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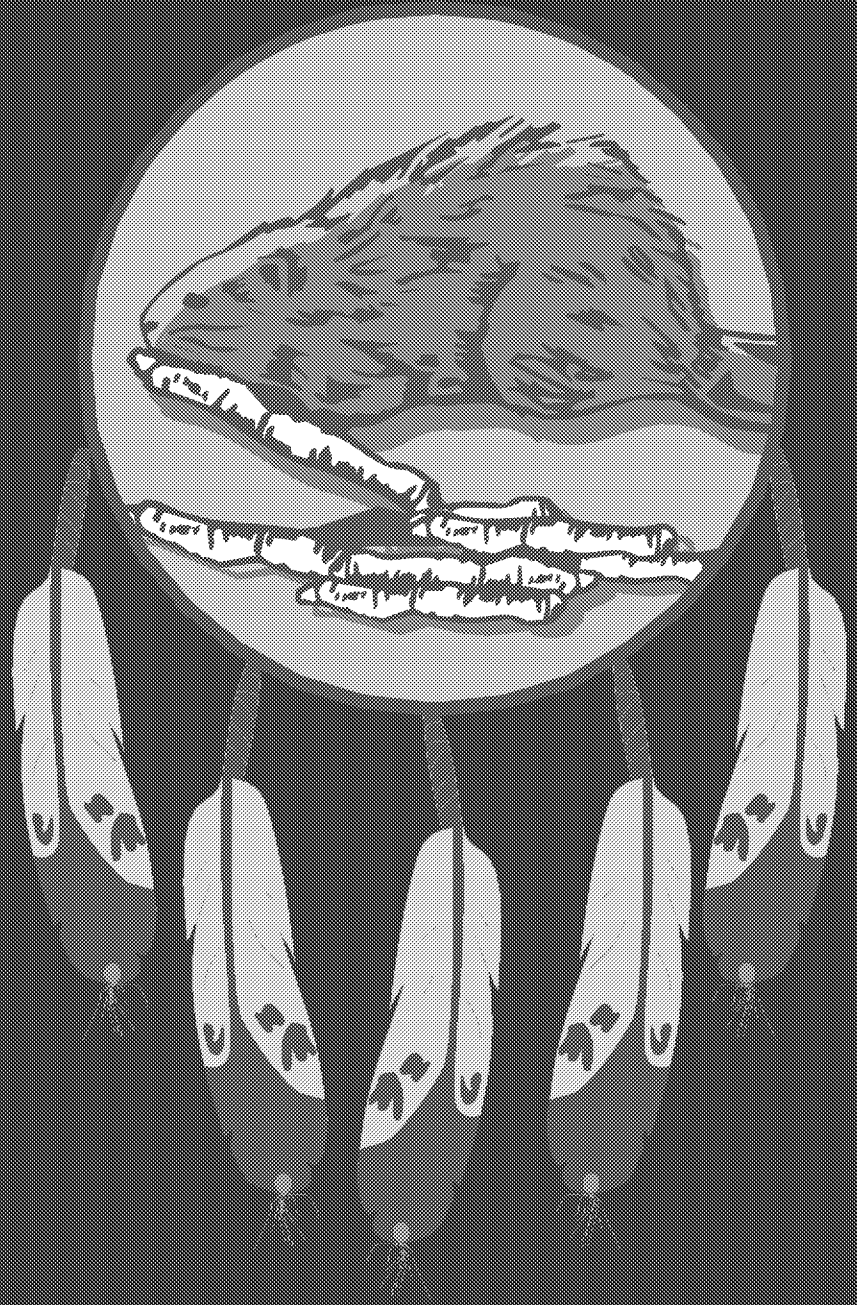

## Construction & Demolition Materials: Concrete Reasons to Manage Them Now!

Building a low cost C&D landfill

Salvaging C&D materials responsibly

Innovative ways to reduce illegal C&D dumping

Welcome to the *Tribal Waste Journal* (TWJ). Each issue features a different waste-related topic and presents ideas, approaches, and activities successfully employed by tribes and villages. The Tribal Voice, an opinions forum, also appears in each issue. The TWJ is published annually. Previous issues of the *Tribal Waste Journal* are available at <www.epa.gov/epaoswer/non-hw/tribal/resource.htm.

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United States Environmental Protection Agency
Municipal and Industrial Solid Waste Division (5306P)
www.epa.gov/tribalmsw


# Five Good Reasons to Manage C&D Materials

Are you a tribal environmental manager looking for ways to prevent illegal dumping of construction and demolition (C&D) materials; save money on disposal costs of these heavy, bulky materials; and maintain clean lands? If so, you'll find many affordable and creative options for tackling C&D materials from the tribes profiled in this issue of the *Tribal Waste Journal*. Embarking on a successful C&D waste management program is a matter of doing your homework—knowing the amounts and types of C&D materials your tribe generates and planning a management approach that fits your situation.

"When we began our solid waste management program, we integrated C&D management into the program; it made sense to manage C&D at the same time as other waste streams."

—Marcie Phillips, Shoshone Paiute Tribes of the Duck Valley Reservation

Tribes at the forefront of this exciting effort use many strategies to approach C&D materials management, but all share the common threads of creativity, partnerships, networking, and discovering the myriad of resources available right in their own backyard. Explains Steve Linsken, environmental planner for the Oneida Tribe of Wisconsin, "Don't reinvent the wheel. Call others who have done what you want to do and pick their brains." The following are five of the most compelling reasons tribes chose to address C&D materials:

## Tips for Developing a Successful C&D Program

- Capitalize on existing infrastructure and resources.
- Collaborate with other tribal departments on program operation and maintenance.
- Maintain close working relationships with federal and local agencies and industry experts.
- Look for inexpensive and creative ways to procure necessary equipment, such as through the U.S. General Service Administration (GSA) government surplus.
- Obtain the proper training and technical expertise you need.
- Take advantage of free technical assistance and federal funding.

## 1. Cost Savings

C&D materials are expensive to send to a municipal solid waste (MSW) landfill because they generally are heavy and bulky and therefore result in higher tipping fees. For this reason, tribes paying to landfill C&D materials can save money by managing these materials separately from their MSW waste or constructing a C&D landfill. Alternately, tribes with their own MSW landfills will save space—which extends landfill life by putting off future expenditures for expansion or a new facility—by creating a specific management plan for C&D materials.

Through ingenuity and partnerships, tribes can find a way to surmount the financial hurdle involved in starting a C&D management program. By reaching out to local partners and conducting a lot of the research themselves, the Bois Forte Band of Chippewa in Minnesota built a model C&D landfill for a fraction of the average cost. The Fond du Lac Band of Lake Superior Chippewas in Minnesota creatively obtained surplus equipment from the United States government to recycle concrete and asphalt.

## 2. Cultural Connections

Managing C&D materials is consistent with traditional Native American culture, in which everything is used. Many C&D materials can be reused by tribal members or departments or recycled to make new materials, lessening impact of C&D activities on the land. For example, the Oneida Tribe of Wisconsin created a team to plan building demolitions in an environmentally sensitive way out of deference to cultural values. The Shoshone Paiute Tribes of the Duck Valley Reservation in Idaho and

### What Are C&D Materials?

Construction and demolition (C&D) materials are generated during construction, renovation, and demolition/removal of buildings, roads, bridges, and non-building structures. In some states, land-clearing debris such as rocks, trees, and soil also are considered C&D materials. C&D materials vary widely from project-to-project and even regionally across the country. The most common materials that make up the C&D waste stream are:

- Wood, including plywood, dimensional lumber, and treated wood.
- Concrete and masonry, including bricks, mortar, and stone.
- Drywall, including sheetrock, gypsum, plaster.
- Roofing materials such as wood, clay, and asphalt shingles.
- Metals such as ferrous metals, aluminum, and copper.
- Paper and cardboard products.
- Plastic, such as wraps, containers, and pipes.
- Other materials such as carpeting, windows, mirrors, ceramic and linoleum tile, light fixtures, and insulation.

C&D materials are classified as a solid waste and their management is governed by RCRA Subtitle D.

EPA estimates that C&D materials constitute between 25 and 40 percent of the total solid waste generated each year in the United State. This estimate is based upon projections provided by the individual states. This relatively broad range represents not only differences in the type of waste each state generates, but also differences in what each state defines as C&D materials. No reliable data are available concerning the percent of C&D materials generated by tribes in the United States.

All C&D management operations should screen incoming materials to ensure that inappropriate and potentially hazardous wastes are not being mixed with C&D materials. The following materials and wastes ***should not be handled*** by a C&D operation:

- Municipal solid waste (MSW)
- Liquid wastes
- Hazardous waste, including household hazardous waste
- Polychlorinated biphenyls (PCBs)
- Asbestos
- Medical or infectious waste
- Animal carcasses
- Sewage or sewage sludge
- Scrap tires
- Used oil
- Batteries
- Mercury and mercury-containing wastes
- Arsenic-treated wood (chromated copper arsenate [CCA]-treated wood)

For more information on proper management and disposal options for these problematic wastes, refer to *The ABCs of C&D Debris* at <www.epa.gov/epaoswer/non-hw/tribal/resource.htm>, or the EPA Office of Solid Waste Web site at <www.epa.gov/osw>. Also, for more information on C&D materials management options visit EPA's C&D Materials Web site at <www.epa.gov/epaoswer/non-hw/debris-new/index.htm>.

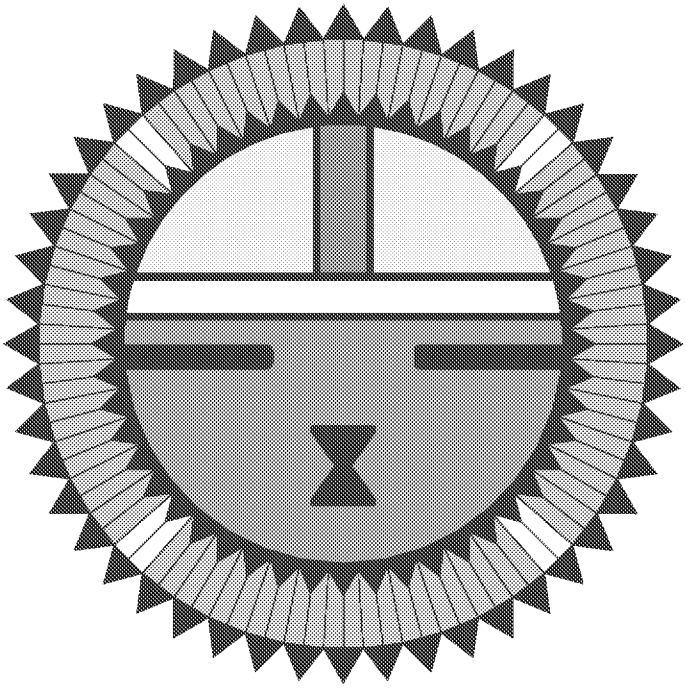
Nevada educates its children on the philosophy behind proper waste management and the connection to tribal tradition.

## 3. Reduction of Illegal Dumping

Tribes that develop a plan for handling C&D materials often do so with the goal—or the positive side effect—of curbing illegal dumping on their lands. For example, the Confederated Tribes of the Colville Reservation in Washington formed a committee to determine how to prevent the illegal dumping of C&D materials, resulting in a building contractor permitting process that keeps tribal lands clean.

## 4. Emergency Planning

In the unfortunate event of a natural disaster, such as a flood, or an emergency, such as a building fire or the collapse of an old building, having a place to dispose of damaged materials will prevent them from building up or forming unattractive and even dangerous dumps on tribal lands. A ruinous flood struck the Turtle Mountain Band of Chippewa Indians of North Dakota, for example, destroying basement and lower-level carpeting, flooring, and walls in many homes. The tribe had to find a way to dispose of this large amount of damaged materials.



## 5. Integrated Solid Waste Management

Finally, a strategy to manage C&D materials should be part of an integrated solid waste management plan—a broad plan outlining how a tribe or village will reduce, manage, or dispose of its solid waste. When tribes consider how to best manage their waste, it is logical to think about C&D materials at the same time. Marcie Phillips, environmental director of the Shoshone Paiute Tribes of the Duck Valley Reservation describes, "When we began our solid waste management program, we integrated C&D management into the program; it made sense to manage C&D at the same time as other waste streams."

# THE TRIBAL VOICE

## C&D Landfill "Biggest-Cost Saver" for Duck Valley

The Duck Valley Reservation, straddling the Nevada and Idaho border, has been disposing of its construction and demolition (C&D) materials—concrete, bricks, some metals (primarily rebar in the concrete), and wood unsuitable for its scrap wood monofill—in an on-reservation landfill since 1997. Operating "on a shoestring budget," the Shoshone Paiute Tribes relied heavily on "resources in their own backyard" to build a C&D landfill that Marcie Phillips, environmental director, calls "our biggest cost-saver." The *Tribal Waste Journal* (TWJ) asked Ms. Phillips to map out her tribes' blueprint for success. The following interview confirms that key elements for a successful C&D management program include:

- Using tribal ingenuity and local resources to cut costs
- Conducting extensive research and visiting active C&D landfills
- Educating the community about what can go in a C&D landfill
- Promoting reuse and recycling of C&D materials to the community
- Developing contract specifications to reduce illegal dumping of C&D materials
- Ensuring C&D management is part of an integrated solid waste program

**TWJ:** Why should tribes be concerned with properly managing C&D materials?

**Ms. Phillips:** Every tribe should have a C&D landfill because it will be their biggest cost-saver if it's designed properly. Even if tribes don't want a landfill or don't have the land space, they should at least segregate their C&D materials and manage it separately, because C&D landfill tipping fees are significantly less than municipal solid waste landfill fees.

**TWJ:** What motivated your tribe to begin a C&D management program?

**Ms. Phillips:** On the reservation, resources for waste management have always been on a shoestring budget. Looking at C&D waste, we decided to manage it separately from our municipal solid waste for financial reasons. C&D waste is heavy

and expensive to landfill; plus, people can reuse or recycle many items from the C&D waste stream.

**TWJ:** How does C&D materials management fit into your integrated solid waste management plan?

**Ms. Phillips:** We integrated C&D management into our solid waste management program from the very beginning. It just made sense to manage C&D at the same time as our other waste streams. When we started C&D landfilling in 1997, waste management was new to the reservation. We had 15 open dumps at the time. We had to conduct a lot of education and outreach on waste management, including C&D waste.

Figuring out how to make a project like this happen requires ingenuity. For example, we saved on costs by using tribal staff to dig the first disposal cell. For the second cell, we worked with IHS [Indian Health Service], and for the third pit, we arranged for one of our building contractors to dig it in exchange for free disposal.

The C&D cells cover about 10 to 20 acres, each of which measures 150 by 60 feet. Our C&D landfill manages all the C&D materials generated on the reservation, as well as materials from federal facilities with which we have disposal agreements. The landfill receives approximately 100 to 500 cubic yards of C&D materials per week—approximately 10 percent of the reservation's waste stream. We are using our GPS and GIS capabilities to map the area so we will know in the future where the old pits are located.

**TWJ:** What resources did you find most useful in getting your program started?

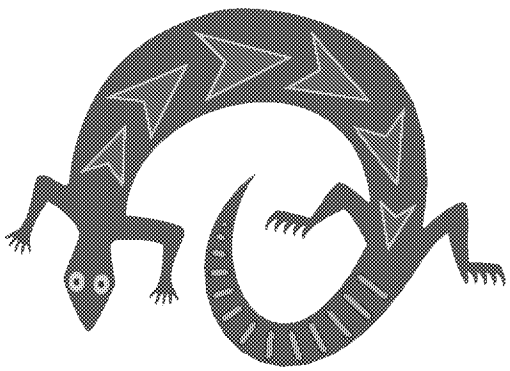
Horses now graze on the beautiful land formerly occupied by Duck Valley's open dump site.

**Ms. Phillips:** When we embarked on this project, we conducted extensive Internet and field research on C&D landfilling. We looked at waste characterization studies of tribal C&D waste streams, and we researched what others are doing and the types of materials they are monofilling. But the most valuable resource was visiting communities with active C&D landfills. We visited towns in Texas, California, Florida, and New Jersey. We were very fortunate to be able to visit the city of Beaumont, Texas—it has a great recycling program. My management was hesitant to fund this travel, but I told them that if we want to do it right, we have to see first-hand how other successful landfills operate!

EPA's C&D Web site (www.epa.gov/epaoswer/non-hw/debris-new/index.htm) is very useful and recently provided information that helped us manage asphalt from a school remodeling project. The Natural Resource Conservation Service (www.nrcs.usda.gov) is another great resource. Also, the Solid Waste Association of North America (SWANA) offers great guidance and training courses. *RCRA Regulations and Key Word Index* is yet another excellent resource covering the RCRA regulations.

**TWJ:** Do you allow or promote reuse of C&D materials by tribe members?

**Ms. Phillips:** Yes, in fact we have some great stories of tribal members reusing materials that came to the C&D disposal site. One of my favorite examples is a tribal member reusing exterior cedar boards removed during the renovation of a tribal building to build a horse barn and half of a garage. Another common practice is using broken pieces of concrete from building demolitions as paving stones—secured with mortar—to build driveways and walkways;



it's really beautiful. Tribal members also reuse bricks to make flowerbeds and wood that doesn't go into the scrap wood monofill to make fence posts for ranch fences.

**TWJ:** How does the community find out that these materials are available?

**Ms. Phillips:** They find out through our community outreach efforts. We implement our entire integrated solid waste management program in a very community-based manner that involves extensive community outreach. One part of this is our tribal environmental newsletter, "Talking Trash," that is distributed to community members on a monthly basis. We also share information through public meetings and our extensive public education efforts, especially through the schools.

**TWJ:** How do you ensure that C&D materials are managed properly on your reservation, especially by outside contractors?

**Ms. Phillips:** Construction is increasing within the tribe right now; we are building a new shopping center and new tribal facilities. When it comes to big projects such as these, ensuring that the contractors manage their waste properly is really a hands-on, one-on-one process. It has to be.

When contractors first come in, we initiate the process of educating them on C&D management requirements through a phone conversation about waste management for their project. We then follow up with a site visit to discuss the types of waste they will be generating and to educate them on not dumping illegally. We also write specifications into the contract that requires contractors to use our waste management system.

Contractors must pay for the disposal of the waste generated from their projects. Contractors rent 40 cubic yard roll-off containers from us to collect C&D waste at their job site. We charge a flat rate for the container rental, which includes all hauling and tipping fees. This is a nice source of income for the tribe. Most tribes do not have enough money to cover operation and maintenance of their solid waste management programs; this type of revenue can help make a program sustainable.

> "It takes a little hustling to develop a program if you don't have funding, but most tribes would be surprised to see the resources they have in their own backyard."
>
> –Marcie Phillips, Environmental Director of the Duck Valley Reservation of the Shoshone Paiute Tribes

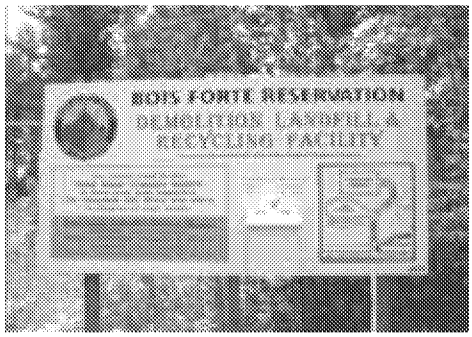
**TWJ:** Did you form partnerships in order to develop your solid waste management program?

**Ms. Phillips:** Yes, we have 23 partners for the whole program! There are too many to name—EPA, IHS, the U.S. Forest Service, USDA Rural Development, and several state agencies from Idaho, to name a few. We have integrated the program into our operations—the partnerships are still there if we need them—but we run entirely on our own now.

**TWJ:** What advice do you have for other tribes attempting to manage their C&D materials?

**Ms. Phillips:** Tribes should strive to run an integrated program incorporating all phases and types of waste management, including C&D. Educating people on what can go in a C&D landfill, as well as broader waste management practices, is critical. When you begin researching your program, it is very helpful to conduct Internet research and to review EPA resources, university resources, and other tribal programs. It takes a little hustling to develop a program if you don't have funding, but most tribes would be surprised to see the resources they have in their own backyard.

# Bois Forte Builds Low-Cost C&D Landfill




**While most construction and demolition (C&D) disposal facilities cost $500,000 to $1 million to design and build, the Bois Forte Band of Chippewa's small-scale, low-tech operation cost just a fraction of that—only $100,000. Today, numerous other tribes strapped for cash but determined to begin similar programs are asking, "How did you do so much with so little?" Darin Steen, the Bois Forte environmental services director, happily recounts the secrets to the tribe's success. Above all, he says, "We did a lot of the work ourselves. I gathered lots of documents and spoke to many people in designing and developing our landfill. We also did much of the site preparation ourselves. Doing it yourself can be a lot cheaper than hiring a consultant."**

**Other key factors in designing a successful program include:**

- **Taking advantage of free technical assistance**
- **Maintaining close working relationships with several federal and local agencies**
- **Capitalizing on existing infrastructure and resources**
- **Collaborating with other tribal departments on program operation and maintenance**

One of the keys to the Bois Forte Tribe's success was its ability to work with different agencies in designing and constructing its site. "There is a lot of free technical assistance available to tribes from the EPA regional offices, IHS [Indian Health Service] engineering services, and BIA [Bureau of Indian Affairs]." In addition to federal agencies, Mr. Steen encourages tribes to develop partnerships with state and local agencies, local universities, and local facilities and companies.

From its creation, the Bois Forte Environmental Program has been cultivating partnerships to help achieve its solid waste goals. Starting in 1993, the tribe worked with BIA and IHS to close its open dumps and open two transfers stations. By 1994 the two transfer stations were completed and open for business, and by 1995, the tribe's new solid waste management system was in place. Under this system, tribal members are required to haul their trash to the transfer stations and pay for disposal.

In 1996, when the Bois Forte Tribe received a HUD grant to build 20 new homes on the reservation, managing C&D materials became a new concern. With assistance from EPA, the tribe developed an integrated solid waste management plan, and included C&D materials management in this process. The tribe determined that shipping the C&D materials from the demolition of the abandoned buildings and new construction to an off-reservation licensed or permitted C&D disposal facility was too expensive, so it decided to open its own C&D landfill instead.

Looking for help in designing and building the C&D landfill, Mr. Steen turned to old friends—a professor from Bemidji State University and some IHS engineers. As a way to reduce construction costs, they looked for design options that most efficiently used the tribe's existing resources.

> "We did a lot of the work ourselves. Doing it yourself can be a lot cheaper than hiring a consultant."
>
> —Darin Steen, Environmental Services Director, Bois Forte Band of Chippewa

The first step in designing the C&D landfill was finding a suitable site. The tribe selected a two-acre site adjacent to the closed open dump. This site had several features that allowed the tribe to take advantage of existing infrastructure. For example, the group decided to use the clay excavation pit previously dug to provide cover material for the tribe's open dump closures as the disposal area. Using this pit saved the tribe excavation costs and, because the soil is clay, it does not require soil improvement or a synthetic liner system to protect ground water. In addition, the site is contained inside the open dump area's fenced and locked perimeter, and a road already leads to the site and only needed to be extended to reach the C&D management area. Finally, a ground water monitoring system is already installed for monitoring the closed dumpsite. To reduce construction costs, the tribe extended the road and prepared the disposal area itself.

Taking advantage of its well established relationship with neighboring St. Louis County, the tribe consulted with county officials on developing design and operation standards for the site. The tribe asked St. Louis County officials about their C&D guidelines and consulted the federal RCRA Subtitle D Part 257 and 258 solid waste landfill regulations. The tribe and county's excellent relationship is based upon years of collaboration and mutual support on several waste management issues. The tribe and county, for example, worked together to close the tribe's open dumps and build its transfer stations. The county also collects the tribe's scrap metal, white goods, and tires for recycling, and collaborates with the tribe on periodic community household hazardous waste collections.

For the Bois Forte Environmental Program, establishing partnerships applies to internal parties too. Environmental Program staff work closely with the Bois Forte Tribal Housing Authority and Department of Public Works (DPW) on operation and maintenance of the C&D landfill. Because the C&D landfill only accepts the tribe's C&D materials, the site is opened only as needed. Whenever the Housing Authority generates C&D materials, it coordinates use of the landfill with the Environmental Program. These two programs also work closely to promote source reduction—whenever possible, the Housing Authority removes and reuses windows, doors, and lumber pieces that are in good condition when demolishing buildings. The Environmental Program also uses a loaned DPW bulldozer and other equipment and staff for C&D landfill operations.

To assist the Housing Authority and promote proper C&D management on the reservation, the tribe purchased a tandem-axle hydraulic

### THE BOIS FORTE C&D LANDFILL ACCEPTS THE FOLLOWING MATERIALS:

- Concrete
- Lumber
- Asphalt shingles
- Wall board (e.g., sheet rock)
- Windows
- Plastic
- Insulation

### IT DOES NOT ACCEPT:

- Liquid wastes
- Paints
- Hazardous waste

## THE ABCS OF C&D DEBRIS

From June 15 through 17, 2004, the Bois Forte Band of Chippewa Indians hosted "The ABCs of C&D Debris" training course at its Fortune Bay Resort. The training course, developed with assistance from EPA Region 5 and the Bois Forte Band, covered the gamut of C&D materials management. Fourteen instructors delivered presentations on such topics as tribal-specific issues, planning and funding, C&D waste reduction, C&D recycling, C&D landfills, waste screening, and safety.

Twenty-two registered tribal members from EPA Regions 5, 7, 8, 9, and 10 attended the training. A pre-course survey revealed that 80 percent of the attendees felt that they had limited knowledge of C&D practices and that their tribe did not have a C&D management program.

For a copy of "The ABCs of C&D Debris: Tribal Construction and Demolition Debris Management Training Course," visit EPA's Waste Management in Indian Country Web site at <www.epa.gov/epaoswer/non-hw/tribal/resource.htm>.

## Nambe Pueblo Partners with the Private Sector for Landfill

Establishing yet another type of partnership—a tribal-private sector collaboration—the Nambe Pueblo Reservation in New Mexico is making its combined MSW and C&D disposal facility a reality. Working through the Nambe Pueblo Development Corporation (NPDC)—a tribal entity that strives to identify economic development opportunities—the tribe has reached an agreement with a non-tribal, private company called MTC Industries to develop, build, and manage the facility.

Under this agreement, the tribe provides the land and retains majority ownership in the endeavor (51 percent). MTC Industries, with 49 percent of the ownership, is funding the construction and operation and maintenance of the facility, including supplying all the trucks and heavy equipment. The Nambe Pueblo Department of Environment and Natural Resources (DENR) also plays a role by providing oversight for the NPDC and ensuring that environmental regulations are followed.

While MSW and C&D materials will be deposited together at this 100-acre site, the tribe plans to continue separating and reusing as much of the C&D materials as possible before disposal. For several years, the tribe has been crushing waste concrete for use as a base material for roads. This recovered gravel also is available for tribe members at no cost for use in driveways, private roads, and other landscaping projects. Any unused recovered material is sold to local construction companies. The tribe also separates rebar from concrete before crushing and recycles it as scrap metal. In addition, any usable lumber is removed from the debris and either given to tribal members or sold for reuse.

According to Steve Romero, water quality technician and former director of the DENR, "The project is a win-win situation for the tribe and MTC because the tribe has the land to lease and can make money off tipping fees, while MTC has the money to fund the project. It also should provide a foundation for economic development and create job opportunities for the Nambe Pueblo." To increase tipping fee revenues, the tribe has agreements to accept MSW waste from the surrounding communities, including the Los Alamos National Laboratory.

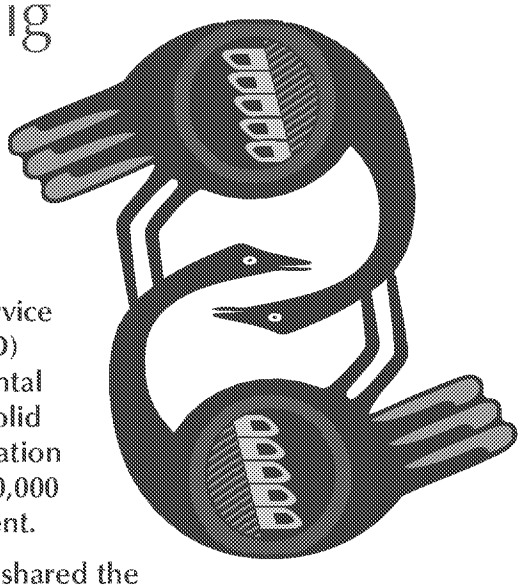
Demolition materials produced by the Nambe Pueblo, waiting for processing through its cooperative effort with MTC Industries.

Bois Forte's hydraulic trailer and small roll-off bins help control C&D management and generate revenue for the tribe.

trailer and five small roll-off bins in 2002. The Housing Authority, contractors, or homeowners can rent these open-top containers from the Environmental Program for a flat fee. This fee covers roll-off delivery to the construction site, hauling to the landfill, and a moderate tipping fee. For only $20,000—that is, $12,500 for the trailer and $1,500 for each roll-off—the Environmental Program has found an effective way for promoting proper C&D management and generating revenue. Revenue from the trailer rentals and tipping fees at the site are used to help cover a portion of the operation and maintenance costs for the site and pay back the tribal DPW for use of its equipment and staff. To help educate the community on the use and availability of this equipment, the Environmental Program distributed a one-page fact sheet describing the roll-offs.

Looking back, Mr. Steen acknowledges that developing the C&D landfill was an easy sell to the tribal council. Owning and operating such a facility fit in nicely with tribal policies of self-governance and self-sufficiency. The C&D site also helps reduce transport and disposal costs and keeps money and resources within the tribe. "Overall, it was a pretty smooth process," Mr. Steen recalls.

# Creative Collaboration Brings Big Gains to North Dakota Tribe



**For tribes in North and South Dakota, the winds of change are clearing away old mistrusts and misgivings about the Feds, making way for a new level of cooperation. The Turtle Mountain Band of Chippewa partnered with the Indian Health Service (IHS), the U.S. Department of Agriculture's Rural Development (RD) Agency, the Bureau of Indian Affairs (BIA), and the U.S. Environmental Protection Agency (EPA) in the early 1990s to build a sustainable solid waste program. The team closed an open dump, built a transfer station and C&D landfill, is in the process of cleaning up approximately 20,000 tons of stockpiled waste, and purchased necessary heavy equipment.**

**Describing its collaborative efforts as a "good marriage," the team shared the secrets of its success with the TWJ. From Turtle Mountain's experience, you will learn how:**

- **Federal agencies formed close connections among themselves to better serve tribes.**
- **Turtle Mountain built its solid waste program using federal engineering and technical assistance and funds.**

## Cultivating Cooperation

The seeds of Turtle Mountain's success in the tribal/federal partnership were planted with a memorandum of understanding (MOU) signed in 2000 by many federal agency regional directors. While this document could have easily remained a "paper promise" to work together, field officials from IHS, RD, and BIA made it work by determining how to align the divergent missions of their agencies for tribal benefit. "We [RD, BIA, and IHS] all have different missions," explains RD civil engineer Rod Beck. "After signing the MOU, we began at the field office to figure out where we could overlap to supplement each others efforts."

Jack Sorum (IHS) and Mitchell Latucer (Turtle Mountain) at the Turtle Mountain waste site.

According to Brent Rohlfs, a solid waste coordinator with the Aberdeen Area IHS and a licensed professional engineer, this level of coordination makes the Turtle Mountain project unique. "The funding available to IHS to provide assistance does not match the level of need," Mr. Rohlfs explains. "The Turtle Mountain clean-up project is unique because it coordinates the efforts of many partners." Thus, it allows the full range of agency resources available to be brought to the table in support of tribal needs and requirements.

Mr. Rohlfs' position is another unique aspect of the project that contributed to its success. Mr. Rohlfs focuses exclusively on tribal solid waste issues. Generally, operations and maintenance coordinators and tribal utility consultants are responsible for water, sewage, and solid waste issues—with water issues usually the priority.

> "The Turtle Mountain clean-up project is unique because it coordinates the efforts of many partners."
>
> —Brent Rohlfs,
> Solid Waste Coordinator
> Aberdeen Area IHS

Cooperation between the tribal environmental division and the

tribal council is just as critical to success. Mitchell Latucer, Turtle Mountain solid waste director, kept tribal council members informed and up-to-date on the project, which is especially important for long-term, multi-year projects, as new tribal council members are elected and take office. As Mr. Latucer explains, "It can take months for the tribe to get the funding and paperwork together and additional time for the tribal council to get up to speed and move forward on a project."

Turtle Mountain's new transfer station.

Wastes requiring proper disposal.

## Finding Funds

The arena of federal grants is not only competitive, but it requires perseverance and patience to become proficient at complying with a myriad of application rules, deadlines, and required studies and documentation. Fortified by their strong relationship, Turtle Mountain and the federal agencies plunged head-on into this world and aggressively pursued funds from numerous agencies. The work paid off. "These partnerships not only helped us get the necessary money to fund the projects," Mr. Latucer explains, "but IHS and RD also provided essential support and technical assistance."

The huge pile of waste at Turtle Mountain, combined with the need to find funding for all components of a solid waste program, convinced the tribe and federal officials to opt for a phased approach to funding. In 1995 the tribe obtained funding from IHS to construct a transfer station and BIA and RD money for equipment to operate and maintain it. Specifically, RD's grant funds helped purchase equipment, such as a hook truck, a pup trailer, and the roll-off containers for hauling waste from the transfer station to the neighboring landfill.

Using the grants as efficiently as possible is another key to Turtle Mountain's financial successes. For example, as Jack Sorum, an IHS tribal utility consultant, explained, "Rural Development does not provide engineering services to tribes, so tribes are often forced to use Rural Development's grant money to purchase these services. IHS can provide engineering services to tribes for free. By enlisting our help, [tribes] can make Rural Development's money go farther. It is a good marriage for all of us." At the tribes' request, IHS prepared the preliminary engineering report section of the RD grant application for Turtle Mountain. This 20- to 25-page report provides the engineering analyses and assessments of the project's technical needs and includes the environmental review as required under the National Environmental Protection Act (NEPA).

Before engineers finished building the transfer station, however, the tribe needed to buy equipment to haul its stockpiled municipal solid waste (MSW) to the nearest permitted landfill—a 252-mile roundtrip,

### Other Tribal/Federal Partnerships

[illegible] on Turtle Mountain's success, tw[illegible] Nor[illegible]ota tribes forged cooperativ[illegible]on-ships with federal agencies:

**Spirit Lake Reservation** received $845,000 from IHS and RD in 2001 to build a large transfer station and a C&D landfill and an additional $662,000 for collection and transfer station equipment in 2003.

**Three Affiliated Tribes on Fort Berthold Reservation** received [illegible]0 from IHS and RD in 2004 for Phase I of its solid waste management project. This money was used for the purchase of collection equipment, construction of a storage and office building, and development of a C&D landfill.

## TURTLE MOUNTAIN TACKLES C&D MATERIALS

A key component of the Turtle Mountain Band of Chippewa's cleanup effort is its C&D landfill. This landfill allows the tribe to separate C&D materials from stockpiled waste and dispose of them for significantly less than shipping it off site for disposal. While the unlined cells are relatively small and are expected to fill up quickly, the site design allows the tribe to excavate more cells as needed.

The amount of C&D materials managed by the tribe varies from year-to-year. In 2005, the C&D landfill received 35 to 40 tons of cement, wallboard, wood, asphalt shingles, and other C&D materials each week. In comparison, the transfer station currently processes 100 tons of MSW each week. The amount of C&D materials could increase significantly in the near future as the tribe recently condemned an entire 100-home housing unit due to black mold infestation. The tribe is in the process of determining how to manage the materials from the demolition. Other unanticipated events, such as a flood several years ago, can generate large amounts of C&D materials.

Initially, the tribe had trouble choosing a site for the C&D landfill because the transfer station, capped open dump, and waste stockpile already occupied a large portion of the available 23 acres. IHS assisted the tribe with identifying a suitable location for the C&D landfill and also prepared the engineering design. In accordance with plans and specifications, the tribe's contractor built two C&D cells with the necessary access roads and an access ramp with a 10:1 slope for easy access and truck safety. The two cells constructed to date have cost $36,252.

Prior to completing the C&D landfill, the tribe hired a contractor to remove and recycle scrap metal from the stockpiled waste. IHS helped the tribe hire the contractor by assisting with developing a request for proposal. The contractor hired by the tribe removed and recycled 420 tons of scrap metal. Unfortunately, according to Mr. Latucer the expense of paying the contractor to do this "ate up any revenues the tribe might have generated through scrap metal sales. In the future, however, we expect to begin generating revenue from scrap metal sales since construction contractors now are required to separate metals from the overall waste stream."

This tall pile of metal waste was one of the major motivating forces behind Turtle Mountain's cleanup effort

so it worked with IHS and RD to obtain the necessary funds. According to Mr. Latucer, a significant portion of the waste was C&D materials, both from ongoing housing construction on the reservation and from household items that were ruined in a flood.

Unfortunately, as the pile grew, so did its potential to harm tribal members and their lands. In fact, EPA Region 8 and the tribe ranked removing the solid waste at the Turtle Mountain site as a top priority. These actions put the problem on a fast track to resolution. As a precautionary measure, the tribe and IHS installed monitoring wells to watch for ground water contamination associated with the temporary waste storage site.

To begin disposing of the waste from this massive pile, the tribe entered Phase II of the project, which entailed building a C&D landfill and cleaning up and closing the waste site. Again, the tribe succeeded in securing funds in 2003 from IHS and RD to accomplish these tasks. The tribe contributed additional funds to the effort. A portion of this money allowed the tribe to buy a front-end loader.

During Phase II, at the request of the tribe, IHS worked to:

- Design the inert/C&D waste cell.
- Provide the technical specifications for the tribe to include in its request for proposals.
- Select a site for the C&D cell.
- Assist the tribe in soliciting outside contractor bids to construct the cell.

By 2004, everyone's efforts had paid off with a fully functioning solid waste program, including a fee structure to make the program sustainable. "The greatest obstacle to success," according to Mr. Rohlfs, "is developing a self-sustaining program. It's hard to get over the final hump." Now, all that remains is removing the final 3,800 tons of stockpiled waste and closing the site.

## Tips for Tapping into RD's Native American Set-Aside Grant

In 2005, Congress appropriated $16 million for the Native American Set-Aside Grant. These funds are designed to help federally recognized Indian tribes pay for all or part of the cost of water and waste disposal facilities. For solid waste projects, RD's Rural Utilities Services (RUS) will pay for all aspects of constructing a new facility, or repairing or upgrading an old one, including facility construction, equipment, waste cleanup, legal fees, and land purchases.

Tribes can apply for these grants year round, though the target date is April 1 of each year. Typical grant amounts range from $100,000 to $500,000. Each state decides whether an application qualifies for tribal set-aside consideration, then submits the request for funding to the national office.

RD gives this advice for tribes interested in applying for solid waste funding:

**Contact your state RD RUS program director.** Ask for the required information to submit a preliminary funding application. This application helps RD determine your loan/grant ratio. To find the director's name on the Web, go to <www.rurdev.usda.gov> and click on "state offices."

**Obtain an engineer** from your IHS Office of Environmental Health and Engineering or hire a private consultant. The engineer can help you work on the preliminary application and educate you on RD's application process.

**Set up a meeting with the state RD RUS program director** or specialist to discuss your project and funding possibilities. Only those tribes that qualify are eligible for a 100-percent grant.

If you decide to pursue funding, **work with your engineer to complete the full application**, including the environmental review and the preliminary engineering report, which consists of an assessment of the best/most cost-effective approach to the problem. The environmental review can take from one month to a year, so it is recommended that your engineer complete it before submitting the full application.

## Sharing the Secrets of Success

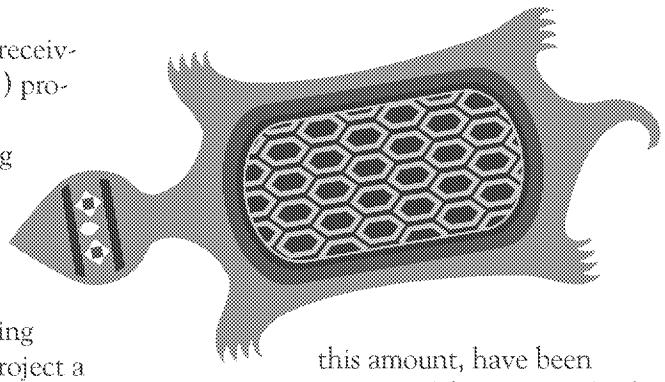
A decade of shared experience in cleaning up open dumps and helping tribes establish sustainable solid waste programs has given the IHS/RD team time to fine-tune its model for success. Most importantly, federal officials acknowledge that building a solid waste program is not easy or quick. It requires staying power. At times, the process can feel overwhelming and fraught with difficulty. For those tribes willing to commit their time, energy, and talents to the long-term process, however, the rewards are substantial: a cleaner, healthier environment and a renewed sense of pride in their lands.

The federal team provides the following advice for tribes looking to follow Turtle Mountain's model:

- **Have a sustainable solid waste management plan in hand.** Tribes should aim to develop a solid waste management plan independently before they approach other agencies "so they know what they are asking for," says Mr. Sorum. "In fact," he adds, "many federal agencies require that the tribe have a solid waste management plan in place before a project will be funded." In addition, federal agencies are more likely to support a sustainable program or project. Devise a method of sustaining your program/project once the grant money runs out, such as a fee structure. For the Turtle Mountain project, the tribe supports the transfer station's operation and maintenance through a user fee attached to residents' water bills from the rural water system, and private haulers pay a tipping fee at the

transfer station. Residents pay private haulers for waste collection services.

- **Form a team.** Mr. Beck suggests that tribes team up with IHS and apply for RD grants so that "everyone is working to solve one problem." To do this you need to contact the right people. In IHS, start with your tribal utility consultant or your Division of Sanitary Facility Construction contact. In RD, start with the state engineer or Rural Utility Service Program Director and ask about the availability of tribal set-aside funds and how to access them (for more information, see the Tips for Tapping into RD's Native American Set-aside Grant side-bar on page 14).
- **Get help.** Ask for help and advice on improving your application. In some cases, you might have to go beyond your local contact to get the assistance you need. Enlist the help of other agencies where appropriate, as Turtle Mountain did by having IHS complete the preliminary engineering report for RD's application.
- **Match funds.** Mr. Sorum explains that tribes can increase their chances of receiving funding by: 1) providing a tribal match or securing a match from another agency or party (such as RD) and 2) making the solid waste project a tribal priority. Listing it as your tribe's number one priority and securing matching funds will "greatly enhance your chances for being successful," Mr. Sorum advises. Historically, he says tribal grant requests less than $500,000, even though the total project cost might exceed this amount, have been more successful in getting funded by agencies such as RD, IHS, and BIA.

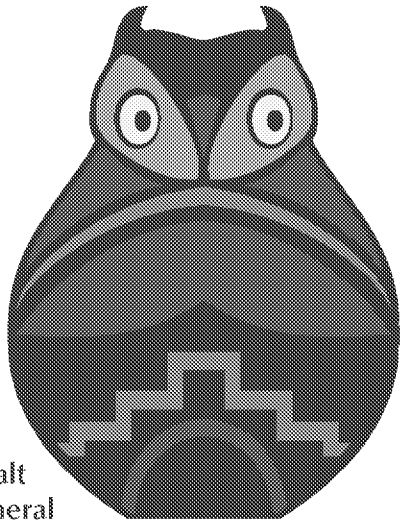


"These partnerships [with federal agencies] not only helped us get the necessary money to fund the projects, but IHS and RD also provided essential support and technical assistance."

—Mitchell Latucer,
Solid Waste Director
Turtle Mountain Band of Chippewa

- **Develop a memorandum of agreement (MOA).** Once you secure funding, develop an MOA that spells out each party's roles and responsibilities. An MOA provides a blueprint for any project and will help it be better managed. For example, Turtle Mountain signed an MOA with IHS and RD to document responsibilities of the agencies and the tribe, how contractors would be procured, and how the project funding was to be used. Tribes also can enter into a three-way MOA with a federal agency and a private consultant or organization. These types of agreements typically are done at the tribal council or tribal business council level, not at the tribal department level.

# Fond du Lac's Ingenuity Makes Demolition Recycling a Reality



**Reusing or recycling heavy demolition materials can save tribes money, but buying the equipment can be a daunting prospect for some tribes. However, this difficulty shouldn't deter tribes from pursuing such a venture, asserts Bruce Savage of the Fond du Lac Band of Lake Superior Chippewa in Minnesota. "Native Americans," he explains, "possess a lifetime of experience dealing with adverse conditions and finding solutions."**

**True to his word, in 2001, the Fond du Lac tribe launched a concrete and asphalt recycling program by obtaining rock-crushing equipment through the U.S. General Services Administration's (GSA's) government surplus program. Recycling concrete and asphalt not only saves the tribe money in waste transportation and disposal costs, but also curbs illegal dumping and reduces the environmental impact of road construction.**

## Overcoming the Financial Barrier

For more than 20 years, Fond du Lac Construction has handled all of the commercial construction on the Fond du Lac Reservation, including roads, parking lots, convenience stores, a golf course, the community center, and expansions on the gaming casino and tribal buildings. "The company is very busy, as the tribe is constantly building," says Mr. Savage, a member of Fond du Lac Construction's Aggregate Division, which runs the concrete and asphalt recycling program.

> "Native Americans possess a lifetime of experience dealing with adverse conditions and finding solutions. They are innovative by nature. They need to be to survive."
>
> — Bruce Savage, Fond du Lac Band of Lake Superior Chippewa in Minnesota

Looking to reduce C&D disposal costs, reduce the impact of construction on the reservation, and curb illegal C&D dumping on the reservation, the tribe began investigating the idea of processing concrete and asphalt for reuse. Equipment costs proved the most formidable barrier. "For a tribe to start a rock-crushing operation from scratch," Mr. Savage explains, "would require close to $1 million. Acquiring and maintaining the equipment are the biggest costs."

Innovatively, Fond du Lac looked to GSA as a source of surplus equipment instead of trying to purchase the equipment outright. Many tribes might not realize that GSA maintains a listing of surplus equipment and supplies. According to Mr. Savage, any tribe that has signed a treaty with the U.S. government can ask its Bureau of Indian Affairs (BIA) representative about its eligibility to request these items. Fond du Lac's road maintenance contract with BIA also makes it eligible for GSA surplus materials. Many GSA surplus materials are free to eligible groups, only requiring the recipient to pay shipping costs.

Although access to GSA's surplus equipment seemed a cost-effective way to launch the program, it took years for the tribe to secure a rock crusher. Mr. Savage chuckles, "I spent years searching the GSA Web site for crushing equipment and never saw anything listed. People used to laugh at me when I asked about it." A GSA district representative told Mr. Savage he had never seen this type of equipment available through GSA in his 20 years on the job.

Fond du Lac's GSA-procured rock crusher

Eventually, patience and persistence paid off. In 2001, the GSA representative called to say some equipment had recently become available, and the tribe should

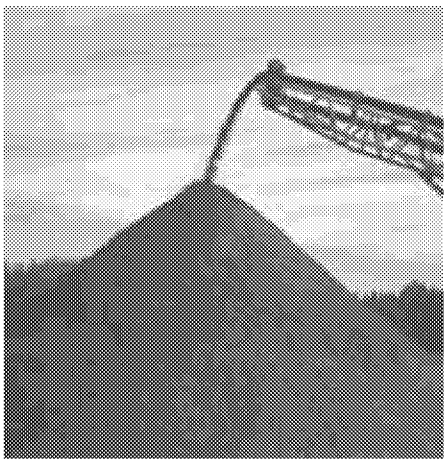
secure it immediately. After extensive paperwork, Fond du Lac acquired the crusher, and the recycling operation blossomed and is now self-sufficient. "If you can do it efficiently, these operations can pay for themselves," Mr. Savage says. "You won't necessarily make money, but you can cover the cost of new material and save on disposal costs."

## Details of the Operation

Since 2001, Fond du Lac Construction has recycled approximately 10,000 tons of concrete and asphalt. Generated during demolition activities on the reservation, the concrete and asphalt are reused as foundation materials for new roads on the reservation.

The tribe does not generate sufficient amounts of concrete or asphalt to operate the crusher on a regular basis. Instead, it stockpiles the materials until enough is accumulated to make processing worthwhile. Currently, the Aggregate Division has stockpiled approximately 30,000 tons that it will process within a year.

As an additional benefit, Fond du Lac also can use the rock-crushing equipment to separate out reusable topsoil from construction sites. The topsoil, which the Aggregate Division reuses or sells for $12 to $16 per ton, can be used for yard finishing at private residences and erosion control along roadsides. In 2003 and 2004, the division produced more than 60,000 tons of screened topsoil, generating a savings of $750,000. The Aggregate Division also uses the crushing equipment and a wash plant to manufacture gravel for use in septic tanks, drain tiles, sand filters, and other construction projects on the reservation.



Crushed asphalt on conveyer belt.

## Keys to a Successful Program

Mr. Savage believes that training and networking have helped him create a successful operation. Before joining the Aggregate Division, he received two years of training from an aggregate industry expert from the local union hall. Mr. Savage continues to expand his knowledge by maintaining a dialogue with other technicians in the field, saying, "Other rock crushing companies have been very open to sharing information and giving advice. It is a very limited group—not many people actually do this—but most have been very helpful."

Success also depends on good heavy equipment, engineering, mechanical, welding, and math skills. "You need to be a problem solver and be able to fix things quickly," Mr. Savage explains "If our crusher goes down, I need to be able to fix it immediately, otherwise we are losing money." For these reasons, he thinks a lot of Native Americans would be good in the aggregate industry because, "Native people are innovative by nature. They need to be to survive."

## BUILDING APPROPRIATE INFRASTRUCTURE: "WE WANT TO HAVE CLEAN LANDS."

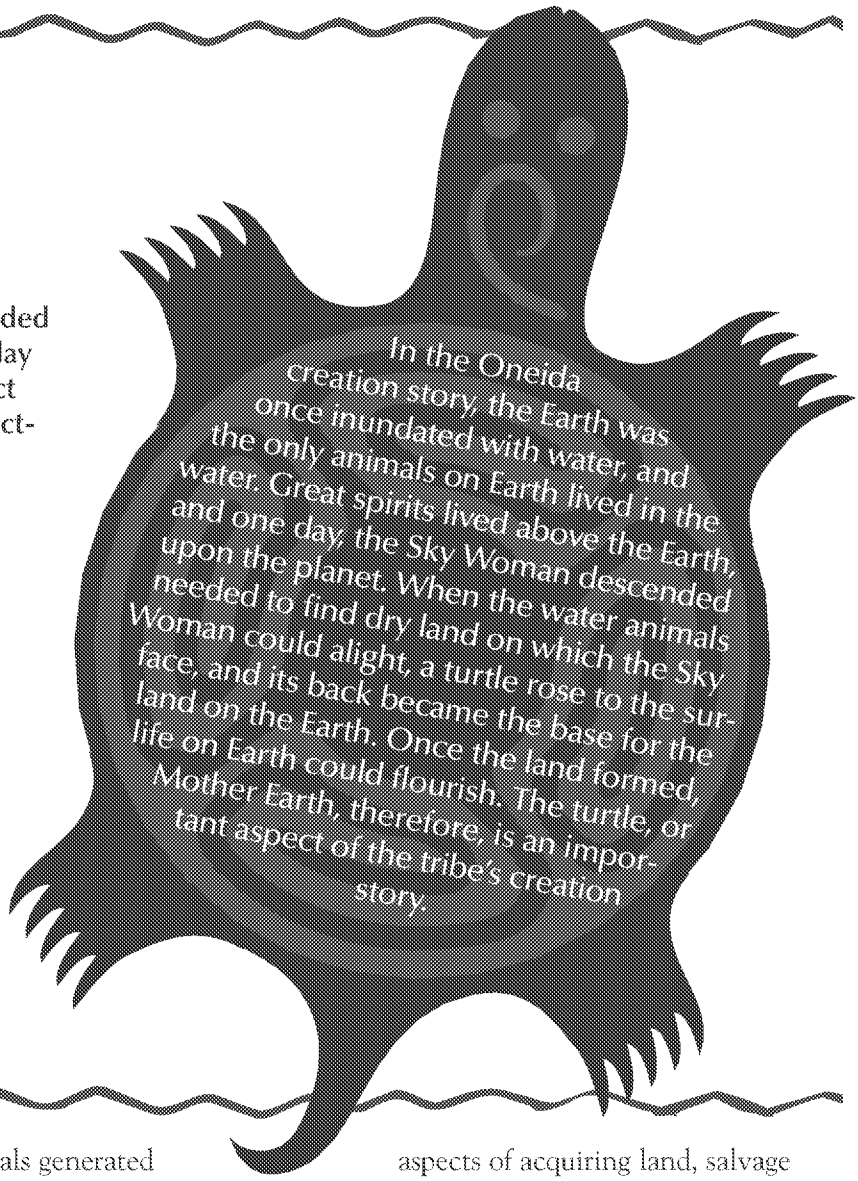
Recycling concrete and asphalt is just one of many waste management activities underway on the Fond du Lac Reservation. The tribe is planning to construct a 20-acre integrated waste management site to replace the existing, undersized 0.5-acre site that houses its recycling, household hazardous waste, and C&D management operations.

While the site is estimated to cost between $1.4 million and $2.5 million, Nathan Reinbold, the tribe's environmental education coordinator, explains Fond du Lac's motivations for such an ambitious undertaking. "Because of growth on the reservation, now is the time to build this waste infrastructure. While the $2.5 million price tag might seem high, having an official place for C&D materials will pay off in the long run. We understand that these things do cost a lot, but we want to have clean lands." The tribe plans to fund a portion of the facility with its own funds.

Currently, Fond du Lac extracts all C&D materials that can be reused or recycled—such as concrete, asphalt, clean wood, and metal—from what is generated on the reservation. Wood that has not been pressure-treated, painted, or stained is chipped with yard trimmings and composted at the tribe's composting facility. Clean wallboard also is used as an additive in the composting process. The scrap metal is recycled. The remaining C&D materials—including pressure-treated and painted/stained wood, asphalt shingles, plastics, and plaster—is commingled and sent off site for disposal in a regional C&D landfill. The new site will include a much larger C&D materials separation and recycling area where these activities can be performed more efficiently.

# Salvaging Materials Responsibly

**The Oneida Tribe of Wisconsin is guided by this creation story in its day-to-day life and therefore has a great respect for the Earth and a responsibility for protecting the environment. This stewardship is apparent as the tribe purchases land to fill in the checkerboard pattern of rolling farm land of its reservation and has had to manage C&D materials from the renovation or demolition of dilapidated buildings on this land. The tribe created a Demo Team in order to maintain the cultural roots by adhering to a guiding principal of sustainable management and to provide cost savings for the tribe through recycling operations. Through these practices, the team ensures that natural resources, making up the land in a delicate balance on the turtle's shell, are conserved to support future generations.**




## Using Partnerships to Manage C&D Materials

Much like the way water animals and the Sky Woman worked together to establish life on Earth, the tribe forged its own coalition that works together to ensure that C&D materials are recovered in an environmentally responsible manner and either reused or recycled.

The Demo Team is a multi-departmental, innovative partnership made up of tribal staff from the Land Management Department, Environmental Health and Safety Department, the Department of Public Works, and the Cultural Heritage Department.

Prior to the formation of the Demo Team, the tribe landfilled the C&D materials generated from the renovation and demolition of the old buildings, wasting tons of material that could be salvaged and reused or recycled. Not only was the Demo Team an opportunity for the tribe to become environmental stewards, but also to facilitate a streamlined salvage and demolition process.

"One of the great successes of the Demo Team has been dividing up the tasks and letting people do what they do best and are best equipped to do," said Steve Linsken, environmental planner for the tribe. "The team really lets people play to their strengths."

The Land Management Department, for instance, handles the financial and contractual aspects of acquiring land, salvage operations, demolition, and disposal. The team recommends demolition when the cost of repair is greater than 50 percent of the assessed value. When the cost of repairs is less than 50 percent of its assessed value, the building is renovated and sold to a tribal member.

Once the Land Management Department decides whether or not to demolish the building, the Environmental Health and Safety Department removes asbestos and other hazardous materials from the site. This department is the backbone for environmental stewardship because it is responsible for ensuring proper recycling and disposal of the C&D materials when buildings are demolished.

And finally, the Department of Public Works (DPW) and Cultural Heritage Department ensure that building materials are handled in a responsible manner and that historical items are not lost during the demolition process. For example, if the DPW finds salvageable items in the building, it calls upon the Cultural Department to identify whether or not they are culturally important so that they can salvage and preserve the items.

## Salvaging Benefits the Community

Through salvage operations, the Demo Team has the unique opportunity to strengthen community ties by giving priority to tribal members to receive the reusable C&D materials.

Items frequently salvaged from condemned buildings include fixtures, hand-hewn beams, doors, and windows. The Demo Team reports that the most sought-after materials are wooden beams that tribal members use in their own houses for structural support or features such as fireplace mantles.

Most of the time, allowing tribal members to salvage materials works well for all parties. Occasionally, however, it can create problems. In these instances, the Demo Team uses its expertise for problem solving. In one case, a tribal member stripped all of the metal off of the buildings at a former pig farm, leaving all the insulation lying around in piles. As a result, the Land Management Department decided to develop salvage agreements for each party wishing to remove materials from tribal property to ensure that the salvaged materials are handled in a responsible manner and that there is no damage or destruction to any other materials or the land.

> "One of the great successes of the Demo Team has been dividing up the tasks and letting people do what they do best and are best equipped to do. The team really lets people play to their strengths."
>
> —Steve Linsken, environmental planner, Oneida Tribe of Wisconsin

## Recycling Pays Off

Once all reusable material has been taken out of the buildings, the Demo Team works to remove and separate all material that can be recycled, such as concrete and metal. Through reuse, the tribe conserves natural resources and saves money in purchasing costs. In addition, it also generates revenue from the sale of the C&D materials.

The tribe has capitalized on the large volume of concrete generated during building demolition by separating it and contracting Braun Recycling and Compost, a local recycling company, to crush the material. In 2004, the tribe demolished buildings on four farms generating 4,886 tons of crushed concrete and 386 tons of garbage, scrap tires, and other materials. The crushed concrete can then be reused for roadwork and other DPW projects such as installing and replacing culverts. The tribe landfilled the remaining waste.

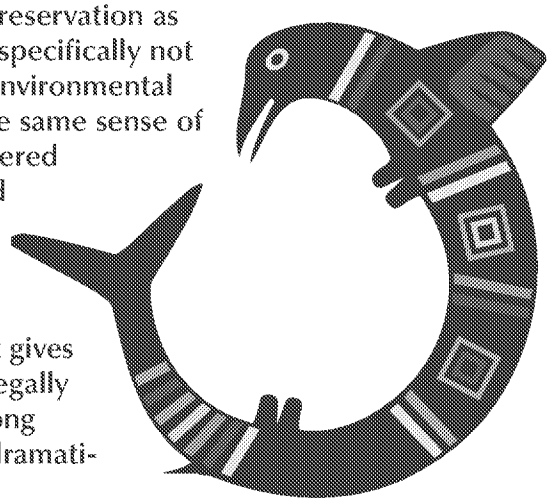
Metal is also a valuable commodity during the demolition process. In 2004, sale of 40 tons of scrap metal from the farm demolitions generated nearly $3,000 for the tribe.

Oneida's reclamation equipment.

Dump truck with deposits of crushed concrete ready for use.

# Colville's Contracts Cut Illegal C&D Dumping

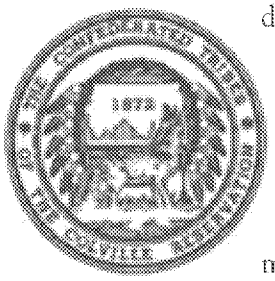
**The Confederated Tribes of Colville Reservation take great pride in the forests, streams, rivers, and lakes that blanket its reservation in north-central Washington. Because of its deep connection to the land, the tribes try to keep the reservation as pristine as possible. For example, the Colville tribes decided specifically not to build a C&D landfill on the reservation for aesthetic and environmental reasons. Some building contractors, however, do not have the same sense of respect for the land; the tribes have found C&D materials littered throughout the reservation that building contractors dumped illegally during construction.**



**To stop this ongoing problem, the Colville tribes decided to include language in building permits requiring contractors to have their own C&D management plan. This legal agreement gives the tribes authority to suspend construction if contractors illegally dump C&D materials on the reservation. Coupled with a strong enforcement presence at construction sites, the tribes have dramatically reduced illegal dumping.**

## Managing Contractors' C&D Materials

The idea for this C&D management approach arose in 1999 when the Tribal Business Council—the body in charge of contractors—realized it would not be able to control illegal dumping of C&D materials on its own. Instead, with support and encouragement from the Colville tribes' Tribal Council, it formed a Solid Waste Alliance Committee (SWAC) to investigate ways to stop contractors from dumping C&D materials on the reservation. According to the tribes' solid waste ordinance, the SWAC "shall consist of a minimum of five members from the tribes that have some knowledge and/or interest in solid waste issues."



To help bolster support of SWAC activities, two members of the tribal council also serve as committee members. "Having the council involved makes a big difference," says Danny Joe Stensgar, the solid waste manager for the Colville tribes. "We resolve issues more quickly."

Instead of taking over the handling and disposal of C&D, the SWAC decided to curb illegal dumping by including language about C&D management in building permits. To implement this approach, the SWAC formed the Internal Land Use Review Board—including representatives from various tribal departments such as planning, environment, natural resources, water, and solid waste—to review all construction projects and issue building permits. The building permits ensure that the contractors recycle or dispose of C&D materials properly and comply with the Colville tribes' solid waste ordinance, which prohibits non-tribal members from dumping or disposing solid waste at any location on the reservation.

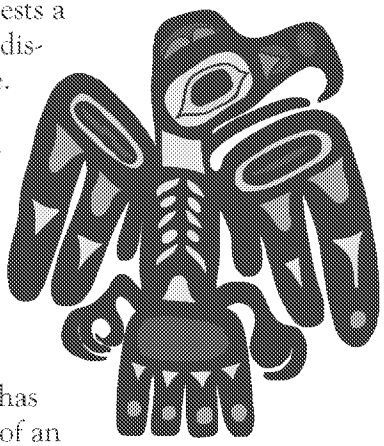
> "Having the council involved makes a big difference. We resolve issues more quickly."
>
> —Danny Joe Stensgar,
> Solid Waste Manager
> The Confederated Tribes of
> Colville Reservation

To receive a building permit from the Internal Land Use Review Board, contractors must complete a Compliance Utilization Form, which includes details of how they plan to manage the C&D materials. Contractors can choose to lease 20- or 40-yard containers from the tribe or indicate the landfill to which they will haul the waste.

## Keeping the Land Clean Through Enforcement

The Colville tribes are willing to go to great lengths to ensure that C&D materials do not litter its reservation. Although the building permit explicitly prohibits building contractors from illegally dumping materials on the reservation and outlines the types of C&D materials that can and cannot be disposed in the leased containers—for example, hazardous materials are prohibited (see side bar)—the tribes have found that sometimes contractors ignore some of the terms of their building permits. Ensuring compliance therefore requires ongoing enforcement.

To increase compliance, a tribal enforcement officer visits construction sites and photographs the C&D materials that the building contractors generate. This precaution gives the tribes evidence that certain materials belong to specific contractors, in the event that a company illegally dumps. As an added measure, the enforcement officer also visits the nearby landfill and requests a receipt that the builder disposed of the waste there. If the tribes' enforcement officer finds violations to the building permit, the officer is authorized to write citations and thereby order construction to cease. According to Stensgar, this vigilance has paid off. "The presence of an enforcement officer has really cut down on illegal dumping," he says.



### Handling Hazardous Materials

Hazardous waste contamination is a serious concern in managing C&D materials. Hazardous constituents such as lead, arsenic, and chrome are common at C&D sites, as are hazardous substances such as asbestos and polychlorinated biphenyls (PCBs).

The Colville tribes help prevent hazardous materials contamination of C&D materials by:

- Identifying whether asbestos or lead-based paint is present in a building slated for demolition. If these materials are found, a certified tribal inspector oversees demolition. Building permit language requires the contractor to remove asbestos and any other hazardous materials from the site.
- Requiring contractors to separate hazardous materials from C&D materials. The tribal inspectors can then ensure proper handling of each of these materials.
- Requiring contractors to specify in their Compliance Utilization Forms how much hazardous material they will generate and where they will dispose of it.

# RESOURCES

## EPA Publications

**The ABCs of C&D Debris: Tribal Construction and Demolition Debris Management Training Course** <www.epa.gov/epaoswer/non-hw/tribal/resource.htm>

*This training course, developed by TASWER and EPA, covers all aspects of C&D materials management in eight sessions.*

**Characterization of Building-Related Construction and Demolition Debris in the United States.** EPA530-R-98-010. <www.epa.gov/epaoswer/hazwaste/sqg/c&d-rpt.pdf>

**RCRA in Focus: Construction, Demolition, and Renovation.** EPA530-K-04-005. <www.epa.gov/epaoswer/hazwaste/id/infocus/rif-c&d.pdf>

**WasteWise Update: Building for the Future.** EPA530-N-02-003. <www.epa.gov/wastewise/pubs/wwupda16.pdf>

## Other Publications

**Builder's Guide to Reuse and Recycling: A Directory for Construction and Demolition Materials** <www.stopwaste.org/nhguide.html>

*This 36-page booklet produced by the Alameda (California) County Waste Management Authority and Alameda County Source Reduction and Recycling Board provides practical, cost-saving tips for building professionals on recycling asphalt, glass, and related materials.*

**Building and Buying Green in Indian Country: A Practical Guide for California Tribes** <www.ciwmb.ca.gov/publications/greenbuilding/43304004.pdf>

*To order a copy, call (916) 341-6306 and request Pub.# 430-04-004.*

**Contractors Guide. Seattle/King County, 2002-2003** <www.metrokc.gov/dnrp/swd/constructionrecycling/documents/ConGuide.pdf>

*Provides recycling and waste prevention information for all builders, from the handyman and remodeler to large commercial contractors. It is a handbook for saving money and resources by recycling and preventing waste on the job site.*

**Recycling Construction and Demolition Wastes: A Guide for Architects and Contractors** <www.mass.gov/dep/recycle/files/cdrguide.pdf>

*This guide, sponsored by the Boston Society of Architects, Associated General Contractors of Massachusetts, and the Massachusetts Department of Environmental Protection, helps architects, engineers, specification writers, and contractors gain an understanding of the goals of C&D recycling and lay the foundation for a successful program.*

**Residential Construction Waste Management: A Builder's Field Guide** <www.ilsr.org/recycling/buildingdebris.pdf>

*This EPA-funded publication from the National Association of Home Builders Research Center explains cost-effective techniques for construction waste management. This 32-page field guide presents several approaches builders can take to manage construction waste and provides real case studies to support the recommended actions. Appendices contain references and supporting documents.*

## Web Sites

**EPA's Construction and Demolition (C&D) Materials Web Site** <www.epa.gov/epaoswer/non-hw/debris-new/index.htm>

**Environmental Protection, Native American Lands: A Cultural Approach to Integrated Environmental Studies** <tismil.humboldt.edu/epa/>

*A curriculum written and edited by a team of Indian teachers and community members to ensure the cultural integrity of American Indian lands by preparing tribal communities to make informed decisions about land development, as well as to prevent household hazardous waste contamination.*

**King County, Washington's Construction Recycling Web Site** <www.metrokc.gov/dnrp/swd/construction-recycling/index.asp>

*Provides the tools and assistance needed to achieve the highest recycling rates possible on construction/deconstruction projects. Tools include job site waste guidelines, a waste management plan template, sample waste recycling specifications, and a directory of local construction waste recyclers.*

**Resource Efficient Residential Construction: Industry Web Directory** <peakstoprairies.org/p2bande/construction/CnstrMatrix.pdf>

*The Peaks to Prairies Residential Environment Web Site provides the following services: technical assistance and referrals, industry contacts, database of resources and publications, news, events calendar, and frequently asked questions.*

**Solid Waste Association of North America (SWANA)** <swana.org/sections/educate/certification.aspx>

*SWANA offers training and certification in eight solid waste management disciplines, including C&D materials management.*

**Tribal Pollution Prevention** <www.tribalp2.org/index.php>

*A user-built collection of tribal pollution prevention resources where tribes can share their projects, case studies, publications, tools, events, news, or funding opportunity with other visitors.*

# CONTACTS

The *Tribal Waste Journal* would like to thank everyone who shared their stories and experiences for this issue. Interviewee contact information is provided below for those who are interested in learning more about specific tribal programs.

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