivation of Giardia.

When retained by BMID earlier this year, Bob and his co-workers were asked to design and test a treatment method that would address variations in Mission Creek water quality. Specific objectives included a system that would –

- minimize capital, operations, and maintenance costs;
- be built entirely on BMID lands;
- make use of existing infrastructure;
- make use of materials BMID has in stock;

(See 'Treatment Project' page 3)



During the two-month pilot project, chemist Darren Schlamp coordinated testing of BMID water for temperature, pH, turbidity, colour, and total organic carbons before and after it underwent coagulation and floculation. Findings were then extrapolated to determine the feasibility of a full-scale treatment project. Reid Crowther is currently finalizing the pilot project report for BMID.

1997 Annual Report from BMID Trustees

Meetings/Elections

BMID's Board of Trustees met 28 times during 1997. Gord Ivans was re-elected board chairman, and Alf Kempf was re-elected to a three-year term as trustee. (The terms of office for Heinz Koetz and Lawrence Petch expired in 1998. Both were re-elected by acclamation.)

Water Quality Assessment

The above-average snow pack, later-than-normal run-off, and heavy rains in the spring of 1997 resulted in numerous mud slides into Mission Creek which greatly impacted water quality in the BMID system. The end result was a 'boil water advisory' issued by local health authorities for a two-week period. With increasing political and social pressures to maintain good water quality, Reid Crowther and Partners Ltd. was commissioned to explore cost-effective treatment options.

Water Treatment Options

A number of treatment options were considered to address the primary areas of concern – turbidity, colour, and total organic compounds. After careful consideration, trustees and staff chose to proceed with a pilot project involving chemical coagulation of suspended particles without filtration. (See page 3 for details).

Aquatic Monitoring Program

In addition to its weekly bacteriological tests and monitoring for turbidity and colour, BMID introduced aquatic monitoring that identifies the presence of algae, zooplankton, and fungi in Mission Creek and the two settling reservoirs. The tests identify changes that could affect water quality parameters such as taste, smell, or appearance. If necessary, control measures are implemented.

Westbank First Nations Treaty Negotiations

Although BMID isn't directly involved at the negotiating table, its interests are represented by local government and the Water Supply Association of B.C., of which BMID has been a long-standing member. As treaty negotiations between the Westbank First Nation and the federal

and provincial governments continue, the district wants to ensure that water supply issues are presented and documented. It is BMID's position that existing water rights, licenses, and accesses to watersheds must be protected, and that provincial ownership and jurisdiction of the water resource must continue to apply.

Kelowna Joint Water Committee

BMID continued to participate as a member of the Kelowna Joint Water Committee, and we feel the progress made has been very positive. The committee's technical arm (which prepares budgets, proposes policies, and manages programs endorsed by the political arm) has been particularly active in three areas – water quality, standardization, and education. Most recently, the committee has joined forces with the Okanagan Similkameen Health Region to develop emergency plans for responding to water quality events. Participants have refined a monitoring program that sets specific

parameters for water quality conditions that indicate potential quality problems.

Development and Subdivisions

Although few large subdivisions were developed in 1997, the growth rate continued at about 2.3 percent. The number of units added to the system was 146, which brought the serviced total to 6,428 at the end of the year.

Water Matters – BMID Newsletter

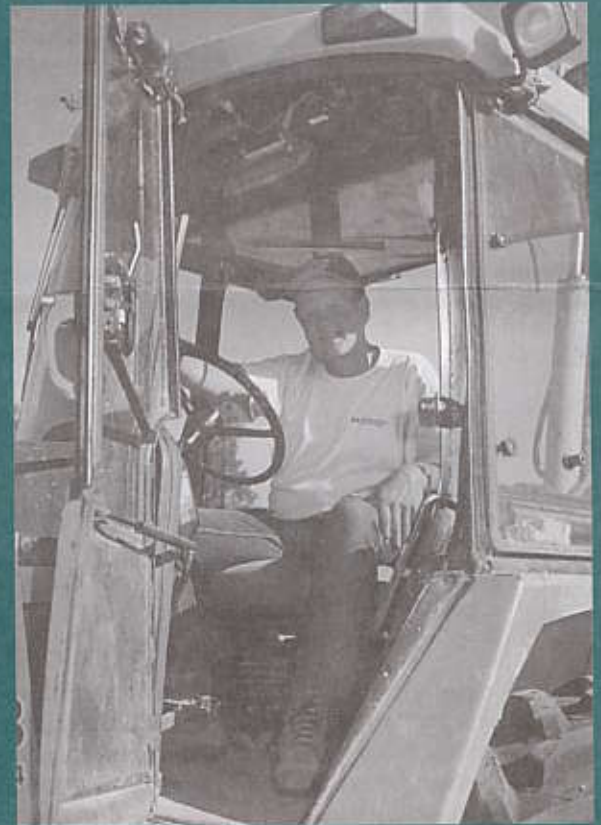
Of the 481 customers who completed our survey in last spring's issue, 99 percent felt the newsletter was a good forum for sharing information about water-related matters. Because of the positive response, we'll continue publication twice yearly.

Thank you!

On behalf of all BMID water users, the trustees thank district staff for their continued cooperation and dedication.

Meet the Staff

Few people know the BMID system as well as machine operator Allen Pansegrau, who's been with the district 29 years. Allen operates BMID's machine fleet, which includes two backhoes, a 450 cat, a flat-deck truck, and a gravel truck. With these he installs and maintains the district's services and hydrants. Allen enjoys his job because he likes the people, is close to home, and performs a variety of tasks. Most of all, though, he likes the machinery – and has ever since he was a kid working on the farm.



Treatment project looks promising

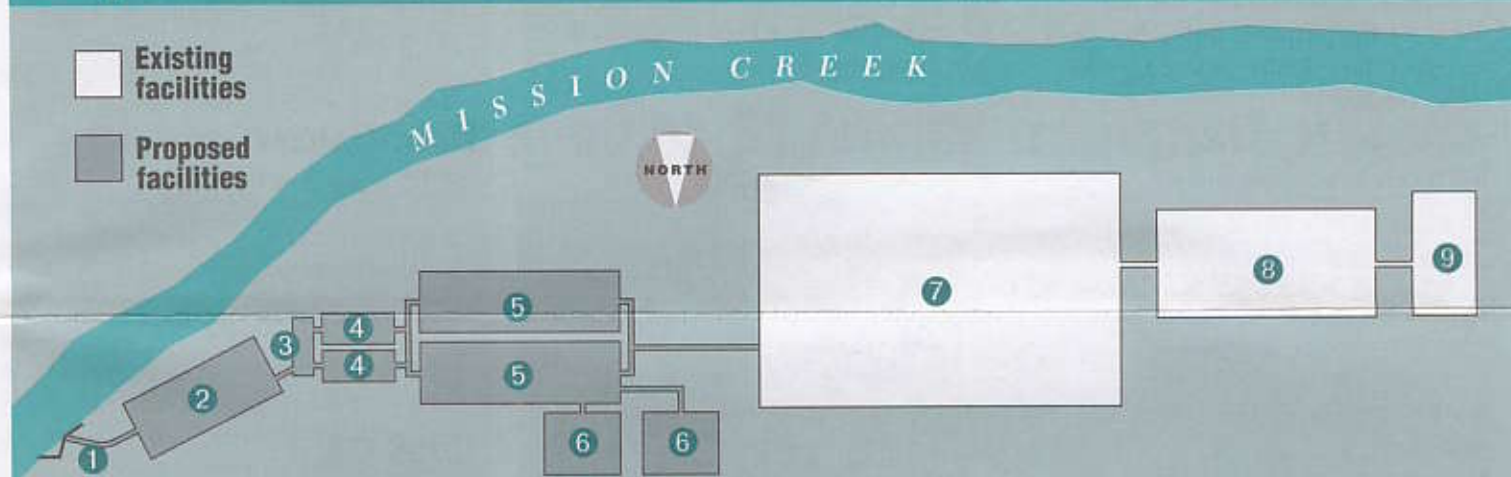
(Continued from page 1)

- minimize pumping costs by utilizing gravity; and
- meet long-term federal and provincial water quality guidelines.

The treatment system proposed and tested by Reid Crowther is 'coagulation/floculation,' during which a chemical is added at the front end of the collection

process to cause floating particles to stick together (coagulate) and settle out (floculate). Of the five coagulants tested, alum (aluminum sulphate) and ferric sulphate were the most effective and affordable. See the illustration below for a more detailed explanation of the process.

Proposed Treatment Process



Water would be drawn from Mission Creek at a new Intake 1. To reduce sediment 'loading' on the treatment 'train', an Initial Settling Pond 2 would be built to settle out heavier particles such as sand and fine gravel. Water would overflow into the Sedimentation Headworks 3 where it would be injected with a chemical coagulant before being balanced and split into one of the two Flocculators 4, where mixing occurs to encourage floating particles to stick together. The bigger these 'floc' particles become, the better they would settle out in the earth-lined Sedimentation Basins 5 – each of which is designed to accommodate 9,500 U.S. gallons/minute. Settled 'floc' sludge from the basins would be diverted into holding ponds 6 where it would dry out and be disposed of. The clarified water would be withdrawn from the downstream surfaces of the basin's before being directed to the existing Stevens Reservoir 7, which holds 38 million gallons. After more settling time in Reservoir #2 8, water would then flow through the Screening and Chlorination Station 9 before being distributed to BMID's 6,300 connections.

LRMP Update

In 1995, the province initiated a Land and Resource Management Plan (LRMP) for the Okanagan-Shuswap region. When complete in 1999, the plan will determine where and to what degree logging, mining, agriculture, recreation, and other land and resource activities may occur on the 2.17 million hectares of crown land and aquatic areas within the Okanagan timber supply area, which includes the Shuswap, Vernon, and Penticton Forest Districts.

Representing BMID's interests at the negotiating table is the Water Supply Association of B.C., which represents 52 water suppliers in the province, 29 of which operate within the plan area. Michael Mercer, manager of the

Winfield Okanagan Centre Irrigation District, is the association's representative at the LRMP table.

The Water Working Group – one of eight sub-groups exploring particular issues and making recommendations to the whole – has met twelve times to discuss and formulate management objectives and strategies to protect water resources in the plan area. The following objectives have been agreed upon by the group's 21 participants, and will be presented to the whole assembly this fall.

Management Objectives Proposed by the Water Working Group

- Monitor and manage surface water supplies and timing of flow to meet both ecosystem and consumptive requirements;
- Maintain/improve and protect surface water quality;

- Maintain/improve and protect ground-water supplies and quality;
- Implement and monitor resource strategies on a watershed basis;
- Maintain and protect quantities and flows of water in community watersheds;
- Maintain and protect water quality in community watersheds to minimize treatment before distribution;
- Maintain/restore and protect the functional and structural integrity of streams, stream channels, lakes, riparian (stream-side) areas, and aquatic ecosystems;
- Minimize the risk to life and property from floods, erosion, mass-wasting, and debris torrents;
- Promote water-use efficiency; and
- Enable and promote communication among resource agencies and users regarding developments which affect their interests.

Sprinkling Regulations

BMID trustees may, at any time, introduce regulations restricting water use for sprinkling or any other purpose. Upon receiving due notice (by mail or in the newspaper) residents may not use water for the purposes forbidden, or in excess of those limits imposed by the restrictions.

Without permission of the trustees, BMID customers may not –

- use more than 5 US gallons per minute per acre of land being irrigated for agricultural or turf farming purposes;
- use more than one outlet at a time for sprinkling lawns and gardens; (outlet not to exceed 3/4" external diameter);
- use excess water for sprinkling; or
- sprinkle with an open hose or pipe.

Requirements for Installing Underground Sprinkling Systems

Customers installing underground systems must –

- submit a system plan showing the maximum amount of water used at any one time;
- have an approved 'Excess Water Use' permit; and
- arrange for a BMID inspection when installation is complete.

Each connection must –

- be installed behind the shut-off valve in the building on the property being serviced by that connection;
- have an approved double check valve back-flow device;
- be on a time clock set between 11 PM and 7 AM; and
- limit consumption to 10 gallons per minute per station.

Installers must not disturb or operate BMID valves. To arrange for a valve turn-on/off, call the office at 765-5169. The fee for this service is \$20.

Water Wastage

BMID has been reminded by other authorities that water spraying onto roadways from irrigation systems is unacceptable. In addition to the waste issue, a sudden shower of water onto a windshield or a cyclist can be dangerous, and could cause legal problems if an accident occurs.

Wally says...



Watch the road when setting your sprinklers.

BMID bylaws state that water must be contained on owners' land. Please ensure that roadside sprinkler heads are fitted with suitable screens to prevent water from spraying onto the road.

Regulations for Fertigation/Chemigation

Growers are reminded that anyone fertigating or chemigating must inform BMID, and must have an approved backflow preventor installed and tested by the district.

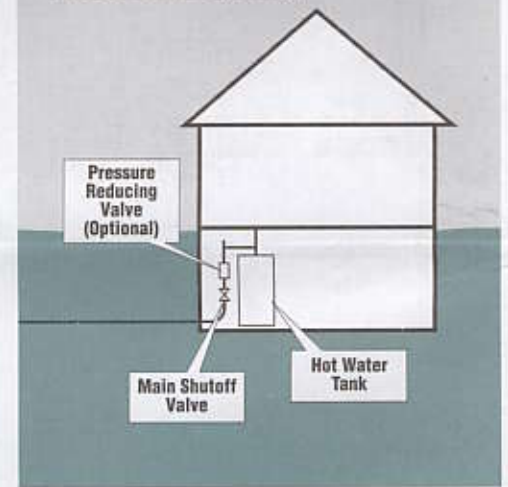
Tech Talk

Yes, Master...

Do you know where the master water supply valve is in your home? Does everyone else in the family know where it is?

If there's an emergency, you'll need to know in a hurry! You can't afford to waste precious time searching while the basement floods or your carpets are drenched. You have to act fast!

Every home, apartment, and business has a master water supply valve. It's usually located where the water supply pipe enters the building, near the clothes washer hook-up, or near the water heater. When you think you've located yours, turn it off briefly to see if all water faucets in the building are shut off. If they aren't, try again. Once you've found the right valve, make it easy to find by marking it with a tag, a bright ribbon, or colourful paint. If the worst happens – and we hope it never does – you'll be able to find it quickly!



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