ITEP Professional Assistance:
Air-Monitoring Support

Technology Specialist Glenn Gehring rejoined the ITEP support team in May to provide air-monitoring support for tribal air professionals through our Professional Assistance (PA) program. Gehring has been involved in science and technology for over 25 years. That activity included laboratory chemical analysis, agricultural research, aviation maintenance technology, onsite wastewater treatment and disposal system design and an extensive array of air-monitoring related activities. He’s now working with ITEP’s Tribal Air Monitoring Support (TAMS) Center from his home on the Umatilla Indian Reservation, providing both onsite and remote support to the tribes, primarily on monitoring-related issues.

The following are excerpts from a recent conversation with Glenn on tribal air management, air programs, the challenges of technical support, and his plans for providing that support to the tribes.

What were you doing at the Confederated Tribes of the Umatilla Indian reservation (CTUIR) before you rejoined ITEP in May?

I was managing the Office of Air Quality. They initiated a smoke-management program as part of EPA Region 10’s Federal Air Rules for Reservations (FARR). The program was effective on January 1, 2007. It requires open burning permits for residential burning, forestry burning, agricultural burning and large open burning. It also requires that all open burning occur only during days and times when CTUIR’s Office of Air Quality allows it. A lot of what we did involved developing effective

In This Issue

In this issue of Native Voices, we take a closer look at ITEP’s Professional Assistance program for monitoring and related support. ITEP Director, Cal Seciwa, discusses “growing our own” tribal air professionals and programs; AIAQTP Curriculum Coordinator, Pat Ellsworth, explains how our air-course schedule is selected each year; and we profile a successful former ITEP Student Intern.

PA at Southern Ute

Christopher Lee, Air Quality Program Manager for the Southern Ute Tribe in southern Colorado, is heading up a new PM2.5 monitoring study in conjunction with U.S. EPA Region 8. The Special-Purpose winter study, designed to help determine whether a fine-particle problem exists on the reservation, involves the installation of three Anderson RAAS samplers, which the tribe borrowed from the air program at the Confederated Salish and Kootenai Tribes of Montana.

“We were somewhat uncomfortable about getting the monitors calibrated,” Lee says, “and we felt we could use some assistance from the TAMS Center. I’ve worked with TEOMs and R&P products, but the Anderson equipment we have requires three points to be taken on each calibration—it’s a more-complex process than usual. When you’re reading the manual and haven’t done one of these calibrations before, it’s really technical and involved; it’s tough to understand what you’re being asked to do.”

After several e-mail and phone communications, Glenn Gehring, TAMS
When we speak of “the tribes,” the appellation might suggest a single, broad collective that exists in Indian country. Of course, that’s only partly true; most tribes share common interests, but each is also a unique, sovereign nation, guided by its own culture, needs, and goals.

As a tribal member and longtime tribal administrator and educator, I recognize the important inter-relationships that exist between tribes and non-tribal agencies such as U.S. EPA, the Bureau of Indian Affairs, and the Indian Health Service. Much of our work in environmental management requires an interplay between the tribes and the agencies that bear trust responsibility for tribal capacity-building. The funding those agencies provide is a big factor in the tremendous progress so many tribes have made over the past decade in developing their environmental-management programs.

Developing the capacity to address environmental problems is an ongoing challenge for all the tribes. Funding issues, the evolution of environmental programs, staff turnover, and the changing nature of both risk factors and federal regulations make the process a dynamic one that requires constant ingenuity. It also requires choices—the kind that only tribes can make.

One perennial Big Question: How much autonomy does a tribe choose to forego in order to garner the resources they need to effectively manage their natural resources?

At ITEP, our main goal is to support the tribes. We take every opportunity to listen and understand tribal needs, and we tailor our support efforts to meet those needs.

Our work is a balancing act much as it is for the tribes—we work to support individual and collective tribal goals and provide the tools and knowledge needed to satisfy federal regulatory requirements. When the two factors are in sync, sometimes we accomplish both objectives.

Through our EEOP program, we seek to engage tribal students in environmental careers from their earliest years, helping to create an ever-replenished pool of environmental professionals from which the tribes can draw. The specific goals they will pursue, however, are set by the tribes. Likewise, our Professional Assistance program and AIAQTP courses provide information and assistance that tribal environmental managers can use to satisfy their goals. In all our efforts, we’re careful to keep our primary mission in mind; our job is not to push any agency’s agenda but to meet tribal needs as the tribes define them.

Addressing federal regulatory requirements is by necessity a big part of our work. For example, when we learned in 2005 that monitoring-data submittal to the federal Air Quality System had become a top EPA priority, we moved quickly to add more AQM and Data Management courses and stepped up our training efforts on ITEP’s newly developed “Tribal Data Toolbox” software. As American Indian Air Quality Training Program Curriculum Coordinator, Pat Ellsworth, explains in this issue, our air-management course list is guided each year by both federal policy emphases (e.g., AQM) and the stated needs of the tribes (Climate Change on Tribal Lands, Indoor Air Quality in Alaska). Likewise, ITEP’s Environmental Compliance and Inspections courses, while supporting EPA’s goal of empowering tribal inspectors with federal credentials, are also aimed at helping tribes to develop inspectors capable of enforcing tribal codes and ordinances.

Generally, federal and tribal environmental goals dovetail; everyone wants clean air, safe...

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procedures for forecasting smoke dispersion on the reservation to make informed open-burning decisions. CTUIR uses a variety of computer-forecast models and has a fairly sophisticated dispersion forecast system in place.

We also spent a lot of time getting two air monitoring projects going. One site is on the reservation and the other, a Supplemental Environmental Project (SEP) funded by a cement facility, was off-reservation but within the CTUIR Usual and Accustomed area. The sites include monitors for ozone, PM$_{2.5}$, SO$_2$, NO$_2$, and meteorological parameters. The off-reservation site is near the Umatilla Army Depot, where they store and incinerate chemical weapon munitions. Dr. Skeen of CTUIR’s Department of Science and Engineering has been modeling Depot emissions and conducting risk assessments.

Please describe your PA efforts since you’ve been back with ITEP.

So far, I’ve worked with a monitoring project at Navajo Nation near Church Rock, where there are concerns about emissions from old uranium mines. I also performed an audit for a Navajo Nation EPA monitoring site, and while I was conducting the audit provided training for Navajo Nation EPA interns on how a TEOM works. I visited the Coeur d’Alene tribe in Idaho on a monitor-communication issue, and I worked with the Shoshone-Bannock air staff on TEOM analog board and hardware flow-calibration training. I’ve also worked with the Makah Nation in Washington on a met station and datalogger training, and I recently visited the Southern Ute Tribe and assisted the air staff there with calibration of some Anderson PM$_{2.5}$ monitors (see accompanying article). In addition, I’ve repaired, serviced, and calibrated monitors for tribal use and answered technical questions over the phone.

What are some of the big technical challenges that the tribes face with their air-management work, and how are you trying to help address those issues?

Tribes are at all different levels with their air programs; some are barely up and running and others are doing a lot—not so different from state and local air programs in their early stages. With any air program, there are so many details to work out; it’s a challenge to get a good, viable air program going, and EPA resources are so limited. You have to be as innovative as possible, cobbling stuff together, for example, to get a monitoring site running with the funding you have available and still meeting the criteria so you can trust and use that data. It isn’t easy.

Hire a contractor and you pay a lot, and they don’t always know what they’re doing; if you don’t know the details yourself you can get into problems, like having data flowing for several years and then finding that the contractor messed up on the datalogger configurations...

I’ve seen that happen, and not just with the tribes—states and EPA have faced similar problems.

There are lots of examples of how technical problems can arise. I’ve seen several TEOMs configured incorrectly. There are different ways you configure a TEOM to log concentrations and to control flow through the system. Typically, the TEOM logs data as EPA Standard concentrations (25 degrees Celsius and 1 atmosphere), or as concentrations calculated under local conditions. Typically, PM$_{10}$ concentrations are calculated at EPA Standard and PM$_{2.5}$ concentrations are calculated under local conditions. Flow should always be set based on ambient conditions, because getting the right particle-cut size depends on volumetric flow through the system being calculated under local conditions. If you have a TEOM, you need to know how these settings are configured on your unit. I’ve seen some TEOM configurations that have been off for years. Regardless of what you’re monitoring or the method you are using to monitor, if you don’t get the methods right your data can be skewed for years. It happens.

So it’s important to know what’s going on. One of my jobs is to teach people how to operate and repair equipment. ITEP offers courses on those topics, and the PA program provides more personalized support. The problem sometimes comes after you attend a course—where you really learn how to calibrate an analyzer—and you go home, no problem, and your analyzer is working fine. But then, two years later your numbers aren’t right, and you’re wondering what’s going on, and you can’t remember the details, you don’t have it anymore. You need something to bring it back.

One way I’m working to address that issue is by creating a library of DVD movies on various technical matters, like how to change a filter or calibrate a certain type of monitor. We plan to videotape these procedures and create DVDs for the most popular monitors. So when someone needs to, say, replace the batteries on a certain...
S. UTE (cont. from p. 1)
Center Technology Specialist, traveled to Southern Ute in October and worked with Lee and his air-program colleagues Brenda Sakizzie and Michael King, on setting-up and calibrating the new equipment. He wasn’t there, he points out, to do the calibration for them. “That’s not the TAMS mission,” he says. “My job wasn’t to do the calibration but to take away some of the mystery in the process. Our mission is to teach people how to do these things for themselves, to help them build their capacity.” Gehring says he was impressed by the expertise and dedication of Southern Ute’s air staff. “One of the biggest things you want to see in people is a desire to do things right, not just do the job and get back to the office, but to do it right. I saw that in the people who will be working with these monitors. For example, I was showing them how to clean the PM<sub>10</sub> inlet, and it wasn’t just a case of ‘well, this is good enough.’ They were scrubbing and scrubbing until it was...clean. It was the same with calibration. It takes a long time to calibrate this equipment, and technically you can do so much and it’s good enough to pass the requirements. But after the first time we went through it, I pointed out that it wasn’t quite as close as maybe it should be, but it did meet the standards. And they said no, we’ll do it again. That’s a good staff out there, very sophisticated on things like ozone and NO<sub>x</sub>; they already have technical capacity, they just needed to add this new skill.” Lee says the TAMS Center and PA program have been very helpful to them (TAMS will also be handling their filter-weighing, and Gehring helped them better understand QAPP recipes that they adapted from the Salish and Kootenai air program). Of Gehring’s recent visit, Lee says, “Glenn is a good teacher. Working with him we were able to see how easy the process really is, not by watching it but by doing it. I think for a lot of tribes, especially smaller ones with one person doing so many things, if they need this kind of support it’s there from the TAMS Center. It’s just a matter of talking with the staff and getting across to them what you need.”

At the ITEP website you’ll find:
- Training schedules
- ITEP program info
- Software tools
- Tribal links
- Equipment loans
- News & events
- Publications
- Contacts...
- ...and much more

www4.nau.edu/itep/
EEOP's Indoor Air Quality Building Assessments

The EEOP program has IAQ Kits to loan out and provides staff to work with students and teachers on IAQ assessment of their school buildings. Instruments included in the IAQ Kit facilitate air quality measurements such as carbon dioxide, radon, carbon monoxide, relative humidity, air movement, surface temperature, and moisture. The staff will also help students and teachers use the U.S.EPA IAQ Tools for Schools kit to identify potential air quality issues in the building.

There are three key components of IAQ Building Assessments:

- Science education: students learn basic scientific principles about air and air pollution.
- Science application: students are doing science by taking basic measurements on air quality and interpreting the information they collect.
- Student learning and health: students will make recommendations that will improve the health of all building occupants and enhance the conditions for learning.

Data and observations collected during the IAQ Building Assessment will be provided to the school administration for their information and action. This is an educational program, not a regulatory program. Only school staff receive the assessment reports.

Building assessments can be done in a variety of formats. One important requirement: teachers and students from the school district must be involved in the assessment; EEOP staff does not perform assessments; rather, we help teachers and students to do the assessments.

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monitor, they can sit down and watch the way it’s done three or four times, review the manual, and take care of it. What’s the biggest challenge for you in providing PA support to the tribes?

Well, funding is always an issue; we wish we could do more, but we’ll always try to help people out in any way we can. I have a lot of background in this field, but it can be a difficult job. If I worked for a state monitoring program, I’d probably be dealing with a few specific types of monitors for each parameter, and I’d have them down pretty quickly. In this job it’s different; for example, for ozone one tribe might be using EcoTech, another Thermo, another Teledyne API and another Dasibi. And, there are different models within the brand, as well as different zero-air generators and dataloggers.

So it isn’t just knowing how an ozone monitor works, but how several different types of ozone analyzers and data acquisition systems work and are maintained.

There’s no way of having all this knowledge, so sometimes when someone requests support with a particular monitor, I have to learn it first, and then I can try to help. I do think that sometimes the tribes can benefit from that process, because there are times when we’re going through the learning process together, and I might see some things they don’t see. My background makes it easier for me to pick these things up than someone doing it for the first time. Still, for me it’s also a learning process and sometimes they see things I don’t see. There are a lot of very talented people in tribal air programs that I’ve had the good fortune to work with. I’m willing to help when I can; I’m also willing to learn. TAMS PA is usually free to the tribes, so one thing is for certain, the price is right.

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drinking water, and soil free of pesticides and other pollutants. Federal agencies provide much of the funding to accomplish those goals, as their trust responsibility dictates. The intensity of federal environmental-management efforts might vary with the political climate, but the over-arching mission of protecting the environment remains relatively constant—just as most tribes work tenaciously to keep their air, water, and lands clean and safe.

We’re here to support you in your environmental efforts, however you define them. Tell us what you need as tribal environmental professionals—and what you want. Our main goal is to serve you.
Each year, ITEP’s American Indian Air Quality Training Program (AIAQTP) offers tribal air staff a schedule of air courses that addresses current and future needs and concerns of the tribal air community. Pat Ellsworth, Curriculum Coordinator for AIAQTP, describes how the yearly AIAQTP course list is developed.

We develop our course list each year based on several considerations. We think it’s important each fiscal year to address the basic training needs of new air staff. Therefore, we offer Introduction to Tribal Air Quality, Air Quality Computations, and Air Pollution Technology at least once each year. We refer to these as “gateway” courses, because they’re prerequisites for more advanced courses, and they’re particularly valuable for tribes with turnover and new air-program employees. Air Quality Computations gets people ready for the Air Pollution Technology course, and “Intro” can be very helpful to new staff, or to someone who has worked for the tribe in another capacity—say the water program—and has now come into the air program. We also try to offer our Management of Tribal Air Program and Grants once a year, because that course deals with managing an air program—personnel, budgeting, grant writing, planning. That can be valuable for tribes with turnover, too.

We listen to what the tribal air community tells us they need, at the National Tribal Forum and other national meetings, through the TAMS (Tribal Air Monitoring Support Center) Steering Committee, and from attendees at our courses. Climate change is a good example; there’s a lot of interest in that topic among the tribes right now. As a result, we’re developing a Climate Change course that we’ll offer next year. Climate change is a huge topic; we could spend an entire semester in a college-style class on that topic. We only have a few days, so we’re attempting to provide an overview of the science of climate change, and discuss how it’s affecting tribes or will be in the near future, and what actions folks can take on the community and inter-tribal levels.

We also base the course list on demand from the previous year. If there was a waiting list for a certain course, we’ll try to offer it the next year. Our Air Quality and Ecosystems course is one example of a course with a waiting list last year that we’re offering again this year. We seem to have met the demand in FY07 for our Air Quality and Community Health course, but I think there will be a renewed demand for that course by FY09. So maybe offering a course like that once every two years will be sufficient.

We look at what is coming from U.S. EPA in terms of revised standards and other regulatory changes. That might be a standards revision for particulate pollution or ground-level ozone, or New Source Review (NSR) changes. We want to get tribes up to speed on those kinds of regulatory issues. A tribal NSR rule and other permitting regulatory revisions are coming out of EPA, something for which a lot of tribes have been waiting a long time; some will probably be revising their emissions inventories to address the regulatory changes. For that reason, we will develop a New Source Review course, which will be presented for the first time in May 2008.

One of the pressures many tribes face currently is that EPA wants their monitoring data to be in the Air Quality System (AQS) database; in fact, continuation of grant funding will probably depend on getting that data into AQS. We recently developed a software tool, the Tribal Data Toolbox, to help tribes with their data; our course that teaches how to use the Toolbox has already been presented twice and will be offered again this fiscal year. We’ve alternately presented that course with our Air Quality System course so that people can understand the software and how to deal with AQS.

Some tribes have been monitoring for several years, have quite a bit of data, and have learned how to manage that data. Some have submitted data to AQS. But they’re still perhaps wondering, “What do these data mean for our tribe? What can these data tell us about our air quality situation right now and for planning into the future?” We’ve designed a new Level 3 [highest technical level] course called Data Analysis and Interpretation that we’re offering for the first time this year. That course should help tribal air staff understand how to analyze and interpret data in terms of their own air-quality situations.

In the past we’ve offered a number of air courses for Alaska Natives. Tribes in Alaska have several air-quality

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challenges, including Arctic haze, dust from dirt roads, and indoor-air problems that result from the cold weather and being indoors so much of the time. A long while back we offered our lower-48 courses to tribes in Alaska, but they told us they needed something more specific for their needs. EPA Region 10 chose to support our grant proposal to develop and provide Alaska-specific training, with Alaska instructors from the tribes and the state. That Region 10 grant has now ended, but we recognize that Alaska Natives continue to have air-quality-management needs. So we will be trying now and in the future to offer some courses specific to Alaska for Alaska Natives. We’re offering one such course this year, Indoor Air Quality in Alaska, scheduled for April 1–3, 2008.

Some of our training is available online. Our Fundamentals of Air Data Management course has been available through the ITEP website for about a year. After March 2008, it will have a new format. We recommend this online data management course as preparation for AQS training. We’re also planning an online version of our Tribal Data Toolbox course, and are exploring the possibility of adding more online courses in the future. The reason, of course, is to help people in terms of finances and travel time, and to allow people the freedom to review information they may have forgotten over time.

Because of funding limitations and the need to have at least a minimum number of attendees, we can’t offer every course we’d like to offer. More training in indoor air quality would be valuable. This year we’re also not providing any courses, such as Meteorological Stations and Gaseous Pollutants, that specifically train people how to monitor or use technical equipment.

If enough tribes indicate a need for those sorts of courses, we’ll put them on our schedule. We recognize that at least some people need this training every year, but right now the demand isn’t sufficiently high to schedule them as regular classes. We do, however, offer such training through our Professional Assistance (PA) program, either individually or with a small group of people gathering for a mini-course. PA is always available; contact Lydia Scheer at ITEP (928-523-6887).

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ITEP Student Internships: Right Turns

“Sometimes you go where you never thought you’d end up,” says Navajo Nation member Walter Begay, whose career shift into air-quality resulted from a combination of eagerness to learn and a few fortunate quirks of fate.

Now employed in Phoenix by the worldwide consulting firm, MWH Global, Inc., Begay graduated from Northern Arizona University in 2001, where he studied Environmental Management and took a proactive role in seeking out a variety of learning experiences. He’d been interested in water and uranium issues—both central to the environmental concerns of Navajos. However, when he landed a ten-week ITEP internship with EPA Region 7 in Kansas to perform air-management education and outreach to nine regional tribes, his focus abruptly changed. “I didn’t know a whole lot about air then,” he recalls, “but during the internship my interest grew. I could see this was one [environmental] issue that was evolving as far as regulations, especially with the tribes. They had an obvious need for help, and so I went in that direction.”

During his internship, Begay was tasked with educating regional tribes on air issues and working on ozone designations. To accomplish his outreach assignment, he conducted research on air issues, gathered several state emissions inventories that contained information on air impacts to local tribes, and brought tribal leaders and EPA officials together for a series of meetings. “When I got there,” he says, “the tribes weren’t talking much to EPA; there was kind of a rift over air issues, and EPA was holding back funds. We had to overcome that problem.”

Employing patience and tenacity, he encouraged both sides to “find a little common ground.” The internship was not only successful in terms of the goals he achieved, but it also steered him into a new environmental arena.

Fate dealt Begay another hand when he went job-hunting after graduation. While he

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was considering several job offers (he wanted to stay relatively close to the Navajo Nation) and was leaning toward a Forest Service range-management offer as well as an Arizona Game and Fish fisheries position, Forest Service administrators were slow to respond to some of the needs he had expressed. Eager to move ahead, he accepted a third job offer to work as an Area Source Air Quality Inspector with the Maricopa County Air Quality Department in the Phoenix metro area. Soon his career path became clear. “This is where the air problems are,” he says. “It’s a great place to learn, and we’re right on the coattails of the innovations that come out of California, so we really benefit from that.”

Since taking that job, Begay has moved on to several positions, working his way through the ranks from Dust Inspector to non-Title V Inspector to Title V Inspector, and most recently to a position as Compliance Supervisor. Over the course of six years, he conducted compliance inspections in Title V and other facilities, and also performed quality-control work, mine inspections, training, documentation and handling of citizen complaints—some coordinated with federal, state, tribal, and other local agencies. He has obtained numerous certifications for air-related technical work (including compliance, safety and health, and fugitive dust). His present career path is focused mainly on Title V matters.

At some point, Begay says, he’ll return to the Navajo Nation to work in an air-management capacity. That move, when it happens, will be the culmination of a career journey that in many ways began with that ten-week ITEP internship, which he says was “key to providing me with advancement opportunities.”

For information on ITEP Student Internships, contact Matthew Zierenberg at matthew.zierenberg@nau.edu, phone 928-523-8864.