



January 24-26, 2017
Palm Springs, CA

*Developing and
Implementing a Tribal
Recycling Program*

What's a Waste Audit?

A process used to quantify the amount and types of waste being generated.

Information from audits will help identify current waste practices and how they can be improved.

Helps determine who is generating the waste and how much is being generated.

Does it have Value??

Identify opportunities to reduce disposal costs and increase recycling and composting.

Identify areas for improvement.

[Http://www.Epa.Gov/region2/webinars/pdfs/022310_hayes2.Pdf](http://www.Epa.Gov/region2/webinars/pdfs/022310_hayes2.Pdf)

Types of Waste Audits

Audits can be done on any type of waste e.g. paper and office waste, municipal waste, commercial and industrial waste, construction and demolition waste, etc.

There are a number of ways to conduct a waste audit, such as visual waste audits, waste characterization, desktop audits and others. The type of audit you use depends on the type of waste, where it is and what you want to get out of the audit.



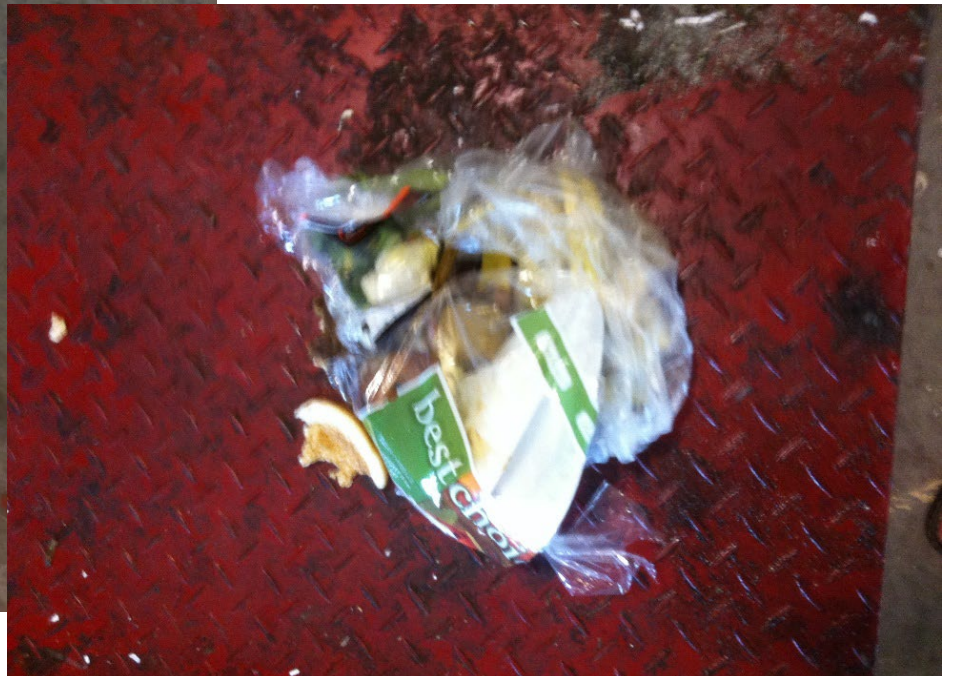
Waste Audits

- **How do you do an audit?**

- Audits can be done either in-house (using own staff), contracted out or a combination of both.

- **What are the objectives of the audit?**

- The audit's objectives will largely determine the waste types and physical locations to be audited. Some examples of audit objectives could be:
 - to determine types and quantity of waste being generated
 - to measure effectiveness of existing waste management system
 - to identify opportunities for improving waste management systems and strategies
 - to collect baseline data for measuring the effectiveness of waste minimization strategies.



Tracking Waste Audits

Building:	Complex	Grants Building	Safety Building	Food Distribution	Community Center	Travel Plaza	Travel Plaza	Travel Plaza	Casino	Commerce / Tourism	WIC	Rubin White Clinic	Purchasing
Location:	Durant	Durant	Durant	Antlers	Antlers	Durant West	Durant East	Stringtown	Stringtown	Durant	Durant	Poteau	Durant
Date:	12/8/2015	1/8/2016	1/8/2016	1/14/2016	1/14/2016	2/11/2016	2/11/2016	2/22/2016	4/1/2016	4/6/2016	4/6/2016	4/29/2016	6/21/2016
Trash	80	2	4	2	16	81	39	24	29	5	2	34	12
Compost (food waste)	42	6	8	0	37	19	19	54	52	7	1	15	22
Glass	0	0	1	0	0	2	3	0	4	0	0	0	0
Plastic	7	0	2	0	3	4	6	6	2	2	0	7	8
Printer Cartridges	3	0	0	0	0	0	0	0	0	0	0	0	2
Shred	3	0	0	0	0	0	0	0	2	0	0	0	0
Electronics/Batteries	2	0	0	0	0	0	0	0	0	0	1	22	19
Paper	34	3	14	5	14	6	10	14	2	8	16	61	16
Plastic Bags	14	0	2	14	2	4	3	9	1	2	0	9	6
Tin/Aluminum	4	0	0	0	4	2	1	3	1	1	0	1	2
Styrofoam	13	0	0	0	7	2	2	4	4	1	0	1	3
Cardboard	<u>13</u>	<u>0</u>	<u>1</u>	<u>67</u>	<u>10</u>	<u>84</u>	<u>6</u>	<u>31</u>	<u>32</u>	<u>15</u>	<u>0</u>	<u>8</u>	<u>6</u>
Total	215	11	32	88	93	204	89	145	129	41	20	158	96
Waste (lbs.)	122	8	13	2	53	102	61	78	85	12	3	49	34
Recyclable (lbs.)	93	3	19	86	40	102	28	67	44	29	17	109	62
% Discarded that could be recycled	43.26%	27.27%	59.38%	97.73%	43.01%	50.00%	31.46%	46.21%	34.11%	70.73%	85.00%	68.99%	64.58%

What are the options for setting up recycling in your community??

Selecting the right kind/size of program for your community

- Transfer Stations / Drop Off Locations
- Buy Back Centers
- Material Recovery Facilities (MRF)
- Curbside Program
- Hub and Spoke

Transfer Station / Drop Off Center

Waste transfer stations are facilities where municipal solid waste is unloaded from collection vehicles and briefly held while it is reloaded onto larger long-distance transport vehicles for shipment to landfills or other treatment or disposal facilities. By combining the loads of several individual waste collection trucks into a single shipment, communities can save money on the labor and operating costs of transporting the waste to a distant disposal site. They can also reduce the total number of vehicular trips traveling to and from the disposal site. Although waste transfer stations help reduce the impacts of trucks traveling to and from the disposal site, they can cause an increase in traffic in the immediate area where they are located. If not properly sited, designed and operated they can cause problems for residents living near them. (EPA.com)

EPA Manuals Available for Download

- [Waste Transfer Stations: Involved Citizens Make the Difference \(PDF\)](#) (28 pp, 210 KB) contains information on what role transfer stations play in the community, how they might impact the community, and how you as a concerned citizen can participate in the decisions concerning their location and operation.
- [Waste Transfer Stations: A Manual for Decision-Making \(PDF\)](#) (66 pp, 648 KB) defines what a transfer station is and how it relates to municipal solid waste management in the context of a community's total waste management plan. The manual identifies issues and factors to consider when deciding to build a transfer station, planning and designing it, selecting a site, and involving the community.

Buy Back Centers

Buy-back centers differ in that the cleaned recyclables are purchased, thus providing a clear incentive for use and creating a stable supply. The post-processed material can then be sold on, hopefully creating a profit.

Materials Recovery Facility

A materials recovery facility, materials reclamation facility, materials recycling facility or Multi re-use facility (**MRF** - pronounced "murf") is a specialized plant that receives, separates and prepares recyclable materials for marketing to end-user manufacturers. Generally, there are two different types: **clean** and **dirty** MRFs.

Clean MRF

A clean MRF accepts recyclable commingled materials that have already been separated at the source from municipal solid waste generated by either residential or commercial sources. There are a variety of clean MRFs.

The most common are single stream where all recyclable material is mixed, or dual stream MRFs, where source-separated recyclables are delivered in a mixed container stream (typically glass, ferrous metal, aluminum and other non-ferrous metals, PET [No.1] and HDPE [No.2] plastics) and a mixed paper stream (including OCC, ONP, OMG, Office packs, junk mail, etc.).

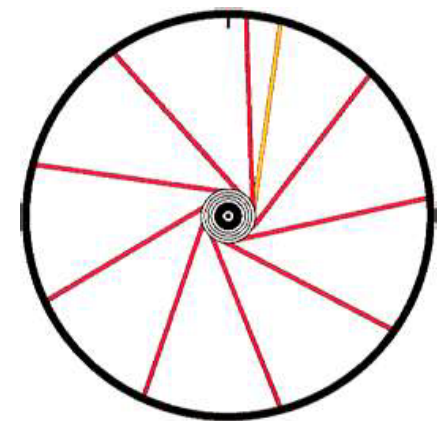
Material is sorted to specifications, then baled, shredded, crushed, compacted, or otherwise prepared for shipment to market

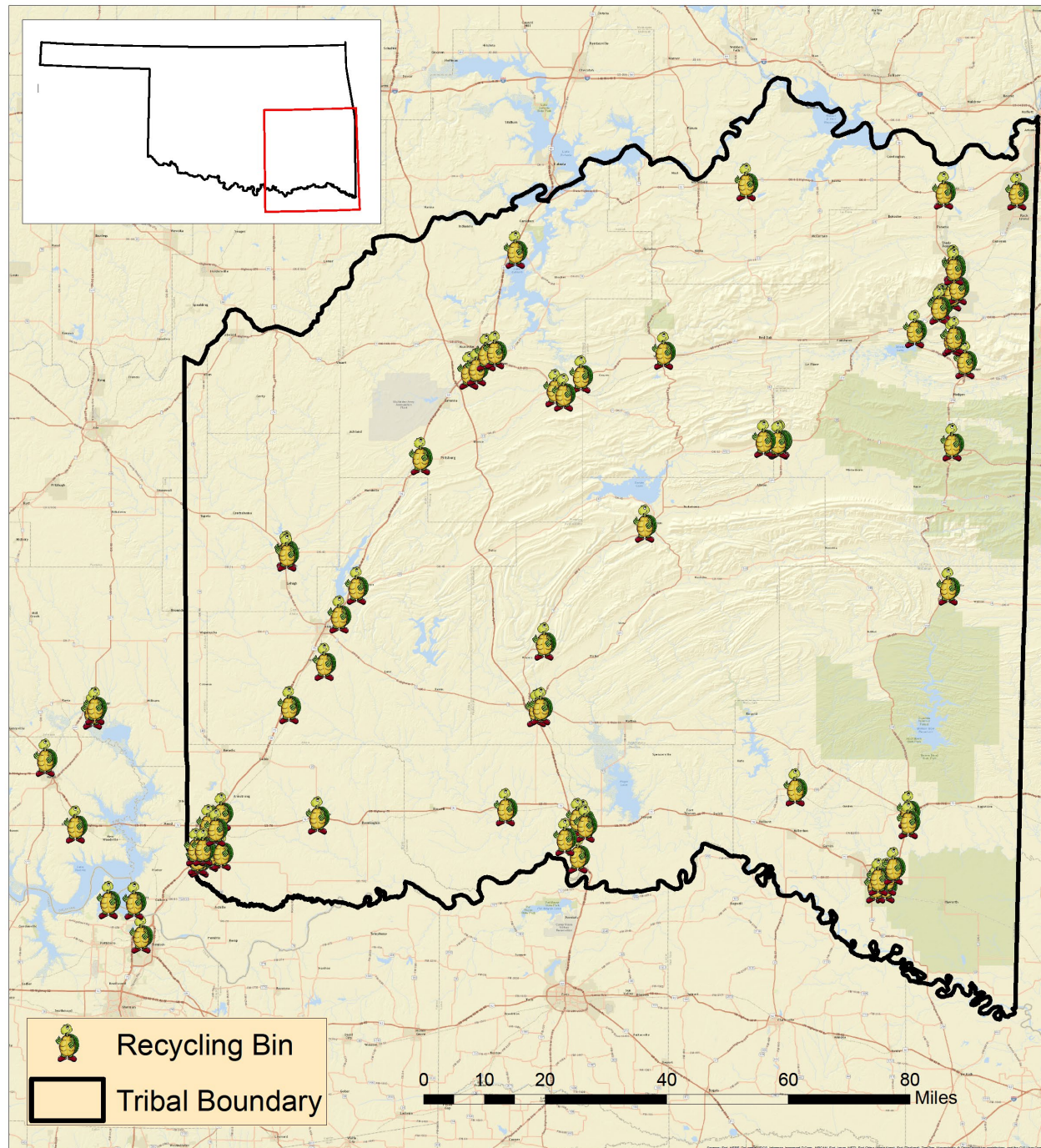
Dirty MRF

- A *dirty MRF* accepts a mixed solid waste stream and then proceeds to separate out designated recyclable materials through a combination of manual and mechanical sorting. The sorted recyclable materials may undergo further processing required to meet technical specifications established by end-markets while the balance of the mixed waste stream is sent to a disposal facility such as a landfill.
- The percentage of residuals (unrecoverable recyclable or non-program materials) from a properly operated clean MRF supported by an effective public outreach and education program should not exceed 10% by weight of the total delivered stream and in many cases it can be significantly below 5%. A dirty MRF recovers between 5% and 45% of the incoming material as recyclables, then the remainder is landfilled or otherwise disposed. A dirty MRF can be capable of higher recovery rates than a clean MRF, since it ensures that 100% of the waste stream is subjected to the sorting process, and can target a greater number of materials for recovery than can usually be accommodated by sorting at the source. However, the dirty MRF process is necessarily labor-intensive, and a facility that accepts mixed solid waste is usually more challenging and more expensive to site.

Hub-and-Spoke

- Origination of Hub-and-Spoke: a method of organizing intercontinental air traffic in which one major airport is used as a feeder for local airports (sometimes shortened to hub)
- Recycling definition: a solid waste management system, where a centralized processing facility (hub) provides services to several regionally appropriate collection programs (spokes).





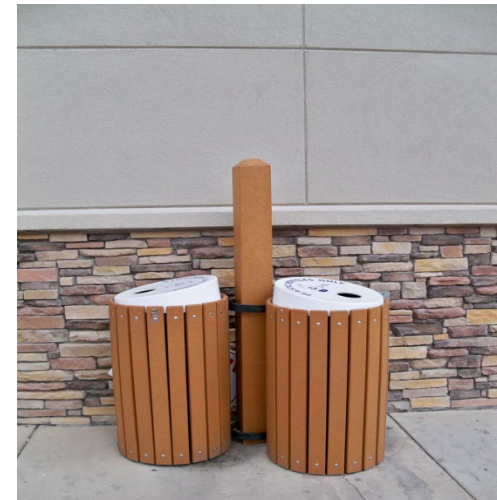
“Spoke” Recycling Locations

- Tribal Facilities

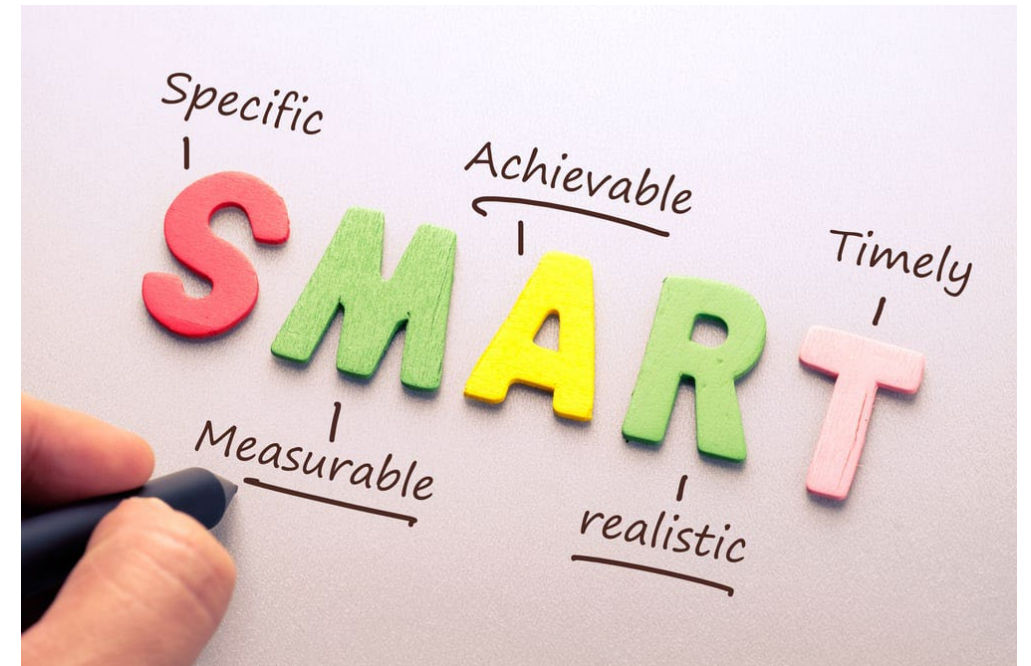
- Inside buildings: bins in offices, hallways, break areas
- Outside buildings: trailers, roll offs and designated areas
- 124 locations

- External Locations

- Businesses – banks, florists, real estate, fast food, retail stores (major retailers), furniture stores etc.
- Municipalities
- Counties
- Universities, High Schools
- 208 locations



What are your initial goals?



Set Goals and Share Them!!

- Start Small – Plan Big – Keep within Budget
 - First goal – Easy to achieve but enough to show accomplishment
- How do you eat an elephant??
- Things to Consider:
 - Weight
 - Types of material
 - Events – how many events, how many people attend, how much “stuff” do you want to collect????
 - Cost
 - Ease of collecting and “disposing of”
 - Quantity of material available

Identify Partnerships

- Like-minded co-workers, neighbors, friends, businesses, organizations, Tribal Members
- Collect and sell aluminum cans and printer cartridges for cash to get started
- Community collection events raise awareness
- Contests get people involved even if only for bragging rights
- Alcoa bin donations
- Coca-Cola and Pepsi partnership
- Grants (ANA, USDA, EPA, etc.)
- Foundations
- U.S. Fish & Wildlife
- Handicap organizations
- Waste haulers
- Community Service
- Local Newspapers – press releases



Making the Case...

- Taking care of Mother Earth
- It's the right thing to do
- Reduces waste bill
- Community Service (willing and non-willing)
- Everyone can be involved
- Puts Tribal Members to work
- Brings in some money into the tribe
- Sets a good example to future generations

Leveraging Grant Dollars

- In-Kind or Matching Funds
 - Matching – cash equivalents
 - In-Kind – non-cash equivalents – i.e. your time to complete the grant paid by tribal funds, travel miles in a tribal vehicle contributed by the tribe to complete grant, hire a person using the grant / pay for their cell phone using tribal funds



GAP Grant Clothing Recycling Included



Tribal Police collected drugs and ammunition



Internal Collaborations

- Career Development – grants for green jobs
- Facilities Maintenance – set up and assist with collection of recyclables
- Finance / Membership – shredded documents
- Scholarship / Education – Recycling / Conservation Interns; college community service opportunities
- Tribal businesses – cardboard recycling
- Tribal Relations – newspapers/newsletters; press releases

Employee/Tribal Involvement for Recycling

- ▶ It's all about getting people involved and raising awareness
- ▶ 4th of July Decorating Contest
 - All materials were to be able to be recycled and requested that materials not be purchased
 - 15 departments participated
- ▶ Department Collection Contest
 - Each department was challenged to bring in materials from home and collect material while at work
 - Winners determined by average per person to allow departments of all size equal opportunity
 - Diverted 15 tons of materials in 2.5 weeks



Employee Contests



15 Tons – 15 Departments
– 2.5 Weeks





Site Selection









Plenty of 3-Phase Electric Connections



Equipment

- Balers: Horizontal versus Vertical (std. vs. hd.)
- Forklifts: Weight Limits; Electric vs. Propane
- Trailers versus Roll Offs
- Trailer Size: need – consider growth
- Divided Containers vs. Single Holding Area
- Trucks: ½ Ton vs. ¾ Ton; Diesel vs. Unleaded; 4x4 vs. non - 4x4
- Scales
- Shredder (option)
- Densifier (option)
- Bulb Eater (option)





Ways to collect materials





Material Sorting and Storage Areas





Forklift / Vertical Baler

Conveyor / Horizontal Baler





**Weighing and Tracking
of Material**





Electronic scales – make sure adequate type and weight. Platform scale shown is for approx. 5,000 pounds. Weigh and label each bale and then track for shipping purposes.



Bale Storage ready to sell



Loading Dock



Balers / Cardboard Staging

Paper Shredding



Styrofoam Densifier



**“Bulb Eater” –
light bulbs**



Staff Training:

“Who Needs Training??”

“I can do this!!”



Training

- It's not just "Trash"
- Various types of materials
- Equipment (balers, forklifts, scales)
- Safety (equipment, vehicles, biohazard)
- Trailer pulling and backing experience
- Locations of recycling sites

Needs

- Shots (Hepatitis, Tetanus, Whooping Cough)
- Clean driving record
- Gloves
- Trash bags
- Tape and tape gun
- Brooms / dust pans
- Floor mats for standing
- Shrink film
- Equipment / supplies (baling wire, grease)
- Flatbed dolly

Recycling: Where to Begin

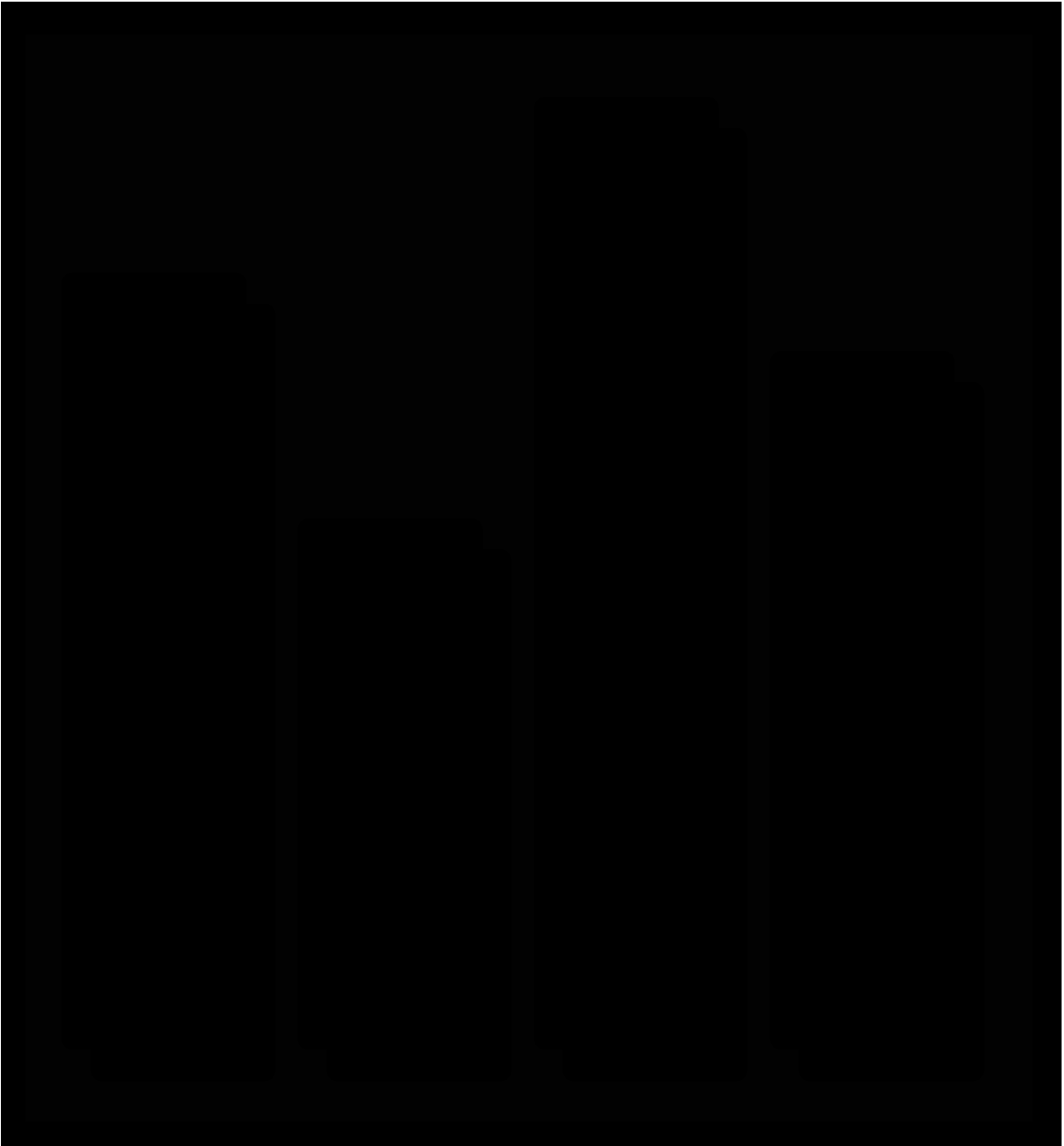
- Tracking!
 - You will not be successful or sustainable if you cannot prove your success/numbers. Keep track of all ins and outs.



Material Tracking

- As baled
- Shipping
- Monthly tracking





MONTHLY TRACKING

2016 Roll Off Container Collection

Location	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16
Durant	136	144	117	143	146	125	109
Poteau	44	84	68	68	67	58	40

**Goals of 120
and 65**

2016 Recycling in Pounds by Facility

Durant			Poteau	
<u>Month / Year</u>	<u>#'s Recycled</u>		<u>Month / Year</u>	<u>#'s Recycled</u>
Jul-16	104,152		Jul-16	25,182
Jun-16	200,412		Jun-16	54,476
May-16	203,408		May-16	52,520
Apr-16	206,866		Apr-16	66,280
Mar-16	157,692		Mar-16	71,887
Feb-16	151,077		Feb-16	60,095
Jan-16	176,129		Jan-16	39,791

**Goals of
200,000 and
60,000**

Bale Loading Report

Company: _____ Product _____ Date: _____

Bale #	Weight	Total Weight		Bale #	Weight	Total Weight
1				29		
2				30		
3				31		
4				32		
5				33		
6				34		
7				35		
8				36		
9				37		
10				38		
11				39		
12				40		
13				41		
14				42		
15				43		
16				44		
17				45		
18				46		
19				47		
20				48		
21				49		
22				50		
23				51		
24				52		
25				53		
26				54		
27				55		
28				56		



CHOCTAW NATION OF OKLAHOMA
RECYCLING CENTER
P.O. Box 1210 3408 Wes Watkins Blvd
Durant, OK 74701
1-800-522-6170 580-920-0488

**BILL OF
LADING**

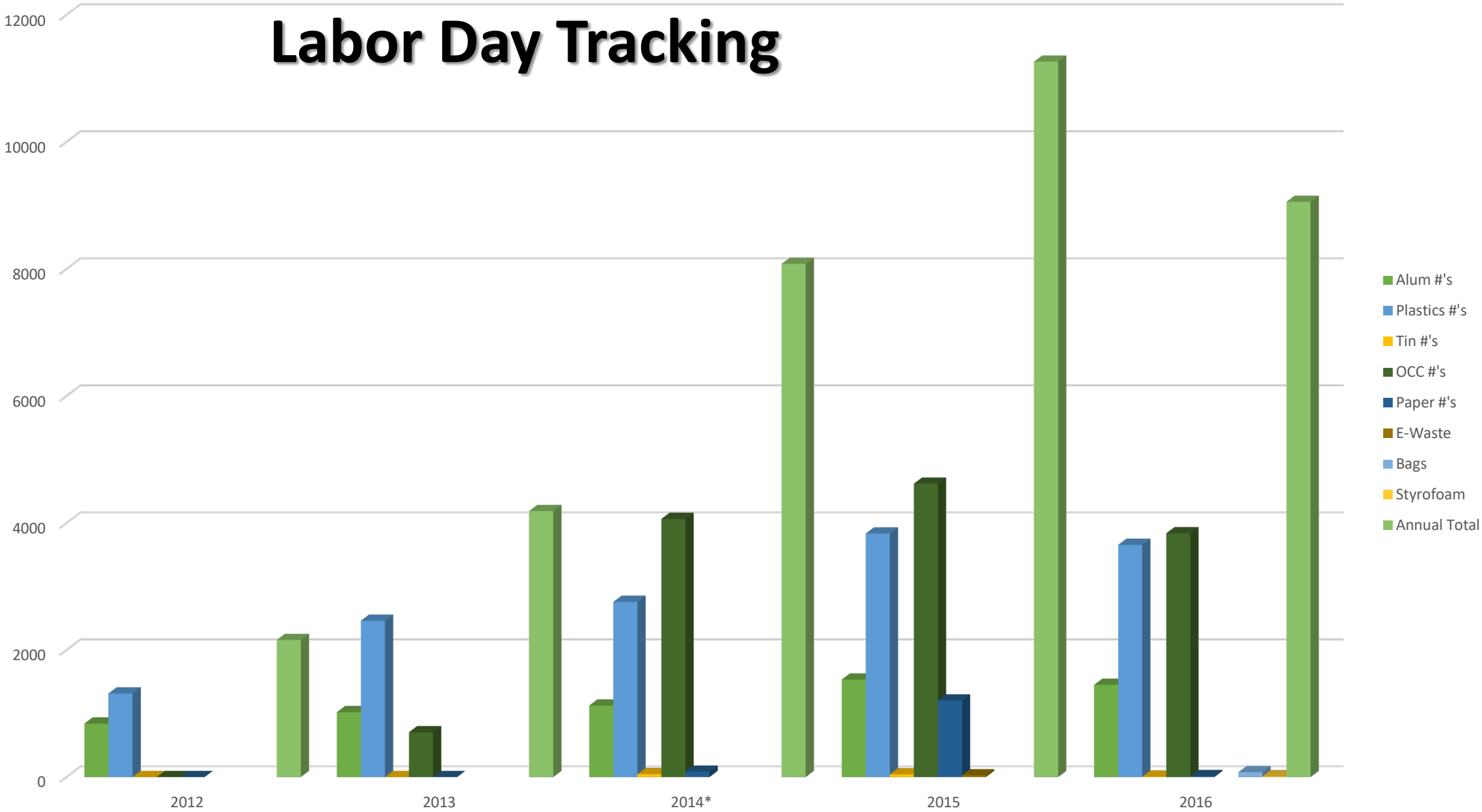
SHIP FROM:	
Name: <u>Choctaw Nation Recycling Center</u>	
Street Address: <u>P.O. Box 1210, 3408 Wes Watkins Blvd</u>	
City, ST, Zip Code: <u>Durant, OK 74701</u>	
PH NO: (DIRECT LINE) 580-920-0488 OR 800-522-6170	
SHIP TO:	
NAME: _____	
STREET ADDRESS: _____	
CITY, ST, ZIP CODE: _____	
Bill of Lading Number: _____	Load Number: _____
Carrier Name: _____	Destination: _____
Trailer Number: _____	

CARRIER INFORMATION

Handling Unit			Commodity Description <small>Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation with ordinary care.</small>
Qty.	Type	Weight/Lbs.	
	Bales		

_____ Shipper Signature/ _____ Date	Trailer Loaded: <input type="checkbox"/> By shipper	Freight Counted: <input type="checkbox"/> By shipper	X _____ Carrier Signature/ _____ Pickup Date
			X _____ Carrier's Printed Name
Printed Name of Contractor This is to certify that the above named materials are properly classified, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the DOT.			Carrier acknowledges receipt of packages and required placards. Carrier certifies emergency response information was made available and/or carrier has the DOT emergency response guidebook or equivalent documentation in the vehicle. Property described above is received in good order, except as noted.

Labor Day Tracking



Excel Spreadsheet / Layout Activity

Options for dealing with buyers

- Monthly bid process
- Two-three year contract
- Paid shipping versus payment required
- Pick up versus delivery
- Mixed versus one product loads

Identifying Markets for Materials

- Commodity Markets (paper, plastics, cardboard, tin, etc.)
 - Identify companies and call for local source – i.e., International Paper, Smurf-It Kappa, Pratt Industries, Georgia-Pacific, Balcones
- ◎ Thermostat Recycling Corporation – www.thermostat-recycle.org
- ◎ Kaps 4 Kids – www.kaps4kids.com – metal, plastic, wine corks
- ◎ Crayons – www.crazycrayons.com
- ◎ Light Bulbs – hardware stores (Lowes / Home Depot) mail back programs
- ◎ St. Jude's Ranch – cards – www.stjudesranch.org
- ◎ Lowe's, Home Depot, Wal-Mart, grocery stores for plastic bag recycling
- ◎ Electronics – manufacturer take back programs; Goodwill
- ◎ Sharps – mail back programs
- ◎ Cell Phones – www.cellphonesforsoldiers.com ; Verizon HopeLine Program
- ◎ Batteries – www.call2recycle.org – Batteries / Cell Phones
- ◎ Wine Corks – www.recork.org
- ◎ Golf Balls – 500 to 5,000 – www.lostgolfballs.com/we-buy
- ◎ Styrofoam – www.dartcontainer.com/environmental/ps-foam-recycling

Identifying Markets for Materials (cont.)

- ◎ Glass - www.rippleglass.com
- ◎ Motor Oil – Automotive parts stores
- ◎ Lions Club International Clubs – eye glasses
- ◎ Clothing – American Textile Recycling Service, Red Cross, Salvation Army, Goodwill, REUSE – www.soles4souls.org
- ◎ Old rugs, blankets, towels – animal shelters
- ◎ Furniture / Household Items – REUSE
- ◎ Toys – REUSE
- ◎ Tennis balls – www.rebounces.com
- ◎ Ink / Toner Cartridges – www.tonerbuyer.com and www.empties4cash.com, Staples, Office Depot
- ◎ Target, Best Buy, Lowe's Home Improvement – offer a variety of recycling options
- ◎ Terracycle – www.terracycle.com – pouches, toothpaste, coffee capsule containers and more
- ◎ Soft Drink plastic rings - www.ringleader.com

Understanding and Using the Market

- Chinese Green Wall:
 - Contamination laws originally not being followed
 - Numerous contamination issues
 - Ceased accepting product
 - Reject shipments
 - Returned you pay freight or receive lower pricing
 - Now doing more of own recycling
- Keep product clean – 0.2% contamination = reject
- Market Fluctuations:
 - Paper: November through April – reduced pricing (this year exception)
 - Paper: Mill usage closures or too much paper
 - HDPE Plastics: Natural pricing vs. color pricing
 - Plastics: More recycling done in China less demand for domestic product
 - Glass: Low pricing – delivery required



Thermostat Recycling – Covanta and Thermostat Recycling Corporation

Oklahoma Mercury Thermostat Recycling Initiative

Safe & Sustainable Disposal of Mercury Thermostats

Covanta Tulsa, Locke Supply and the Oklahoma Department of Environmental Quality (ODEQ) have partnered to provide a convenient way to responsibly recycle mercury containing thermostats in Oklahoma. Mercury is a heavy metal that represents a threat to human health and the environment when released into the environment. An average wall thermostat contains 4 grams of mercury, which is the equivalent of 800 compact fluorescent lights. Covanta, Locke Supply and ODEQ are committed to protecting our land, air and water.

This program will provide a safe way to prevent mercury from polluting the environment.



How to Participate

Locate the nearest Locke Supply location at:

www.lockesupply.com/locations.php

Or contact your Heating, Ventilation, & Air Conditioning (HVAC) contractor to responsibly recycle your thermostat.

For more information, please contact:

Thermostat Recycling Corporation (TRC)

www.thermostat-recycle.org/

Oklahoma Department of Environmental Quality

www.deq.state.ok.us/factsheets/land/whatism mercury.pdf

Environmental Dangers of Mercury

Preventing toxics like mercury from entering the waste stream plays a critical role in protecting our environment and water supply. Once in the waste stream, these thermostats may break and release mercury into the environment.










Look for the mercury switch inside.



Please recycle the whole thermostat, do not remove mercury switch

Frequently Used Abbreviations

- OCC = Old Corrugated Cardboard
- SOP = Shredded Office Paper
- ONP = Old News Print/Paper
- MIX = all paper types: white office, shred, magazines, phone books, colored, newspaper, catalogs
- UBC = Used Beverage Cans = Aluminum
- Plastic types: #1 = PET, etc. sheet attached

Plastic Identification Code	Type of plastic polymer	Properties	Common Packaging Applications
	Polyethylene Terephthalate (PET, PETE)	Clarity, strength, toughness, barrier to gas and moisture.	Soft drink, water and salad dressing bottles; peanut butter and jam jars
	High Density Polyethylene (HDPE)	Stiffness, strength, toughness, resistance to moisture, permeability to gas.	Water pipes, Hula-Hoop (children's game) rings, Milk, juice and water bottles; the occasional shampoo / toiletry bottle
	Polyvinyl Chloride (PVC)	Versatility, clarity, ease of blending, strength, toughness.	Juice bottles; cling films; PVC piping
	Low Density Polyethylene (LDPE)	Ease of processing, strength, toughness, flexibility, ease of sealing, barrier to moisture.	Frozen food bags, squeezable bottles, e.g. honey, mustard; cling films; flexible container lids.
	Polypropylene (PP)	Strength, toughness, resistance to heat, chemicals, grease and oil, versatile, barrier to moisture.	Reusable microwaveable ware; kitchenware; yogurt containers; margarine tubs; microwaveable disposable take-away containers; disposable cups; plates.
	Polystyrene (PS)	Versatility, clarity, easily formed	Egg cartons; packing peanuts; disposable cups, plates, trays and cutlery; disposable take-away containers.
	Other (often polycarbonate or ABS)	Dependent on polymers or combination of polymers	Beverage bottles; baby milk bottles; electronic casing.

See also

- Reuse of water bottles

Reaching Out!!

- Get EVERYONE involved!!
 - Community wide contest ~ Red vs. Blue
- Always update on event dates and results
 - Press releases in newspaper and Facebook are FREE
- Make them feel part of the process
- Tell them it saves money
 - Smaller waste bill – businesses
 - Less landfill fees – community haulers
 - Landfills last longer – landfill owner
- Create goals and provide progress
- Educate, educate, educate
 - Posters/Flyers: PICTURES, COLOR, words





**AT&T and Kingston Elementary
Phone Book Recycling!!
Diverted over 500 phone books and
2,000 pounds from the landfill!!**



**Choctaw Nation Safety
Camp Recycling Relay!!**



**Southeastern Oklahoma State University Recycling
in a BIG Way EVERY Day!!**

KOB Great American Clean Up



E-Waste Recycling Event



**37,000 pounds of e-waste recycled at our first event – now
3,000 – 5,000 pounds / month**

Material Sorting Area



Material Collection Area



Material Storage 11 cubic yard roll offs



2010 – Two small wire trailers







Recycling



Games



Aquaponics



Composting



Labor Day Collection Activities throughout Tribal Grounds



Camping Recycling



Sign for Vendor Poly Carts

ATTENTION VENDORS!!!!

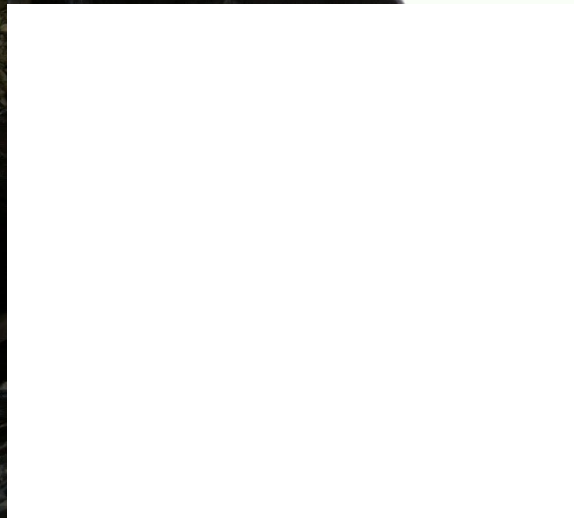
Please place small cardboard boxes, paper, all empty plastic bottles, empty or damaged Styrofoam containers, empty aluminum cans and empty tin/steel cans into this container.

Place large cardboard containers next to the poly cart for recycling collection as well.

DO NOT use this container for **FOOD WASTE OR OTHER TRASH!!**

We greatly appreciate you helping us to make a difference in the environment!!





HHW & More Collection Events



❖ Prescription Drugs

❖ Ammunition



❖ Clothing

❖ Toys

❖ Tires



❖ Light Bulbs

❖ Gently Loved
Household Items

❖ Blankets

❖ Towels

❖ Rugs

**Household
Hazardous Waste
and More!!**

- ❖ Chemicals
- ❖ Used Paint
- ❖ Motor Oil
- ❖ Fertilizers
- ❖ Cleaning Chemicals
- ❖ Insecticides



❖ Tires

❖ Electronics





Tire Recycling – Over 60,000 since 2013



Recycling Every Where

- Travel Plazas
- Hospital and Clinics
- Community Centers,
- Gaming Facilities, RV Park, Event Center
- Tribal Administration Buildings
- Schools, Colleges, Universities
- Head Starts, Day Cares, Boys & Girls Clubs
- Tribal Archiving and Manufacturing Businesses
- Housing Authority Facilities
- Special Events





External Roll-off Bins



Wire Collection Trailers



Inside CNO Bins



Segregated Collection Trailer



External CNO Bins

Event Recycling and Education

- Senior Citizens at Community Centers
- Employee e-mails and area newspaper articles
- Choctaw Nation Sponsored Events
- Employee Cookout Events
- Recycling Events (e-waste and other)
- Labor Day Swap
 - ◎ Safety Camp
 - ◎ Career Expo
 - ◎ Environmental Fairs
 - ◎ Earth Day Events



More Activities...

- E-Waste Events
- Shredding Events
- America Recycles Day
- Annual Used Toy Drive
- HHW Events
- Earth Day is Every Day



Crayon
Recycling!!



Final Take Away....

- Never give up!!
- Never stop learning!!
- Always ask questions if you don't know – it will only help you learn MORE!!
- Use what you have, you can recycle using a cardboard box!!
- Educate, Educate, Educate!!
- Share, Share, Share!!