Taiga Environmental Training Program

Final Report 2003_2004

Submitted to:

The Northwest Territories Cumulative Impact and Monitoring Program and Audit Committee

David Livingstone,
Director of Renewable Resources and Environment

Eric Kotler,
A/ NWT CIMP and Audit Coordinator

By

The Taiga Environmental Laboratory

Teresa Joudrie,
Laboratory Manager

R. Shane Harnish,
Quality Assurance Officer

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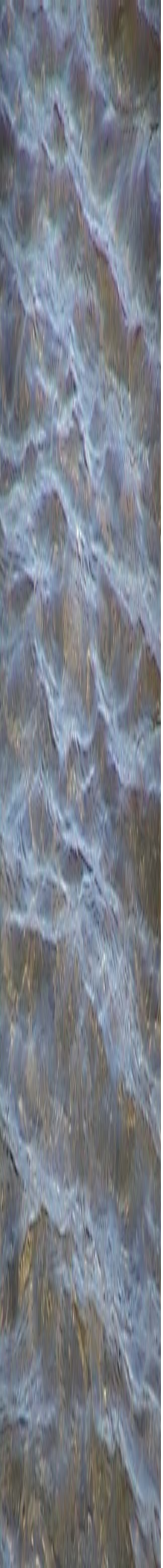


Executive Summary

The Taiga Environmental Training Program was developed in response to the need for training programs to direct aboriginals into the field of environmental monitoring. Thanks to funding through the Northwest Territories (NWT) Cumulative Impact and Monitoring Program (CIMP) and Audit this training program was offered to six aboriginals from various locations in the Northwest Territories.

The Taiga Environmental Training Program consisted of a two-week intense study program that incorporated the following fundamentals:

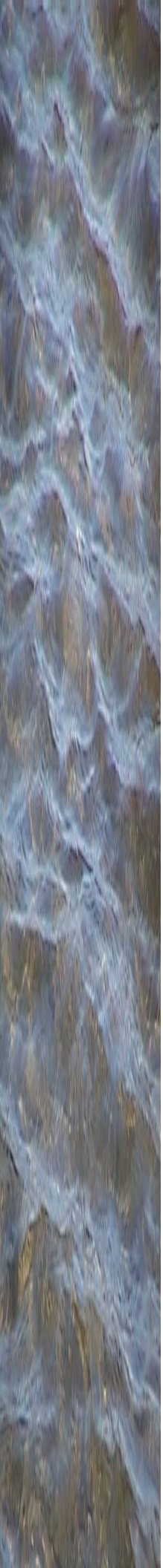
- Laboratory and Field Safety
- Analytical Techniques
- Sampling Collection
- Sample Handling
- Quality Assurance and Quality Control
- Data Analysis
- Interpretation and Reporting Data
- Presentation of Results

With these fundamentals, the students were exposed to a wide gamut of environmental knowledge. The focus of the training program was to show students from beginning to end the steps involved in environmental sampling protocols.

Throughout the entire training program, students were encouraged to actively participate in all aspects of the course. Students were eager to learn and provided unique feedback regarding environmental sampling. During each step of the program, students were shown proper techniques and then were given the opportunity to repeat the technique.

Overall the program was very successful. Based on discussion and questions, students understood the material and were able to explain basic scientific principles and interpretation of data.

Taiga Environmental Laboratory would like to thank all involved in the successful implementation of this project. We would particularly like to thank the NWT CIMP and Audit committee for their moral as well as financial support throughout this project.



Introduction

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Capacity building is fundamental to the success of the NWT CIMP and Audit. Community residents need training in a range of environmental management techniques if the program is to be truly community based. Exposure to scientific methodology as it relates to sampling, analysis and interpretation of results is a key component of overall training program.

The program incorporated classroom, hands-on and presentation forms of learning. Students were exposed to a wide range of environmental techniques. These techniques included following a sample from collection to shipping to receipt to sample analyses to final reporting and interpretation of data. Only the basics were taught with the ultimate goal of providing a wide base of knowledge. It was hoped that students would continue training in specific areas that were an interest to them.

Course Description

The Taiga Environmental Training Program consisted of a two-week intense study program that incorporated the following fundamentals:

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- Analytical Techniques
- Sampling Collection
- Sample Handling
- Quality Assurance and Quality Control
- Data Analysis
- Interpretation and Reporting Data
- Presentation of Results

With these fundamentals, the students were exposed to a wide gamut of environmental knowledge. The focus of the training program was to show students from beginning to end the steps involved in environmental sampling protocols.

The course began with two days of classroom studies. These studies provided the necessary background prior to field collection and sample analysis. Students learned proper laboratory safety practices, including the Workplace Hazardous Material Information System (WHMIS). Background information regarding analytical analyses such as pH, conductivity, major ions (calcium, magnesium, potassium, and sodium) and metals were also provided including the scientific bases for each analysis. Through each step of the classroom training, an effort to link traditional knowledge with western science was made.

To provide field experience, the students were taken to Colomac mine. Colomac mine is an abandoned gold mine 222 km northwest of Yellowknife. Formally owned by Royal Oak, site remediation was taken over by the Department of Indian Affairs and Northern Development (DIAND) after Royal Oak went into receivership. The mine site was chosen because sampling points were well known. The sites sampled at Colomac included a background sample collected from Steeves Lake (uncontaminated lake next to base camp) and another from the Zone 2 pit (containing contaminated tailings water).

Students learned how to sample in winter conditions (as sampling took place in the month of April). Samples were also collected at various depths using a Kemmar water sampler. Proper field preservation as well as handling and shipping techniques were also taught.

On arrival back to the laboratory, students were shown proper login procedures. These procedures included chain-of-custody, laboratory tracking procedures and how to properly fill out a Taiga Laboratory field sheet. After samples were entered in to Taiga's tracking system, the students analyzed them.

Each student was responsible for testing their samples for each of the following testing parameters:

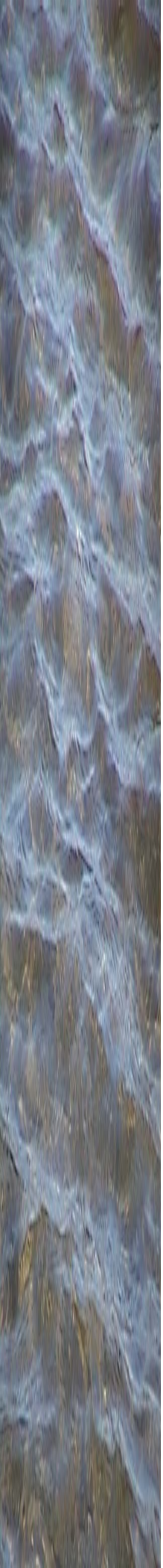
- pH
- Conductivity
- Calcium
- Magnesium
- Hardness
- Potassium
- Iron
- Sodium
- Metals

Students were taught how to use the various analytical equipment required to do the above tests. The following analytical equipment was used:

- Radiometer equipped with a pH electrode and a temperature correcting conductivity probe.
- Atomic Absorption Spectrophotometer
- Metals by Inductively Coupled Plasma Mass Selective Detector (ICP-MS)

Results were entered using Taiga's Laboratory Information Management System (LIMS) database and final reports issued to the students.

Discussion between the students and the instructor stressed the significance of results by comparison to available guidelines such as Canadian Council of Ministers of the Environment (CCME) and NWT water guidelines. An emphasis was placed on the proper use of guidelines and it was stress that clients are ultimately responsible for proper interpretation of results.



Student Participation

Throughout the entire training program, students were encouraged to participate in all aspects of the course. Students seemed eager to learn and provided unique feedback regarding environmental sampling. During each step of the program, students were shown proper techniques then were given the opportunity to repeat the technique.

Conclusion

Overall the program was very successful. Based on their presentation, students understood the material learned and were able to explain basic scientific principles and interpretation of data.

During the two-week session, the students learned various fields of knowledge within environmental science. Student learning ran the gamut from selecting the correct bottles to analyzing sample using an atomic absorption spectrophotometer. Links between traditional knowledge and western science where made. A large amount of general knowledge was delivered and learned by the students.

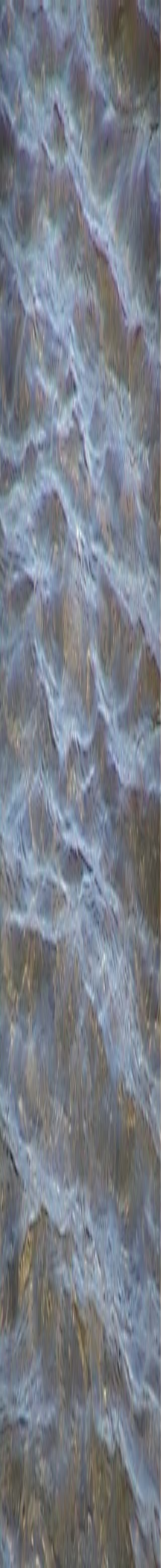
Comments from a Student

To Taiga ~

Regarding the training sessions past, I would like to extend my thanks to you and the rest of the Taiga Team. Though my time was brief, the information and experience I have gained are priceless and I value it with paramount respect. Taiga is an example of teamwork, professionalism and co-operative efforts that businesses and governement agencies should follow. It is not the policies or money that make Taiga and INAC influential, it is the inspiration, dynamics and the quality of their employees. Because of the comments and contributions of you and your employees, I am now an Environmental Technician at the Colomac Remediation Project! Of course on assignment from Tli Cho Logistics, but hopefully with more experience and academics I'll have a government job where I can actually stay in town and play ball!!!

Thank you Teresa for the arrangments you made, I would be more than happy to come back again. Please extend my thanks to the rest of the team.

Sincerely,
Dean Holman
Environmental Technician
Tli Cho Logistics - Colomac

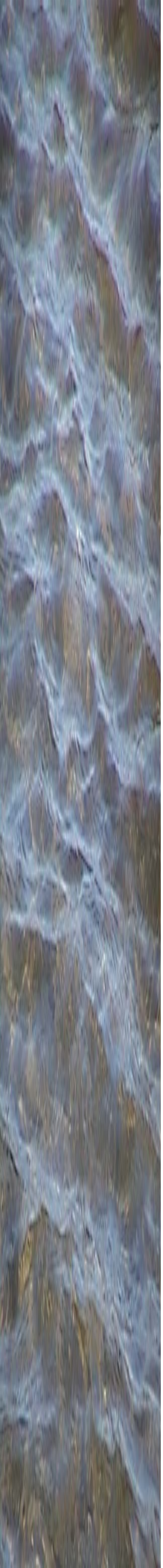


Further Suggestions

Extending the program with more sessions would be advised. Some minor modifications can be made based on student interests of industry considerations. Due to facility problems (i.e. lack of space) the training program would normally be offered during the winter months (Taiga's slower period). Additional funding or cost recovery is required to sustain this program as well as a dedicated full time instructor.

More specific training programs could be developed using the latest technologies. Remote training *via* the Internet is another possibly. Modular training is also an interesting possibility that allows the instructor to travel to the client and present the course over 1-2 day period therefore reducing traveling expenses.

Taiga Environment Laboratory is also actively investigating the development of a Sampling Training Video series. These videos have some major advantages over traditional classroom learning. With video, the student can learn at home at their own leisure and can review the training anytime thereafter. Video also helps to eliminate any language barriers. Visual learning has been shown to be more efficient than lecture or reading scenarios.



Summary

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