



## Investing in Healthy Tribal Communities: *Strengthening Solid Waste Management through Tribal Public Health Law*

### Executive Summary

Comprehensive solid waste management systems are those that provide sustainable alternatives to disposal. They require both infrastructure investments and impactful community education. When solid waste is mismanaged, people are exposed to toxic open dumps, dangerous abandoned vehicles, tire piles, and hazardous waste. Solid waste management addresses environmental public health concerns on tribal lands. Risk factors associated with mismanaged waste and toxic materials can have significant safety and environmental impacts. Tribes, as sovereign nations, understand the responsibility to protect the environment to sustain culture and the health and wellness of tribal citizens.

*Tribal public health law* is a tool tribal governments can use to establish policy and legal solutions to manage solid waste on tribal land. This Policy Insight Brief includes:

- A **definition** of solid waste.
- A summary of **tribal public health law** on solid waste management with emphasis on enforcing dumping laws, encouraging recycling, and disposal of junk vehicles.
- **Examples** of two tribal open dumping cleanup programs, two solid waste management programs, and a landfill alternative in Arctic Alaska.
- **Recommendations for tribal leaders** committed to improving tribal codes and regulations to prevent health risks.
- **Benefits** of recycling, repurposing, and composting eligible solid waste materials, utilizing landfill gas as green energy, and establishing a waste management system in the community

NCAI hopes this brief will provide tribal nations with additional tools in developing and refining their solid waste management programs.

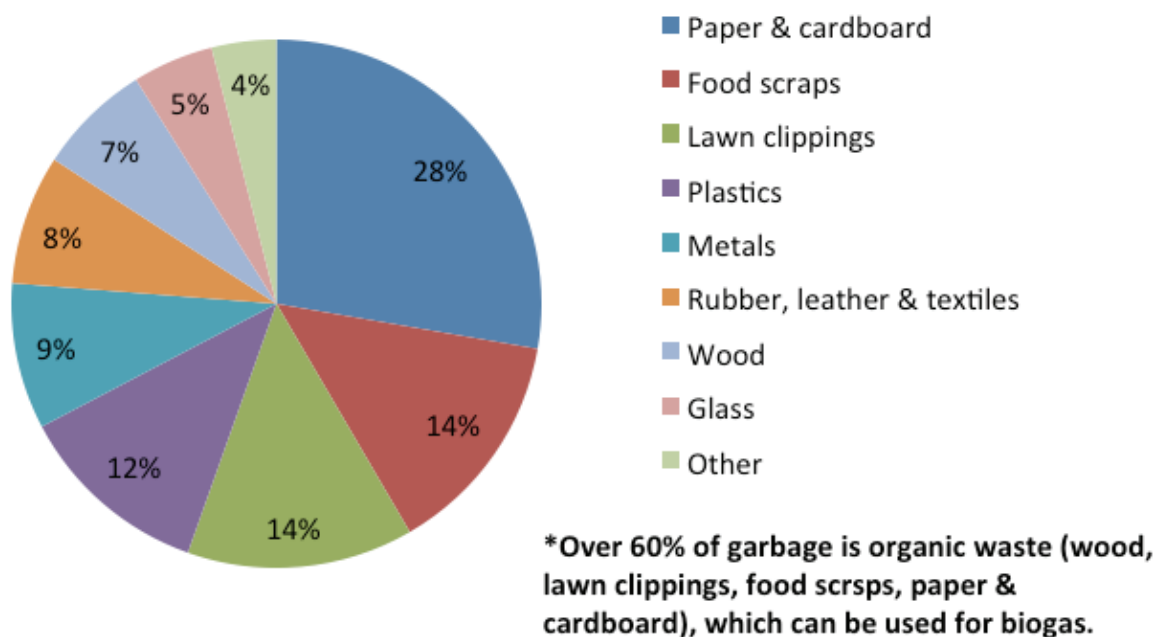
## Introduction

Comprehensive solid waste management systems are those that provide sustainable alternatives for waste disposal. They require both infrastructure investments and impactful community education. Mismanagement of solid waste leads to *environmental harm, dangerous health concerns for citizens, and economic costs*. American Indians and Alaska Natives (AI/AN) are working toward control over their solid waste management.

The United States generated 250 million tons of solid waste in 2011, as show in the pie chart below. As this chart shows, very little of the waste actually needs to go into landfills and can instead be composted (food waste and yard trimmings) or recycled/repurposed (wood to paper) in order to prevent additional expensive landfills. Public health law provides a framework for tribes to develop a waste management plan by providing legal and regulatory tools and coordinating across tribal, local, state and federal agencies; policy-makers; attorneys; and public health practitioners.<sup>2</sup> Encouraging the community to properly dispose of large household appliances, motor vehicles, and other solid waste requires multiple efforts ranging from awareness campaigns to laws that prevent and manage waste. Cleaning up open dumps is one of the first steps in establishing a solid waste management plan. Advocating for clear policies and regulations on illegal dumping will reach beyond cleaning up a nuisance and deliver sustainable environments, prevention of unintentional injuries, solid infrastructure and optimal health status for tribal nations.

For the purposes of this brief, we discuss tribal efforts to manage solid waste through preventing illegal dumping and cleaning up open dumps, appropriating disposal of toxic materials, promoting recycling, repurposing, and composting eligible solid waste materials, utilizing landfill gas as green energy, and ultimately establishing a comprehensive waste management system in the community.

## Garbage Components



**Figure 1: Total Municipal Solid Waste Generation (by Material) in the United States, 2011 250 Million Tons (before recycling or reuse) <sup>3</sup>**

## Defining Solid Waste and Its Environmental Impacts

Solid waste is not an all-inclusive term; it excludes sewage and water management. It is necessary to define solid waste in order to understand what is manageable through this brief. The Environmental Protection Agency (EPA) broadly defines solid waste as any garbage or refuse, sludge from wastewater treatment plant, nonhazardous industrial waste, and other discarded material. The EPA generally identifies municipal solid waste as everyday items like furniture, bottles, food scraps, appliances and batteries as well as provides various other definitions for types of waste (i.e. E-waste, household hazardous waste, etc.).<sup>4</sup> Some examples of hazardous components include refrigerants from household items and older cars, foam from household appliances, polychlorinated biphenyls (PCBs) in old electrical equipment, mercury from household appliances, tires, and motor vehicles, etc. For information on handling and disposing these types of waste and others please visit the EPA website listed in the endnotes.<sup>5</sup>

In addition to a more generalized definition of solid waste, AI/AN confront large quantities of abandoned vehicles and tires, hazardous waste, and white goods. Hazardous waste must be handled safely while abandoned vehicles, tires, and white goods, along with other wastes such as wood can be recycled and/or repurposed.

### *Abandoned Vehicles and Tires*

Communities may not have access to appropriate means for collecting and disposing of abandoned vehicles but feasible options are offered in the US EPA document titled *Developing an Abandoned Vehicle Cleanup Program for Tribal Governments*.<sup>6</sup> Tires also pose a major waste challenge. When they are burned in an uncontrolled manner, they release toxins into the environment. The US EPA web page on *Scrap Tires*<sup>7</sup> provides helpful options for managing tires. Tires left in piles provide a living space for pests carrying disease and stagnant water for mosquitoes to breed. The tires can be recycled and used for a variety of other purposes.

### *Household Hazardous Waste (HHW)*<sup>8</sup>

Hazardous waste in households includes paints, batteries, pesticides, cleaners, and oils, etc. Thrown directly into a landfill this contaminates the soil, air, and water. Dumping the products down the sink where they drain to the sewer adds toxins to the environment. Many waste facilities have specific collection of HHW. For more information, see the EPA's website on HHW.<sup>9</sup>

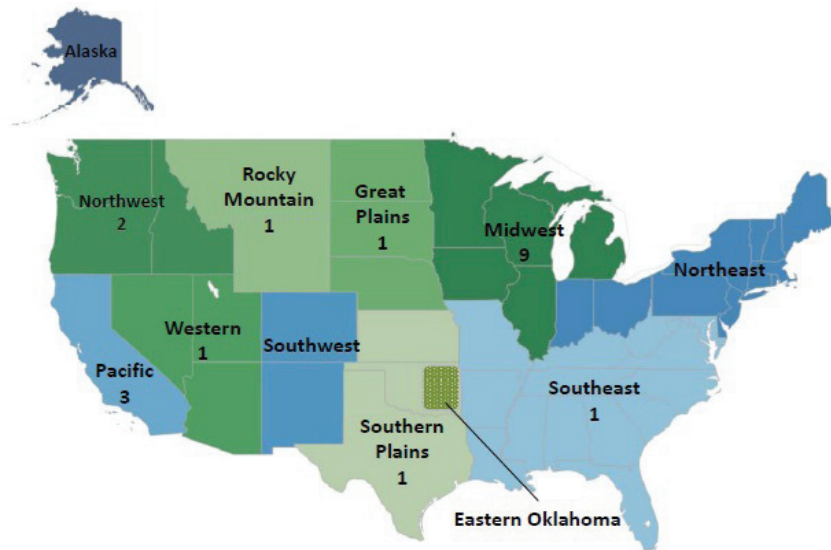
### *"White Goods"/Household Appliances*

Household appliances have been established as environmental health risk factors containing potentially hazardous contaminants.<sup>10</sup> In open dumps children play on or around white goods. According to the Centers for Disease Control and Prevention (CDC), the burden of unintentional injuries has been highest among AI/AN children.<sup>11,12</sup> Childhood unintentional injury can be prevented by expanding tribal solid waste management codes to emphasize safe disposal of appliances including the removal of doors from refrigerators and stoves, etc. In addition, the EPA has a brochure on Safe Disposal Procedures for Household Appliances.<sup>13</sup>

## Tribal Public Health Solid Waste Law: Data & Trends

Disposing of solid waste today is an investment to preserve tribal lands for generations to come. Some tribes have taken this investment and implemented solid waste codes to promote safe and healthy environments for their communities. They have made it illegal to dump any solid waste except at permitted facilities. Through public health law, tribal leaders focus on preserving the environment for future generations.

In order to support American Indian and Alaska Native communities in their efforts to manage waste and preserve the environment, we provide a brief synthesis of trends in tribal solid waste management codes. Of the 19 tribal solid waste management codes collected, 17 tribes from nine of the 12 NCAI regions are represented, including: 9 codes from the Midwest, 2 codes from the Northwest, 3 codes from the Pacific, 1 from the Southeast, 1 from the Great Plains, 1 from the Southern Plains, 1 from the Rocky Mountain, and 1 from the Western region; see Figure 2. Tribal solid waste management codes emphasize three key trends, namely the need to: 1) prevent illegal dumping; 2) promote recycling; and 3) properly dispose of junk vehicles. Three of the codes directly address the disposal of junk vehicles, but abandoned vehicles are mentioned in an additional six dumping codes.



**Figure 2: 19 Solid Waste Management Codes by the NCAI Regions**

### *Tribal Dumping Codes*

Fifteen codes directly address dumping solid waste (some overlapping with recycling and vehicles). The codes about dumping, specifically, include:

- The requirement to dump waste in an approved landfill or sanitation station.
- Descriptions of enforcement of illegal dumping through fines and penalties.
- Explanations of the environmental hazard of dumping outside of allowed locations.

### *Tribal Recycling Codes*

Recycling is included in 10 of the dumping codes, or over half of the total codes identified here. These codes specify what is recyclable and how to recycle. There a variety of ways that tribes handle recyclables, including:

- How to separate recyclable materials.
- The importance of keeping recyclables separate from garbage.
- Preferring recycling as the ideal method of handling solid waste.
- Encouraging the use of recyclables as resources.

### *Tribal Junk Vehicle Codes*

The codes on junk vehicles address the disposal of junk vehicles, machinery, trailers, and boats.

These codes include:

- Not allowing junk to remain on property within tribal jurisdiction.
- Directions on how to properly dispose of junk vehicles according to tribal regulations and by using tribal facilities.
- How to keep, store, and maintain junk vehicles.

### **Strengthening Tribal Public Health Law: Recommendations & Resources for Tribes**

Managing solid waste in a safe and healthy way is challenging, especially as tribes often have to assemble funding and resources to cover the costs involved. This makes developing comprehensive solid waste management efforts that include cleaning up open dumps, recycling and composting, disposing of tires and abandoned vehicles, and enforcing dumping codes very difficult.

### *Funding*

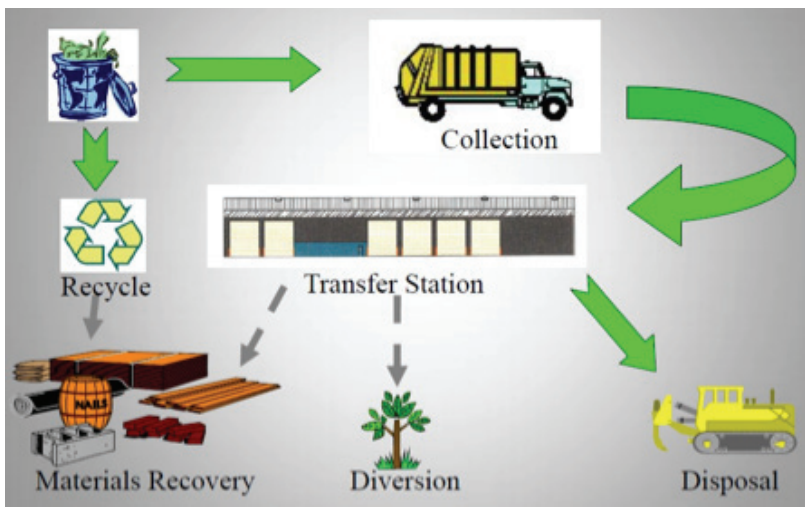
Tribes can work directly with the EPA to institute waste management programs due to the federal government's trust responsibilities. There are a variety of funding sources available for tribes to develop solid waste management.<sup>14</sup> These include, but are not limited to the: Brownfields Assessment and Cleanup Cooperative Agreements; Brownfields Training, Research, and Technical Assistance Grants and Cooperative Agreements; General Assistance Program (GAP); Community Action for a Renewed Environment (CARE) Program; Indian Environmental General Assistance Program (IGAP); Performance Partnership Grants (PPGs); and Tribal Hazardous Waste Grants. In addition, the Tribal Solid Waste Interagency Workgroup works with tribes to develop management plans. The workgroup evaluates proposals for the Tribal Open Dump Cleanup Project.<sup>15</sup> Tribes can also save money by working with one another if they are in close proximity, sharing collection trucks and other equipment.<sup>16</sup>

### *Enforcement*

Enforcing the tribal codes around solid waste management is vital in protecting the tribal land and people. Some of the tribal codes noted above mention fines and penalties for noncompliance with the codes. In addition, the EPA website provides guidance on enforcement through Administrative Actions, Civil Action, and Criminal Action that the regulating tribe can take, specified by EPA region.<sup>17</sup>

### *Developing an Integrated Waste Management System*

Ideally, the Integrated Waste Management System, Figure 3 shown below, provides an example of waste management in alignment with tribal values, creating a sustainable source of waste management so that the environment stays healthy for coming generations. This system begins with taking the collection of materials that have been sorted into recyclables and waste to the transfer station. Then, as shown in Figure 3 and 4, the items are divided into reusable materials, recyclables, composting or refuse for recovering energy through biomass fuels, and disposables (depending on the system used by the tribe)<sup>18</sup>. Finally trucks carry each of the divisions to their location to be utilized and the waste to the landfill. Using a transfer station saves money as all the collection vehicles bring their materials to a facility that can sort and then send only one larger vehicle to the disposal site. In addition, through this division process, a minimal amount of waste should be going to the landfill. For information on Developing a Tribal Integrated Waste Management Plan please see the website provided in the notes.<sup>19</sup>



**Figure 3: Integrated Waste Management System<sup>20</sup>**

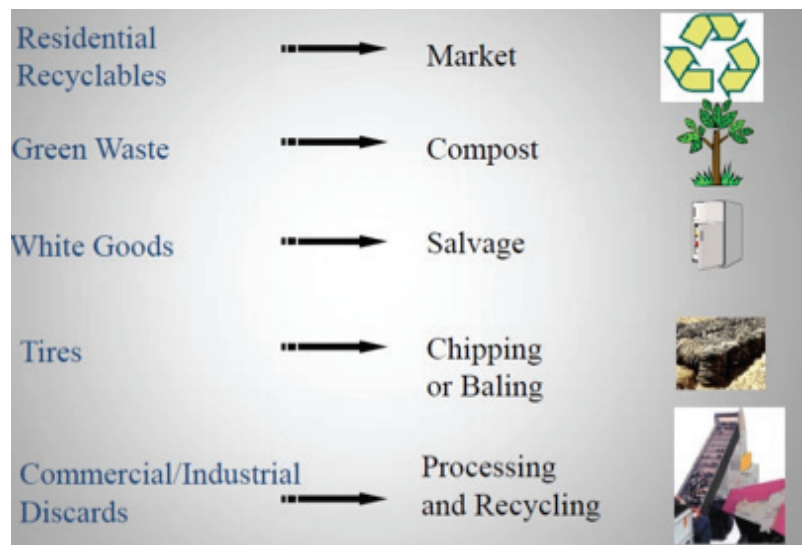
materials. These are just some of the many options available. Throwing everything in a landfill will fill it quickly and landfills are expensive to build. It is important to find sustainable means of waste disposal that works for your tribe, look to the five tribal examples above for some options.

**Biomass Power.** Biopower is electricity produced from organic fuels such as plant materials, wood, energy crops, animal products, and landfills. Biopower is a great way to get rid of waste while using it as energy. Currently the biomass plants cost more than fossil fuel plants as their fuel has to be transported longer distances, is less concentrated, and requires more processing than fossil fuels.<sup>22</sup> However, they offer an environmentally friendly way to manage waste and provide power to areas far from power plants. They also create jobs in the community and provide a reliable source of energy.

Tribal sovereignty enables each distinct nation to create public health codes tailored to fit Native communities and prioritize the safety and well-being of their community members. A comprehensive law streamlines the procedure for identification and processing of abandoned items like junk vehicles or the procedure for proper and safe disposal of household appliances. Tribal leaders engaging in the process to update public health codes is a vital tool to prevent unintentional injuries among the community's children and adolescents and maintain a safe and healthy environment

The predominant challenge to proper waste management is the development of proper waste disposal alternatives.<sup>23</sup> Education and outreach about new waste disposal systems to tribal citizens is important in changing waste disposal as well. The opportunity to assess and improve tribal codes related to environmental

**Recycling, Repurposing, and Composting.** Not all waste needs to go into the landfill. In fact, Figure 1 mentions that 60% of waste is organic and can be used for biofuel. Waste can also be recycled, repurposed, and composted. See Figure 3 and 4. First, recyclables can be collected and put back in the market for use. Second, green waste can be composted or used for biofuel. Third, white goods can be salvaged and certain harmful components removed. Finally, tires do not have to be stacked or burned but can be chipped and baled to later be used in road or playground construction



**Figure 4: Recycling, Repurposing, and Composting<sup>21</sup>**

health provides increased public health awareness. Improvements to laws and provisions that prevent illegal dumping and encourage safe and effective disposal of household appliances, vehicles and other junk items will display decision-makers focus on human health and the environment. These efforts will impact tribal communities by promoting public health.

### *Insights from Tribal Initiatives*

Tribal nations have taken multiple steps to resolve these public health concerns. The tribal codes work as tools in public health allowing proper implementation, adequate enforcement and authority to deter an unsafe environment and prevent unintentional injury to tribal youth, such as suffocating in an old refrigerator being or crushed in an abandoned vehicle. Tribal leaders are advocates for their citizen's health and safety; therefore, preventing illegal dumping of household appliances, vehicles, or vacant mobile homes is a move in the right direction.<sup>24</sup> Looking at these five tribal examples of impactful solid waste management systems provides lessons for other tribes. Some of these include:

- Plan a feasibility study: This is a useful way to learn about waste disposal and the opportunities available (Confederated Tribes of the Umatilla Indian Reservation)
- Establish a committee: The committee can interface between the waste operations and maintenance and the tribal council to streamline communication. (Fort Peck)
- Develop a system to increase tribal capacity: Tribes who invest in establishing a solid waste management system gain knowledge and control over their waste management, empowering them to advance human and environmental health. (Yakama Nation)
- Address sustainability: Combine economics, environmental health, and ancestral ecological knowledge into waste management practices to develop a safe and sustainable program. (Yakama Nation)
- Enforce policies: Fine people that dump illegally. (Yakama Nation)
- Provide community education: Community education on safe waste disposal can lead to sustainable changes in disposal practices. (Kikapoo Reservation)
- Plan for effective community information and messaging using flyers, websites, and tribal newsletters. (Kikapoo Reservation)
- Build connections with government contacts through training sessions and conferences: By networking you can obtain funding from different sources. (Native Village of Selawik)
- Improve tribal health: Cleaning up open dumps and promoting the proper disposal of appliances and vehicles makes the land safer for children and prevents water and land contamination.
- Consider variety of methods to handle solid waste like landfills, transfer stations, curbside pickup, and roll off sites. The best option for each tribe is the one that fits local needs.

### **Featured Tribal Initiatives**

The following tribal initiatives highlight some of the strategies and best practices that tribes are using to achieve these goals.

Index of Featured Tribal Initiatives:

**Kickapoo Tribe:** Open Dump Cleanup

**Confederated Tribes and Bands of the**

**Yakama Indian Nation:** Open Dump Cleanup

**Confederated Tribes of the Umatilla Indian Reservation:** Developing a Waste Management System

**Fort Peck Assiniboine and Sioux Nations:** Developing a Waste Management System

**Native Village of Selawik:** Challenges Facing Alaska Native Villages



## **Kickapoo Tribe – Open Dump Cleanup**

The Kickapoo Tribe had 14 open dump sites on reservation lands in 2000, largely due to the lack of practical disposal sites for large items, metal, vehicle tires, and appliances. Open dumps can create public health issues for a variety of reasons. The dumps have no lining which allows leakage of contaminating materials into the water supply; there is no control of the gas the waste emits; and uncontrolled backyard or open dump burning releases toxic emissions into the air, which can be inhaled and settle on crops which are eaten by animals and then the toxins are in the food chain. As such, some tribes are working with the EPA and other organizations to clean up open dumps and prevent illegal dumping.<sup>25</sup> Multiple tribes have had success in this area, including Kickapoo.<sup>26,27</sup>

The community now holds annual “community cleanup” events under its Natural and Cultural Resources Division. Cleanup begins with people collecting trash around the reservation, especially along roads. Following the community cleanup, the Environmental Program staff drives around to collect the large items. The Environmental Program staff recruits people to participate in the cleanup through their website, flyers, signs at each housing cluster, and announcements in the tribal newsletter.

Tribal members largely support the cleanup, and with this support the tribal government has begun other waste management projects, including tire collection, e-waste collection (e.g., computer batteries), and recycling efforts. From 2008 to 2011, 3,015 tires have been removed from open dumps and recycled. With these tires removed, half of the open dumps were closed. E-waste collection annually from 2009 to 2011 resulted in the collection of six pallets worth of items that would have been dumped. The casino and schools now recycle as well.<sup>28</sup>

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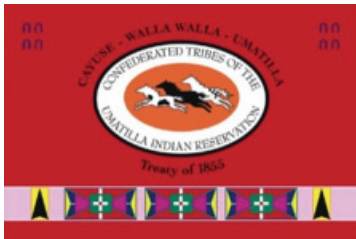
## **Confederated Tribes and Bands of the Yakama Indian Nation – Open Dump Cleanup**

The Yakama Nation overhauled its 1977 Solid Waste Management Plan in 2006 with a new mission statement and new goals. The Nation developed an economical program that is environmentally safe and incorporates outreach and education as well as empowering tribal members. The Yakama Nation faced a large financial burden of cleanup with more than 130 open dumps identified in 1995. Developing a landfill was a much more cost effective way to manage waste. The Nation first set out to clean up the open dumps. Tribal staff gained skills in using maps and GIS technology to identify priority sites, recycle, and write reports. The tribe applied for funds from the Indian Environmental General Assistance Program (IGAP) which is part of the EPA to purchase machinery to clean up the waste.

However, cleaning up the open dumps was only the beginning of establishing a comprehensive approach to solid waste management. To make the cleanup sustainable, the Nation had to prevent ongoing overuse of open dumps. They began to collect data using surveys with residents to determine how to prevent overreliance on open dumps. Most people suggest the Nation fine those dumping illegally. In order to address this, the Solid Waste Program developed new tribal codes around dumping.

Since the Solid Waste Program began, 148 open dump sites were closed and 4,000 tons of illegally dumped waste removed. Proper handling of waste saves the tribe a lot of money as open dump sites can cost around \$45,000 per year due to daily cleanup of the far spread sites, hauling the waste to appropriate landfills, and cleaning contaminating spills or seepage into the ground from the dumped items. In order to prevent people from dumping there again there are barricades and signs informing people to use a management facility and not dump illegally. The tribe is also continuing to educate the community on trash removal.<sup>29</sup>

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## **Confederated Tribes of the Umatilla Indian Reservation – Developing a Waste Management System**

The Confederated Tribes of the Umatilla Indian Reservation worked for ten years to plan and build a waste transfer station and now have a working waste management system. Their previous landfill began to fill up in the 1980s and they considered building another landfill. However, the tribe did not produce enough waste for a new landfill, and they could not afford to purchase the land and the landfill liner system required for a new landfill. So, they decided to build a transfer station where all waste would be brought and sorted and then taken to recycling locations and landfills in larger vehicles, saving gas and trips off the reservation; see Figure 3. They developed a partnership with the Oregon Department of Environmental Quality (DEQ) in 1995 and updated their tribal Solid Waste Ordinance to support a transfer station and ban open dumping.

The tribe gathered information on transfer stations and visited three working stations. They hired a firm to conduct a feasibility study, business plan, solid waste management plan, and household hazardous waste (HHW) plan. The study pointed out potential obstacles, goals, and future tribal expansion causing stress on the transfer station capacity. With the study results the tribal leaders chose a site next to the reservation and on a major interstate to aid in the ease of hauling the waste from the station.

The construction costs were set at \$1.3 million, with the revenue from the tribes' gaming enterprise only able to cover part of the costs. The tribes contributed money to fund the project and received grant funding from the Indian Community Development Block Grant from the US Department of Housing and Urban Development (HUD), Administration for Native Americans (ANA), private JELD-WEN Foundation, and Indian Health Service (IHS) under the sanitation deficiency system. Finally, the tribe secured a loan from the US Department of Agriculture's Rural Utility Service to pay for the rest of project costs. The tribe awarded the bid to Colville Construction, requiring the company to hire American Indians and Alaska Natives whenever possible on the project, giving priority to the members of the Confederated Tribes of the Umatilla Indian Reservation.

The transfer station opened in 2002. Workers at the facility have been trained by Oregon's DEQ to screen the trash for recyclables, such as tires and cans. The waste is put into trailers which a private contractor hauls to a landfill. The company hauls away tires and car batteries too. Household Hazardous Waste (HHW) is stored in a containment facility, and the tribe worked with Oregon's DEQ to develop a management plan for HHW. The tribes are negotiating with IHS for funds to add a building for recyclable sorting and baling. The tribes want to construct a large composting facility and own equipment to handle construction and demolition debris. In order for all of this to be sustained, the community has also invested in a community education effort to share the benefits of recycling and proper disposal of solid waste. For example, the tribal recycling coordinator teaches youth about recycling by visiting Head Start and daycare facilities.

To fund the facilities, tribal members pay \$22.70 per month to have curbside waste collection picked up in trucks by tribal members. Tribal members can also bring their own waste to the facility and pay by the pound for disposal. The tribes save seven percent of the transfer station revenue for maintenance and repair. They also hope to someday serve people outside of the reservation as the station has greater capacity for waste management than the amount of waste generated by the tribes.<sup>30</sup>

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## **Fort Peck Assiniboine and Sioux Nations – Developing a Waste Management System**

The Fort Peck Reservation (Assiniboine and Sioux Nations) is geographically large with a dispersed population of 10,300 residents in six towns; over half of the population on the reservation are enrolled tribal members. The tribe found a convenient and affordable solution to solid waste management through establishing curbside collection and waste drop-off sites. This began in 1983 when the tribal Operations and Maintenance Department (O&M) began to provide collection services to residents in remote reservation areas, expanding to six towns in the 1990s.

Residents in Brockton and Frazer pay \$14 per month on their utility bills for waste disposal. Wolf Point and Popular also charge residents through utility bills, while Fort Kipp and Oswego do not currently have curbside service. For areas without curbside service, the Reservation offers five roll-off sites. At these sites a large dumpster sits on the ground and when filled up is picked up by a truck and the waste is taken to the landfill. Residents pay \$15 for a monthly permit to use the roll-off site, and businesses and contractors pay \$300 per month. Not all the sites are staffed but those that are educate people about the benefits of recycling. To pay to build the roll-off sites in Oswego and Frazer, the tribe used a HUD Community Development Block Grant (CDBG) and pays for each household to use the landfill. IHS Sanitation Deficiency Services funds covered the costs for the Poplar, Wolf Point, and Brockton. The waste from these sites is hauled to a landfill where tribes pay a per-ton fee for waste management. The roll-off sites are successful in reducing the prevalence of open dumps.

Critical to the success of the waste management system has been a streamlined decision making process through the tribally established Public Works Committee Board. The board performs a variety of duties, some of these include: setting roll-off and curbside permit rates, applying for funding from outside entities, and interfacing between the O&M and tribal council. The Board makes the waste management run more smoothly by making the day-to-day decisions for O&M without needing to go through the tribal council for each decision.<sup>31</sup>

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## **Native Village of Selawik – Challenges Facing Alaska Native Villages**

Alaskan Arctic villages are remote, many accessible by only plane or boat (if there is no ice). Hauling waste from their small communities to an out-of-community landfill is not a feasible option. Often the villages have started an open dump and burn waste there very near where people live. This is toxic and dangerous to the air and ground water. In addition, many of the communities are located on tundra, which is wet and soft in the summer and completely frozen in the winter.

The Native Village of Selawik sits three miles above the Arctic Circle and currently has the worst open dump in the State of Alaska. The Village received funding from the EPA to build a landfill. However, due to the ground conditions, they use an above ground landfill. They fill large sacks “Super Sacks” with waste and store them until a barge can haul them away.

The village is also sorting recyclables and salvaging items such as vehicles, storing them in containers until the barge that comes twice a summer can pick them up. The landfill has operation hours to monitor people so that it does not become another open dump. Currently this plan is not fully implemented but it demonstrates that remote Arctic villages can have environmentally safe waste disposal, keeping the land, water, and air clean for future generations.<sup>32</sup>

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## EndNotes

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### **ABOUT THIS PUBLICATION**

This publication was produced as part of the Native Public Health Law Partnership project led by NCAI, developed with the National Indian Health Board, and funded by the Robert Wood Johnson Foundation. The goals of the project are: 1) to provide information on public health laws in Indian Country; 2) to recognize tribal authority to regulate public health; and 3) to develop a database tool to enable tribes to share information with each other and the broader public health law community about tribal public health law, codes, and policy.

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#### **Suggested Citation:**

NCAI Policy Research Center. (2014). Investing in healthy tribal communities: Strengthening solid waste management through tribal public health law [Policy Insights Brief]. Washington, DC: National Congress of American Indians.

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