

let's talk

Solid Waste

systems and disposal



**TURNING TRASH INTO A
TREASURED SOLUTION**

ADAPTING RECYCLING PROGRAMS

**PURCHASING A SOLID WASTE
COLLECTION VEHICLE**

**HOW A PANDEMIC CAN IMPACT
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Rural Community Assistance Partnership

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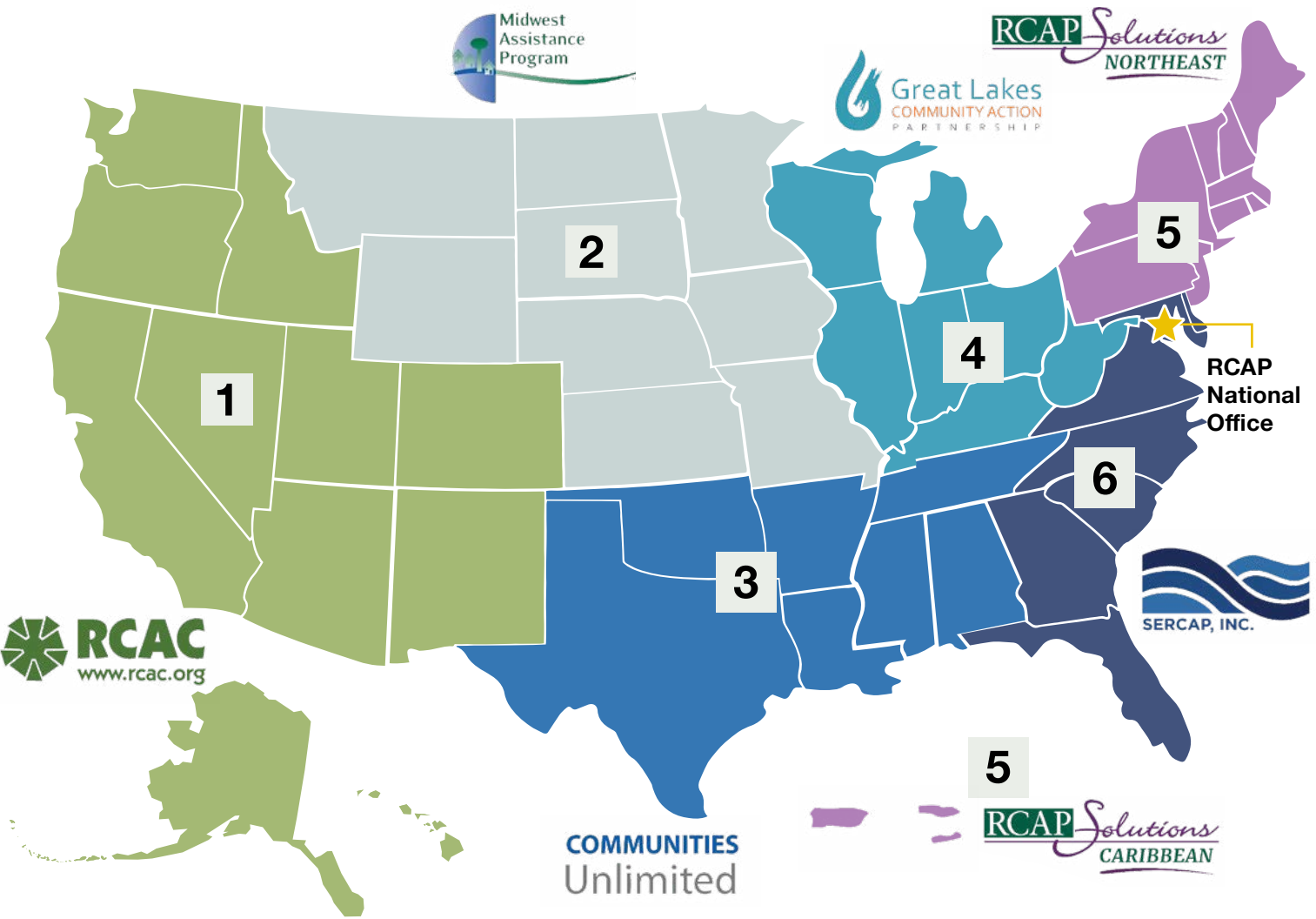
ceo letter

The summer edition of Rural Matters is known to be our trashiest. Kidding aside, the focus is on an essential and often forgotten service: solid waste management in rural and tribal areas across the country. You will read stories from across the Rural Community Assistance Partnership (RCAP) network that use creativity and persistence to solve communities' solid waste issues such as recycling, illegal dumping, new landfills, and management practices. In my past life, I was a county executive and had the responsibility of overseeing the management of a large landfill. It turned out we had illegal hazardous waste being dumped at night, and our water table was being affected. These illegal activities are real, and they are nationwide. We must all be vigilant.

Solid waste management is more than your weekly trash collection; it is an environmental protection and public health issue. If taken for granted in your community, you will face economic stagnation or decline in rural and tribal communities. Creating safe, healthy, and prosperous communities requires holistic water, wastewater, and solid waste management approaches. The dedicated technical assistance providers of RCAP's regional partners share this belief and are committed to helping the smallest, most vulnerable communities.

As I reflect on my last six months as Interim CEO, I am celebrating all the victories from these stories and countless others. Every person in the RCAP network is changing people's daily lives in our smallest communities. Thank you for your dedication and grace as we transitioned to new leadership. Thank you for the opportunity to serve as your leader and hand the baton over with pride to our new CEO, Olga Morales-Pate, whose commitment to our rural and tribal communities is undeniable.

Keith Ashby
Interim CEO, RCAP



Rural Community Assistance Partnership

The Rural Community Assistance Partnership (RCAP) is a national network of nonprofit partners with over 300 technical assistance providers across the country. RCAP works to improve the quality of life in rural America starting at the tap.

1. Western RCAP

Rural Community Assistance Corporation (RCAC)
916.447.2854
rcac.org

2. Midwestern RCAP

Midwest Assistance Program (MAP)
660.562.2575
map-inc.org

3. Southern RCAP

Communities Unlimited (CU)
479.443.2700
communitiesu.org

4. Great Lakes RCAP

Great Lakes Community Action Partnership (GLCAP)
800.775.9767
glcap.org

5. Northeastern and Caribbean RCAP

RCAP Solutions (RSOL)
800.488.1969
rcapsolutions.org

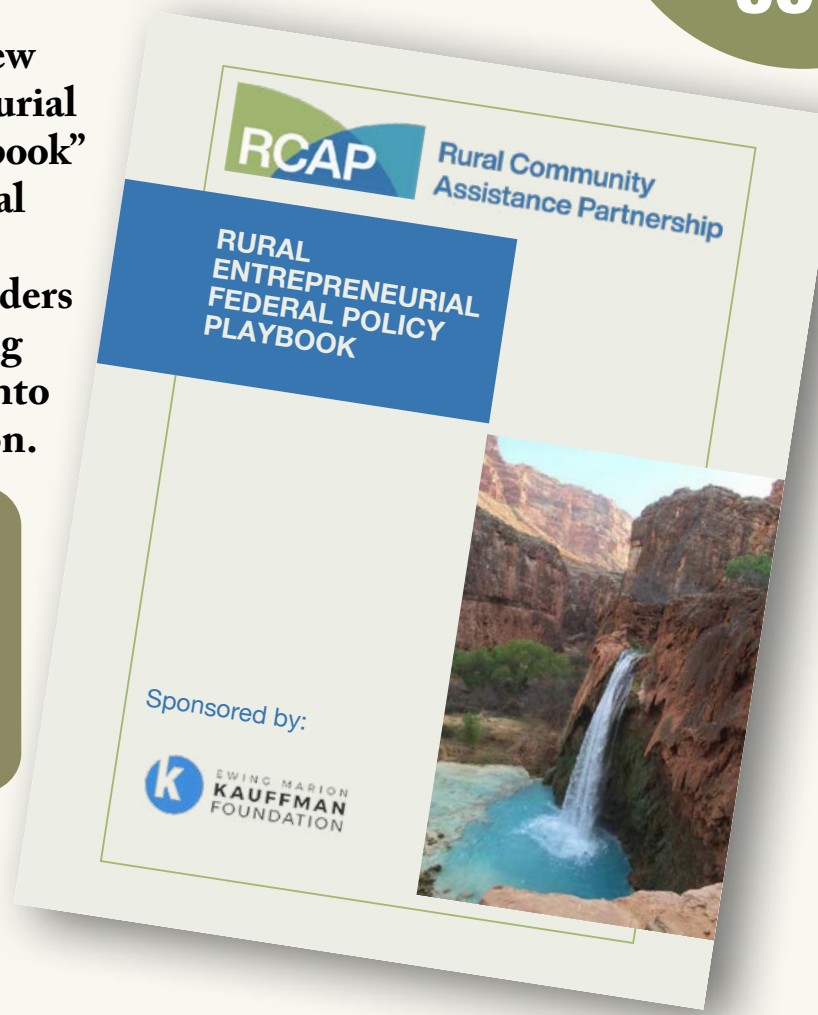
6. Southeastern RCAP

Southeast Rural Community Assistance Project (SERCAP)
866.928.3731
sercap.org

WHAT Matters

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Check out the new “Rural Entrepreneurial Federal Policy Playbook” dedicated to rural entrepreneurs and ecosystem builders on implementing policy solutions into meaningful action.



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“The power of community to create health is far greater than any physician, clinic or hospital.”

Mark Hyman

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RURAL ROUND-UP

Recent wins and happenings



Regionalization and Resiliency eLearning is Live. Check out the new module that targets individuals involved in the utility's technical, managerial, and financial (TMF) decision-making. Technical assistance providers (TAPs) can also use this module to understand how disaster planning, resilience, and regionalization can be part of the broader TMF capacity development work for systems. rcap.talentlms.com/catalog/info/id:223



Impact Report 2021 The RCAP network made the most of the historical challenges and embraced the opportunities to truly hear, elevate, and address rural America's diverse and compelling voices and needs. Check out the full Impact Report at rcap.org/report.



Communication Training. RCAP is partnering with Rogue Water Lab on a webinar series for communities and technical assistance providers on the ABC's of water communication. Topics include assessment, branding, content and strategy, as well as collaboration and storytelling. The series kicks off in October, so stay tuned!



Lead Pipe and Paint Action Plan. This summer, the EPA released guidance (at epa.gov, search "revised lead and copper rule") to help communities and water utilities identify lead pipes that connect drinking water service to homes and other buildings, including a \$15 billion investment into the Biden-Harris administration's Lead Pipe and Paint Action Plan. The guidance specifies that utilities can implement the \$15 billion into lead service line replacement funding, passed under IIJA/BIL, and seeks to strengthen the Lead and Copper Rule (LCR) (at epa.gov, search "lead and copper rule"). Be on the lookout for a newly developed toolkit that helps TAPs communicate lead service line replacement projects.



RECENT WINS and Happenings

This year was RCAP's first in-person conference since 2019, and at over 250 attendees, it was an overwhelming success. The packed schedule included speakers from the U.S. Environmental Protection Agency, the Low Income Household Water Assistance Program, and the mayor of Godwin, North Carolina. Several breakout sessions for technical assistance providers covered topics such as environmental justice, water and wastewater rate setting, and temporary debris management. During the conference, we even had a field day session where participants could tour a recycling plant or gain hands-on experience working on a wastewater or drinking water system. The learning possibilities were endless and exciting for everyone who managed to attend this year's conference. We're looking forward to the 2023's National Conference in Boston.



Did You Know?

RCAP selected its first female and person of color to lead the RCAP network.



After months of searching, the RCAP board selected Olga Morales-Pate as its next CEO! She is an experienced environmental justice and rural community development leader ready to take RCAP and the rural communities it serves to the next level.

A familiar face to many of you from her 19 years at RCAC, Olga is an accomplished and experienced leader on environmental justice and rural community development issues. She has been the assistant director of Community and Environmental Programs at RCAC since 2018. She led a team of 32 and managed an annual portfolio of nearly \$10 million in grants and contracts.

Olga developed and led RCAC's Regionalization Program and authored legislation establishing the New Mexico Colonias Infrastructure Fund, which has secured \$144.6 million for 263 infrastructure projects since 2011. She also served on the EPA's National Drinking Water Advisory Council (NDWAC) as an appointee of President George W. Bush, where she established strong working relationships with the agency while leading advisory efforts on issues such as climate change, hydraulic fracturing, carbon sequestration, and harmful algae blooms and cyanotoxins, among others.

Keep an eye out for an in-depth interview with Olga in the next edition of *Rural Matters*.



Training Calendar

RCAP hosts free webinars on topics ranging from capacity building to wastewater treatment. **Sign up for an upcoming webinar here!**



We also have webinars in business and financial planning designed to support small business entrepreneurs across the country in our Open For Business Hub powered by the Wells Fargo Open for Business Fund. **Learn more and sign up for an upcoming webinar!**





TIPS

from a TAP (Technical Assistance Provider)

Multicultural Conflict Resolution by **Katrina L. Hiott**, Rural Development Specialist III, Rural Community Assistance Corporation (RCAC)

Conflict is not inherently bad, but it can impede projects if it's not resolved effectively. Awareness of the Integration-Adaptation model can help. The two main functions of any social system are Internal Integration and External Adaptation. Internal Integration is common identification that provides esteem, status, and a sense of inclusion to the members. External Adaptation involves assessing the expectations of others and using social cues to understand what is appropriate within the environment. Balancing these two functions creates an environment where multiculturalism can thrive, members are valued for their uniqueness, and they feel confident to navigate new environments.

The tools of the Integration-Adaptation model are:

- Awareness of cultural assumptions, cultural rules, racial-ethnic identities, privilege, class, and the perception of ourselves and others;
- Accuracy in reading situations, valuing and verifying data, and recognizing preconceived theories, beliefs, and stereotypes;
- Adaptivity to situational demands; and
- Accountability to self, others, and community by requesting and accepting feedback and incorporating it into reforms and solutions.

Katrina provides a brief overview of her 2022 RCAP National Conference workshop. Be on the lookout for more Multicultural Conflict Resolution content in future Drop of Knowledge editions.



10 YEARS

of SepticSmart Week

This year, SepticSmart Week celebrated its 10th anniversary! SepticSmart Week is an annual event that is put on by the EPA every third week of September. Communities, local groups, and state governments can bring attention to the importance of caring for and maintaining septic systems by organizing homeowner education events, sponsoring workshops, or sharing social media from the SepticSmart program.

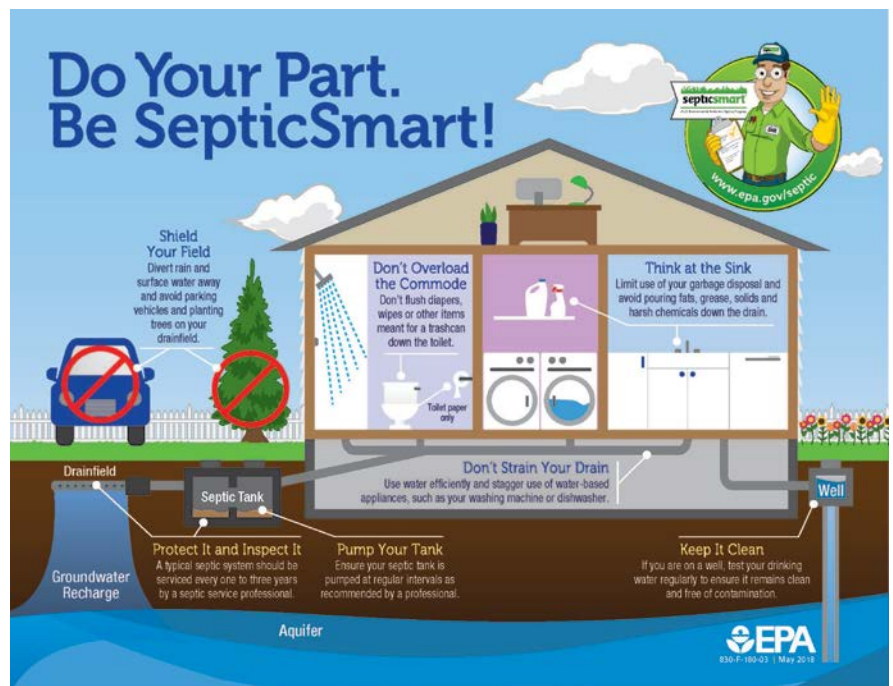
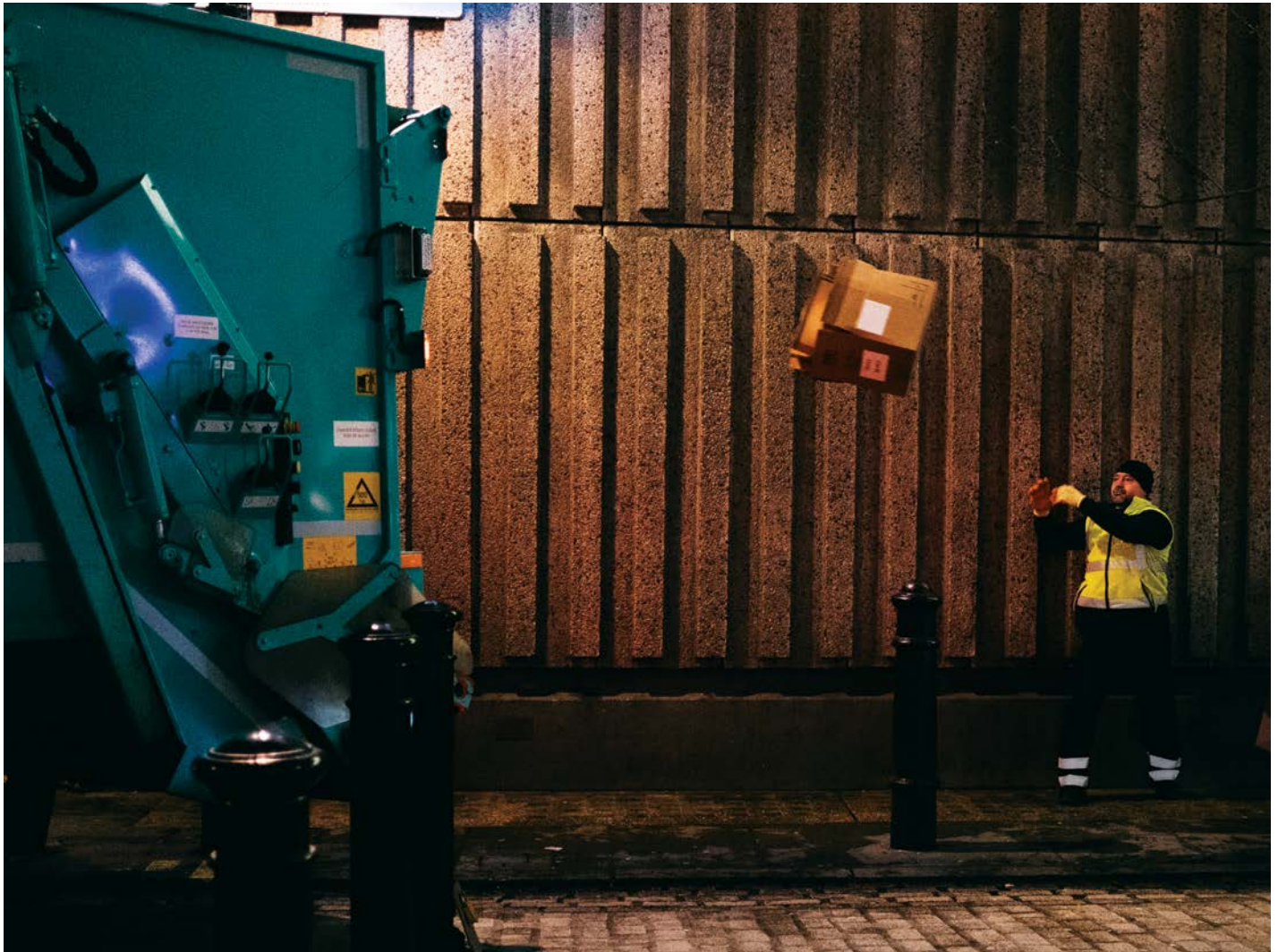


PHOTO BY WALTER RANDELHOFF ON UNSPLASH

Purchasing a Solid Waste Collection Vehicle

Quick tips for the planning process.

Michelle Viney, Senior Community Facilitator, Communities Unlimited (CU)



Managing the collection and transfer of rural solid waste requires a lot of equipment, such as collection vehicles, carts, compactors, and transfer vehicles. Particularly demanding rural solid waste collection routes cause continuous wear and tear on collection vehicle fleets. Strategic maintenance can extend the useful life of collection equipment, but eventually, every community faces the costly and complex process of replacing essential collection vehicles.

Collection Vehicle Specifications

Solid waste collection vehicles have two major components: the chassis and the collection body. Both are specialized for the harsh environments where they operate. The chassis includes the vehicle frame, cab, drive train, and wheels. The collection body, either rear loader, side loader, or front-end loader, is mounted on the vehicle chassis and serves as the containment vessel for solid waste and recycling collection. Manufacturers usually offer chassis and collection bodies, but not always both. For this reason, solid waste collection vehicles are rarely purchased from stock inventory.

One of the first decisions a community must make is whether it wants to fully automate or semi-automate collection and whether it prefers the front-, rear-, or side-loading vehicles. Some communities may collect more than one type of waste stream with the same collection vehicle—that is, the vehicle collects residential solid waste some days and residential recycling on others. Depending on which type of loader the vehicle is, there may



be additional equipment, such as hydraulic forks for lifting dumpsters or automated cart-tipper arms for emptying residential curbside collection carts. The first step in purchasing a new solid waste collection vehicle involves a thoughtful examination of the specialized needs of the community.

Purpose

First, consider the use of the collection vehicle. Often, rural communities use one vehicle for multiple functions: collecting solid waste, recycling, and yard waste. If a community identifies specifications for these individual waste categories separately, the final vehicle unit might be notably different because of the customized collection purpose. However, when a community seeks to purchase a multi-use vehicle, it must consider all the various collection needs.

Route

Understanding the environment in which the equipment will be functioning is

critical. If the community has many unpaved, narrow, or rugged roadways, the space available for operating the equipment may be limited. Choosing a vehicle with a smaller chassis and collection body may be essential for day-to-day operation—but ensuring the equipment is durable enough to handle the terrain is vital.

Size

Understanding the volume of solid waste that is being created, collected, and transferred for disposal will help you plan for the collection vehicle size you need. Factors such as how many route stops there are, how much waste you can collect in a day, and how many days you have available to complete the route will help determine the size of the collection body you need to purchase. Additionally, city managers often consider the impact of vehicles on the roadways.

Personnel Considerations

Most standard solid waste collection vehicles require a commercial driver's license, also known as a CDL. However, some manufacturers offer compact trash trucks that fall below the weight requirements for a CDL license, which benefits rural communities that find it challenging to locate and hire qualified CDL drivers.

Many communities are trying to move to more automated collection vehicles. The benefits of automated trucks include fewer personnel obligations—for example, manual rear-loading trucks can require two to three operators, depending on the route size; one operator drives while one or two operators ride on the back to collect trash at each stop along the route. Automatic rear-, front-, or side-loading vehicles can reduce the number of operators to one and free up personnel for other much-needed public works functions.

Collection Vehicle Purchase

Pricing and return on investment are often very high priorities for purchase decision-making. When it comes to solid waste collection vehicles, the adage about using the right tool for the job can make a big difference in the success of a solid waste management program. The considerations discussed above lead to the development of purchasing specifications. Most communities will follow a standard bidding process of developing an invitation to bid and accompanying specifications. Collection vehicle specifications can be written either separately for the chassis and collection body or combined. Based on the community's prioritized needs, bids may incorporate many design variations into the specifications for a vehicle.

Beyond the vehicle specifications, an invitation to bid will need to contain additional sections of information, including these:

- timetables for procurement, such as ...
 - bid announcement date
 - deadline to submit a bid
 - bid opening date
 - date of expected contract award
- administrative details, such as ...
 - identifying the purchasing office
 - restrictions on communications
 - clear and concise title for vendors to locate the opportunity
 - any contractual terms and conditions

Procurement rules vary from state to state, and a community should always reach out to its state procurement office or municipal league for guidance. There may also be additional funder requirements if state or federal grants or loans are used for the purchase.

Funding

Collection vehicle funding may come from various sources, including city revenues, loans, and local, state, or federal funds. Many rural communities can access application assistance from organizations that provide technical assistance. Exploring these resources may ease the burden of complicated grant and loan application processes. State municipal leagues, local planning and development districts, or specialized community development organizations like the Rural Community Assistance Partnership (RCAP) can provide more information about application assistance.

Some communities consider solid waste collection vehicle purchases within their American Rescue Plan Act (ARPA) funding expenditures. ARPA funds were set aside by the American Rescue Plan Act of 2021 and designated for the relief of COVID-19 impacts on public health and economies. ARPA allocated more than \$1 trillion of these funds for distribution to local municipal and county governments. Organizations such as the National League of Cities and the National Association of Counties have provided extensive information about ARPA funds and their distribution on their websites.

Regardless of the funding source, many communities choose to conduct a comprehensive rate study before making a significant expenditure like a new collection vehicle. Solid waste rate studies include an analysis of all revenues and expenses to the solid waste management program. Typically, they allow the community to see the impacts of rate adjustments on the annual budget and, conversely, help communities understand how a large financial purchase may necessitate a rate adjustment. Rate studies are typically provided by consulting engineers or community development organizations, such as the affiliates of RCAP.

Managing a New Asset

Adding a new asset, such as a solid waste collection vehicle, to your inventory may be less glamorous than selecting and purchasing the vehicle. However, managing and maintaining a new asset over the long term is a critical part of the process. The first order of business for your new asset is acquiring the license, registration, and insurance with external agencies and internally adding your asset to your existing asset inventory. If you do not have an asset inventory, you should create one; the RCAP affiliates or other providers can help with that.

Complete inventory updates and tagging before the operators use the vehicle. Inventory best management practices for solid waste collection vehicles may differ slightly from other asset inventories. One collection vehicle unit is composed of multiple components, including the chassis and collection body and often additional accessories, which are individually valued at a rate that merits inventory under many municipal policies.

In addition to adding your new vehicle to inventory, thoughtful asset management planning can reduce the costly burden of maintaining and eventually replacing equipment such as collection vehicles, carts, compactors, and transfer vehicles for rural communities. Asset management planning is a process that helps you keep track of the equipment you use at solid waste facilities, such as transfer stations, landfills, recycling centers, and collection programs. Accurate inventories and condition details will help you maintain the operations' safety, security, and reliability.

Keeping an accurate inventory of your solid waste facilities can help you comply with federal and state regulations, create accurate budgets, identify concerns early, and prepare for future needs, whether financial, growth-related, or regulatory. Knowing the strengths and weaknesses of your solid waste assets will help you intercept any sudden or unexpected problems you experience with operations or the quality of service you provide. Understanding every detail of your system enables you to explain its current condition and how it operates and equips you to inform decision-makers, such as elected officials, customers, local health officials, and the media.



How a Pandemic Can Impact Solid Waste Management

Lessons from COVID-19.

Patrick T. Walker, Contractor,
Southeast Rural Community Assistance
Project, Inc. (SERCAP)

The ongoing COVID-19 pandemic has significantly impacted solid waste management activities in the southeastern part of the United States and throughout most of the country. These impacts, felt in many rural communities that the Rural Community Assistance Program (RCAP) routinely assists, were identified through brief industry and local government surveys conducted by various state and federal organizations, in addition to other collected data.

The following are examples of the effect that this pandemic has had on solid waste management, based on the results of the surveys and data collected as well as on conversations with several of our local solid waste collection site attendants in southern Carolina. Hopefully, being aware of these COVID-19 related impacts will assist RCAP technical assistance providers (TAPs) and others to better understand and respond to current needs and concerns of solid waste management officials in their communities. As solid waste collection and disposal facilities begin to return to the “new normal,” this will also provide opportunities for technical assistance and training related to health and safety protocols, waste handling, recycling priorities, and reinforcing behavioral changes.

Solid Waste Management

In March 2020, solid waste management, collection, and disposal workers were designated as an Essential Critical Infrastructure Workforce by the U. S. Department of Homeland Security. Waste haulers were also exempted from Hours of Service (HOS) regulations during COVID-19. Recycling activities were designated as an essential part of the supply chain for critical manufacturers. The Institute of Scrap Recycling Industries reports, “recycling provides 40% of raw materials for manufacturers on average across all commodities.” While these designations were good for industry finances, they put additional pressures on the operation and management of waste facilities.

OSHA re-issued guidance that stated:

Generally, management of waste that is suspected or known to contain or be contaminated with COVID-19 does not require special precautions beyond those already used to protect workers from the hazards they encounter during their routine job tasks in solid waste management. Solid waste workers and employers should manage municipal (e.g., household, business) solid waste with potential or known COVID-19 contamination like any other non-contaminated municipal waste. Use typical engineering and administrative controls, safe work practices, and PPE, such as puncture-resistant gloves and face and eye protection, to prevent worker exposure to the waste streams (or types of wastes), including any contaminants in the materials, they manage.

Even though the precautions in place during the pandemic were similar to those before the pandemic, the fact of working in a pandemic placed additional pressures and concerns on the front-line workers.

In addition to worker safety, a primary impact during COVID-19 seemed to be that waste production shifted from industry and commercial centers to residential areas. This resulted in a re-focusing of collection efforts and the management of drop-off facilities.

Solid Waste Disposal

A majority of solid waste disposal facilities reported a surge of varying degrees in residential disposal rates. Higher levels of consumption of packaged products and take-out foods were reported due to people staying at home and/or working remotely. Additionally, many individuals took this opportunity to declutter their homes—to clean out, remove junk, and dispose of stored items. Several local drop-off facilities indicated that they had been overrun with bulk items during the pandemic.

Some local governments reported an increase in traffic at drop-off facilities that produced other problems to manage, such as traffic flow, increased container size or quantity requirements, increased safety for residents, and more. Disposal facilities have had to maximize the use of existing facilities to manage the increased waste production. This has resulted in altering facility disposal patterns, rerouting traffic into and out of the disposal areas, and reassigning personnel.

Personnel at local drop-off facilities also reported an increase in the disposal of residential land clearing debris—brush, trees, leaves, etc.—during COVID-19. This certainly resulted from residents being at home more and working outside to clean up their property.

Recycling

In some instances, recycling is being sent directly to a landfill or minimal sorting is occurring. Recycling is a very hands-on process, and the logistics of handling and sorting mixed recycling material could be considered unsafe during the pandemic. Many drop-off facilities reported significant increases in cardboard collection and recycling, probably as a result of the e-commerce industry and increased demand for package delivery.

Food had previously been identified as the No. 1 item Americans throw away, with up to 40% of the food supply in the U.S. each year never consumed. Interim data shows that, since many residents have been at home during COVID-19, more attention has been paid to reducing the amount of food wasted. This behavior change needs to be reinforced in the future, post-pandemic.

Local attendants reported a large increase in electronics recycling, especially televisions. Since more people were staying home, new televisions were being purchased for entertainment.

Conclusion

Certainly not all of the above-referenced impacts occurred throughout the country or to the same degree, but the pandemic clearly had an impact on the solid waste industry. Updated and timely refresher training courses will be critical to maintaining a strong post-COVID solid waste management industry. RCAP, through its regional training programs, is well-positioned to serve as a leader in this effort.



Supporting Assessment Reports with Valid Data from Federal Agencies

The example of Fajardo, Puerto Rico.

Edwin Vazquez-Asencio, Sustainable Materials Management Specialist, RCAP Solutions (RSOL), Puerto Rico

Fajardo is a municipality on the east coast of Puerto Rico with beautiful marinas and vibrant tourist activity, which are an important part of its economy. It has a beautiful nature reserve called Las Cabezas de San Juan, a bioluminescent bay, and key areas of the Yunque National Rainforest, mainly undeveloped areas in a state of conservation. Several areas were affected by illegal dumping activities, and Fajardo representatives, who had little success in combating the problem, contacted RCAP Solutions for assistance.

RCAP Solutions (RSOL) performed a site visit to the affected areas. It validated the severity of the situation and shared opportunities to improve these areas and eventually eliminate the problem.

The first aspect we focus on is who is causing the problem and why. A major reason is often a lack of education and limited environmental awareness of residents. The lack of empathy and respect for society is another element; however, in this case, we focus on the most practical points to address the problem.

How do we engage those who can address the problem and allocate resources to support the necessary management?

For those who will treat or remedy the area, it is important to know why. For those who have the decision-making capacity to allocate resources, it is more important to know the effect illegal dumping has on our communities, public health, and the environment. There are certain criteria and tools available that we must consider when reporting these clandestine dumping activities.

How do we effectively and fully report these illegal landfills to each stakeholder? Who are those stakeholders?

First, a distinction must be made between clandestine landfills, where an organization, company, or individual regularly disposes of its waste systematically, and the repeated dumping by members of the community without any consideration to the damage it will cause. In both cases, this can occur on private property either by the owner or by others without the owner's consent. In general, this constitutes a clandestine landfill, since it is not an authorized location for the disposal or management of waste. If there are no controls in place to prevent pollution, it is considered an illegal landfill that endangers public health and the environment.

When organizations dump waste as part of an operation, they are required to have adequate management of the waste they generate, and these waste generators or managers are known as a regulated community. They assume responsibility in the eyes of the government for all of their operations and must comply with the regulations that apply to them. They need to have the permits from the regulatory bodies according to the type of operation. These regulations may be more stringent in some states or territories, either by federal or state legislation, including subdivisions of local government. These regulators may be part of the "stakeholders" with which we need to address the issue and should be included in our reporting process.

Those that are contributing to the illegal dumping in one of these regulated communities are considered waste handlers. Typically, the complaint may be for facilities that fall within the

definition of an illegal dump if they do not follow regulations or damage is observed in the areas surrounding or influenced by the facility. However, in this case, RSOL is referring to landfills in places that are not managed or regulated for this purpose but are open spaces, public or private. Some evidence or examples that we will mention could be helpful for the regulated areas that also have illegal or clandestine activity.

How do we know what kind of illegal landfill it is?

The kind of illegal landfill usually depends on the type of materials found and the amount of each material in proportion to the others. We refer to categories of materials as such: construction and demolition waste (C&D); furniture and bulky material such as mattresses and appliances (whites) and electronics (e-waste); household hazardous waste (HHW); tires, auto parts, and chemical waste such as oils, grease, and paint; biological waste such as dead animals; clinical waste; and other types.

Assessing the Problem

The RCAP Solutions staff assessed the affected areas and the services available for controlled disposal. Interviews were conducted with residents to understand the current behavior, including stakeholders such as landfill staff. Discarded building materials were identified in the affected locations, likely associated with small contractors or homeowners conducting DIY projects or home repairs. Other materials, such as kitchen furniture and crockery pieces, toilets, and sinks, helped to validate these assumptions.

In the area of commercial activity, it was possible to identify a large number of tires dumped on the side of the road near the landfill, with the intention of hiding the number of continuous deposits made. This is indicative of a relentless and systematic practice.

It is important not only to document the activity by taking photos of the sites, the discarded materials, the access areas, and observations of the disturbances created on the site, but also to thoroughly review all details. RSOL also established that the probable cause was due to a lack of solid waste services in the area. Although the municipality offers special collections and publicizes these services, some interviewees were unaware of the collection routes and what types of materials the municipality collects.

Unfortunately, there is no service available for some materials, and little information is available on how to proceed if you need to dispose of those types of materials. If the residents believe that there are no other alternatives, they will dispose of their waste when and where they can without any further consideration. Once they dump it somewhere, they believe that the problem belongs to someone else, mainly the government. Among those interviewed, there was no knowledge of who owns the areas where the dumping takes place or the possible effects on their health or the environment due to this illegal dumping. Others simply want to avoid the cost of landfill disposal and show a certain level of ignorance on the topic. In the case of used tires, storage costs can be added to the equation due to a deficiency in the disposal system in place for the diversion of this type of material.

Data to Assess Potential Impact

Photos, interviews, and a deeper knowledge of the problem are a vital component, but the challenge is to present this information to the stakeholders and engage them in the solutions, which can

be quite difficult. The facts should be presented with evidence or at least backup information to support our claims. Studies and laboratory tests could be complicated, and there is a cost implicit in terms of money and time. To provide the communities and the municipality with valid information to educate and to present the situation to other stakeholders, RSOL gives at least three facts related to public health concerns, endangered species that could be affected, and information about the owners of the sites who are impacted by the illegal dumping.

The report included several elements using various technologies. First, the area was identified using a coordinate system in order to use the powerful tools offered by Geographic Information System (GIS) technology. This allows us to place the locations on a map and add the necessary layers to evaluate the area according to other information available on platforms such as ESRI. In the case of Puerto Rico, we used information from the Municipal Collection Center (CRIM) to identify the property owners and obtain their contact information. RSOL also included important and reliable sources of information from the U.S. Environmental Protection Agency (EPA).

The Drinking Water Mapping Application to Protect Source Waters (DWMAPS) was another platform used to explore the possible impacts on the Fajardo River near the illegal dumping sites. This page contains information about groundwater reserves, wells, nature reserves, tribal areas, permitted discharge sites, and drinking water suppliers in the area. RSOL also consulted FEMA's flood area maps to find out how susceptible the flood-impacted area is. In addition to pollution, bulky materials can be a major hazard to bridges and access roads during floods or weather events. Moving these bulky materials on roads or runoff management systems could cause serious problems that would increase losses and insurance costs, as there is a greater risk. Another factor to consider is the effect on the environment and ecosystems impacted by the practice of illegal dumping. Throughout this process, RSOL discovered most of the community members and even some municipal staff were not aware of such details. Other stakeholders may be interested in other environmental elements, including the soil and wildlife.

Environmental Pollution's Effects on Wildlife

Through the U.S. Fish & Wildlife Service platform, an Information for Planning and Consultation (IPaC) report was generated as a planning tool to be integrated into the environmental review process. In this case, it served as a quick reference for information about sensitive areas previously identified by the agency that included vulnerable species.

Three endangered species were identified as affected by the impacted area, including the broad-winged hawk, the Amazona vittata or Puerto Rican parrot, and the Puerto Rican boa, all Puerto Rican endemic species. Other migratory birds were also included and considered



vulnerable according to the report. This information may be relevant for the U.S. Department of Natural Resources or EPA to integrate into a strategic approach to solve the problem. Other groups, such as ecologists or bird lovers, can help spread information and help educate communities about the large-scale effects of improper waste management practices.

This information is important to educate the community and train municipal staff so that action can be taken and possible allies and funds can be identified to address the problem. Other approaches considered were the effects of possible contaminants on Fajardo's drinking water reserves and the possible migration of these contaminants from illegal dumping to those reserves. Fortunately, in this case, it does not seem likely that the illegal dumping areas can influence the tributary that serves the drinking water treatment plant.

Hidden Chemicals May Seep Into Our Water

It is important to consider that routine tests such as bacteriology and some chemicals may not detect some uncommon substances that may be a part of the waste. Some materials are identified as volatile organic compounds (VOCs) in contact with polyvinyl



chloride (PVC) plastic products that readily evaporate; as a result, hazardous gases enter the ecosystem and cause cancer in humans and other animals. If these substances from an illegal dumping site come in contact with the pipelines, it could contaminate the water supply for the community. Pipeline maps can be included in the evaluation of illegal dumping sites. This could be an important detail to present to the community and the municipality to educate all who may be affected by illegal dumping. Other potential victims are private well owners who do not have the resources to sample their water frequently. New compounds and chemicals that could be harmful to public health and the environment are evaluated every year.

RSOL's Solutions and the Municipality's Future

RCAP Solutions' report of these clandestine sites provided the municipality with relevant and valuable information to highlight what is most important to the agencies that will be contacted in search of alliances. The same information can be presented in diverse ways to the communities directly so that the issues most relevant to them can be considered and action plans can be developed to address this problem.

RSOL found that other nearby municipalities should be included in the mitigation strategy of the areas, particularly those near the landfill. It was recommended that the patent office be involved in the education process for contractors and tire-handling businesses.

As a result, the municipality is in a better position to train its staff and educate its local communities. Violators were identified, and details about how to approach the issue were discussed. The assessment demonstrated the need to include other materials in the recycling program and areas of opportunity to develop a mini-transfer station to correct operational deficiencies in the municipal system. Additional assessments on the cost of managing illegal dumping sites vs. the cost of taking on the tipping fees of neighbors who take their waste to landfills should be considered.

The municipal staff learned a new way to approach these solutions to reduce illegal dumping activities. New tools to evaluate the illegal dumping sites were demonstrated, and a five-step process to eliminate the sites was discussed. The municipality is looking forward to receiving additional training and guidance on this process, and multiple stakeholders were identified to create a working group that will now be part of future training sessions.



One Promise Zone Turns Trash Into a Treasured Solution

Solid waste successes in South Dakota.

LeAnn Kerzman, Regional Field Manager for South Dakota and Wyoming, Midwest Assistance Program (MAP)

The Oglala Sioux Tribe (OST) of the Pine Ridge Indian Reservation is in southwestern South Dakota and consists of 3,468.86 square miles of land area, which makes it one of the largest in the United States. The reservation encompasses the entirety of Oglala Lakota County, the southern half of Jackson County, and the northwest portion of Bennett County (Oglala Sioux Nation, 2012).

Of the 3,142 counties in the United States, these are among the poorest. In April 2015, the Obama administration designated the Pine Ridge Indian Reservation of the Oglala Sioux Tribe one of eight

new Promise Zones. These zones are high-poverty communities where the federal government partners with local leaders to increase economic activity, improve educational opportunities, leverage private investment, reduce violent crime, enhance public health, and address other community-identified priorities.

In 2015, the director of the OST Solid Waste program (OST SW), Robert Pille, worked with Indian Health Services (IHS) and Midwest Assistance Program (MAP) to develop a preliminary engineering report to address the lack of capacity within the existing landfill. MAP Technical Assistance Provider LeAnn Kerzman helped them complete a funding application to receive

\$1.85 million for a Water and Waste Disposal grant through USDA Rural Development, which would be used to construct a cell for the solid waste landfill, construct a building, make repairs, and purchase equipment. IHS provided the remainder of the grant financing of \$1.35 million, for a total of \$3.2 million.

Then, the OST SW program experienced a change in directors. In the interim, the EPA issued an Area of Concern (AOC) for deficiencies within the solid waste department. Finally, Director Leslie Mesteth came on board and immediately began improvements within the program. With MAP providing technical assistance since 2015, OST realized the following benefits:

- Constructed a new landfill cell to meet the growing reservation needs;
- Utilized Sourcwell cooperative purchasing for pre-bid pricing on large equipment;
- Purchased a scraper and loader for the landfill to improve compaction and increase the useful life;
- Added a scale to allow for the weighing of incoming trash and a measurable procedure for billing of services;
- Developed an Integrated Solid Waste Management Plan;
- Separated debris, allowing for the diversion of materials with further use, such as tires and construction and demolition (C&D) materials and extending the expected useful life of the landfill;
- Completion of Solid Waste training by OST SW management and staff;
- Completion of required training by MAP Field Manager Kerzman, who is certified as a Solid Waste Manager/Technical Assistance Provider; and
- The last item to satisfy the AOC: completed the building at the landfill, which has water and wastewater facilities on-site and eliminated the need for the port-a-potty, a cost of more than \$300 per month.

Director Mesteth believed so strongly in the benefit of receiving technical assistance that she came to Washington, D.C., in 2020 to support the Midwest Assistance Program and Rural Community Assistance Partnership (RCAP) in the annual pilgrimage of “RCAP on the Hill.”

Partnering with USDA Rural Development for this system was the key to its success. Through technical assistance and funding, we helped those in the greatest need. It’s been a long process, but we still have more work to do. We greatly appreciate Director Mesteth’s ongoing support. The next steps include the following:

- Updating and improving the fencing around the transfer site locations to prevent illegal dumping, scavenging, fire, and other illegal acts. A previous fire at a transfer site location led to a large grassland fire which, luckily, did not result in property damage.
- Continuing community education on the safe disposal of items at the landfill. Using the new compactor provides increased compression and air removal from within the landfill, which prevents landfill fires and maximizes space but also can cause an improperly disposed propane tank to explode.
- Implementing a recycling plan that fits the budget.





When the County and City Work Together, Everyone Benefits

Richmond and Wayne County, Indiana, adapt their recycling programs to changing conditions.

Debbie Hackman, Solid Waste Specialist, Indiana Great Lakes Community Action Partnership (IN-GLCAP)

Recycling is a very local enterprise—every community crafts its own program in its own way. But local programs are subject to global conditions and, as those conditions evolve, the programs have to adjust. Indiana RCAP, through the Indiana Great Lakes Community Action Partnership, helped Richmond and Wayne County, Indiana, make one such adjustment.

An Evolving Sector

Many industries have experienced a lot of change in the past few years, and recycling is one example. Small communities that depend on the added revenue from selling recyclables have been directly affected by negative business impacts. To understand this, you must recognize how the recycling business is influenced by external factors.

Recycling is dependent on supply and demand and the market fluctuations that follow. Chinese restrictions placed on import of American recyclables in 2018 due to contamination issues greatly reduced the international demand for plastic and cardboard. Communities make choices about which commodities to collect in their recycling streams based in part on the availability of markets for the commodities. China had been a major importer of American cardboard and plastic but, after several years of

declining quality in the recyclables being shipped overseas, the Chinese government imposed a strict percentage of acceptable contamination. The amount of foreign material allowed barely covered a label on a plastic drink bottle.

As a result, recyclers were searching for domestic markets, warehouses were filling up, and market prices plummeted. Many municipalities and small collectors became more selective in what they collected and were wary of adding additional products for fear of not having the markets available to sell them. Although most did not sell directly overseas, their brokers did, and the mismatch in supply and demand brought the flow of recyclable exports to a screeching halt.

This was the context when the recycling program in Wayne County, Indiana, was due for an update.

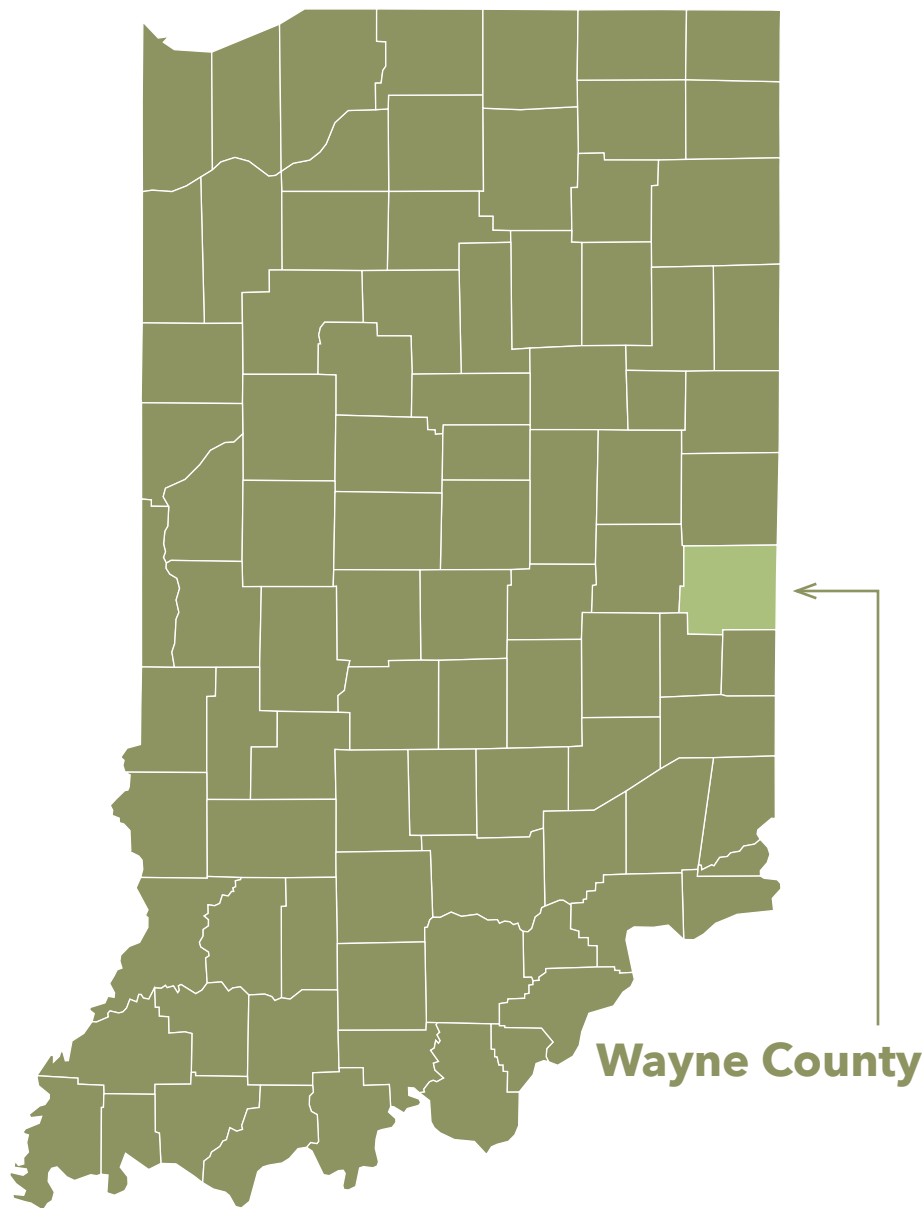
Recycling in Wayne County

The small recycling collection and processing program in Wayne County, Indiana, was already facing limitations on what it could collect, but that had more to do with physical space than anything markets halfway around the world were doing.

The community has embraced recycling since the early 1990s but only collected a small variety of items. Early in its program, Wayne County built a sorting facility that accommodated a few of the more common recyclables: #1 and #2 plastic bottles, steel and aluminum cans, and, because it was popular in the 1990s, newspaper.

Recycling has changed in many ways over those 30 years and even in the past several years. Mainly due to the Chinese ban—the Green Sword, as it was dubbed—domestic recycling facilities sprang up across the United States, and demand increased for several types of plastic. As part of a longer-term trend, both the demand for and the supply of newspaper has plummeted. Once a source for all our news, newspapers were decreasing as millennials and others have come to prefer Internet-based news services. And meanwhile, online shopping and home deliveries are now producing thousands of cardboard boxes daily.

As the Indiana RCAP Solid Waste specialist became a part of the Wayne County program, prices for recycling were low. Some products had no value at all. However, the antiquated method of collection and processing was still getting the job done for them.



The hand-sorting process, although labor intensive, was producing a clean product. The machines were well-maintained, and the staff was friendly and seemed to genuinely enjoy their work. Recycling route drivers also would periodically back into the concrete structure to empty their loads of residential recycling. Then, unexpectedly, they parked their trucks, found what seemed to be their usual spot near the conveyor line, and helped sort the product they had just delivered. How clever it was that the drivers would have to take ownership of what they picked up: Because the trucks required hand-loading, the drivers knew not to pick up unacceptable items left curbside.

The small Materials Recycling Facility (MRF) still accepted the five main items they had started with years before: steel and aluminum cans, plastic bottles and jugs, and paper. Items were picked up as dual-stream in double container trucks, and the number of products collected corresponded with the number of bins below the sorting line.

Although small municipal operations like these are neither very efficient nor profitable, there was some merit to the city collecting and processing its own recyclables. City officials could take pride in their operations, and they provided employment for many drivers and sorters. These facilities also provided a drop-off location for businesses and residents outside the city limits and reached into the rural parts of the county that had substantial amounts of recyclables—particularly cardboard.

The Missing Link

That was the missing link in all this productivity and efficiency—cardboard! The most recycled and usually the most profitable item in a recycling process was not being collected curbside. Home delivery of goods was only beginning to gain popularity, but even the smallest amount of cardboard put in a trash can was money lost.

In the meantime, since the institution of the Green Sword, more paper mills were opened in the United States. To keep up with the increasing demand for cardboard, market prices for cardboard increased. As online shopping became the norm for many families, cardboard boxes seemed to be on every porch. The processing of cardboard in the Midwest had a turnaround time of about two weeks from the time of collection to the time a new box was available for use.

And again, while the use of cardboard was exploding, Wayne County was seeing a decrease in newspaper recycling—in fact, the number of newspapers collected had decreased tremendously. The paper in the newspaper bin barely covered the floor. Nearby there was, however, a large pile of brown cardboard delivered by a flower shop owner who recognized the value of the cardboard to the city as well as the reduction in the volume in his trash dumpster.

A common-sense solution would be to replace the newspaper with cardboard in the collection process. It did pose challenges, though: Although the bins in the trucks were adequate for newspaper, large amounts of cardboard would fill the paper compartment quickly, and repeated trips back to the MRF would be costly and time-consuming. The only reasonable solution would be to upgrade to a single-compartment packer and initiate a cardboard-only route. Of course, this would also be a costly venture.

A Tidy Solution

Indiana maintains a solid waste fund fed by per-ton fees from landfills. Those funds are dedicated to increasing recycling volumes and markets. Adding cardboard recycling to the Wayne County program would increase recycling opportunities in this eastern Indiana community, and the Indiana Recycling Market Development Program was happy to see the funding application from Richmond.

With assistance from the Indiana Solid Waste RCAP representative, solid waste



officials, and city employees, a grant in the amount of \$220,000 was awarded from the Indiana Recycle Market Development fund in 2020, which was used to purchase a side-loading truck.

Heavy advertising prior to the initiation of the service grew interest, and the program was initially rolled out to 20% of the residents. 96-gallon carts were distributed to residents, and directions were given on how to break down boxes to fit the maximum amount in the carts.

The initiation of cardboard recycling was accepted by residents and people throughout the county, who benefited from the new service. The timing of the program also corresponded well with the increase in the price of cardboard.

The service continues to expand, and the added revenue through cardboard sales is a welcome addition to the county and city solid waste programs.



Living at the Bottom of the Grand Canyon

Unique solid waste management practices, unique challenges.

Jacqueline D. Shirley, Rural Development Specialist II, Rural Community Assistance Corporation (RCAC)

For over 1,000 years the remote village of Supai, Arizona, located eight miles' hike below the rim of the Grand Canyon, has been home to the Havasu Baaja, People of the Blue Green Waters, or, as they are known today, the Havasupai Tribe. Just above the village, a hidden limestone aquifer gushes forth the life-sustaining blue-green waters that have nourished the fields of corn, squash and beans which have allowed the Havasu Baaja to thrive living in the harsh desert landscape deep in the Grand Canyon for centuries. This remoteness creates many obstacles for residents and visitors alike. The United States Postal Service office in Supai transports all mail in and out of the canyon by mule train. Everything must make the 8-mile trek in and out of the village either by foot, on horseback, or by helicopter.

— THEOFFICIALHAVASUPAITRIBE.COM

Improving Solid Waste Practices

Rural Community Assistance Corporation (RCAC) staff worked with the Havasupai Tribe under the U.S. Department of Agriculture, Rural Development Solid Waste (USDA RDSW) grant. The Tribe reached out to RCAC for and technical assistance in developing best solid waste practices to reduce waste and solid waste transportation costs, increase recycling, improve community outreach and education, improve operator health and safety training, and provide for the basic transfer of operations and maintenance. RCAC staff developed a plan as part of the USDA RDSW grant to achieve these objectives.

Currently, the only way to transport solid waste out of the village is by helicopter, which is costly. This method has challenges due to the limited weight allowed for each “helicopter sling,” the netting attached to the helicopter to lift out waste (Figures 3-8). Waste transport is usually conducted every other Wednesday, weather permitting, and the load weight is restricted to 1,000 pounds. In the past, the Tribe hired households to use their horses and mules to pack waste out of the canyon (Figure 2); however, this mode of transportation had to be stopped due to potential cross-contamination of non-waste items packed down to the village on the same horse/mule tack that brought the waste up. It is not the practice to return the mule or horse tack to the village “empty,” as this would be considered a waste of resources.

The local solid waste management utility process now requires each household to have supersacks, instead of traditional trash bins, set up along the village's narrow dirt roads, which are used by people traveling on foot, horse, and all-terrain vehicles. There are no cars or trucks in the village. The supersacks are collected and brought to the transfer station for staging for the next sling and for sorting out recyclables. Through this grant, RCAC is training and advocating for the Tribe to begin the sorting of recyclables at the household level.



Recommendations

RCAC recommends outreach to households to educate them about using blue supersacks for recyclables and white supersacks for household trash. Blue and white supersacks are already a pickup service but also allow for self-haul.

Local businesses break down, separate, and stage cardboard in large piles for the next helicopter sling. RCAC recommends using cardboard balers to improve preparation for the helicopter slings; this includes a compactor and baler for plastics and aluminum. Having recyclables compacted and baled will be more efficient and safer during sling operations.

Technical Assistance Provider (TAP) Observations

The Havasupai still speak their language, but it's easily converted to English for their RCAC TAP. It is up to the Tribe if they want the community outreach and education flyers and posters only written in their local language or also translated into English. Tribes are always given this option when RCAC develops written materials.

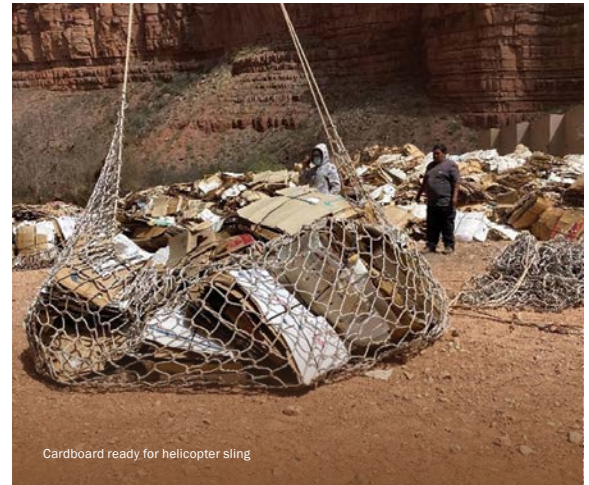
As technical assistance providers, we must remember not to contribute to the problem we are trying to help solve. For example, during the pandemic, I started having my training and project supplies shipped to my house instead of to the Tribal community, since many were shut down and there was no guarantee that someone would be at the office to accept the shipment. By unpacking shipments at my home office, all that packaging is now being diverted from small, remote solid waste systems, and I can better recycle and dispose of the materials where I live, in a city that has full capacity to deal with the waste.

Most importantly, I realized my personal responsibility to reduce my “waste footprint” when I visited remote and rural communities. I conducted a “micro-waste audit” on my hotel stay and, needless to say, I will start traveling with drinking mugs and a shopping bag. Figures 10–12 demonstrate the waste a visitor can create and add to the problem.

Continued On-site Training

A 20-hour Integrated Solid Waste Training was conducted in July 2022, including these topics:

- transfer station health and safety
- transfer station operations and maintenance
- staging best practices for used oil
- household hazardous wastes
- white goods
- recyclables
- source water protection from improper waste management
- expanding the recycling program
- the importance of sorting at the source
- community outreach and education strategies



Next Steps

RCAC will ensure that Havasupai and other Tribal communities covered under the USDA RDSW 21-22 grant program are aware of and understand what the new EPA solid waste infrastructure funding, made available through the Bipartisan Infrastructure Law (BIL), will be for and how recycling education and outreach grants can provide for their solid waste systems and communities. This new solid waste infrastructure funding can be used to purchase the compactors, balers, and horse and mule tack needed to improve recycling for the Havasupai. Providing alternate sets of horse and mule tack would address the cross-contamination concerns. Hauling waste out by horse and mule also creates jobs and income to local households that provide this service.

Importance of On-site Training

The week after my initial visit to the Havasupai village, I traveled to Chevak, Alaska, a Cupiq Tribal community located in a tundra village along the Bering Sea region. Chevak is only accessible by small Cessna aircraft. Integrated Solid Waste Management best practices can be particularly challenging in rural America, and especially in Tribal communities across our country that have remained in their homelands over millennia. RCAC is grateful for the opportunity the USDA-RD Solid Waste grant provides for our staff to travel to these remote, isolated communities and provide much needed and appreciated technical assistance and on-site training to address their unique and specific waste management needs.

Tribal staff I have worked with over the years have shared with me that they cannot afford to send entire staff or departments to train, and when staff do go to training, it is not site-specific, so they must “imagine how to make this work at home.” The RDSW grant funding enables RCAC to visit individual communities on-site and provide training that is locally meaningful. The Tribes have always been most appreciative of the individual attention to their solid waste program needs.

2022 NATIONAL CONFERENCE AWARD WINNERS

The work you do matters. We appreciate everyone who serves rural communities and want to give a special shout out to our 2022 National Conference Award Winners and Photo Contest Winners. Congratulations!



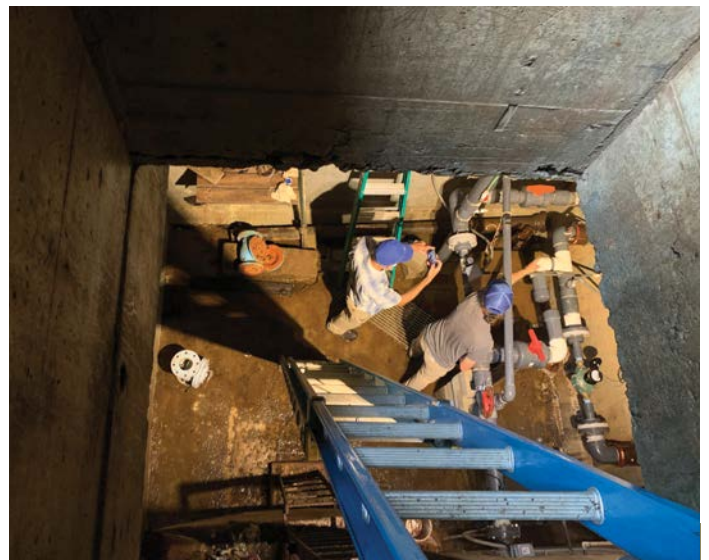
FACES IN THE COMMUNITY
“Community meeting in times of COVID”
Carlos Velasquez-Figueroa, RSOL



RURAL LANDSCAPES
“Sunset at the Black Canyon of the Gunnison”
Kurtis Strickland, GLCAP



INFRASTRUCTURE
“Moonrise over Penobscot Narrows Bridge”
Michelle Coad, RSOL



RCAP IN THE FIELD
“The Pit”
Rebekah Novak, RSOL



OUTSTANDING MENTOR OF THE YEAR
Matt Kennedy, RCAC



OUTSTANDING SERVICE AWARD
Amanda Kelley, SERCAP



PILLAR AWARD
Erin Miller, MAP



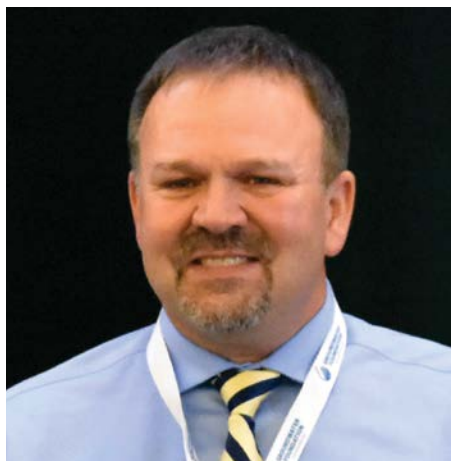
OUTSTANDING ROOKIE OF THE YEAR AWARD
Olivia Barfield, CU



BILL FRENCH BRIDGE BUILDER AWARD
Kim Padgett, GLCAP



ROBERT STEWART LEADERSHIP AWARD
Karen Conrad, CU



JOHN SQUIRES HALL OF FAME AWARD
Mike Brownfield, MAP



TAP OF THE YEAR
Catherine Rees, RSOL

2022 NATIONAL CONFERENCE AWARD RUNNER-UPS



“Twin Lakes in Colorado”
Jamey Wilkins, GLCAP



“As Rural as it Gets”
Jacqueline D. Shirley, RCAC



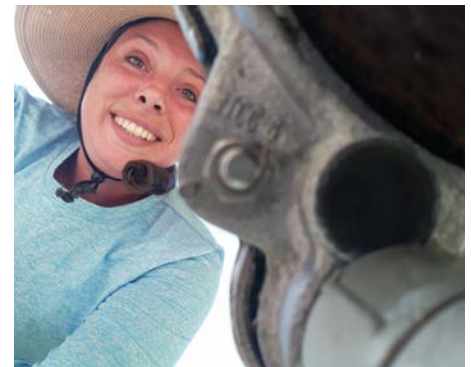
“Manhole Art”
Kimberly Martin, SERCAP



“Power”
Edwin Vazquez-Asencio, RSOL



“Quaboag River near South Street
bridge with Blue Heron”
Danielle Lee Desmarais (RSOL)



“Well Mesh Pit”
Danielle Lee Desmarais, RSOL

RCAP recognizes the 2020 and 2021 National Conference Award Winners due to the pandemic canceling the in-person National Conferences.



2020 AWARDEES

(left to right) Ron Vanderpool, MAP, Randy Welch, SERCAP, Carlos Velazquez-Figueroa, RSOL, Alexander Brandon, CU
Not shown: Brian Phillips, CU, Jennifer Jennette, MAP, Lisa Totten, GLCAP, Kimberly Griffey, CU



2021 AWARDEES

(left to right) Tommy Ricks, CU, Adam Drozd, RSOL, Kim Martin, SERCAP, Kelli Fika, MAP, Pamela Ewing, GLCAP
Not shown: Ramon Lucero, RCAC, Hope Cupit, SERCAP, Jason Carman, RCAC

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- Security Practices for Operations and Management (EL261)
- Risk and Resilience for Water and Wastewater Systems (EL262)
- Emergency Planning (EL263)
- Cybersecurity Guidance and Use Case Tool (EL250)

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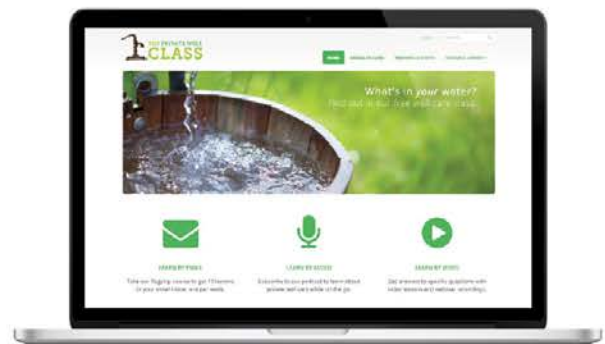
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WaterOperator.org and PrivateWellClass.org are collaborations between the Rural Community Assistance Partnership and the University of Illinois, through the Illinois State Water Survey at the Prairie Research Institute, and funded by the U. S. Environmental Protection Agency.