

Water matters

A newsletter from
the Black Mountain
Irrigation District

Issue Number 11
July, 2000

Medical health officer applauds BMID's "efficient" and "cost-effective" water treatment system

Kelowna's Black Mountain Irrigation District (BMID) has a new coagulation/flocculation water treatment system that is exceeding everyone's expectations, including those of Okanagan Similkameen Health Region's medical health officer, Dr. Bill Moorehead.

"BMID's new system is a progressive, wise, and thoughtful response to the district's specific water management challenges," says Dr. Moorehead, who particularly applauds the system's efficiency and cost effectiveness.

Administrator Phil Ruskowsky is also thrilled with BMID's new treatment facility, which — at 102 megalitres daily — has the distinction of being B.C.'s largest. "BMID's collection system is such that turbidity (cloudiness) caused by spring runoff has been a perpetual problem," he explains. "Our turbidity levels were often in the neighbourhood of 55 NTUs. Shutting the system down and issuing boil water advisories were not uncommon. The new system is performing better than expected. It has reduced turbidity levels to less than 2 NTUs and, more importantly, has resulted in a 50 percent reduction in chlorine usage."

As explained by engineering project manager Bob Hrasko from Reid Crowther & Partners Ltd., "by settling out most of the organic compounds, we've significantly reduced the amount of chlorine needed before distribution. This reduces the levels of trihalomethanes (known carcinogens) produced when organic compounds are mixed with chlorine, which provides a significant health benefit."

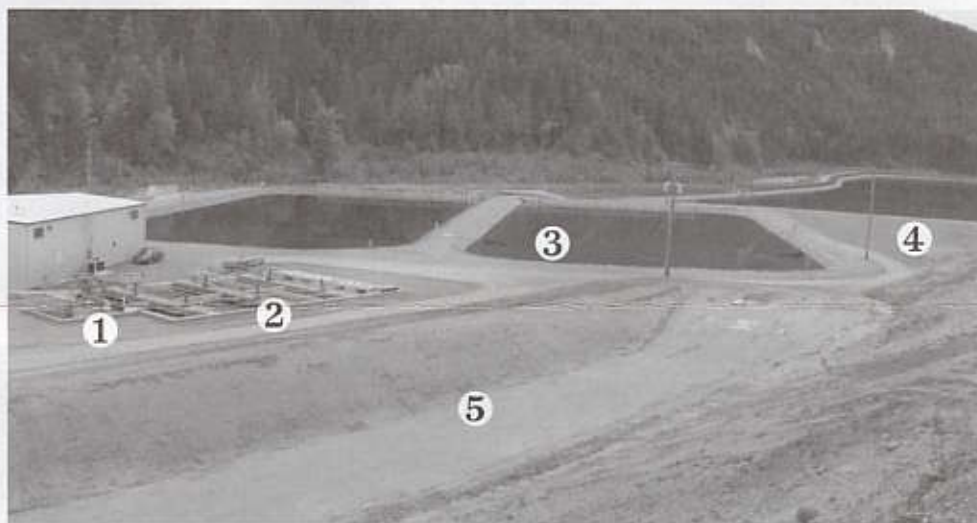
BMID started exploring its treatment options seriously in '97, when a "one-in-

one-hundred-year runoff" caused landslides and riverbank erosion that played havoc with water supplies throughout the valley.

"We cannot control Mission Creek," says BMID operations supervisor Malcolm Tomlinson. "We have to play the hand we're dealt, and what we got in the spring of '97 was a very dirty hand! What we can do, though, is improve the part of the system we can control — from our initial intake through to where our last on-line customer receives water."

To meet that objective, Reid Crowther began by researching and testing treatment options that were feasible and affordable considering 85 percent of the district's considerable output is used for agricultural and domestic irrigation. Other objectives were that the system be built entirely on BMID lands; that it minimize capital, operations and maintenance costs; make use of existing infrastructure

See 'Treatment system' page 4



Water is drawn from a new intake on Mission Creek before being directed to a grit pond, where heavier particles such as fine gravel and sand settle out. It then travels over a fish screen (to divert fish back to Mission Creek) before overflowing into the sedimentation headworks **1**, where it's injected with a chemical coagulant before being directed into one of the two flocculators **2**, where a polymer is added and mixing occurs to encourage floating particles to stick together. The bigger these "floc" particles become, the better they'll settle out in the polyethylene-lined clarifier basins **3**, each of which is designed to accommodate 51 megalitres daily. The clarified water will then flow to Stevens **4** and Hadden Reservoirs for further settling before flowing through the screening and chlorination station on its way to BMID's 6,600 connections. Settled "floc" sludge from the clarification basins will be diverted into a clay-lined holding pond **5**, where it will dry before being disposed of.

Trustees' Annual Report

Meetings: The Board of Trustees held 38 regular and special meetings to conduct BMID's business activities.

Election: Allen Kirschner was elected to a three-year term as BMID trustee. Gord Ivans was appointed chairman of the board. The terms of office for Gord Ivans and Alf Kempf expire in 2000. Both will seek re-election. Since there were no other nominations, both were re-elected for three year terms.

Water Treatment Facility: Trustees approved a \$3.5-million water treatment project that will improve drinking water quality, especially during spring runoff. Construction commenced in early August and was complete by runoff. The facility includes a new intake on Mission Creek, and rapid-mix tank where chemical (alum) is added, two flocculators, two large sedimentation clarifiers, an operations building, and all necessary pipe works, instrumentation and chemical dosing equipment needed to operate the plant.

Water-Main Failures: You may recall, late in December 1998, a 4' by 6' section of the main conduit failed — the result being that a 90' section of concrete had to be removed and replaced at considerable cost. In June, failure of a section of 36" pipe caused an interruption of service for several days and, again, at great expense. Shared connections with Rutland Waterworks District and Glenmore Ellison Improvement District again proved beneficial, and BMID trustees are very grateful to both districts for supplying emergency service while repairs were carried out.

Backflow Prevention Program: Amendments to the BC Plumbing Code require water purveyors to monitor for cross-connections and comply with various standards established by the Canadian Standards Association. The program was undertaken by the Kelowna Joint Water Committee, of which BMID is a member — along with all other water districts operating within City of Kelowna boundaries. This ongoing project will eventually require additional staff.

Financial Summary: BMID continues to operate in a sound financial position. Due to an anticipated increase in operating costs for the water treatment plant, both irrigation and domestic water rates were increased. Domestic rates were increased by \$1.50/month effective January 1st, 2000, with a further increase of \$1.50 planned for January 1st, 2001. Irrigation rates were increased by \$1 per acre per year effective in 1999. The district has applied for a government debenture to finance the water treatment facility.

Subdivision Development: Growth in BMID's service area continued to be moderate, with 77 units being added to the system. The increase of 1.18% brings the total number of serviced units to 6,596.

Capital Works: In addition to the water treatment facility being constructed, the Cornish Road well was upgraded and will be ready for use this year. Also, some additional water main looping was undertaken in the Totem Industrial Park to achieve required industrial fire flows.

Gallagher's Canyon — Reserve Status: all negotiating parties have accepted Draft No. 14 of the Master Agreement. Barring further amendments, all stakeholders will accept the agreement. Negotiations have been underway since 1993.

BMID Website: In August, BMID introduced its website on the World Wide Web. Located at www.bmid.org — the site offers a convenient look at the district's history, bylaws, billing, current and future projects, newsletters (under construction), and links to other related sites.

Acknowledgement: On behalf of all BMID water users, the trustees thank all staff for their continued cooperation and dedication, and overall for a job well done.

Respectfully submitted,

Gord Ivans
Alf Kempf
Allen Kirschner
Heinz Koetz
Laurence Petch

Wally and Wanda say...

...be responsible when playing in our watersheds

- Recognize that you're in a community watershed and that water is a priority resource.
- Stay on designated roads to avoid damaging soft ground such as meadow lands and creeks.
- Pack out what you pack in.
- Go to the bathroom well away from streams and lakes.
- Make sure your campfire is "out cold."
- Obey all signs and keep vehicles off dams and other structures.
- Observe, record, and report questionable activities to BMID at 765-5169.
- Remember that damage to the watershed causes damage to your drinking water.



Using common sense – automatically!

Many of you either have or are thinking about putting in automatic, underground sprinkler systems. Please read on to see how they should be designed, installed, and operated.

■ All properties serviced by BMID have an amount of water allocated to the property. This allocation is measured in irrigated area (acres) and is always equal to, or less than, the property's actual area. The allocation varies, depending on how much water (flow rate) has been purchased for the property. The minimum is 5 U.S. gallons per minute — the flow rate presently allocated to most residential properties. If

Did you know...

There are ways to landscape that use between 30% and 80% less water than traditional landscaping? Consult your local nursery for suggestions.



greater flow is needed, additional allocation may be purchased by the property owner. Phone the BMID office at 765-5169 for property-specific information.

■ If you're planning to install a permanent set (underground) system, you must first submit plans to the district for approval. Installation may proceed only after receiving written approval from BMID.

■ 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 or off, call the office at 765-5169. The fee for this service is \$25.



Pass the grass, please!

If you cut your lawn too short, it's prone to dehydration and, therefore, needs watering more frequently? An ideal length is 2 1/2\"/>



Wally says...

Properly-installed, well-maintained and wisely-managed automatic sprinkler systems conserve water admirably. Remember to —

- schedule properly, watering only when needed.
- clean filters routinely, and
- adjust sprinkler head pressure to avoid overlap and the unnecessary watering of roadways and sidewalks.

Stream Consciousness

Small streams in B.C. provide living, feeding, and spawning areas for fish stocks. A healthy stream has different types of habitat to provide cover (e.g. pools, forest debris, boulders, overhanging trees and brush), a constant and even flow of water, moderate summer temperatures, few predators, and insects for food. In a good spawning stream, adult fish can reach spawning gravel with free-flowing, silt-free water.

Unfortunately, it's easy to damage streams — often seriously. Damage may be caused by factors beyond your control, such as inefficient logging or mining practices and poorly-planned urban and industrial growth. There are, however, stream care guidelines you can follow to help preserve our streams.

- Do not disturb streamside vegetation or natural debris such as stumps, fallen trees or boulders
- Do not disturb streamside soils during wet seasons
- Follow environmental regulations when working near streams
- Keep pets and livestock away from streams
- Remove garbage from streams and nearby riparian (streamside) areas
- Use garden and lawn chemicals sparingly and with care
- Keep household chemicals out of streams



Treatment system from page 1

and materials BMID had in stock; minimize pumping costs by utilizing gravity; and meet long-term federal and provincial water quality guidelines.

"Our mandate was to improve water quality 80 percent for 20 percent of the cost of a full-scale treatment plant," says Hrasko, who oversaw the design, development, and assessment of the \$3.5-million treatment system.

A pilot project, undertaken in the spring of '98, proved sound Reid Crowther's idea of using conventional technology (coagulation/flocculation) in an unconventional way (for a large volume of water with extended settling time). Results of the two-month project showed that the proposed process effectively reduced turbidity, particle count (size and number of particles in the water), colour, and total organic carbon (TOC) levels.

BMID then asked its customers for input about the proposed system and the additional user fees that would be required to support it. Response was positive, so the BMID Board of Trustees gave the go-ahead to call for construction tenders. The successful bidder was Maple Reinders, which, despite wet weather and a very wet job site, had the system completed and operational before spring runoff.

"The results have been so good, we've had customers ask if there's even been a runoff this year," says Ruskowsky. "During runoff, turbidity measured at the intake has spiked off the meter as high as 170

NTUs. After treatment, readings on water leaving the clarifiers are less than 2 NTUs, and sometimes less than 1NTU. We're thrilled with the results."

The system is being operated and

maintained by Aquatrol, an arm of Reid Crowther Ltd. A cost-benefit analysis showed this was the most efficient and effective approach, considering the plant is highly automated. ■

Tech Talk

Preventing Cross Connections

Although your drinking water is treated and tested by BMID, contaminants can enter the water supply within your home through a 'cross connection.' Under certain conditions, the flow in household water lines can reverse and siphon contaminants into the water supply. The 'backflow' caused by this 'cross connection' can prove fatal if the contaminants involved are lethal.

A residential cross connection can best be described as a connection between your drinking water supply and a container that holds a mixture of water and an additive (e.g. a laundry tub full of water and bleach), or a container holding a chemical compound (e.g. an insect-control sprayer attached to a garden hose). If the water supply is reduced (due to a fire in the neighbourhood) or stopped (due to a watermain break), the back-siphonage or back-

pressure draws water backward through the system.

To prevent backflow, it's important to identify all possible cross connections in your home.

Because most residential cross connections are created by hoses, it's wise to install vacuum breakers

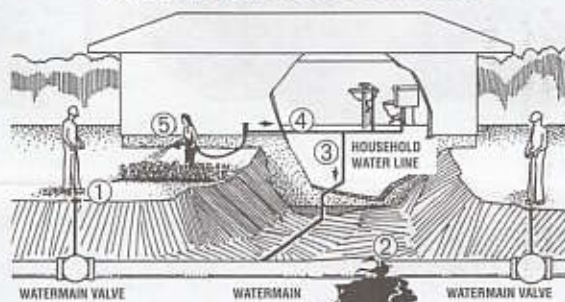
between all threaded taps and hoses. These allow water to flow out but not back in.

Potential cross connections in floor drains, water softeners, tubs, or sinks can be prevented by installing air-gap fittings available at your local plumbing store.

Agricultural irrigation systems with potential cross-connections must have approved backflow preventors installed that must be tested annually. ■



BACKFLOW FROM A CROSS CONNECTION



- ① The watermain is shut off and depressurized for a repair.
- ② Water flows out a break or a crack in the watermain and into the soil.
- ③ The water in the household lines drains into the watermain which is at a lower elevation.
- ④ A siphon is created by the water draining out of the household lines.
- ⑤ Contaminants are siphoned through a cross connection and into the household water lines and the watermain.

Get a 'Fresh Outlook'

Lake Country's Alliance Professional Services publishes *Fresh Outlook*— a quarterly, province-wide newspaper containing information about drinking water, wastewater, storm-water, and other related issues such as land-use planning and watershed restoration and management.

You can be added to the mailing list for a free subscription by calling Diana at 250-766-1797 or by emailing dbrisseau@silk.net



Black Mountain Irrigation District
285 Gray Road
Kelowna, B.C. V1X 1W8

Tel. 765-5169 • Fax. 765-0277

