



# BRITISH COLUMBIA OPERATORS DIGEST

A NEWSLETTER FOR WATER  
AND WASTEWATER OPERATORS

MARCH 2004 • NUMBER 108

## New Continuing Education Requirements

**A**t the February 2, 2004, Environmental Operators Certification Program (EOCP) Board meeting, the Board of Directors unanimously voted to implement a program of mandatory continuing education units (CEU's) for all certified operators, based on recommendations presented by a sub-committee appointed in 2003 to draft the new requirements. The new program takes effect on January 1, 2005, and will be similar to other certification authorities throughout North America.

In the next several months the Board will be communicating the specifics of this decision to all holders of water and wastewater permits, all chief administrative officers of cities, towns, districts, villages and regional districts, regulatory agencies, educational institutions and others that may be affected.

The purpose of requiring continuing education units is to ensure that certified operators remain well trained and are capable of operating and maintaining their facilities in a responsible and professional manner. Payment of annual dues alone, does not provide EOCP with the assurance that public health and the environment is protected by those who are responsible for the operation and maintenance of water and wastewater facilities in BC. As a result, it has been decided to implement the continuing education requirements to ensure that EOCP is fulfilling its responsibilities to governments and the public regarding mandatory certification, by only certifying those who meet prescribed standards. The establishment of standards for certification and membership in EOCP has been entrusted to the Board of Directors as per Sec. 5.6(b) of its Constitution.

Commencing on January 1, 2005, operators certified as Small System Operators in water and



Recent certification exam session in Kitimat after a BCWWA Water Treatment course.

wastewater facilities will be required to take 12 hours of continuing education (1.2 CEU's) every 2 years in order to hold a valid certificate. Operators certified at Level 1, 2, 3, and 4 will be required to take 24 hours of continuing education (2.4 CEU's) every 2 years in order to hold a valid certificate. To implement the new requirements, operator certificate renewals will be

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# Environmental Operators Certification Program

The BC Operators Digest is the official newsletter of the Program. Submissions for publication in the Digest are welcome and may be sent to the Editor:

Don Gare  
Box 2293  
Sechelt, BC V0N 3A0  
**Phone:** 604 740-5695  
**e-mail:** dgare@dccnet.com

Changes of address, annual dues, exam applications, as well as general inquiries about the program should be addressed to:

Environmental Operators Certification Program  
219 – 3823 Henning Drive  
Burnaby, B.C. V5C 6P3

**Phone:** 604 874-4784  
**Fax:** 604 874-4794  
**Toll Free:** 1-866-552-3627  
**email:** eocp@eocp.org  
**Web:** www.eocp.org

Ms. Barbara Striegler, Executive Assistant  
Ms. Kim Eames, Office Assistant

Business card sized advertisement space is available at \$50.00 per issue or \$175.00 for four issues. GST and PST included. For other sized advertisements, please contact the Editor.

The Environmental Operators Certification Program is a charter member of the Association of Boards of Certification, and is a Registered Society with over 2,500 active members.

## 2003/2004 BOARD OF DIRECTORS

- Joe McGowan** – Chairman
- Bernie Taekema** – Secretary
- Bill Hyslop** – Industrial Waste
- Leo Albrecht** – CEU Assessment
- Al Lane** – Facilities Classification
- Don Gare** – Newsletter
- Mike Gosselin** – Newsletter
- Eric Jackson** – Treasurer
- Bob Smith** – Education

Design and Layout by: Olive Design  Printed on Recycled Paper

# 2004 CERTIFICATION BOARD ELECTIONS

This year's Nominating Committee members are Don Gare and Mike Gosselin.

There are five positions on the Board to be filled by three operators, one government representative and one educational representative. Each position is for a two-year term. The following candidates have been nominated:

**Operators:** Leo Albrecht  
Eric Jackson

**Government Representative:** Bernie Taekema

**Educational Representative:** Bob Smith

The Nominating Committee invites further nominations from the membership. Each nomination shall be supported by a minimum of three (3) certified operators and shall be submitted no later than April 2, 2004 by mail to:

EOPC Nominating Committee  
219-3823 Henning Drive  
Burnaby, B.C. V5C 6P3

Or by fax to (604) 874-4794

Ballots with instructions will be mailed to operators on April 23, 2004. Returned ballots must be mailed to:

EOPC  
219-3823 Henning Drive  
Burnaby, B.C. V5C 6P3

The deadline for the receipt of ballots is May 21, 2004.



## BOARD BUSINESS BRIEFS

### BOARD MEETING – FEBRUARY 2, 2004, EOCP OFFICE, BURNABY

Directors present: Joe McGowan (Chair), Al Lane, Eric Jackson, Don Gare, Mike Gosselin, Leo Albrecht, Bill Hyslop, Bernie Taekema, Bob Smith.

#### Treasurer's Report

Eric Jackson, Treasurer presented a detailed report which included the following totals:

Cash and Bank Accounts	\$44,036.24
Total Investments	\$62,378.36
Total Assets	\$106,414.60

An audit was completed on the EOCP financial records.

#### Chairman's Report

Joe McGowan reviewed accomplishments of the Board and the challenges ahead for the Board. Some of his comments:

The Chairman stated that there have been many discussions on where the Board is going and what this Board wants to accomplish. In 1990 there was no mandatory certification in BC. The EOCP spent time trying to convince MOH and MOE that certification be mandatory.

In 1993 mandatory certification for wastewater treatment operators was legislated by the MOE that operators must be trained and certified to minimize problems with human health and the environment. The EOCP took this message on the road through personal meetings, phone calls, letters and relationships with the Provincial Government and BCWWA. In the last couple of years things started to come together on the drinking water side as the government did not want a repeat of the Walkerton disaster. Bob Smith and the Ministry of Health provided the initiative for this change. We are in a position where changes will continue.

The EOCP has, through vision and hard work, put out goals followed by the MOH through regulation. After years of focus, pushing and trying, things have changed. The EOCP Board will have to take a hard look and focus on where we want to go.

#### Some areas of improvement for the Board to consider:

- Increase the frequency of the newsletter as it is the single most valuable communication method to operators

- Complete the development of EOCP WWT exams and after that WD and WT exams as well
- Complete the contract with the MWLAP for development of WWT Operating Plans (determine and authorize who could develop the plans)
- Yukon Government is looking to the EOCP for guidelines for Yukon content exams
- There will be an increase of 150+ more small water system facilities to be classified by the EOCP next year, and eventually the addition of 2,000 small water system operators.  
This will require more staff and office space.
- Implementation of a CEU requirement will be a huge challenge, again requiring additional staff.

**BCWWA LIAISON** – The BCWWA invited four EOCP Board members to attend the BCWWA Strategic Planning meeting in January hoping to promote better communication between the two organizations. The MOU between the two organizations was discussed.

**NEWSLETTER** – The next Digest will be sent out in March. There have been some other changes to the web site including an Operator Award page.

**FACILITIES** – Al Lane has classified over 180 facilities in the last while, mostly SWS and WD facilities.

#### CEU Requirement for Validity of Certificates

A draft CEU requirement document has been developed. The EOCP is in the business of protection of Public Health. We are following the US where every state requires CEU's for renewal of certificates.

The Board is suggesting a 2 year renewal period for all operators with a requirement of 24 CEU's for a 2 year period and 12 CEU's for Small System operators over a 2 year period.

The EOCP Board unanimously endorses this concept of CEU validity for renewal and plans to phase in the program over a few years starting in January 2005 to be effective January 2007.

*Continued on page 4*

# BOARD BUSINESS BRIEFS (Continued)

Revisions of the EOCP Constitution and the EOCP Program Guide will be discussed at a future meeting.

**Top Ops Skills Competition at Whistler Conference**

This competition is a BCWWA function as part of the annual conference. The EOCP has been asked to help with providing judges and questions which has been undertaken by Bill Hyslop. Hundreds of questions are required for as many as 12 teams with 20 questions per round. The Chairman will arrange for EOCP vests for prizes.

**EXAM MARKING** – Barb and Kim have had 2 days of training on the LXR marking and scanning system and will now mark SWS, SWWS and IWWT exams in house. Don Gare will provide categories for questions for the Small Water exams. Leo Albrecht will provide categories for questions for the two Small Wastewater System exams.

**OUC BURSARY AWARDS** – The EOCP will present two OUC Bursary Awards. Applications have been received and Eric Jackson will choose the two recipients.

**EOCP STAFFING** – With the workload becoming heavier for the Board, Directors are doing Board work, not directing. As all Directors are volunteers, none have the time to spend and there is a lot of backlog work to be done. It was discussed that

it was time to hire an Executive Director for the program whose duties would include:

- gathering information for newsletter
- coordinating with BCWWA and Ministries
- approving invoices and facility applications
- using executive skills and general knowledge of the industry to move projects along
- attending conferences
- disseminating of information

The Chairman will put together bullet notes within one week and email same to all Directors. A conference call will be scheduled for Thursday, February 12, 2004 at 7:00 pm to discuss the hiring of an Executive Director.



The photo above shows the new primary tank covers at the Kelowna Wastewater Treatment Plant. The odor control covers were designed by the two operators shown right – Vince Hughes and Mike Humes.



## Operator of the Year Nominations

The EOCP Board is seeking nominations for the Operator of the Year Award. The Vic Terry Award is presented by the BCWWA at their annual conference to a certified operator nominated by the EOCP Board. Nominations may be submitted by operators, municipal officials, supervisors, or any member of the BCWWA.

**NOMINATION GUIDELINES**

The nominee must be a member of good standing of the EOCP. The nominee must have provided exemplary service in water or wastewater operations over an extended period of time. Written submissions must be received by March 31, 2004 at the Board Office.

**Previous Vic Terry Award Recipients**

2003	Maitland Smith	1991	No Award
2002	Jim McQuarrie	1990	Rod McCabe
2001	Louie Sabbas	1989	Norm Burow
2000	Errol Franson	1988	Bernie Udala
1999	Dave Sivyer	1987	Leo Albrecht
1998	Norm Gobbi	1986	H. Scott Lee
1997	John Tailford	1985	Ted McDowell
1996	Dave McLean	1984	Lloyd Scrimshaw
1995	Glen Dunville	1983	David Bain
1994	No Award	1982	Graeme Faris
1993	Norm Staff	1981	Richard Morris
1992	No Award	1980	Gerry Stevens
		1979	Dale Cannon



## PLANT PROFILE: SUNSHINE COAST REGIONAL DISTRICT Chapman Creek Water Treatment Plant

The Sunshine Coast Regional District (SCRD) is located 40 minutes by ferry northwest of Vancouver on the beautiful Sunshine Coast. The SCRD supplies water to residents with five separate water systems consisting of seven supply sources. The largest system is the Chapman Creek system which supplies water to 22,000 residents in Sechelt and adjoining rural areas.

In late 2001, the SCRD received approval of a \$3.8 million Canada/BC Infrastructure Grant to construct a water treatment plant for the Chapman Creek water system. In 2002 the SCRD hired an engineering consultant, reviewed process designs, approved the detail project design and tendered the project. The total project cost was \$7,000,000. The water treatment plant construction began in February 2003.

### Water Source

Water from Chapman Creek is categorized as a very soft, coloured, low turbidity, low pH, high organic carbon, low alkalinity and calcium deficient water. This combination of characteristics results in a water that is very corrosive and is subject to formation of disinfection byproducts including trihalomethanes and haloacetic acids when using chlorine for disinfection. The water quality is quite good for most of the year, however colour and turbidity levels exceed drinking water guidelines during spring runoff and following heavy rains.

### Water Supply

Water flows from the intake on Chapman Creek through an existing sedimentation box, where the water flow is slowed to allow settling of sand which can be manually flushed out. Water then travels by gravity pipeline for approximately one kilometer to a new raw water pumping station. This pumping station consists of three low lift pumps which supply all the flow to the new treatment plant. Each pump has a capacity of 16 ML/day and operates on variable speed drives. Two pumps only can operate together. The raw water is pumped to the main treatment plant building which is adjacent to the existing 13 ML Selma Zone 2 reservoir.

### Plant Process

The water treatment plant process consists of chemical injection and rapid mixing, coagulation and flocculation, clarifying by flotation, filtration and disinfection. Treated water is discharged into the adjoining reservoir prior to entering the distribution system.



Site of the new water treatment plant

Plant Capacity	
Nominal Flow	25 ML/day
Hydraulic Capacity	32 ML/day
Average Daily Flow	12.5 ML/day
Minimum Flow	9.0 ML/day
Maximum Flow	25 ML/day



Chapman Creek intake during a winter storm.

*Continued on page 6*



Early in the construction



Formwork for the filters

**Rapid Mixing**

Raw water enters the plant by a 600 mm water main and passes through a flow meter which measures total flow and is used to adjust the chemical feed amounts. The plant uses aluminum sulphate (alum) as a coagulant, which is injected at the head of the plant. The liquid alum is rapidly mixed in the water by a pump and diffuser. Water then flows to a flow splitter box where soda ash is injected. The soda ash solution increases the low pH of the raw water.

The flow splitter box divides the water flow into two pre-treatment process trains. Each train consists of two flocculation tanks and one DAF tank. Following this are four filters. During lower flows from October to April, one process train and two filters are in operation; with both trains and four filters required for the spring and summer month’s operations.

**Coagulation and Flocculation**

Alum is used as the coagulant, which results in the clumping together of fine particles which cause colour and turbidity, into larger particles called floc. Once the alum has been injected into the raw water, the water enters the flocculation tanks where it is gently mixed. The flocculators are mechanical paddle mixers with one mixer in each tank. The first tank mixing is done at about twice the speed as the second tank. Detention time at maximum flow is 23 minutes.

Coagulation and Flocculation	
Flocculation Tanks	4 (2 per train)
Volume per cell	110 m3
Water depth	4.40 m

**Daf Clarification**

Water leaves the flocculation tanks entering into the bottom of the dissolved air flotation (DAF) tanks. There is a slanted baffle plate in the first section of each DAF tank where aerated water is injected from recycled lines. Millions of microscopic air bubbles (20 – 50 micron diameter) are released and float to the surface of the DAF

floating the floc particles to the water surface. This floc is skimmed by a continuously rotating skimmer brush and sent to waste. Clean water is collected at the bottom of the DAF through launder pipes that lead to the filter influent channel.

DAF Clarification	
DAF tanks	2 (1 per train)
DAF size	5 m X 9.5 m
Water depth	3.9 m
Surface loading	12.2 m/hr
Maximum flow	13.9 ML/day per chamber

**Filters**

Water is diverted to any of the four filters from the filter distribution channel. Polymer is added as a filter aid and also added to backwashed waste water. The rapid rate filters are gravity down flow filters with dual media - 500 mm of anthracite on top of 250 mm of sand. The filters are backwashed from a submersible pump pumping treated water and air scoured by one of two blowers.

Filters	
Filters	4
Filter size	6.1 m X 3.6 m
Water depth	3.0 m
Filter media	500 mm anthracite 250 mm sand

**Disinfection**

UV light is used as the primary disinfection system just before the treated water leaves the plant. Chlorine gas is the secondary disinfectant, added first in the filter distribution chamber before water enters the filters, then also in the effluent chamber as the treated water leaves the plant prior to flowing into the 13 ML reservoir. Chlorine is also added as required as the treated water leaves the reservoir for the distribution system.



Sand and Anthracite Filter Media



Underground piping for the raw water pump station

Soda ash is also injected in the effluent chamber once the treatment process is complete, again to raise the pH of the treated water.

### Residuals

The treatment process produces sludge from the removal of colour and turbidity in the DAF and filter processes. Floc from the DAF process and backwash waste from the filters is flushed by gravity to the old open water reservoir 1.5 km from the water treatment plant. The old reservoir was converted to a sludge settling basin where the water is decanted to a gravel infiltration basin.

### Plant Controls

Two new standby diesel generators are available for automatic switchover in case of a power outage. A 450 kW generator powers the main plant with a 100 kW unit powering the raw



Raw water pumps

*Continued on page 8*



Interior view



Treated water pipe gallery



water pump station. An existing 35 kW generator powers the chlorine building in case of a power outage.

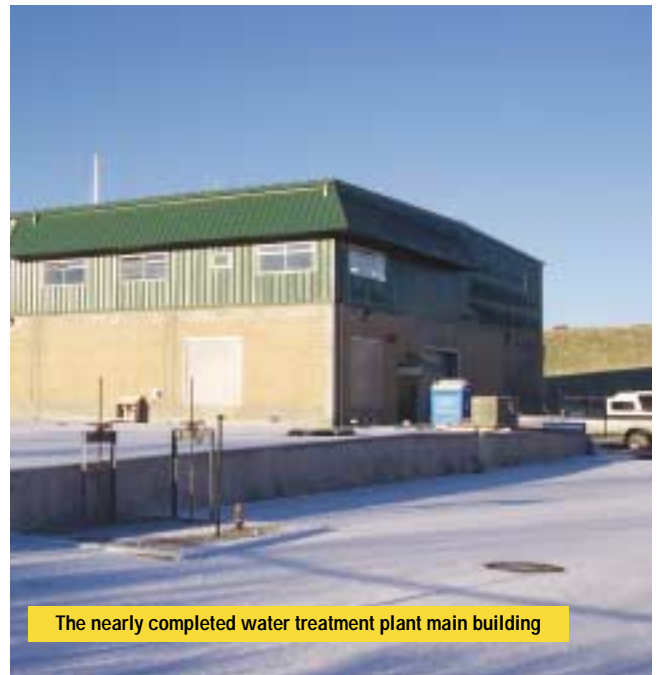
The new plant has a networked SCADA system allowing for onsite plant operation with data logging and report generation, and remote monitoring and alarming through the SCRD monitoring system.

### Staffing

The plant is operated with one operator on day shift, seven days a week. There are four trained operators who share the work on a rotational basis throughout the year. The four operators, Dennis Cassin, Shane Walkey, Scott Fry and Gary Popp were all existing SCRD waterworks employees prior to training at the new plant.

The Chapman Creek Water Treatment Plant was commissioned in March, supplying safe and excellent quality water to Sunshine Coast residents and visitors.

—Don Gare  
SCRD



### CERTIFICATION QUIZ ANSWERS:

Answers: 1. c 2. c 3. a 4. methane 5. mean 6. c 7. c 8. c 9. b 10. c

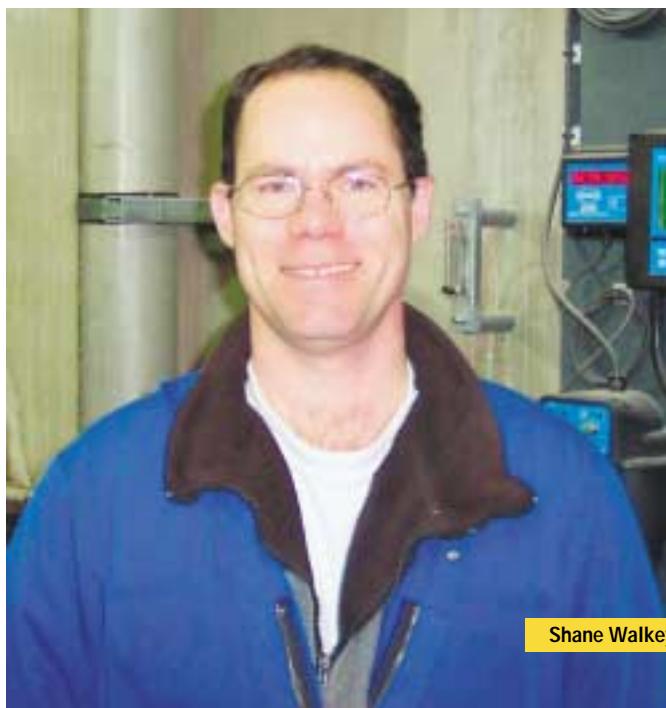


## OPERATOR PROFILE – Shane Walkey

**S**hane commenced work at the Sunshine Coast Regional District in Sechelt in 1989 after a few seasons commercial fishing the Queen Charlotte Islands on the “Kestrel”. He began his career in the water/wastewater field at the Sechelt Wastewater Treatment Plant and assisted in the water system construction and expansion. Through out the last fifteen years he has worked in all aspects of the SCR D Class III water distribution system, Class II water treatment plant and the seven Class I wastewater treatment plants. He is very excited at the upcoming opportunity to be one of the first Water Treatment Plant Operators at the new Class IV Chapman Creek Water Treatment Plant.

Shane is an EOC P Certified Operator holding a WD III, WT II, WWT I and also has a Chlorine Handler certification. He has continually been upgrading his education through the BCWWA., Capilano College and BCIT. In 2002 he was awarded the BCIT Intermediate Certificate of Technology in Transportation Systems with honours.

In his spare time Shane enjoys time with his family, camping, hockey and woodworking. He is married to Amanda, and has three very busy children, Kaden, Talia and Ashaya.



Shane Walkey



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# DIRECTOR PROFILE – Mike Gosselin

**M**ike began his career in the wastewater field after graduating from the Water Technology Program at Alberta's Westerra Institute of Technology. He spent four years as an operator at the Capital Regional Sewage Treatment Plant outside Edmonton in Fort Saskatchewan. Mike heard the call and moved out to BC to spend a further four years as an operator at the GVRD's Iona Island Wastewater Treatment Plant in Vancouver. An opening at the Kelowna Wastewater Treatment Facility brought him to the Okanagan eleven years ago.

Mike's current duties at the Kelowna WWTF include CDACS design and implementation, PC trouble shooting, ACAD drawings, PLC trouble shooting and programming, portable gas detector training and repair and operations relief. He is certified as a wastewater treatment Level III operator.

Mike owns two horses and enjoys camping, fishing and snowmobiling. He also operates a small business in computer training, repairs and consulting. He has two stepdaughters, aged three and six; and is getting married on July 3rd this year!

Mike was elected to the EOCP Board in May 2003, and assists with the newsletter and also on the sub-committee reviewing CEU requirements.



Mike Gosselin

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# BCWWA 32nd Annual Conference and Exhibition Whistler, BC – May 1-5, 2004

## OPERATOR'S PROGRAM

### TWO DAYS OF OPERATOR CHALLENGE EVENTS & EDUCATIONAL WORKSHOPS

Chartered buses will leave Lower Mainland (as long as numbers warrant) on Sunday morning for Whistler and return on Tuesday afternoon. A pre-packaged program includes Waste Water Plant tour, Top Ops Competition, Specialty Pumping System Challenge, Four Operator Workshops, AGM Registration (including all associated meals and refreshments), as well as two nights hotel accommodation (sharing) and breakfast at The Crystal Lodge all for \$399.

### OPERATOR'S CHALLENGE

Two days of Action Packed Events  
Monday, May 3rd – Tuesday, May 4th

### TOP OPS

Three member teams (you may enter a full team from the same utility or enter individually and teams will be formed) compete in a fast paced skill testing question and answer format on topics derived from the Environmental Operators Certification Program's question databank. Operators with water and wastewater experience will test their knowledge in a "friendly competition" against their peers on rapid-fire questions posed by an EOCP moderator and a three member EOCP judging committee will validate responses.

Teams will compete for trophies and awards to be presented on Tuesday, May 4th.

### SPECIALTY PUMPING SYSTEM CHALLENGE

Three operators (same utility or enter individually) test their team's maintenance skill, dexterity and knowledge pertaining to a Flygt Dry Pit Submersible pumping system.

With emphasis on safety, skill and time related efficiency, each three member team will be required to properly isolate all energy sources, perform maintenance functions including removal, installation and rebuilding or upgrading of various parts. An O&M manual, including specifications, and data on wet well size, run times, cycles, and inlet elevation will be provided in order to properly perform designated tasks along with completion of a work sheet.

ITT Flygt graciously agreed to provide their model 3102 pump as the prototype for teams to use in this competition.

The pump will be available either by contacting the BCWWA office and arranging shipping prior to the conference or in Whistler on Sunday, May 2nd from 3:00pm – 6:00pm so that teams can practice in advance of AGM competition on the

following Monday and Tuesday. GVRD's Water Environmental Federation team will be there to provide "pointers" and advice on how to take apart and re-assemble the pumping system. This team will also perform a "demonstration only" event but not compete with the other first year teams.

## OPERATOR'S WORKSHOPS

### THERE WILL BE FOUR SPECIALTY WORKSHOPS ON: WATER TREATMENT – WHAT IS THE MULTI-BARRIER APPROACH?

The phrase multi-barrier approach has become a buzz-phrase in recent years and a variety of definitions have surfaced depending on the discipline and perspective of the source. This presentation examines the term from various frames of reference and then focuses on what it means to the water treatment operator in the context of operating systems, process optimization and best practices.

### SUPERVISORY SKILLS FOR OPERATORS – THE LEADER WITHIN

We have all reflected on the qualities and characteristics that make good leaders and perhaps the motivating factors that inspire people to be leaders and practice their skills in supervisory positions. It is widely recognized that old-style, dictatorial management techniques don't work in today's world. In addition, being a leader in the water and wastewater Industry is becoming an ever more complicated task, with greater responsibility and its attendant challenges. This interactive session examines what skills are requested to be good leaders and provides an overview of how to meet the varied challenges of the future

### INSIGHTS INTO THE ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM (EOCP)

This workshop is a must for any operator wanting to learn more about the EOCP and how it operates. An EOCP Board member will outline the requirements for system classification and operator certification, as well as provide useful information on what you need to do to pass an EOCP exam.

### WASTEWATER COLLECTION – CLOSED CIRCUIT TELEVISION INSPECTION

This workshop will cover operations of a wastewater collection system including:

- advanced design theory and practical applications

*Continued on page 13*

## PROJECT NEWS

### CITY OF VERNON: WASTEWATER TREATMENT FACILITY



The existing wastewater plant is on the left with the new construction on the right.

**C**onstruction of the City of Vernon's new \$29.7 million, state of the art Biological Nutrient Removal (BNR) wastewater treatment plant began in September 2002 and should be complete by the fall of 2004. The new facility replaces the city's aging trickling filter plant, parts of which have been in service since the 1930's. The new plant is located on the same site as the existing plant.

A new influent sewer will be constructed to carry influent to a new headworks. Following coarse screening and grit removal, influent will enter a new pump station where it will be pumped across Vernon Creek to one of three identical B.N.R. trains, each consisting of a primary clarifier, bioreactor and secondary clarifier. Each B.N.R. train will have a capacity of 9,000 m<sup>3</sup>/day, for a total plant capacity of 27,000 m<sup>3</sup>/day.

Effluent from the secondary clarifiers can be sent directly to the High Lift Pump Station to be pumped to MacKay Reservoir, or to new filtration and ultraviolet (UV) disinfection facilities. The filtration and UV disinfection facilities will allow the plant to produce effluent suitable for direct irrigation or discharge to Okanagan Lake if necessary. The new facility will be extremely flexible, depending on the ultimate destination and use of the effluent produced. The city remains committed to the beneficial reuse of reclaimed water.

A new administration building, workshop, fermenter, odour control works and dewatering facilities are also being constructed.

Odour control has been a primary focus of the project since the beginning. Numerous steps have been taken to minimize the production of odours, and to collect and treat foul air.

The City of Vernon and the District of Coldstream are partners in this project. The Sanitary Sewer Advisory Committee was formed to oversee construction of the facility. The committee is made up of political representatives from both the City of Vernon

and the District of Coldstream. Stantec is the project designer with Maple Reinders providing project management services.

Construction of the new facility reflects the regions commitment to providing quality infrastructure for its citizens.

—Maitland Smith  
Chief Operator

City of Vernon Water Reclamation Plant

### VILLAGE OF TELKWA: WATER TREATMENT PLANT

**T**he Village of Telkwa is a small rural municipality located in northwestern British Columbia, along the Yellowhead Highway 16, with approximately 1,400 people. The new water treatment plant was designed by Dayton & Knight Ltd. to treat water with high concentration of suspended sediments, fecal coliforms and colour. The plant was designed to treat water from the Bulkley River in a cost-effective manner and initially produce 1,700 m<sup>3</sup>/day of treated water with allowance for future expansion, for a total design capacity of about 3,400 m<sup>3</sup>/day. The water treatment plant is currently under construction and consists of mechanical flocculation, clarification by tube settler and dual media filtration. It also includes primary disinfection with ultraviolet (UV), secondary disinfection with sodium hypochlorite and a new river intake system with submersible pumps.

—Gerson Neiva, P.Eng.  
Project Engineer  
Dayton & Knight Ltd.



Telkwa Water Treatment Plant Construction

## PROJECT NEWS

### CITY OF KAMLOOPS: WATER TREATMENT PLANT

In April 2003, the City of Kamloops began construction on what will become the largest and most complex ultrafiltration membrane water treatment facility in North America, the River Street Water Treatment Plant. What started out as empty field has now progressed substantially over the past 10 months and is now about 50% complete. Commissioning is set to start in September of 2004. The plant is expected to be fully operational and online by the end of December this year, supplying the citizens of Kamloops with high quality of drinking water.

This facility will be constructed according to LEED criteria (Leadership in Energy and Environmental Design). The River Street Water Treatment Plant will demonstrate the commitment by the City of Kamloops towards sustainability and help promote green technology.

The University College of the Cariboo, Zenon Environmental and the City of Kamloops are also developing a unique Centre for Safe Water Excellence integrated as part of the building. It will include several classrooms, laboratory and both full-scale membrane and conventional pilot systems. The purpose of centre will be to deliver training to both existing and future operations staff across the world in the field of water and waste treatment. This program will better assist them in obtaining higher levels of certification in their respected areas. Look for the program to be launched towards the end of 2004.

The plant is expected to employ 5 operations staff and one instrument person. Employment opportunities will be posted in early summer 2004, with EOCP Level III Water Treatment Certification being the minimum standard for recruitment.

For further information, please contact: [dteasdale@city.kamloops.bc.ca](mailto:dteasdale@city.kamloops.bc.ca)

—David P. Teasdale  
Utility Treatment Plants Supervisor  
City of Kamloops BC



April 17, 2003



October 1, 2003



January 17, 2004

### BCWWA 32nd Annual Conference and Exhibition – Whistler, BC – May 1-5, 2004 *Continued from page 11*

- use of smoke and dye testing to troubleshoot sewer systems
- CCTV inspection and its role in infrastructure management

### CONTINUING EDUCATION UNITS (CEUS) WILL BE AVAILABLE

Certified Operators attending the conference will receive 1.2 CEUs or 0.6 CEUs for attending the workshops. Please check at the Certification (EOCP) booth for CEU credit forms, have them

signed by the Session Chairs and submit at the address shown on the form.

Operator Certification Exams may be written on Tuesday, May 4th, 2004 from 1:00pm – 4:00pm in the Boardroom in the Convention Centre. Operators must apply to the EOCP by written application complete with job description no later than April 15.

# NEW MEMBERS AND UPGRADES

Congratulations to the following new operators and those operators who have upgraded their certification level.  
October 1, 2003 to December 31, 2003

CERT. NO.	NAME		CITY	CERT. NO.	NAME		CITY
3407	Acton, Dave	WWC I	<i>Vernon, BC</i>	4399	Dewhirst, Robert	SWS	<i>Prince George, BC</i>
3568	Alexander, Blain	WD I	<i>Taylor, BC</i>	4474	El-Baghdady, John	IWWT I	<i>New Westminster, BC</i>
593	Allen, Lawrence	CH	<i>Chilliwack, BC</i>	4476	Elia, Gino	OIT WD	<i>Fernie, BC</i>
4487	Allingham, Andrew	OIT WWT	<i>Oyama, BC</i>	1933	Emery, Kent	CH	<i>Abbotsford, BC</i>
4119	Amato, Giuseppe (Joe)	WWC II	<i>Vancouver, BC</i>	4415	Esau, Darrell	SWS	<i>Chetwynd, BC</i>
3931	Anderson, Michael	WWC II	<i>Nanaimo, BC</i>	4467	Fairclough, Jason	SWS	<i>Carmacks, YT</i>
4469	Andre, Blair	SWS	<i>Mayo, YT</i>	4447	Finn, Mike	SWS	<i>Field, BC</i>
4375	Arding, David	SWS	<i>Mount Currie, BC</i>	4448	Flagel, Terrance	SWS	<i>Castlegar, BC</i>
4410	Badger, Jeff	SWS	<i>Cecil Lake, BC</i>	4400	Fonda, Lester	SWS	<i>Fort St. James, BC</i>
4478	Balducci, Patrick	WD I	<i>Langley, BC</i>	4400	Fonda, Lester	SWWS-L	<i>Fort St. James, BC</i>
4044	Bashaw, Edwin	CH	<i>Kelowna, BC</i>	4466	Ford, Donald	SWS	<i>Whitehorse, YT</i>
4044	Bashaw, Edwin	WT II	<i>Kelowna, BC</i>	3456	Frank, Garth	WWC I	<i>Whitehorse, YT</i>
4411	Bedard, Ronald	SWS	<i>Spruce Grove, BC</i>	4188	Franks, Terry	CH	<i>Dawson City, Yukon</i>
4376	Bennett, Fred	SWS	<i>Savona, BC</i>	3146	Freeman, Neale	WD II	<i>Duncan, BC</i>
4412	Bergen, George	SWS	<i>Fort St. John, BC</i>	4417	Garrett, Keith	SWS	<i>Fort St. John, BC</i>
3454	Bernier, Ed	WWC II	<i>Whitehorse, YT</i>	4032	Gaudet, Daniel	WT II	<i>Brackendale, BC</i>
4468	Billy, Terry	SWS	<i>Carmacks, YT</i>	4032	Gaudet, Daniel	MWWT II	<i>Brackendale, BC</i>
792	Bjorgaard, Darryl	WWC I	<i>Thornhill, BC</i>	4473	Geske, Siegfried	SWWS-L	<i>Haines Junction, YT</i>
4457	Bourne, Ian	SWS	<i>Nelson, BC</i>	3862	Giesbrecht, George	WWC I	<i>Williams Lake, BC</i>
4445	Brook, Sid	SWS	<i>Field, BC</i>	4471	Glynn, Michael	SWS	<i>Dawson City, YT</i>
1416	Bround, Chris	WWC I	<i>New Westminster, BC</i>	4418	Goulet, Gill	SWS	<i>Cecil Lake, BC</i>
4463	Brown, Jacob	SWS	<i>Pelly Crossing, YT</i>	4449	Hall, David	SWS	<i>Cranbrook, BC</i>
4444	Bursey, Wade	SWS	<i>Stewart, BC</i>	4482	Hampton, Gary	OIT WD	<i>Maple Ridge, BC</i>
4479	Callow, John	WD I	<i>Surrey, BC</i>	4450	Hann, Walter	SWS	<i>Radium, BC</i>
3044	Camano, Robert	WD II	<i>Delta, BC</i>	4485	Harshenin, Glen	OIT WWT	<i>Kelowna, BC</i>
1928	Camilli, Keith	WD I	<i>Watson Lake, Yukon</i>	4419	Hartnell, Cheryl	SWS	<i>Dawson Creek, BC</i>
812	Carlson, Norm	CH	<i>Dawson City, Yukon</i>	4420	Hartnell, Timothy	SWS	<i>Dawson Creek, BC</i>
4486	Casler, Marc	OIT WWT	<i>Kelowna, BC</i>	4059	Hawthorne, Mark	CH	<i>Vernon, BC</i>
4446	Chhibber, Anil	SWS	<i>Edmonton, AB</i>	4421	Hesleton, David	SWS	<i>Claresholm, AB</i>
3508	Coles, Vincent	WD II	<i>Nanaimo, BC</i>	4422	Hill, Paul	SWS	<i>Saskatoon, Sask</i>
2050	Connor, Bryce	WT I	<i>Chilliwack, BC</i>	4423	Hofer, Michael	SWS	<i>Farmington, BC</i>
4413	Courvoisier, Francis	SWS	<i>Dawson Creek, BC</i>	3831	Holman, George	SWWS-L	<i>Atlin, BC</i>
4414	Cramp, Gordon	SWS	<i>Chetwynd, BC</i>	4060	Holman, Kevin	CH	<i>Vernon, BC</i>
4398	Crocker, Jennifer	SWS	<i>Burns Lake, BC</i>	4465	Holmes, Dean	SWS	<i>Faro, YT</i>
3302	Cruikshank, Michael	WD II	<i>Surrey, BC</i>	4465	Holmes, Dean	SWWS-L	<i>Faro, YT</i>
4194	Cunningham, Adam	CH	<i>Keremeos, BC</i>	4406	Hopkins, Scott	SWS	<i>Stewart, BC</i>
4331	Daley, Wayne	SWWS-L	<i>Fort St. James, BC</i>	4472	Huebschwerlen, David	SWWS-L	<i>Carcross, YT</i>
4459	David, Carriere	SWWS-M	<i>Grande Prairie, AB</i>	799	Huey, Kevin	WD II	<i>Penticton, BC</i>
4407	Davidson, Michael	SWS	<i>Boston Bar, BC</i>	4124	Hutchinson, Gerry	WWC I	<i>Nanaimo, BC</i>
504	Davie, Michael	WD II	<i>Salmon Arm, BC</i>	4405	Ingram, Lloyd	SWS	<i>Quesnel, BC</i>
4456	Davis, Barry	SWS	<i>Moberly Lake, BC</i>	4210	Inkster, Richard	WT I	<i>Terrace, BC</i>
2090	Deane, Victor	CH	<i>Victoria, BC</i>	4424	Johnson, Lorn	SWS	<i>Fort St. John, BC</i>
4462	Deboer, Gerry	SWS	<i>Prince George, BC</i>	4425	Keen, Valerie	SWS	<i>Fort St. John, BC</i>
4322	Desjarlais, Corey	WT I	<i>Southbank, BC</i>	3132	Kennedy, John	CH	<i>Penticton, BC</i>
1223	DeVuyst, Kerry	WD II	<i>Dawson Creek, BC</i>	3983	Koshey, Daryl	MWWT II	<i>Powell River, BC</i>

# NEW MEMBERS AND UPGRADES

Congratulations to the following new operators and those operators who have upgraded their certification level.  
October 1, 2003 to December 31, 2003

CERT. NO.	NAME		CITY	CERT. NO.	NAME		CITY
3377	Kozub, Jeremy	MWWT II	Lake Country, BC	3592	Ridley, Colin	WT I	Hartley Bay, BC
1846	Kuchtyn, Kevin	WD II	Vancouver, BC	4435	Roberts, Timothy	SWS	Dawson Creek, BC
1846	Kuchtyn, Kevin	WWC I	Vancouver, BC	4451	Ross, Neil	SWS	Field, BC
4426	Lang, Glenn	SWS	Pink Mountain, BC	4403	Routley, Darren	SWS	Williams Lake, BC
4114	Lanigan, Kelly	CH	Whitehorse, Yukon	3621	Rowe, Ernest	SWWS-L	Chetwynd, BC
1570	Laskiwski, Richard	WD I	Surrey, BC	929	Rykers, Henry	MWWT I	Princeton, BC
4377	Laverdure, James	SWS	Lytton, BC	929	Rykers, Henry	WWC II	Princeton, BC
2012	Law, Allan	WT I	Kaslo, BC	4404	Saharchuk, Dennis	SWS	Fort St. James, BC
3026	Laycock, Lyle	WD II	Delta, BC	4404	Saharchuk, Dennis	SWWS-L	Fort St. James, BC
4460	Lee, Thomson	SWS	Prince George, BC	4368	Sampson, Ernie	SWS	Seton Portage, BC
4475	Lepore, Alfredo	MWWT I	Vancouver, BC	4155	Sawatsky, Richard	MWWT I	Prince George, BC
4455	Leslie, Ian	WT I	Vanderhoof, BC	4436	Shepherd, James	SWS	Hudson's Hope, BC
4427	Levac, Marcel	SWS	Fort St. John, BC	1394	Shortt, Brad	SWS	Chetwynd, BC
4428	Levi, Joel	SWS	Hudsons Hope, BC	2038	Simpson, Kyle	WD II	Aldergrove, BC
4481	Lindsay, Jason	WD I	Delta, BC	4409	Sonnenberg, Blaine	SWS	Agassiz, BC
4401	Luff, Gregory	SWS	Quesnel, BC	4438	Sorenson, Kelly	SWS	Montney, BC
4429	Lyth, Steven	SWS	Fort St. John, BC	3120	Stalker, Douglas	MWWT III	Richmond, BC
3562	Manahan, Kelly	SWWS-L	Fort Fraser, BC	2066	Steer, Murray	WD I	Delta, BC
1758	Margetson, Shane	WD I	Surrey, BC	3457	Stoker, Real	WWC II	Whitehorse, YT
4351	Martin, Dexter	SWS	Fort St. James, BC	4477	Terpstra, Bradley	WD I	Penticton, BC
4480	Marton, Peter	WD I	North Vancouver, BC	4437	Thola, Kenneth	SWS	Pouce Coupe, BC
4386	McAvity, Bruce	WD I	Vanderhoof, BC	1617	Thorburn, Brian	WT III	Kelowna, BC
3800	McDonald, Christian	WD II	Pemberton, BC	3441	Thurston, Robert	WD I	Keremeos, BC
4430	McLachlan, Chad	SWS	Fort St. John, BC	4452	Tissington, Melvin	SWS	Creston, BC
1378	McLean, Colin	WT I	Mission, BC	4350	Toews, Rudy	CH	Yarrow, BC
4431	McLeod, Ian	SWS	Dawson Creek, BC	3478	Trautmann, Fred	WD I	Penticton, BC
3102	McLuskey, Kevin	MWWT III	Summerland, BC	4439	Tschetter, Joel	SWS	Farmington, BC
3949	Moilliet, Jim	WWC I	Parksville, BC	4396	Unrau, Brian	OIT WWT	Vernon, BC
4458	Mullett, Jordan	SWWS-L	Carmacks, Yukon	4453	Van Delft, Will	SWS	Kimberley, BC
4458	Mullett, Jordan	SWS	Carmacks, Yukon	725	Vance, Karey	SWS	Field, BC
4402	Munsell, Donald	SWS	Quesnel, BC	4378	Vickery, Frederick	SWS	Lytton, BC
4310	Nickel, Hardy	SWWS-L	Prince George, BC	4454	Voszler, Mark	SWS	Windermere, BC
4461	Nissila, Carol	SWS	Prince George, BC	4464	Wagantall, Kerry	SWWS-L	Faro, YT
4432	Nosek, Ward	SWS	Fort St. John, BC	4464	Wagantall, Kerry	SWS	Faro, YT
1290	O'Connell, Tim	WD II	Coquitlam, BC	1103	Walden, Brent	WWC II	Whitehorse, YT
4408	O'Handley, Roy	SWS	Boston Bar, BC	4484	Wentz, Brent	MWWT I	Duncan, BC
1122	Osborne, Ray	WWC II	Whitehorse, YT	4440	Wheeler, Donald	SWS	Chetwynd, BC
3504	Pay, Rex	WD I	Delta, BC	4441	Wiebe, Cameron	OIT	Charlie Lake, BC
3588	Piguet, Kevin	WD I	Surrey, BC	4442	Wiebe, William	SWS	Montney, BC
4433	Platten, Robert	SWS	Edmonton, AB	4397	Wilcox, Kelly	IWWT I	Dawson Creek, BC
4488	Pontellini, Dany	WWC I	Coquitlam, BC	3313	Wilson, Michael	WD II	Surrey, BC
3686	Potter, Kevin	CH	Salmon Arm, BC	4443	Wolford, Simon	SWS	Fort St. John, BC
1557	Praught, Sylvia	WWC I	Surrey, BC	1313	Zabolotniuk, Bryan	WD II	Surrey, BC
4434	Reschke, Edward	SWS	Hudson's Hope, BC	4379	Zaste, Cliff	SWS	Mount Currie, BC
3737	Ricciuti, Daniel	MWWT I	Summerland, BC				

## NEWLY CLASSIFIED OR UPDATED FACILITIES

Facility No	Facility Name	October 1 – December 31, 2003	Classification / Level	City/Province
188	Agassiz Wastewater Treatment Facility		MWWT III	Agassiz, BC
706	Anglemont Water Utility		SWS	Anglemont, BC
363	Arbutus Ridge Sewage Treatment Facility		MWWT II	Cobble Hill, BC
688	Bastion Mobile Village		SWS	Tappen, BC
493	Black Pines Community Water Distribution System		SWS	Kamloops, BC
708	Blue River Community Water System		SWS	Kamloops, BC
711	Caledonia Mobile Home Park		SWS	Prince George, BC
682	Caravans West Resort Ltd.		MWWT III	Scotch Creek, BC
705	Celista Water Utility		SWS	Anglemont, BC
703	Chapman Creek Water Treatment Plant		WT IV	Sechelt, BC
209	City of Dawson Creek Wastewater		MWWT II	Dawson Creek, BC
218	City of Fernie Sewage Treatment Facility		MWWT I	Fernie, BC
316	City of Grand Forks Wastewater Treatment		MWWT II	Grand Forks, BC
75	City of Kamloops Wastewater Treatment		MWWT III	Kamloops, BC
143	City of Prince George Water Distribution System		WD IV	Prince George, BC
61	City of Richmond Water Distribution System		WD IV	Richmond, BC
10	City of Terrace Wastewater Treatment		MWWT I	Terrace, BC
713	Coal Harbour Wastewater Treatment Plant		SWWS-L	Port McNeill, BC
717	District of Campbell River Water Distribution System		WD IV	Campbell River, BC
224	District of Hope Pollution Control Centre		MWWT I	Hope, BC
154	District of New Hazelton Sewage		MWWT I	New Hazelton, BC
38	District of Salmon Arm Pollution Control		MWWT IV	Salmon Arm, BC
49	District of Sechelt Wastewater Treatment		MWWT II	Sechelt, BC
701	District of Tofino Wastewater Collection System		WWC II	Tofino, BC
236	District of Vanderhoof Lagoon		MWWT I	Vanderhoof, BC
707	Evergreen Estates Community Water System		SWS	Kamloops, BC
718	Fanny Bay Community Hall Water System		SWS	Fanny Bay, BC
723	Fort St. James Forestry		SWS	Fort St James, BC
47	French Creek Pollution Control Centre		MWWT IV	Parksville, BC
686	George Pringle Memorial Camp Society		SWS	Shawnigan Lake, BC
371	Gitsegukla Sewage Treatment Facility		MWWT II	Gitsegukla, BC
721	Lakahamen First Nation Water System		SWS	Deroche, BC
222	Lakeview Wastewater Treatment Facility		MWWT I	Campbell River, BC
719	Melrose Strata Water		SWS	Qualicum Beach, BC
720	Mount Park Estates Improvement District		SWS	Mayne Island, BC
351	Nanoose Water Pollution Control Centre		MWWT II	Nanoose, BC
697	Nimmo Bay Resort		SWWS-M	Port McNeill, BC
742	Nimmo Bay Resort		SWS	Port McNeill, BC
716	Otter Lake Water Company		SWS	Tulameen, BC
694	Paddy Ryan Lakes Reservoir		WD II	Invermere, BC
699	Prince George Strata Corporation #PG152		SWS	Prince George, BC
709	Pritchard Community Water System		SWS	Kamloops, BC
696	Pritchard Waterworks District		SWS	Pritchard, BC
712	Quesnel River Pulp		SWS	Quesnel, BC
695	Silver Ridge Estates Small Water System		SWS	Hope, BC
700	Silvermere Water Treatment Plant		SWS	Mission, BC
704	Sion Improvement District Water System		WD II	Grand Forks, BC
304	Snug Cove Sewage Treatment Facility		MWWT II	Bowen Island, BC
690	Sointula Water Works District		SWS	Sointula, BC
687	Sunnay Acres Mobile Home Park		SWS	Winfield, BC
317	Town of Oliver Wastewater Treatment		MWWT II	Oliver, BC
312	Town of Osoyoos Water Distribution System		WD II	Osoyoos, BC



## NEWLY CLASSIFIED OR UPDATED FACILITIES

Facility No	Facility Name	October 1 – December 31, 2003	Classification / Level	City/Province
9	Town of Smithers Wastewater Treatment		MWWT I	Smithers, BC
334	Township of Langley Water Distribution System		WD IV	Langley, BC
23	Townsite Wastewater Treatment Facility		MWWT II	Powell River, BC
684	Village of Burns Lake Water Distribution		WD II	Burns Lake, BC
168	Village of Gold River Wastewater		MWWT II	Gold River, BC
338	Village of Lumby Wastewater Treatment		MWWT II	Lumby, BC
237	Village of Nakusp Wastewater Treatment		MWWT I	Nakusp, BC
43	Village of Tahsis North Wastewater		MWWT I	Tahsis, BC
366	Village of Tahsis South Wastewater		MWWT I	Tahsis, BC
301	Village of Valemount Sewage Treatment		MWWT II	Valemont, BC
710	Walhachin Community Water System		SWS	Kamloops, BC
691	Western Forest Products – Holberg Operation		SWS	Holberg, BC
22	Westview Pollution Control Centre		MWWT III	Powell River, BC
85	Whistler Wastewater Treatment Facility		MWWT IV	Whistler, BC
724	White Rock Utilities Limited		WD III	White Rock, BC
24	Wildwood Lagoon		MWWT I	Powell River, BC
735	Woss Wastewater System		SWWS-L	Port McNeill, BC

## New Continuing Education Requirements (continued from front cover)

based on 2 year terms instead of the current 1 year. With the new requirements taking effect on January 1, 2005, the above continuing education will be required between then and January 1, 2007, and every 2 years thereafter. When operators pay their dues late in 2006, they must list the applicable continuing education they have taken since January 1, 2005. The number of hours must meet the above requirements in order to remain a certified operator.

General guidelines have been developed to identify which training will be acceptable to meet the new requirements. The term “continuing education unit” is defined as ten contact hours of participation in an organized, continuing education experience under responsible sponsorship, capable direction, and qualified instruction. Continuing education must therefore conform to this definition, and be relevant to the certificate to which it applies. Examples of continuing education that will qualify include:

- BC Water and Waste Association courses, seminars and workshops
- BC Water and Waste Association annual conference
- Correspondence courses such as those offered by California State University, Sacramento
- First Aid training
- Computer training
- Regional college courses designed for operators
- Supplier or other agency on-the-job training
- Workshops and seminars designed for operators
- Chlorine or other disinfection courses

- Safety training such as WHMIS, WCB, confined spaces, including on-the-job emergency procedures for chlorine, etc.
- Backflow prevention courses
- Relevant laboratory courses
- On-line (Internet based) training related to operators

Any other training that meets the definition for continuing education

Since many operators hold more than one certificate, the continuing education requirement will not require those operators to take the required number of hours for each certificate they hold. A minimum of 25% of the requirement must apply to each certificate held. For example if an operator holds Wastewater Treatment Level I and Wastewater Collection Level I certificates, he/she will be required to show a total of 24 hours of continuing education per two year period, of which a minimum of 6 hours must be in wastewater treatment and a minimum of 6 hours must be in wastewater collection training. The balance of 12 hours per 2 years can be made up of other related and approved training that is common to both certificates.

The new continuing education requirements do not apply to certification in chlorine handling, independent systems, or operator-in-training certificates.

Should certified operators fail to take the required amount of continuing education, their certification will be revoked until the requirements are met.

Operators wishing to discuss this new requirement with the EOCP are encouraged to call the office at the phone numbers listed elsewhere in this Digest, or e-mail to [eocp@eocp.org](mailto:eocp@eocp.org)

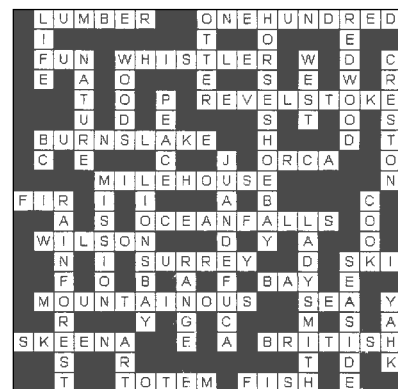
# CERTIFICATION QUIZ – WASTEWATER TREATMENT

These questions are representative of those found in actual certification exams.

1. **Wastewater solids are commonly classed as**
  - a) inorganic and dissolved
  - b) inorganic and suspended
  - c) inorganic and organic
  - d) organic and suspended
  
2. **The purpose of primary sedimentation is to remove**
  - a) rags, cans and large debris
  - b) sand and gravel
  - c) settleable and floatable material
  - d) suspended and dissolved solids
  
3. **Minimum wastewater flow typically occurs closest to**
  - a) 4 am
  - b) Noon
  - c) 6 pm
  - d) 9 am
  
4. **What is one of the primary gasses that are formed during the process of anaerobic digestion?**
  
5. **Both the maximum and average flow rates of influent into a wastewater treatment plant are important for its operation. What is another work for average?**
  
6. **Influent coming into a wastewater treatment plant is normally what percent solids?**
  - a) <1.0%
  - b) >1.0%
  - c) <0.1%
  - d) >10%
  
7. **What temperature should an incubator be set for a BOD test?**
  - a) 10 degrees C
  - b) 15 degrees C
  - c) 20 degrees C
  - d) 25 degrees C
  
8. **How many milliliters of each nutrient are required to make 5 litres of diluent water for a BOD test?**
  - a) 1 mL
  - b) 2 mL
  - c) 5 mL
  - d) 10 mL
  
9. **What should the acids/alkalinity relationship be in an anaerobic digester?**
  - a) 0.05/1
  - b) 0.5/1
  - c) 0.1/1
  - d) 1/1
  
10. **When running an anaerobic digester in a mesophilic stage, what should the temperature range be?**
  - a) 10 to 18 degrees C
  - b) 20 to 28 degrees C
  - c) 30 to 38 degrees C
  - d) 40 to 48 degrees C

Answers are on page 8.

Teresa Daoust from Vernon wins an EOCP coffee mug for sending in the correct answers from last issue's puzzle.

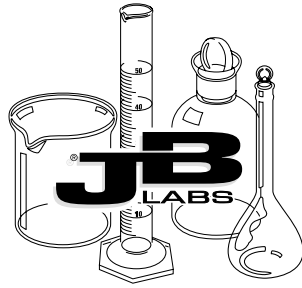


**JB Laboratories Ltd.**  
*water/wastewaters*

Toll Free: 866-385-6112  
Tel: (250) 385-6112  
Fax: (250) 382-6364

[jblabs@islandnet.com](mailto:jblabs@islandnet.com)  
[www.jblabs.ca](http://www.jblabs.ca)

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**Exercise "RESTRAINT"**

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# UPCOMING EVENTS



## BC WATER & WASTE ASSOCIATION SPRING 2004 CALENDAR


DATE	COURSE	LOCATION
March 15-19	Wastewater Treatment V	Lulu Island, WWT Plant
April 13-14	Small Water Systems	Kitimat
April 15-16	Small Water Systems	Kitimat
April 20-21, 2004	Small Water Systems	Fort St. John
April 26-27	Small Water Systems	Chilliwack
May 1-5	BCWWA Annual Conference & Exhibition	Whistler
May 31-June 4	Water Distribution I	Simon Fraser University
	Water Distribution II	
	Wastewater Collection I	
	Wastewater Collection II	
	Wastewater Treatment II/III	
	Chlorine Handling	
	Cross Connection Control	
	Supervisory Skills for Operators (May 31 – June 2)	

Please phone BCWWA at (604) 433-4389 for information on the above courses or check their website at [www.bcwwa.org](http://www.bcwwa.org)

## EOCP CERTIFICATION EXAMINATIONS

Operators wishing to write certification exams must apply to the EOCP by written application complete with job description no later than two weeks prior to the exam session. Exam fees are payable to the EOCP office before the time of writing and may be paid by Visa or Mastercard.

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