Appendix A - Conway Road Compost Site Materials December 2014

Bing Maps aerial imagery and labels, 2013.

LEGEND

Conway Road Compost Facility Material Distribution

as of December 30, 2014

Location	Description		Qty (CY)
A	(104 x 146 x 6)/27	=	3,375
	Single Grind Woody Waste, 2-3 years old, never been turned		
B	(145 x 17 x 15)/27	=	1370
	Finished leaf compost, probably 10-15 % is not fully cured		
C	(15 x 23 x 15)/27	=	192
	Single grind leaf waste from resident drop off		
D	(45 x 52 x 10)/27	=	866
	Unprocessed curbside collection		
E	(36 x 80 x 8)/27	=	853
	Single Grind Woody Waste less than 1 year old		
F	(35 x120 x 6)/27	=	933
	(27 x125 x 13)/27	=	1,625
	(31 x119 x 5)/27	=	685
	Single Grind Woody Waste, 1-2 years old, never been turned		
G	(18 x 15 x 12)/27	=	120
	Finished leaf compost, unscreened		
H	(18 x 55 x 11)/27	=	403
	Finished leaf compost, unscreened		
I	(39 x 37 x 12)/27	=	641
	Single Grind Woody Waste, 4-6 years old, needs screened and fines placed on berm and the overs reground.		
J	(15 x 100 x 11)/27	=	611
	Single Grind Woody Waste, 4-6 years old, needs screened and fines placed on berm and the overs reground.		

K	(75 x 30 x 11)/27	=	916
	Unprocessed leaf waste from resident drop off		
L	(75 x 10 x 4)/27	=	111
	Unprocessed woody waste from resident drop off		
M	(90 x 50 x 16)/27	=	2,667
	(90 x 15)/2 x 16)/27	=	400
	Unprocessed leaves from Township leaf collection		
N	(74 x 52 x 12)/27	=	1,710
	Unprocessed mixed yard waste from curbside collection		

Finished Compost (unscreened)	=	B, G, H,	=	1,893	CY
Wood Mulch (less than 1 yr old)	=	E	=	853	CY
Wood Mulch (1-2 yr. old)	=	F	=	3,243	CY
Wood Mulch (2-3 yr. old)	=	A	=	3,375	CY
Wood Mulch (4+ yr. old)	=	I, J	=	853	CY
Ground Leaf Waste (needs turned)	=	C	=	192	CY
Unprocessed Leaf Waste (res, drop off)	=	K	=	916	CY
Unprocessed Woody Waste (res, drop off)	=	L	=	111	CY
Unprocessed Mixed Yard Waste (curb coll.)	=	D,N	=	2,576	CY
Unprocessed Leaves (Twp. Leaf Coll.)	=	M	=	3,067	CY
		TOTAL		17,079	

Appendix B - Lower Paxton Compost Site Photos 12-19-2014

Lower Paxton Township – Conway Road Compost Site
Photos 12-19-14

Photo 1: 12-19-14. Conway Road Compost Facility Curbside Leaf Waste Collection

Photo 2: 12-19-14. Conway Road Compost Facility Vacuum Leaf Waste Collection

Photo 3: 12-19-14. Conway Road Compost Facility Bagged Leaf Waste Drop-off

Photo 4: 12-19-14. Conway Road Compost Facility Woody waste/brush Drop-off

Photo 5: 12-19-14. Conway Road Compost Facility Woody Waste/brush Drop-off

Photo 6: 12-19-14. Conway Road Compost Facility Curbside Bagged Leaf Waste

Lower Paxton Township – Conway Road Compost Site
Photos 12-19-14

Photo 7: 12-19-14. Conway Road Compost Facility Single-grind Mulch

Photo 8: 12-19-14. Conway Road Compost Facility Single-grind Mulch

Photo 9: 12-19-14. Conway Road Compost Facility Single-grind Mulch

Photo 10: 12-19-14. Conway Road Compost Facility Single-grind Mulch

Photo 11: 12-19-14. Conway Road Compost Facility Single-grind Mulch

Photo 12: 12-19-14. Conway Road Compost Facility Screened Street Sweepings

Lower Paxton Township – Conway Road Compost Site
Photos 12-19-14

Photo 13: 12-19-14. Conway Road Compost Facility Leaf Vacuum Truck

Photo 14: 12-19-14. Conway Road Compost Facility Dump Truck (used in pull-behind leaf vacuum operations)

Photo 15: 12-19-14. Conway Road Compost Facility Leaf Vacuum and Dump Trucks

Photo 16: 12-19-14. Conway Road Compost Facility Horizontal Grinder

Photo 17: 12-19-14. Conway Road Compost Facility Leaf Boxes

Photo 18: Conway Road Compost Facility Vermeer Wildcat Trommel Screen

Appendix C - Lower Paxton Township Compost Product Outlets 2015

Paxton Township - Compost Products Outlets (2015)

Company	Address	Phone
Pennsylvania Landscape and Nursery Association (PLNA)	1707 S Cameron St, Harrisburg, PA 17104	(717) 238-1673
Summer's Landscaping	1331 N 14th St, Harrisburg, PA 17103	(717) 770-9904
Elite Lawn & Landscaping LLC	Carlisle, PA	(717) 226-2796
Hemlock Landscaping Inc.	3221 Spring Street Harrisburg, PA 17109	(717) 652-9535
Davis Landscape LTD (Northern Region Office)	2340 Paxton Church Road | Harrisburg, PA	(717) 545-4235
Zeager Bros., Inc.	4000 E Harrisburg Pike, Middletown, PA 17057	(717) 944-7481
Harrisburg Gardens	811 S. Progress Ave. Harrisburg, Pa 17111	(717) 565-8080
Two Particular Acres	248 Rittenhouse Road Royersford, PA 19468	(610) 454-9635
Quality Lawn Works	211 North Middleton Road, Carlisle PA 17013	(717) 226-3509
Yingst Trucking	5707 Oak Ave, Harrisburg,PA17112	(717) 652-9181 or 717-579-9901 (cell)
Blue Mountain Processors, Inc.	34 Blue Mountain Lane Elliottsburg, PA 17024	(717) 438-3296

Contact

Jeremy Wiser

Terry Hoffman
(terryhoffman@davislandscapeltd.com)

Ned Foley

Scotty Yinst

Appendix D - First Regional Compost Facility Summary and Fee Schedule

FRCA
FIRST REGIONAL COMPOST AUTHORITY
Northampton Pennsylvania
www.frcaweb.org

Program Summary

The following program summary is based on Gannett Fleming's phone interview with William Bedics, FRCA Director of Operations, conducted December 23, 2014.

- FCRA is a 5 acre PBR facility that processes roughly 200,000 yards of material annually. This serves a population of about 140,000.
- 5 original municipalities formed the Authority and bore the capital costs as supplemented by grants to get the facility running.
  - These 5 municipalities pay $2.80 per capita (2010 US Census) to the Authority, billed quarterly.
- 4 additional municipalities joined
  - These 4 municipalities pay $3.30 per capita to the Authority, billed quarterly.

Generally, these 9 municipalities get the benefits of being able to delivery material to the FCRA facility and get finished compost. An example of this might be the municipality delivers a 20 yard container of brush and takes back a 20 yard container of compost (supplies permitting).

- 4 additional municipalities only pay tipping fees for dropping off material
  - This material is processed and primarily sold to landscapers

- Currently the FRCA facility revenues are generally broken down as:
  - 60% per capita revenue from municipalities
    - Municipalities have curbside waste collection contracts and often just build this cost into the trash bill
  - 35% commercial tip fees
  - 5% sales to landscaper and similar companies
    - Unscreened leaf mulch ($15 per cubic yard)
    - Finished screened compost ($30 per cubic yard)
    - The plan is to move to increase revenue via product sales and diminish or eliminate the per capita fee

2014 HOURS OF OPERATION & RATE SCHEDULE

Winter hours (December to March) Tuesday & Thursday 8 a.m. to 3 p.m. Saturday 8 a.m. to 12 p.m.

Summer hours (March to December) Monday thru Friday 8 a.m. to 4 p.m. Saturday 8 a.m. to 3 p.m.

** Any commercial customer that needs special drop off times please schedule by calling prior to drop off. **

The Processing Center will be closed on the following Holidays:

May 26th Memorial Day July 4th Independence Day September 1st Labor Day November 11th Veterans Day November 27th Thanksgiving

December 25 th Christmas Dav

Yard Waste/Leaves

Type of Vehicle	Price per Delivery
Pick-up truck (6-foot bed)	$ 13.00
Pick-up truck (8-foot bed)	$ 19.00
Small trailer (up to 8 feet)	$ 19.00
Trailer (9-12 feet.)	$ 25.00
Trailer (13-16 feet)	$ 31.00
Pick-up dump truck (8 feet)	$ 32.00
Stake body truck (10-foot bed)	$ 32.00
Stake body truck (12-foot bed)	$ 38.00
Single axle dump truck (10 ton)	$ 38.00
Enclosed chipper truck (20 yd)	$ 50.00
Tandem-axle dump truck (15 ton)	$ 75.00
Tri-axle dump truck (25 ton)	$ 94.00
Dump trailer (up to 48')	$125.00
Walking floor trailer (48'-53')	$313.00
Container/Refuse truck (10 yard)	$ 38.00
Container/Refuse truck (15 yard)	$ 50.00
Container/Refuse truck (20 yard)	$ 63.00
Container/Refuse truck (25 yard)	$ 75.00
Container/Refuse truck (30 yard)	$ 94.00
Container/Refuse truck (35 yard)	$ 107.00
Container/Refuse truck (40 yard)	$125.00

Grass Clippings & Sod

Type of Vehicle	Price per Delivery
Pick-up truck (6-foot bed)	$ 25.00
Pick-up truck (8-foot bed)	$ 32.00
Small trailer (up to 8 feet)	$ 32.00
Trailer (9-12 feet.)	$ 37.00
Trailer (13-16 feet)	$ 50.00
Pick-up dump truck (8 feet)	$ 38.00
Stake body truck (10-foot bed)	$ 38.00
Stake body truck (12-foot bed)	$ 63.00
Single axle dump truck (10 ton)	$ 75.00
Container/Refuse truck (10 yard)	$ 107.00
Container/Refuse truck (15 yard)	$ 113.00
Container/Refuse truck (20 yard)	$ 125.00
Container/Refuse truck (25 yard)	$ 138.00
Container/Refuse truck (30 yard)	$ 150.00
Container/Refuse truck (35 yard)	$ 163.00
Container/Refuse truck (40 yard)	$ 175.00

Additional fees can apply to dump trailers**

FIRST REGIONAL COMPOST AUTHORITY

6701 Weaversville Road, Northampton Pa 18067 Phone: 610-262-1000

Commercial Large Item Rates

Type of Vehicle	Large Logs	Stumps
Pick-up (6-foot bed)	$38.00	$44.00
Pick-up (8-foot bed)	$50.00	$57.00
Pick-up Dump (8ft)	$57.00	$64.00
Trailer up to (8 feet)	$50.00	$57.00
Trailer (9 to 12 feet)	$50.00	$57.00
Trailer (13to 16 feet)	$57.00	$64.00
Trailer (18 to 24 feet)	$100.00	$155.00
Stake Body Truck (10ft)	$75.00	$82.00
Stake Body Truck (12ft)	$88.00	$95.00
Stake Body Truck (16ft)	$102.00	$109.00
Dump Truck Single (10ton)	$88.00	$95.00
Dump Truck Tandem(15ton)	$119.00	$188.00
Dump Truck Tri-axle(25ton)	$125.00	$220.00
Container (10 yard)	$88.00	$107.00
Container (20 yard)	$125.00	$188.00
Container (30 yard)	$157.00	$220.00
Container (40 yard0	$220.00	$245.00

*__Large Logs-__ Logs can be up to 20" in diameter or larger logs can be split into Smaller pieces less the 20" in diameter. Logs must be less the 24" in total length.

*__Stumps-__ Stumps must be free of dirt and rocks. The root system can still be on them. (no limit on diameter).

*Residential drop off can consist of a small amount of logs up to 20" in diameter.
SMALL AMOUNT= 1 OR 2 LOGS LESS THEN 2 FEET LONG NO STUMPS WILL BE ACCEPTED BY RESIDENTS W/O PAYING THE LARGE ITEM RATES.

***Prices are for "price per vehicle". If vehicle is half full, discretion can be Used in charging a "1/2 load price".**

Appendix E - Millfair Compost Center Brochure

Open to Millcreek, Fairview, and West County Residents

Millfair Compost & Recycling Center

2301 Millfair Road, Erie, PA 16506

Millfair Compost & Recycling Center

The Millfair Compost & Recycling Center is a joint effort between Millcreek and Fairview Townships that is located on the border of the two municipalities. The facility has been open since 2004 and receives nearly **18,000** visitors each year!

After receiving a permit outlined on the next page, residents and landscapers may bring in the following organic material for drop off:

Acceptable Items:

Leaf waste
Shrubbery
Brush
Tree trimmings
Non-food garden residue

Unacceptable Items:

Grass
Sod
Dirt – loose or items covered in dirt
Nothing over 24" in diameter
Bamboo – ornamental grasses
Weeds
Food or food garden waste
Landscape timbers
Concrete
Wood that contains nails and metal
Painted or processed wood
Hay or straw
Corn stalks
Large root systems

***Please remember to check your drop-off loads for metal chains, fencing, and shovels as these items severely damage our equipment!**

Hours

Monday-Thursday	8:00am – 5:00pm
Friday-Saturday	9:00am – 5:00pm
Sunday	12:00pm – 5:00pm

*Closed on Easter, Memorial Day, Independence Day, Labor Day, and Thanksgiving Day.

Residential

Residential Permit Cards

Residents are required to obtain a FREE permit before dropping materials off at the facility. Millcreek residents may obtain a permit from the Millcreek Recycling Department, while Fairview residents may obtain the permit at the Fairview Township Building. Please be prepared with your Driver's License at the time of registration so that the staff may activate your account. These permits help to expedite the check-in process at the gate as well as collect data on the tonnages passing through facility.

Christmas Tree Collection

Unload your Christmas tree after the holidays at the Compost Center. Monetary donations are accepted at the check-in gate each year directly benefitting the Emmaus Soup Kitchen. Volunteers are on hand to help unload the tree from vehicles. Save the date for our next Christmas Tree Collection on Saturday, January 10, 2015 from 9am-12pm.

Commercial

Commercial Permits

Businesses and landscapers may purchase a Commercial Permit from the Recycling Department for a one-time fee of $20. Commercial entities are charged a drop-off fee per vehicle after that, but may now purchase a one-year unlimited season rate of $350. Payment with debit card, credit card, or credit card (MasterCard, Visa, & Discover) is required at the time of purchase. Cash will not be accepted out at the facility.

Drop Off Rates

Pick-Up Truck	$10.00
Single Axle Truck	$20.00
Tri-Axle Truck	$40.00
Wood Chips	FREE
Unlimited Seasonal Rate	$350.00

Items Available for Purchase

(For all residents of Erie County and Commercial)

Screened Mulch (1/2 – 1 inch)	$20.00/yard*
Coarse Mulch (2 inches & up)	$15.00/yard*
Leaf Compost	$25.00/yard*
Logs (when available)	$20.00/pickup truck load*
Wood Chips (when available)	FREE

*All purchases are subject to PA sales tax

Payment options include payment at time of purchase with Debit, Credit, Check, Credit Card (Mastercard, Visa, or Discover) or Terms Net 10 Days. With the Net 10 Day option, your receipt is your invoice.)

Recycling organic materials is one small way you can conserve natural resources and do your part to take care of planet earth.

Websites

Please check the following websites for recycling, composting and other environmental information.

www.millcreektownship.com

www.fairviewtownship.com

www.dep.state.pa.us

www.proprecycles.org

Jointly Operated By:

Millcreek Township

3608 West 26th Street • Erie, PA 16506-2059
(814) 833-1111 ext.317 • FAX (814) 835-6622
E-mail: jjames@millcreektownship.com

Fairview Township

7471 McCray Road • Fairview, PA 16415-2401
(814) 474-5942 • FAX (814) 474-1199
E-mail: zoning@fairviewtownship.com

Like Us On facebook

To receive additional updates and reminders, "LIKE" our new Facebook page!
www.facebook.com/MillcreekTownshipRecycling

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Appendix F - ODB One Man Leaf Truck Specs

Detailed Specifications for 2009 Model 35,000# GVW Dual Drive Cab & Truck Chassis Complete with One Man Operation Leaf and Grass Vacuum Loading and 25 cubic yard Body

It is the intent of these specifications to provide the _____ _____ with a Dual Drive cab & Chassis truck. Complete with chassis and a One Man Operation leaf and grass vacuum loading unit and 25 cubic yard body to be used to load, and unload residential yard waste. The _____ will accept bids only from Franchised Truck Dealers. The truck will be operating within the limits of _____, with the longest run being to a compost facility less than a 10-mile distance. The vehicle shall be conventional cab type. The vehicle must comply with all requirements of Act 40-1984, the Motor Vehicle Procurement Act. The type of truck quoted shall have been in successful use for two or more seasons and shall meet the following minimum requirements. **ANY DEVIATIONS FROM THE MINIMUM SPECIFICATIONS ARE TO BE NOTED BY THE BIDDER**

Engine, Power train, Frame, Chassis and Mechanics

1. Engine: Shall be a minimum 7.6L diesel, 260 HP @ 2200 RPM; 800lb/ft torque @ 1300 RPM, or approved equal. Shall meet January 1, 2007 Emission requirements.
   Engine to be equipped with 110-volt 1000 watt engine block heater with parallel prong receptacle. (No ether assist). To be supplied with a water filter. Electric safety shutdown; magnetic drain plug; and fuel/water separator.

2. Transmission: Allison Automatic 3500 RDS 6 speed transmission. Controls shall be dash mounted push button electronic type. Water to oil transmission cooler shall be in radiator tank. Oil Filter to be included. PTO Gear or equal.

3. Chassis: Wheelbase to accommodate a 25 cubic yard leaf body, and vacuum collector; Shall have 220" minimum wheelbase (154" cab to axle)

4. Frame: Hi-tensile strength frame rails shall be a minimum of .375 x 3.6 x 10.25. Section Modulus shall be a minimum 16.979 cu. inch per rail and shall a minimum RBM of 2,037,500 lbf. Inch. And yield strength of 120,000 PSI. Shall have frame mounted tow hooks. Bumper shall be painted steel.

5. Brakes: 16.5 x 5 Q-Plus brakes with cast iron drums shall have automatic slack adjusters; front dust shields.

6. Parking Brake: shall be air type mounted on rear axle

Engine, Power train, Frame, Chassis and Mechanics (Continued)

7. Air Cleaner: Dry Type with restriction indicator (Farr or Donaldson).

8. Exhaust: Right hand Horizontal type.

9. Alternator: 12 volt, 160-amp minimum.

10. Battery: Heavy duty 2 – 12 volt – 1850 CCA minimum.

11. Power steering: Hydraulic

12. Front Axle: Rated capacity = shall be 12,000 pounds.

13. Air Compressor shall be a minimum of 16.5 CFM

14. Starter shall be 12 volt 38MT series or approved equal.

15. Rear Axle: Rated capacity of single speed rear axle = 23,000GVW pounds and shall have minimum 30,000 lb. leaf springs with auxiliary helper. Springs shall be modified to keep entire unit level. Rear suspension shall be modified to accommodate a SCL800SM 25 yard self contained leaf loader.

16. Rear Brakes shall be 16.5 x 7 Q-plus brakes with cast iron drums. Brake cams and chambers and shall have automatic slack adjusters, and rear dust shields.

17. Fuel Tank: Shall be aluminum mounted left hand under cab and shall have a minimum capacity of 50 gallons. Shall have a heated fuel/water separator.

18. Axle Ratio: Shall be 6.43 or equivalent

19. Air brake system shall be WABCO 4S/4M ABS or equal. The Air dryer shall be Meritor System Saver 1200 type or equal.

Wheels and Tires

1. Tires: Front – 11R22.5 radial, highway tread, 14 ply Rear 11R22.5 radial, lug tread, 14 ply.

Wheels & Tires Cont'd

2. Wheels: 8.25 x 22.5, hub piloted, 2 hand hole steel wheels front, iron front and rear hubs. Spare wheel and tire shall be included. Oil seals shall be Chicago Rawhide Scotseal Plus XL or equal.

Exterior

Mirrors:

Shall be West Coast type, heated and remote control mirrors with heated convex mirrors mounted below main mirrors

Paint:

The entire unit shall be properly cleaned, painted with an acrylic enamel primer, with a base coat of acrylic urethane enamel, safety yellow (Centari #43536, or equal) black paint followed by acrylic urethane high gloss enamel clear coat. All products shall be as manufactured by DuPont, Sherwin Williams, or approved equal. Cab shall be safety yellow (Centari #43536, or equal) and all other components shall be black. Aluminum & stainless steel components shall remain unpainted

1. Cab: Shall be aluminum or galvanized steel construction with a minimum 5 year warranty.

2. Cab assist grab handles, shall be non-slip, both sides.

3. Engine hood: sloped down/forward type for maximum operator visibility.

4. Front tow eyes, hooks, pins or other tow devices.

5. Truck to be undercoated except where fully insulated.

6. Tinted Glass

7. Front bumper –Bumper shall be painted steel.

8. Door Hinges must be bolted/ **welded hinges not acceptable**

9. Dual 8" convex heated mirrors shall be installed on both fenders.

Body Building Wiring

Body builder wiring shall be provided at back of frame. Sealed connectors for tail, turn, marker, and backup lights. Accessory Power/Ground and sealed connector for Stop/Turn shall also be provided.

Interior of Cab

1. Seat: Shall have dual "Bostrom Talladega 910" or National high back air ride seats. Both seats shall have an inboard arm rest.

2. Dome light.

3. Electronic throttle.

4. Deluxe airflow heater and defroster

5. Dual intermittent windshield wipers and washers.

6. Dual Gauge Panels shall be provided and consist of the following gauges:
   a. Voltmeter
   b. Engine hour meter
   c. Tachometer
   d. Fuel
   e. Water temperature (with high temperature light indicator)
   f. Transmission oil temperature
   g. Oil pressure with low pressure indicator (both light and buzzer)
   h. Air restriction indicator
   i. If unit has a center console it must be removed to accommodate the mounting of Controls for the one-man leaf loader operation. All switches shall be relocated to the center dash panel.
   j. All other gauges as required by manufacturer

7. AM/FM stereo radio with digital clock

8. cigarette lighter

9. Tinted windows

10. Sun visors

11. Shall have OEM factory installed Left Hand and Right Hand steering and controls with tilt steering wheel.

Interior of Cab Cont'd

12. Heavy Duty insulation shall be provided as a Silence package.

13. Unit shall have dual 18" two spoke steering wheels

14. Cruise control shall be provided for operator convenience.

15. Unit shall have factory installed Air-Conditioning with a recirculation switch.

17. Dual dash mount cup holders shall be provided for use from both sides of the cab.

Safety Equipment

1. Dual tone electric horns

2. Audio backup warning device

3. First Aid Kit

4. Two = Fire extinguishers: 1 – 5 lb (min.) dry chemical charge with gauge or equal, one shall be mounted inside cab and one shall be mounted out by auxiliary power unit.

5. Flares: 1- reflective triangle type flair set, three flares in set, sorted in mountable box.

One Man Truck Mounted Compaction Debris Collector

General

The intent of these specifications is to cover the requirements to manufacture a heavy-duty one-man operated truck mounted self-contained debris collector that vacuums from the right (passenger) side of the unit.

1. The design of the unit shall incorporate the latest available technology and engineering capacities.

2. All bolts shall have aircraft quality nylon lock nuts on the unit and any component that is riveted shall use only stainless steel rivets.

3. For superior strength and durability of the machine, tab and slot construction procedures shall be used for all metal fabricated components.

General Cont'd

4. The proposed unit shall be a current production model; proto type or obsolete units will not be considered.

5. The proposed unit bid shall be a regularly manufactured unit with at least ten (10) references available (please provide references with bid)

6. The leaf collection unit shall meet or exceed all OSHA, federal and state regulations and requirements.

Power Unit

1. A turbo charged four-cylinder diesel engine shall be certified and rated for 84HP at 2500 RPMs. Ref: John Deere model 4045T or approved equal.

2. The engine shall be equipped with a 12-volt starter, alternator, 120volt block heater, and a heavy-duty air cleaner.

3. A heavy-duty 6.62" diameter x 21" long muffler that is horizontally mounted shall be supplied.

4. The engine sound rating shall be no higher than 80 dBa at 50 feet.

5. For maximum safety, a 2.5" diameter stainless steel exhaust pipe shall root the engine exhaust out to the lower driver's side of the unit, no exceptions.

6. To reduce the possibility of the radiator from becoming clogged with leaf dust, a pressurized "trash" style radiator shall be used.

7. The radiator shall have a minimum of 3 cores to provide maximum cooling.

8. For maximum engine cooling, and 18" diameter fan with seven 5" wide blades shall be provided.

9. The fan blades shall be at a 40º chord angle and shall be capable of producing 7,600 cfm to pull the air through the radiator.

10. The radiator shall be equipped with a bottom hinged secondary screen.

Power Unit Cont'd

11. The radiator screen shall be constructed out of ½" expanded metal backed with 1/8" hardware screening. The use of fine window

    screening is not acceptable due to the lack of air that can pass through and the overall durability of the material.

12. The secondary radiator screen shall be powder coated black to prevent corrosion; painted screen assemblies shall not be acceptable.

13. The secondary radiator screen shall be held in place by two adjustable over-center clamps and shall be opened and cleaned without powering down the unit.

Cab Mounted Engine Controls

1. The auxiliary engine controls shall be mounted inside the truck's cab in an instrument panel.

2. The instrument panel shall be designed for easy access to the instrument control wiring.

3. Controls shall include the following: voltmeter, oil pressure gauge, water temperature gauge, electric throttle, tachometer, clutch engagement and hour meter.

4. All engine-monitoring gauges shall be illuminated with back lighting for early morning or late evening operation.

5. All engine gauges shall be of marine quality to insure proper functioning in all weather conditions.

6. All electrical controls and gauges shall be connected via circuit board with circuit breaker protection. The use of electrical wiring strips and fuses shall not be acceptable.

7. A relay shall be provided to isolate any external loads from the control circuit.

8. All electrical connections associated with the engine shall be made with heat shrink connectors.

9. The engine's wiring harness shall be connected to the circuit board by CPC screw type connectors.

Cab Mounted Engine Controls Cont'd

10. All electrical wiring shall be color-coded and use watertight terminal boxes with clear covers.

11. Due to the electrical complexity if this unit, all bidders shall submit wiring diagrams/schematics with their bid, NO EXCEPTIONS.

12. An automatic safety engine shutdown for low oil pressure and high water temperature shall be provided.

13. LED indicator lights shall indicate what function has caused the engine to shutdown; water temperature, oil pressure, E-stop or inspection door/hose.

Engine Enclosure

1. The engine shall be fully enclosed in a custom metal housing.

2. The enclosure shall have front and rear access doors that protect operators from all belts, fans and moving parts.

3. Front and rear access doors shall have stamped openings for optimum ventilation.

4. The top of the engine enclosure shall be completely removable without the use of tools.

5. All access doors shall be securely held in place by adjustable twist latches.

6. The top of the engine compartment shall have hinged doors for convenient access to the radiator cap and oil fill.

7. Adjustable twist latches shall secure the top access door.

Fuel Tank

1. A 40-gallon minimum capacity fuel tank shall be supplied.

2. The tank shall be constructed out of the strongest of cross link polyethylene resins and shall be roto-molded in a manner to have a wall thickness of ¼" over the entire surface of the tank.

3. The fuel line pickup inside the fuel tank shall have a screen mesh for filtration as well as a check valve.

PTO and Power Transmission Belt Drive

1. The power tank off shall be a heavy-duty spring loaded automotive type clutch with a 2-1/4" diameter hardener shaft.

2. PTO shaft shall turn on 2 roller bearings that shall be pressed into the housing

3. The PTO shall be separate from the clutch assembly and bolt directly to the engine bell housing.

4. The clutch shall consist of an automotive style industrial quality 13" pressure plate and a one-piece clutch disc.

5. All clutch linkage shall be on the outside of the housing so that it is not necessary to remove the clutch housing for adjustments.

6. Power shall be transferred from the engine to the impeller shaft via a 4-grooved power band belt.

7. Power band belt shall provide the suction fan with a 1:1 ratio with the engine PTO shaft speed.

8. Both of the drive pulleys shall have a minimum diameter of 11".

9. The power band belt shall be constructed with Kevlar to provide the maximum amount of life with minimal stretching.

10. To minimize belt stretching, the maximum distance between the engine PTO shaft and the impeller drive shaft shall be 18".

11. Belt tension shall be achieved by rising and lowering the height of the engine via 4 threaded sleeves.

12. The engine base that supports the threaded adjustment sleeves shall have a minimum thickness of ½".

13. To aid in the replacement of the power band belt, a cam rod shall be supplied so the PTO end of the engine shall be capable of being raised a minimum of 1 ½ inch.

PTO Safety Engagement System

1. The PTO and clutch shall be equipped with a non-electric safety engagement system that prevents abrupt engagement of the PTO at

   High RPM's. Information shall be provided with bid packet on this item

2. The PTO and clutch shall have an adjustable hydraulic cylinder that automatically ensures that every engagement is exactly the same no matter what operator activates it.

3. The assist cylinder shall be leak proof and incorporate a constant velocity speed control to ensure precise engagement speed of the PTO every time.

4. Bidder shall supply of a list of ten (10) references that are currently using a PTO safety engagement system on their unit.

5. For safety reasons, the operator shall be able to completely disengage the drive mechanism while the engine is running; fluid drive couplers are not acceptable alternatives to the PTO safety engagement system.

Skid

1. The skid frame shall be properly balanced and constructed of heavy-duty enclosed tubular steel. The tubular steel shall be a minimum of three (3") inch x (8") inch with ¼" inch thick walls. No open design frame shall be acceptable.

2. The skid shall be designed to mount on a flatbed truck or directly to the chassis framework.

3. An amber LED oval strobe light shall be cab mounted top of the roof. An on/off rocker switch located in the cab easily accessible to the operator.

4. All wiring for the skid shall be run through protective looming and have protective rubber grommets when passing through steel openings.

BE Series Box Container (Bottom Exhaust)

1. The box has a useable inside capacity of not less than 25 cubic yards and is self-dumping.

BE Series Box Container (Bottom Exhaust) Cont'd

2. Top of the box is equipped three easily removable ½" expanded metal mesh screens with a smaller 1/8" metal screening on the

   inside of the box for proper ventilation. The use of larger screens or dust tarps will not be acceptable.

3. The top screens slide into a channel and are bolted in place. Top screens welded in place are not acceptable.

4. Top screens shall be capable of being removed without requiring personnel to enter the interior of the hopper, no exceptions.

5. Hinged access panels with over-center latches shall be provided to gain access to the top screens.

6. The box is constructed out of 12-gauge steel and is bolted to the platform floor. Hoppers that are welded to the platform floor are not acceptable.

7. The box is structurally supported by a minimum of four 3" channels vertically positioned on the sides and tied into cross members across the top. Units without top cross members will not be acceptable.

8. The interior walls of the box are smooth and the floor has drain holes to help eliminate additional water weight.

9. The floor of the box shall be supported by channel cross members.

10. The front of the box shall extend over the suction blower and engine to provide additional protection.

11. Front of the box shall be angled to provide a built-in brush guard to guide low hanging branches up and over the unit. Units with flat or vertical front hopper walls are not acceptable.

12. There shall be a ¼" thick abrasion resistant deflector and an in-line deflector to insure proper settlement of leaves in the box.

13. There shall be metal duct work so to direct the exhausted air across the top of the box, down the sides and exit at the bottom of the unit.

BE Series Box Container (Bottom Exhaust) Cont'd

14. At the final exit point of the exhausted air shall be angled inward towards the bottom center of the unit.

15. To help dissipate the exhausted air flow, the air exhaust ducting shall be at it largest opening at the final exit point of the system.

16. The box is equipped with a single top hinged rear door securely fastened at the bottom corners of the door.

17. The rear door latch mechanism shall be hydraulically controlled from inside the cab.

Dumping Hoist

1. Both dumping cylinders shall have a 5" diameter piston with a minimum stroke of 27".

2. The box is dumped via a Crysteel scissors style lifting mechanism incorporating twin hydraulic cylinders capable of dumping 26.6 tons. Systems with single hydraulic cylinders will not be acceptable.

3. Both dumping cylinders shall have a 5" diameter piston with a minimum stroke of 27".

4. The lift mechanism is powered up and down. Single acting dump systems are not acceptable.

5. The rear dumping hinge assembly shall be a minimum of 1/2" thick steel with a 2" diameter pins.

6. The dumping hoist shall come standard with a manufactures five-year warranty, no exceptions.

7. There shall be means of dumping the hopper from within the cab as well as a manual control valve that is located near the auxiliary engine.

8. There shall be a hydraulic check valve incorporated into the container box dump cylinder that prevents the box container from falling should a hydraulic line, hose or fitting fail, no exceptions.

Dumping Hoist Cont'd

9. The hopper shall have an automatic guide system to realign the hopper and the blower housing when the hopper is lowered back down into a working position, no exceptions.

Hydraulic Systems

1. The unit shall be equipped with independent hydraulic systems to provide proper flow and pressure to the 3-axis hose boom assembly, the hydraulic dumping hoist and rear hopper latches, no exceptions.

2. The unit shall have a piston style hydraulic pump that is gear driven off of the engine's auxiliary drive. Belt driven or electric/hydraulic pumps are not acceptable.

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3. The piston hydraulic pump shall have variable volume and be pressure compensating.

4. The hydraulic systems shall operate at 3200 psi and shall be "live" as soon as the engine is started.

5. A hydraulic reservoir shall be supplied with an in-line hydraulic filter.

6. Hydraulic tank shall be conveniently mounted on the side of the chassis frame and include a sight gauge and fill cap that are easily accessible.

Suction Impeller

1. The impeller diameter shall be a minimum of 32" diameter with six gusseted blades.

2. The blade shall be constructed out of 3/8" thick abrasive resistant T-1 steel with a Brinell hardness exceeding 400.

3. For maximum vacuum and superior wear characteristics, the suction blades shall be straight (flat) with no curve or cups formed in them.

4. Suction blades shall be robotically welded to a backing plate.

5. The impeller back plate shall have a minimum thickness of ¼".

Suction Impeller Cont'd

6. The suction impeller blades shall be keyed and notched into the back plating along with external gussets to provide the safest and strongest bond.

7. The suction impeller blades shall have a gently serrated tip to lower the operating noise level.

8. The suction impeller shall be secured to the drive shaft via a taper locking hub to provide a better-fit and easy removal.

9. The taper locking hub shall have a safety ring to protect it from direct impact of foreign material.

10. The suction impeller shall be both statically and dynamically balanced.

11. The suction impeller shall be stress relieved via Bonal stress relief technology. This will ensure the safest and most durable impeller. A copy of the Bonal stress report shall be supplied with the new unit.

Impeller Support Shaft (Belt Drive)

1. The impeller shall be supported by a minimum of 2-1/4" diameter x 26.56" long shaft.

2. The impeller shaft shall be supported by two 2-1/4" diameter four bolt flange bearings. Two bolt bearings will not be acceptable.

3. The four bolt flange bearings shall have a double row of precision spherical roller bearings and shall utilize an eccentric locking collar to lock the shaft.

4. The impeller bearings shall be heavy duty type with a minimum dynamic load rating of 26,500 pounds. Please indicate the dynamic load rating _____ lbs.

5. The impeller bearing shall be heavy duty type with a minimum static load rating of 31,000 pounds. Please indicate static load rating _____ lbs.

6. The flange bearings shall be mounted to steel plates with a nominal thickness not less than 7/16".

Impeller Support Shaft (Belt Drive) Cont'd

7. The flange bearing shall have a Teflon seal to prevent any foreign material from seeping through the blower-housing opening.

8. After the removal of the blower housing cover plate, the entire suction fan shaft and bearings shall be removable as a complete assembly by the removal of only 8 bolts.

Blower Housing

1. The blower housing shall be located at the curbside of the unit and shall be bolted in place.

2. The outer scroll of the blower housing shall be constructed out of 10-guage steel.

3. The front and back plates of the blower housing shall be constructed out of 7-gauge steel.

4. The interior of the housing shall be equipped with a two-piece slip inner liner constructed out of ¼" thick abrasion resistant steel that requires no bolts.

5. An additional bolt in ¼" thick liner shall be provided to protect the housing from material that gets carried over before it exits the housing.

6. An inspection/clean out door shall be provided with a safety kill switch that shuts the engine down when opened or improperly closed.

7. The inspection/clean out door shall be side hinged and require no more than two (2) nuts to be removed to open.

8. The bottom of the blower housing shall have a drain to help prevent water from accumulating when not in use.

Intake Hose

1. The intake house shall be 16" diameter x 120" long of heavy-duty wire reinforced flexible urethane hose with a wall thickness of 0.70".

2. The intake hose shall be suspended from the hydraulic boom arm by an adjustable chain, for operator's safety, the use of springs or cables will not be acceptable.

Intake Hose Cont'd

3. The hose support tube shall connect to a metal hose support band wrapped around the hose for a secure and safe connection. The use of rubber or belting materials to support the weight of the intake hose will not be acceptable.

4. The intake hose shall be equipped with a 16" nozzle that is constructed out of 12-gauge steel.

5. The suction nozzle shall be connected to the boom assembly via an I-beam structure that is designed to pivot at both ends. This design provides a secure connection for both vertical and horizontal movement of the assembly.

6. The use of chains, cables or rods to connect the suction nozzle to the boom assembly will not be acceptable.

7. The suction nozzle shall have wear strips welded to the bottom to prevent the nozzle from being sucked to the ground surface.

8. The suction hose shall be secured to the straight inlet via an over-center clamp.

9. The hose shall be capable of pivoting forward or rearward and lock to the unit for transport without having to remove the hose.

Exhaust Duct

1. A rectangular extension of the blower housing shall be horizontal and discharge the leaves through the packer's ejection plate.

2. There shall be a hinged panel on the ejector plate that allows the leaves to blow through.

Hydraulic Boom

1. The intake hose boom shall be a 3-axis (in/out, up/down & forward/reverse) that is hydraulically operated.

2. The boom assembly shall be capable of having a 180º working arc that allows the hose to be pointed toward the front of the truck and swing all the way towards the rear of the truck.

Hydraulic Boom Cont'd

3. The boom shall raise and lower by a hydraulic cylinder with a minimum 1-1/2" diameter piston with a minimum stroke length of 12".

4. A flow control valve shall be provided so that the downward speed of the boom is adjustable.

5. A double acting hydraulic cylinder shall provide the in/out function of the boom assembly.

6. A hydraulic motor coupled to a straight cut spear gear via a roller bearing block assembly shall provide the 180º forward/reverse boom motion.

7. Two-2 diameter 4-bolt flange bearings shall support the 3-axis boom shaft

8. Adjustable boom "stops" shall be provided to limit the forward/reverse motion of the assembly.

9. The hydraulic boom shall be capable of working off the front bumper of the truck and store along the side of the hopper.

10. Units that store beside the passenger's side of the cab will not be acceptable.

11. A hydraulic pump that is coupled to the auxiliary engine shall power the boom. The use of electric/hydraulic pumps will not be acceptable.

12. The pivot point of the boom shall include a bushing and grease fitting for proper lubrication.

13. The hydraulic boom assembly shall be mounted directly over the center of the suction hose so that it can work freely to the front or rear of the unit. Side mounted booms will not be acceptable.

14. The hydraulic boom shall be straight for maximum strength, boom with kinks or bends will not be acceptable.

15. For maximum strength, the first section of the boom shall be constructed out of a minimum of 4" x 4" x ¼ tubing, with the second section out of 2" x 3" x ¼ tubing.

Hydraulic Boom Cont'd

16. The boom assembly shall be mounted to 4" square tubing frame that is not attached to the vacuum blower housing

17. The entire boom mounting assembly shall be capable of telescoping out approximately 18" from the blower housing cover plate via a screw mechanism.

18. Complete access for service and maintenance of the impeller and blower housing liners shall not require the removal of the suction hose or 3-axis boom assembly.

19. Boom controls shall be located in side the cab of the truck.

20. A three-way joystick shall be used to control the functions of the boom assembly.

21. The joystick must incorporate a "dead man" trigger that must be pulled in order to activate the joystick, no exceptions to this requirement.

22. Boom controls shall have a remote joystick that can be utilized by the operator from either left or right hand and shall have the capability of being temporarily or permanently mounted.

Warranty and Manuals

1. The entire unit shall carry a one-year warranty for parts and labor against manufacturing defects and materials.

2. The Auxiliary engine and the Auto PTO clutch shall have a minimum two-year warranty.

3. An unconditional 30-day guarantee shall be submitted on the bidder's letterhead stating, "If the end user is not pleased or satisfied in the quality and performance of the proposed equipment within 30 days after delivery, a full refund including freight will be furnished to the customer."

4. The successful bidder shall provide a minimum of 8 hour operator and mechanic training. A videotape shall also be provided showing maintenance and operating procedures.

5. Complete parts, operating and service manuals for the chassis, power unit, and the body shall be supplied on cd-rom.

Warranty and Manuals Cont'd

6. The bidder shall provide replacement parts and service directly from the manufacture.

Options

1. To make the unit more versatile in the fleet, the _____ is requesting a "Brush chipper Door" be built into the tailgate of the unit. This will aide in the recycling of wood material. The door shall be located in the center of tailgate side to side. The bottom of the door shall be 84" from ground and the top of door shall be 118" from ground the door shall be a minimum of 45" wide. The door shall be removable and shall be air-tight and sealed when installed on unit.

2. A 7 pole trailer connector socket Ref: Part # 755-5019 NAPA shall be installed on rear of chassis and meet SAE-J560 B specs. A hitch capable of receiving a 2 ½ pintle hook shall be provided. The hitch shall be capable of supporting and towing the weight of a Brush Bandit 250 wood chipper. Safety chain rings or hooks shall be provided as well.

3. To reduce the exhaust of leaf dust into the air the _____ is requesting a "Bottom Exhaust" where as the leaf dust is exhausted through an enclosed channel included in the body of the unit.

4. Two tailgate safety props shall be installed on the tailgate (one each side) and be able to be hinged into a safety latch hole on body

5. An access ladder shall be hinged on the rear of the underbody and be utilized by pulling out and lowering to assist in getting inside the body for cleaning purposes.

Camera System

6. A Camera System shall be provided for safety and shall be a **Safety Vision SV-5065** Camera System or approved equal

   A) Camera system shall include (1) SV-510 Camera , (1) SV-511 Monitor and (1) SV-523 65' camera cable with threaded metallic connectors with rubber O-ring seals.

   B) 5 ½" black/white monitor. **(Location to be decided by State College)**

Camera System Cont'd

C) Camera System Warranty shall be a minimum of 5 years and shall include camera cable

D) Camera System shall have sound to allow for operator to hear as well as see what is behind vehicle.

E) (2) rear flood lights shall be mounted on rear of tailgate beside camera, facing rearward. Camera placement on rear shall be decided by the _____ by contacting the Operations Manager at 814-234-7138.

F) Installation shall include having split loom protection installed on complete length of camera cable to prevent rubbing and damaging cable.