2014 GNWT Report on Drinking Water

DECEMBER 2014

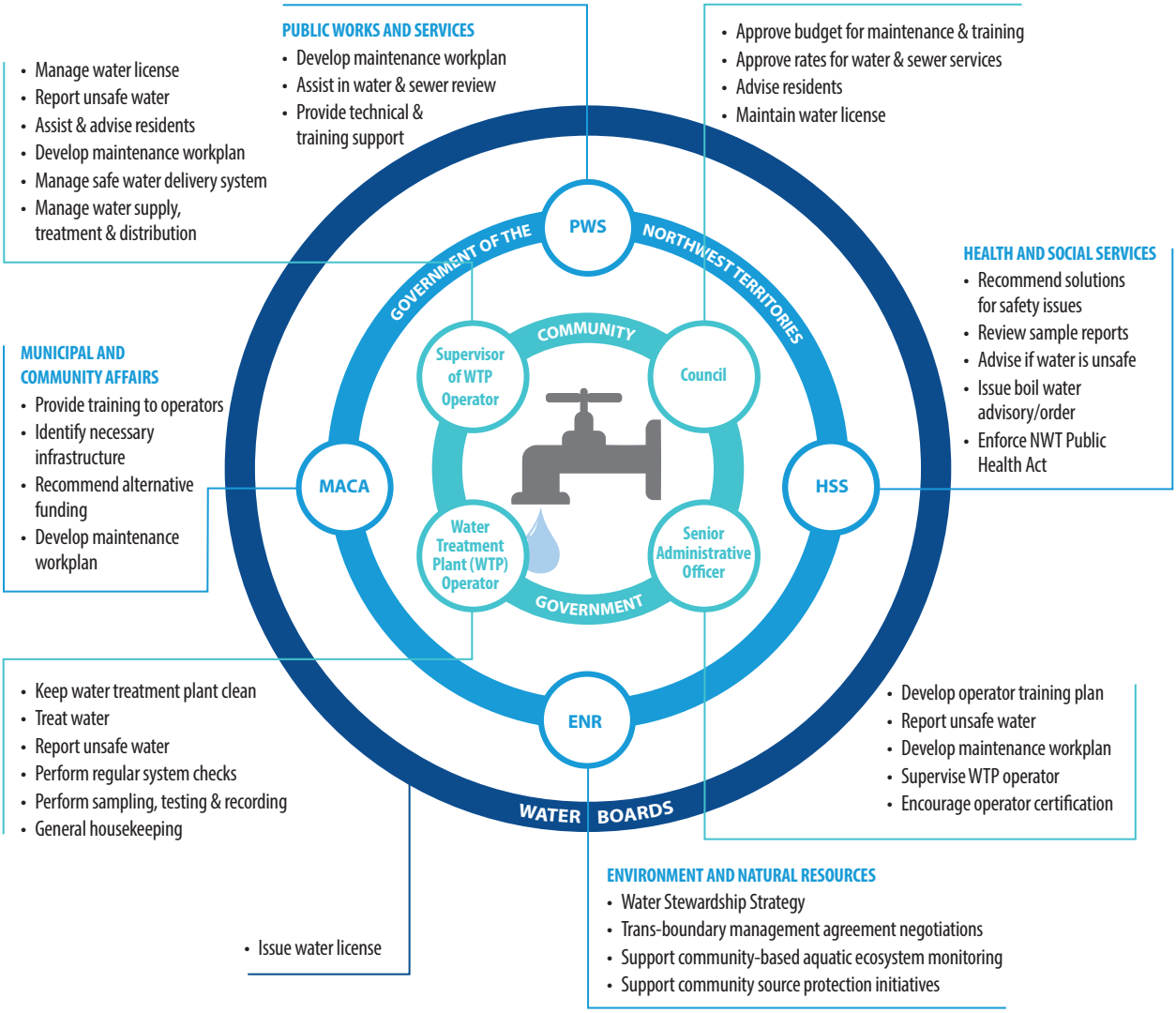
It takes all levels of government to protect NWT water quality

Drinking water is strictly regulated in the Northwest Territories (NWT) to ensure it is of good quality and safe for people to drink. The NWT has pristine source water. From source water to tap, all levels of government have measures in place to ensure drinking water is safe. These measures include land and water use restrictions in watersheds, drinking water treatment, water quality testing and monitoring, public health inspections, circuit rider training, and water plant operator training and certification. The Public Health Act and Water Supply System Regulations set the standards for drinking water systems. The Act and Regulations adopt the national Guidelines for Canadian Drinking Water Quality as the standard for drinking water quality in the NWT.

All drinking water is treated in a water treatment plant to ensure it is safe. Treatment methods differ depending on the quality of the source water. For example, the need for filtration and type of filtration system may differ depending on the turbidity level (degree of cloudiness from particles). Treatment methods can include filtration, disinfection with UV light, and disinfection with chlorine. In all cases, drinking water must be treated with chlorine to ensure it is disinfected. To be considered safe, a minimal level of chlorine is required throughout the water distribution system to protect against bacteria and viruses. Sampling, testing, and monitoring drinking water happens before it enters the water treatment plant, in the treatment plant, when the water leaves the plant, and in the community.

The most important way of monitoring water quality is through daily tests for chlorine and turbidity in the treated water. These tests are done at the water treatment plant. If these results are satisfactory and the treatment plant is operating as designed, the water will be considered safe. The weekly log sheets for chlorine and turbidity test results are an important tool used by Environmental Health Officers (EHOs) with Health and Social Services to ensure that community drinking water is safe for consumption.

DRINKING WATER ROLES AND RESPONSIBILITIES



As a secondary means to verify that the water is safe, bacteriological samples are collected weekly by the water treatment plant operator or designated person in the community. These samples are shipped to a laboratory or tested on site if the proper equipment and training are in place.

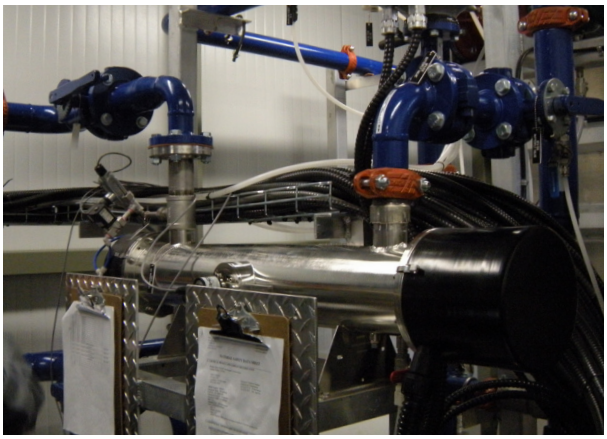
In addition, both raw water and treated water samples are collected yearly for complete chemical and physical analysis. Samples are collected either by the EHO with the water treatment plant operator or by trained local staff without the assistance of the EHO.

Community governments are responsible for ensuring the minimum required sampling is completed. EHOs make sure that the required sampling is done. Where a community fails to submit the required samples or test results, the water treatment plant operator is notified by the EHO. If

a bacteriological sample is missed it is considered a violation; however, it only means there was no secondary verification test and not that the water necessarily is unsafe.

The EHO also confirms if chlorine and turbidity tests were done and addresses any deficiencies. Deficiencies are sometimes the result of flight interruptions, bad weather, or other legitimate reasons. Unexplained deficiencies are followed-up in writing by fax, e-mail or letter from the EHO to the Senior Administrative Officer.

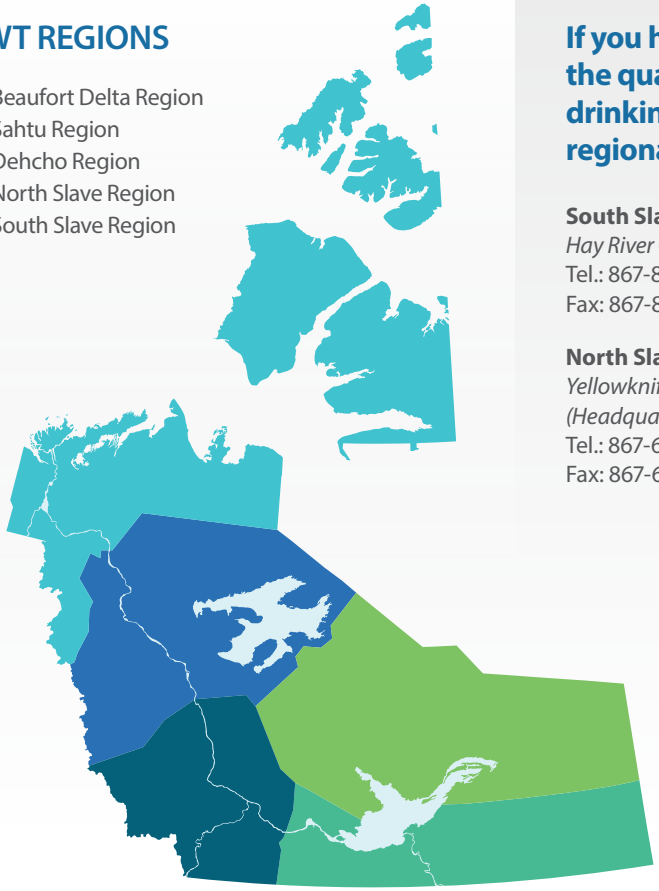
The Office of the Chief Public Health Officer has the authority to issue a Drinking Water Advisory if the community's drinking water is unsafe to drink or if it cannot be confirmed that it is safe to drink. ■



UV reactors in the Uluhaktok Water Treatment Plant disinfect water for the community.

NWT REGIONS

- Beaufort Delta Region
- Sahtu Region
- Dehcho Region
- North Slave Region
- South Slave Region



If you have any concerns with the quality of your community's drinking water please contact your regional EHO at:

South Slave
Hay River Office
Tel.: 867-874-6596
Fax: 867-874-7198

Beaufort Delta/Sahtu
Inuvik Office
Tel.: 867-777-4841
Tel.: 867-777-4840
Fax: 867-777-4842

North Slave/Deh Cho
Yellowknife Office
(Headquarters)
Tel.: 867-669-8979
Fax: 867-669-7517

NWT Water Stewardship Strategy

Leianna McNeely of Fort Good Hope takes a water sample as a part of the community based monitoring program.

In 2010, *Northern Voices, Northern Waters: the NWT Water Stewardship Strategy* was released in response to Northerners' growing concerns about their water. In May 2011, the *NWT Water Stewardship: A Plan for Action 2011-2015* was released to support the implementation of the Strategy. The Action Plan expands on the keys to success outlined in the Strategy by designating lead agencies and deliverable dates for each action item. Both the Strategy and the Action Plan were developed in collaboration with NWT water partners, including the Aboriginal Steering Committee and Aboriginal leadership, communities, federal and territorial governments, regulatory boards, environmental non-government organizations and industry.

Of the numerous keys to success identified in the strategy and action plan, the prominent activities currently underway that work towards keeping NWT drinking water clean are:

- Source water protection and mapping;
- Community-based aquatic monitoring; and,
- Developing partnerships.

Mapping and Protecting Community Public Water Supply Sources

People who live and work in communities are in the best position to identify what water values are important to them, including those related to water quality and quantity, and the aquatic ecosystem health of their watershed.

ENR is working with communities to help identify local water values that may be at risk from activities taking place on the land. Residents and officials can make informed decisions, such as whether additional protective measures may be necessary, when they are knowledgable about the lakes and rivers that are a part of the drinking water supply watershed. This includes being aware of which part of the watershed may be affected on the land and in the water bodies. When residents and officials are knowledgeable about the lakes and rivers that are part of their drinking water supply watershed, and are aware of which parts of that watershed may be affected by activities on the land or in water bodies, they can make informed decisions, such as whether additional protective measures may be necessary.

Source water is raw surface water (e.g. rivers or lakes) or groundwater that supplies the community drinking water systems. The term "source water protection" refers to a planning and management program within a watershed with a specific goal of protecting source water quality. The goal of the program is to reduce the risk of drinking water contamination by building in serial barriers, within a water management system. Source water protection is the first barrier in the to drinking water management.

Trout Lake Water Plant Operator Terry Corothers prepares citric acid for a chemical clean of the membrane filters.

The Water Strategy identifies source water protection as a key to success and supports the development of community source water protection plans. The GNWT worked together with Dr. Robert Patrick (University of Saskatchewan) to develop a draft Source Water Assessment and Protection (SWAP) Guidance Document. The guidance document can be used by northern communities to create source water protection plans that are tailored to meet their community's needs. Dr. Patrick developed the document after travelling to Fort Smith, Fort Resolution, Yellowknife, Behchokò, Inuvik and Aklavik, where he met with key source water protection stakeholders to identify community concerns.

The document went out to a wide variety of NWT source water protection stakeholders for review and revision.

The guidance document and workbook are available on the NWT Water Stewardship Website at: http://nwtwaterstewardship.ca/?q=swprotection.

In early 2012, ENR partnered with Dr. Patrick and source water protection experts, Leslie Collins and Craig Murray (Trent University Institute for Watershed Science & Indigenous Environmental Studies Department), to provide community workshops on developing source water protection plans.

ENR has created community catchment maps to support source water protection planning initiatives in communities. These maps are currently available for each NWT community at: http://www.geomatics.gov.nt.ca/maps.aspx?i=8.

For more information about source water protection planning, or if your community is interested in developing a source water plan, contact the Water Resources Division of ENR at nwtwaterstrategy@ gov.nt.ca.

Community-based Monitoring and Developing Partnerships

One of the main goals of the Water Strategy is for all water partners, including communities, Aboriginal groups, government agencies and academics to work together to realize the vision of the strategy. Work that is currently underway regarding source water protection is part of the implementation of the strategy.

An important initiative under the Strategy is to

support communities in becoming more involved in water stewardship and aquatic monitoring by developing community-based monitoring programs. This was identified as important by communities and water partners during the development of the Strategy. As part of this initiative, ENR developed an NWT approach to community-based monitoring that addresses community concerns and links western science and traditional and local knowledge. This approach is being used for the Slave River and Delta Partnership and with the communities of Fort Good Hope and Sambaa K'e, who are all developing and implementing collaborative, community-based aquatic ecosystem health monitoring programs.

As part of the community-based monitoring process, community and water partners develop a State of the Knowledge report, which identifies what is known about the aquatic ecosystem, from traditional and local knowledge and western science. Communities and their water partners then conduct a vulnerability assessment and prioritization exercise to identify community questions that can be answered through research and monitoring. The community begins with their top priorities, working in collaboration with water partners from government agencies, academic institutions, environmental groups and others.

In 2010, the Slave River and Delta Partnership was formed with the intent to coordinate and maximize community-based monitoring efforts along the Slave River and Slave River Delta. The partnership includes members of community, territorial, federal, and Aboriginal groups and governments, environmental non-governmental organizations, and academics.

The Partnership successfully applied for Cumulative Impact Monitoring Program (CIMP) funding for the 2011/2012 cycle. This funding was used to create a report that captures knowledge from traditional and western scientific sources. Funding was also used to conduct a vulnerability assessment, prioritization exercise, and a contaminants/sediment core study on a Slave River Delta lake. Since then, a partnership with Dr. Paul Jones (University of Saskatchewan) was established to conduct fish health studies, undertake a muskrat, mink, hare and beaver health study and monitor water quality on the Slave River, Delta and Great Slave Lake.

For more information on community-based monitoring partnerships, please contact ENR's Water Resources Division at nwtwaterstrategy@gov.nt.ca. The Water Strategy and Action Plan can be viewed online at: http://nwtwaterstewardship.ca/?q=introduction. ■

Cumulative effects monitoring framework in development

The Slave River and Delta Partnership is currently working on developing an Aboriginal-led, community-based cumulative effects monitoring framework, in partnership with the University of Saskatchewan. Once completed, this framework can be adapted by and used in other interested communities. The Partnership is also working on developing locally and culturally relevant tools to share research and monitoring information with all interested community members, water partners and decision-makers. ■

Capital Programs Updates

NWT community governments are making major investments in drinking water systems to ensure safe drinking water for residents. The GNWT and five communities partnered together to improve their potable water through a treatment plant capital program. The communities of Fort Good Hope, Lutsel K'e, Trout Lake, Jean Marie River, and Wrigley all partnered together to make significant investments in their water treatment systems to improve the safety of their drinking water supply. The project commenced in 2010 and water treatment plants have been installed and are in use in Jean Marie River, Lutsel K'e, Trout Lake and Fort Good Hope. Components for the fifth and final water plant treatment plant arrived in Wrigley on the winter road, and construction is near completion. It will next undergo a commissioning phase of the project prior to being turned over to the community.

All five of the water treatment plants are using membrane ultrafiltration technology to produce water of the highest quality. Ultrafiltration is used to remove potential contaminants from the water in advance of chlorination. These projects were made possible through the Government of Canada's Building Canada Fund.

The City of Yellowknife and Town of Inuvik are also investing significantly in their water systems. Yellowknife awarded a $30 million contract in the summer of 2013 to construct a new water treatment plant. Slated for completion in March 2015, the new plant will be able to treat 20 million litres of water a day and will feature membrane filtration technology. The Town of Inuvik plans to construct a new water treatment plant and year-round intake in 2014.

Paulatuk, Wekweeti, Nahanni Butte and Gameti have all identified water treatment plant upgrade projects on their five-year capital investment plans. MACA will continue to support communities with capital projects as requested.

These current and planned investments help to ensure communities meet the water demands of NWT for years to come and the treatment criteria specified in the Water Supply System Regulations. ■

Rae Lake, water source in Gameti.

Summary of Statistics

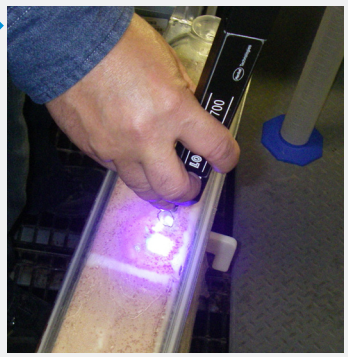
The Public Health Act requires that every water treatment facility provide weekly bacteriological samples as well as annual chemical tests. The Bacteriological samples must be taken from three sources, one from the treated water tank, or truck, and two more from public buildings. In the community, private homes are not tested unless requested by the homeowner due to possible positive results caused by the water storage tank not being cleaned properly.

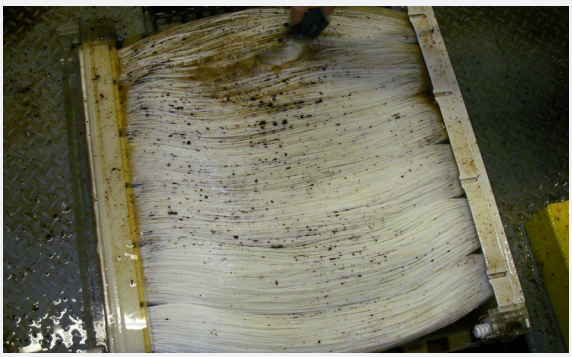
In 2013, 21 of the 32 water treatment facilities completed all of their bacteriological samples. These samples can be done either in-house or using an approved lab, however they are very time sensitive and need to be processed within 24 hours of being collected. Some logistical issues can arise from the remote communities and as a result some samples do not get analyzed and the community has no record for that week. Out of the 11 communities that missed their required amount of samples five of them had collected over 75% of the required number, the remaining six communities have been working towards meeting requirements and have received training on how to properly take the samples and either ship them to the nearest lab or analyze them in-house and send the results to their assigned Environmental Health Officer (EHO).

In 2013, all communities met the requirement for their annual chemical sample. A full set of chemical water samples is taken annually according to specifications from the Department of Health and Social Services. These results can be found in the online water quality database within the Municipal and Community Affairs website drinking water section. ■

Top, left to right: Testing for residual aluminum at the Trout Lake Water Treatment Plant; Vincent Tam weighing out polymer for mixing at the Fort Resolution Water Treatment Plant.

Bottom, left to right: Using Ultraviolet light and resin to repair membrane fibers at the Trout Lake Water treatment plant; Cleaning the membrane filters at the Trout Lake Water Treatment Plant.





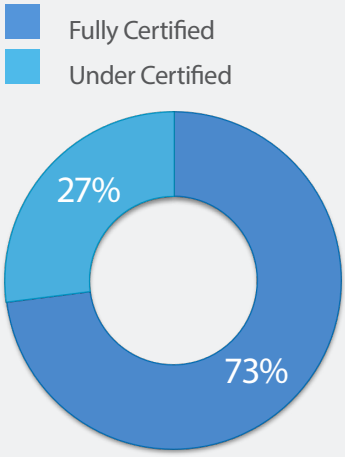
Operator Certification

In the Northwest Territories, water and wastewater plant operators are certified through the Association of Boards of Certification (ABC) with courses provided through the Department of Municipal and Community Affairs School of Community Government. ABC certification is used by all jurisdictions in Canada that require their water plant operators to be certified. Courses are offered annually in different communities to accommodate travel schedules of the community staff. To find a copy of the training calendar, contact your regional Municipal and Community Affairs Office or check the School of Community Government section at: http://www.maca.gov.nt.ca/events.

Along with training through the School of Community Government, potential operators can also achieve certification through accredited training institutions throughout Canada and apply to have the certification transferred to the NWT through the GNWT certification committee. Half of the NWT operators who are not certified to their plant's class level are from recently upgraded plants. Those operators are currently working on the plant experience required for certification. ■

SYSTEM CLASS	EDUCATIONAL REQUIREMENT
Small System	Grade 10 plus 6 months experience and 70% on the Small Systems exam
Class I	Grade 12 plus one year experience at a Class I plant plus 70% on the Class I exam
Class II	Grade 12 plus two years' experience in a Class II plant plus 70% on the Class II exam
Class III	Grade 12 plus three years' experience in a Class III plant plus 70% on the Class III exam

OPERATOR CERTIFICATION TO PLANT LEVEL



Gibson Kudlak operating the water treatment plant in Ulukhaktok.

The GNWT Circuit Rider Program

Since 2004, the Northwest Territories has been undergoing water treatment plant upgrades as a result of changes to the *Canadian Drinking Water Quality Guidelines*. The upgrades to some of the water treatment plants have resulted in a change in the plant classification, which requires operators to advance their certification level. In addition, the *Water Supply System Regulations* enacted in September 2009 require mandatory certification for water treatment plant operators. For these reasons, and because of high operator turnover, an increased emphasis on training and certification is needed and the Circuit Rider Program assists communities to address these requirements.

In 2013, the GNWT Circuit Rider Program continued its operation to provide hands-on training for water treatment plant operators, as well as guidance for community administrations in the development of their drinking water treatment program. The main objective is to work with operators in their own facility on operational areas they identify, and to help them to achieve certification to the level of the plant they are operating.

A circuit rider travels to assigned communities two or three times a year to provide training. A couple of days are spent in the water treatment plant assisting the operator and evaluating the system. A circuit rider can provide assistance in many areas, some of which include:

- Regulatory sampling and reporting requirements;
- Routine and preventative maintenance;
- Equipment calibration;
- Assistance during boil water advisories;
- Water tank cleaning training;
- Assistance in reservoir cleaning and filling;
- Troubleshooting;
- Roles and responsibilities;
- Classroom and pre-course preparation for certification.

In addition to routine assistance for communities,

Left to right: Operator Gibson Kudlak preforming chlorine samples in Ulukhaktok; Works staff in Jean Marie River prepare the overland fill line from the Mackenzie River.

the circuit rider trainers also assist regional and community staff with site-specific challenges that may occur. For example, in 2013, MACA staff worked in close partnership with the community of Colville Lake when the community's raw water intake began drawing in air and floating to the surface, which rendered the plant unusable. After months of coordination and planning, a team of divers with a custom-made barge, mounted with a crane hoist, was brought into the community. The divers were able to shorten and sink the intake pipe, replace the intake structure and hold it to the bottom using weighted bags along the full length of the intake. ■

In 2013, 16 different communities received circuit rider assistance. The communities are listed here, by region.

NORTH SLAVE	DEH CHO	SAHTU	BEAUFORT DELTA
Lutsel K'e	Jean Marie River	Fort Good Hope	Paulatuk
Gameti	Nahanni Butte	Tulita	Tsiigehtchic
Wekweeti	Trout Lake	Colville Lake	Tuktoyaktuk
Whati	Wrigley	Deline	Sachs Harbour

System Reviews

GNWT water supply system and infrastructure reviews have continued throughout 2013. The reports outline the operations and the physical infrastructure condition of the water treatment plant and distribution system in a community. The reviews identify changes that are needed and suggest ways to upgrade or better maintain the community's water supply system. Reviews are completed every two or three years. In the instance that a new water treatment plant has been constructed or a major upgrade has occurred, reviews are typically performed after the water plant has been operating for a couple of years.

Environmental health officers (EHOs) also do regular water treatment plant inspections. EHOs do public health inspections once every six months, and ENR and Lands officers officers do annual water license inspections.

Aboriginal Affairs and Northern Development Canada inspection reports are available to the public through the appropriate water board's public registry. ■

Vincent Tam – Biography

Mickey Andre, Marjorie Dobson, and Patrick Gruben celebrate with Vincent Tam (second from left) in Tsiigehtchic upon hearing of his retirement.

On April 04, 2014, Vincent Tam retired from his position as Senior Engineer for the GNWT Department of Public Works and Services. For years, he was responsible for ensuring the proper operation of water treatment plants around the Northwest Territories. He was also a member of the Federal-Provincial-Territorial Committee on Drinking Water.

Vincent's work went far beyond what was expected of the position. When he visited communities, he often worked from early morning to late evening. Vincent's passion for the work was reflected in his meticulous and thorough efforts. He spent a lot of his time teaching those around him about how drinking water systems operate. EHOs, fellow engineers and water treatment plant operators learned invaluable lessons from Vincent. He was never reluctant to help when asked for assistance. Whether providing advice, accompanying someone to resolve a plant-operating problem or delivering training, he was always eager to help.

The capacity of water treatment plant operators in the NWT to provide safe drinking water has improved due to Vincent's devotion to his work. The Water Treatment Plant Operator Certification Program went from a voluntary program to a mandatory program during his career, and through his hands-on assistance, as well as the occasional instruction of the courses, he was responsible for assisting many NWT operators achieve their certification.

One of the common challenges in the NWT is getting access to information from remote communities. Vincent pioneered the installation of an electronic remote monitoring system. The system records chlorine and turbidity levels at water treatment plants in several communities. In addition to helping with the installation and repair of the system, Vincent also compiled the data on a regular basis and provided easy to understand summaries of this information.

Vincent holds a Bachelor of Science in Civil Engineering from the University of Manitoba. He has won several awards over the years, including a Queen Elizabeth II Diamond Jubilee medal, awarded on February 28, 2013. Post-retirement, he plans to take a year off to enjoy his time at home with his family. After that, he may look into the possibility of providing consultant services. ■

Boil Water Advisory

Environmental Health Officers (EHOs) are responsible for regulating public water supply systems, in the NWT. Typically, this is done by monitoring chlorine, turbidity and bacteria water samples. If there is a concern, the water treatment plant operator is advised and corrections are made. However, sometimes a problem cannot be easily fixed. When this happens, it may be necessary for the EHO to issue a Boil Water Advisory.

A Boil Water Advisory is issued when it is reasonable to believe that the drinking water supply poses a public health risk. Everyone is advised to boil their water before it is used for drinking, cooking or brushing teeth. This protects the public against harmful viruses, bacteria and parasites that might be in the water. An advisory is issued under the *Public Health Act*. It ends only when the EHO is satisfied that the water is once again safe to drink without boiling.

EHOs consider many aspects of a situation before issuing an advisory. For example, if one of four bacteria water samples tests positive, the fact that the other three samples were good suggests the problem is not serious. There may have been a mistake made when testing the bad sample or there many have been an external contaminant, such as a dirty faucet. In this case, the water would be re-tested. The chlorine levels would also be checked to make sure they are sufficiently high.

Another situation that can occur is when spring thaw churns up mud and overwhelms the filters at a water treatment plant. In that case, dirty water can get through the system and neutralize all the protective chlorine. A boil water advisory would be justified because there is no way to ensure the water leaving the plant is safe.

Many people are notified when this type of advisory is put in place - the municipality, the media, citizens, etc. This action allows the right message to get out without causing people to panic about the condition of their drinking water. Everyone is notified once the problem has been resolved. ■

The Northern Territories Water and Waste Association

The Northern Territories Water and Waste Association (NTWWA) has supported northern water professionals in the NWT and Nunavut for over 20 years, thanks to hard-working volunteers. Twelve board members, approximately half from each territory, meet once a month via teleconference with the main goal of planning the annual conference, trade show, AGM, and operator's workshop. Each year, the organization puts on a weekend conference highlighting northern water projects and issues. Immediately following the conference a two-day workshop is held where operators can earn their much-needed CEU credits. The GNWT has been a long-time supporter of the NTTWA, with active engagement and an annual contribution agreement. ■

Environmental Health Officer Observation

Water Treatment Plant Challenges

Operating a water treatment facility is a large task for a community to keep up with, maintaining a fully functional treatment and distribution system, be it trucked or piped, is a full time job for many employees. Maintaining at least one certified operator, and preferably two, is the first priority that communities have when operating their facility, through training programs and courses most communities do have a certified operator but other issues can come about. After consulting with the Regional EHOs two main challenges came up, high levels of turbidity during spring runoff, and the need for assisting communities with planning for new water systems due to aging infrastructure.

Treatment Facility Operations

SOUTH SLAVE

Fort Smith
Operated By: Town of Fort Smith
System Type: Class III coagulation /flocculation plant with a seasonal primary settlement pond and rapid sand filtration.
Year Built/Upgraded: 1993

Fort Resolution
Operated By: Hamlet of Fort Resolution
System Type: Class II coagulation /flocculation plant with treated storage.
Year Built/Upgraded: 1998

Fort Providence
Operated By: Hamlet of Fort Providence
System Type: Class II coagulation /flocculation plant with treated storage.
Year Built/Upgraded: 2003

Hay River
Operated By: Town of Hay River
System Type: Class II coagulation / filtration plant with treated storage and chlorine dioxide disinfection
Year Built/Upgraded: 1977

Hay River Reserve
Operated By: Katlodeeche First Nation
System Type: Small System.
Year Built/Upgraded: 1993

Kakisa
Kakisa (Ka'a'gee Tu First Nation) does not have its own water treatment plant. The town of Hay River supplies water to this community by trucked delivery. Please see the description of Hay River's water treatment plant for more information.

Enterprise
Enterprise does not currently have its own water treatment plant. The town of Hay River supplies water to this community via trucked delivery services.

NORTH SLAVE

Behchoko (Rae)
Operated By: Community Government of Bechoko
System Type: Class II coagulation /flocculation plant with treated storage.
Year Built/Upgraded: 2007

Bechoko (Edzo)
Operated By: Community Government of Bechoko
System Type: Class II coagulation /flocculation plant with treated storage.
Year Built/Upgraded: 2009

Lutsel K'e
Operated By: Hamlet of Lutsel K'e
System Type: Class I membrane filtration with treated water storage.
Year Built/Upgraded: 2011

Whati
Operated By: Community Government of Whati
System Type: Class I greensand filtration plant with softening and treated storage
Year Built/Upgraded: 1988

Spring Freshet, High Turbidity Levels

During the spring freshet, or breakup season, water levels and river velocity can dramatically increase. When these conditions are combined with ice flow against the sandy river bank, turbidity levels can increase significantly. The various types of water treatment systems in the Northwest Territories use unique processes to ensure the safest drinking water possible, but what happens when the raw water fluctuates?

During times of increased turbidity it is important for the operators to be extra diligent in keeping their water plant optimized. Class 2 coagulation/flocculation plants are best equipped to handle water with high turbidity and are most commonly found along rivers in the NWT. Some plants use membranes to combat high levels of turbidity but can be overloaded quickly, so primary settlement is needed. In some cases the turbidity is so high that the plant needs both primary settling and coagulation/flocculation such as Fort Smith where the North's only Class 3 water treatment plant is located. In some water plants in the North the raw water turbidity can still result in high levels of turbidity in the treated water. Despite a fully optimized plant increased sediment load and cloudiness caused by environmental factors can potentially affect the disinfection process and as a result give the EHO no choice but to issue a boil water advisory until the treated water turbidity levels drop.

Treatment Facility Operations *continued*

Wekweeti
Operated By: Community Government of Wekweeti
System Type: Small System.
Year Built/Upgraded: 1993

Yellowknife
Operated By: City of Yellowknife
System Type: Class I plant with treated storage and fluoridation
Year Built/Upgraded: 1949, with continuous upgrades

DEH CHO

Fort Liard
Operated By: Hamlet of Fort Liard
System Type: Class I greensand filtration plant with softening and treated storage
Year Built/Upgraded: 2011

Fort Simpson
Operated By: Village of Fort Simpson
System Type: Class II coagulation/flocculation with treated water storage
Year Built/Upgraded: 1986

Jean Marie River
Operated By: TthedzehK'edeli First Nation
System Type: Class I coagulant assisted membrane plant with treated storage.
Year Built/Upgraded: 2011

Trout Lake
Operated By: Sambaa Deh First Nation
System Type: Class I coagulant assisted membrane plant with treated storage.
Year Built/Upgraded: 2012

Nahanni Butte
Operated By: Nahanni Butte Dene Band
System Type: Class I greensand filtration plant with softening and treated storage
Year Built/Upgraded: 1995

Wrigley
Operated By: Pedzeh Ki First Nation
System Type: Small System with raw water storage.
Year Built/Upgraded: 2014

SAHTU

Colville Lake
Operated By: Behdzi Ahda First Nation
System Type: Small System with cartridge filtration and treated storage
Year Built/Upgraded: 2007

Deline
Operated By: Charter Community of Deline
System Type: Small System with cartridge filtration, UV disinfection and storage
Year Built/Upgraded: 2009

Fort Good Hope
Operated By: Community Government of Fort Good Hope
System Type: Class I coagulant assisted membrane filtration plant with treated water storage and a seasonal fill reservoir
Year Built/Upgraded: 2013

Norman Wells
Operated By: Town of Norman Wells
System Type: Class II coagulation / filtration plant with treated storage.
Year Built/Upgraded: 1992, with a new intake built in 1996

During the times of high water and runoff, GNWT departments partner together with the community staff in order to optimize the water treatment plant to ensure that the highest quality of water is possible. Plant optimization is accomplished through technical assistance and by working directly with MACA staff and EHOs. During these times of high turbidity it is important for all levels of government to focus on teamwork and cooperation in order to successfully serve residents safe drinking water.

Aging Infrastructure

Like most facilities, water treatment plants have an expected life cycle. Due to changing guidelines and wear and tear of both the buildings and treatment systems, some facilities in the north are showing their age and are due to be replaced in the near future. Under new Canadian guidelines all surface water must be filtered, leaving some smaller systems in the NWT that don't currently filter water non-compliant. In recent years upgrades in 10 communities were completed to bring their systems into compliance with the new guidelines, we are now only dealing with three communities whose water systems do not contain filtration and are non-compliant. In recent sampling studies these remaining plants were deemed at a low risk for diminished water quality; however, it is still a priority to upgrade the remaining facilities to meet the new guidelines.

Aging infrastructure is not the only challenge that community governments face in relation to maintaining good water treatment systems. There are also important maintenance items that affect the overall performance of treatment systems. Repair and replacement in areas where required will help prolong the life of systems that will continue to deliver quality water to residents. GNWT are always available to assist community governments in learning about proper maintenance of treatment systems and to provide technical assistance when it comes to replacing aging infrastructure. ■

Treatment Facility Operations *continued*

Tulita
Operated By: Hamlet of Tulita
System Type: Class I membrane ultrafiltration.
Year Built/Upgraded: 2004

BEAUFORT DELTA

Aklavik
Operated By: Hamlet of Aklavik
System Type: Class II coagulation / filtration plant with treated storage.
Year Built/Upgraded: 2010

Fort McPherson
Operated By: Hamlet of Fort McPherson
System Type: Class II coagulation / filtration plant with treated storage.
Year Built/Upgraded: 1987

Inuvik
Operated By: Town of Inuvik
System Type: Class II using sand filtration, chlorine disinfection in the winter from the Mackenzie River, and chlorine disinfection and fluoridation in the summer from Hidden Lake
Year Built/Upgraded: 1963, currently being upgraded

Paulatuk
Operated By: Hamlet of Paulatuk
System Type: Small System with Chlorine Disinfection
Year Built/Upgraded: 1986

Sachs Harbour
Operated By: Hamlet of Sachs Harbour
System Type: Small System with Cartridge Filtration
Year Built/Upgraded: 2005

Tsiigehtchic
Operated By: Hamlet of Tsiigehtchic
System Type: Class II membrane Nano-Filtration with treated storage
Year Built/Upgraded: 1993

Tuktoyaktuk
Operated By: Hamlet of Tuktoyaktuk
System Type: Class I pressure media filter with UV disinfection and storage
Year Built/Upgraded: 2010

Ulukhaktok
Operated By: Hamlet of Ulukhaktok
System Type: Small System with basket strainers and UV disinfection
Year Built/Upgraded: 2009