

FACILITY AND EQUIPMENT  
ASSESSMENT FOR  
POLK TOWNSHIP RECYCLING  
FACILITY  
FINAL REPORT

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## **1.0 Background**

Polk Township (Township) is a rural municipality located on the western fringe of Monroe County, Pennsylvania. The Township has a population of 6,533 people (2000 census) and it encompasses 29 square miles. The Township operates a green box waste transfer station/recycling center located adjacent to its Township Administration Building in Kresgeville. The facility is open Wednesdays and Saturdays from 8:00 AM to 4:00 PM. The recycling facility is one of the oldest in the state having serviced the Township residents for 25 years. A new recyclables collection and processing building was constructed in 1991 with the assistance of 902 Grant funding. All residents who wish to participate in waste disposal at the facility must purchase an annual permit at the cost of \$60.00. The permit allows a resident to dispose of three (3)-30 gallon bags of municipal waste per week. Drop-off recycling is, of course, free of charge. Recyclables are segregated by participating residents at the center. They include: clear, brown and green glass, aluminum cans, bi-metal cans, PET plastics, HDPE plastics, newspaper, corrugated cardboard, used motor oil and car batteries.

The recycling center is operated by Township employees who process the recyclables to market specifications. Material collected including glass containers (all colors) aluminum foil and cans, corrugated cardboard and HDPE and PET plastic (milk and beverage containers only) are compacted into bales. The bales are stored until there is sufficient volume for the Township to deliver to markets. Newspapers are set onto a feed conveyor that loads a roll-off container, which when full is delivered to a local market by

the Township. The used motor oil is stored in sealed collection containers. The oil is used as fuel (in a specialized waste oil furnace) to heat the facility. Automobile batteries are stored on pallets until marketed locally. Clothing is recycled via a Salvation Army collection bin. Books are also exchanged at the center. Used items in good repair (bicycles, furniture, picture frames, toys, etc.) are also dropped off at the center. These items are sold at periodic yard sales. The proceeds from these sales fund community projects. Polk Township's recycling program has received local, regional and state recognition including the "Governor's Award for Waste Reduction and Recycling".

## **2.0 Introduction**

The Township operates an efficient and attractive facility, which is user friendly. The facility is designed for drive-thru service; residents drive under the building's 10 foot roof extension (which provides weather protection). Residents separate their recyclables into 18 gallon rectangular containers which are placed in clearly marked areas eg: clear glass, green glass, aluminum cans, etc. The collection containers are placed on a waist high collection platform for convenience and ease of sorting by residents. Township personnel slide full containers on rolling conveyors to designated processing areas. This system is simple and efficient requiring little effort on the operator's behalf.

The current facility was built in 1991 and has been expanded as population and program participation has increased.

An indication of the program's growth is the steady increase in materials collected. The program marketed 190 tons of material in 1992 and 362 tons in 2002. With the

Steady increase in materials collected, the processing efficiency and material storage capacity at the center have been somewhat impacted. The Township realizes that the recycling programs processing abilities and storage capacity must keep pace with the increasing flow of materials. Particularly considering the fact that projections for the Township are for continued rapid growth.

Additionally, the Township wishes to continue to operate efficiently, improve its program and expand the types of materials recycled.

### **3.0 Assessment of Existing Facility**

Although Alternative Resources, Inc. (ARI) is familiar with the Township's program and facilities, several visits were made to collect information, observe operations and discuss facility needs with the operators. The following are observations based on facility inspections.

#### **3.1 Building and Layout**

The facility's materials receiving area is convenient for participants and facility employees. The conveyor system used to deliver materials to processing stations is simple and effective. This system is a low maintenance and operator friendly method of moving bins of segregated materials from the drop-off/receiving area to the various processing stations. Normally, the transport of materials is fluid and few steps are wasted

between the receiving area and the processing stations. However, due to current encroachment of baled material (e.g.: baled, aluminum cans, HDPE and PET containers, aluminum foil and corrugated cardboard) in the processing area efficiency is being lost. These materials are being stored in the processing area due to a lack of available storage space. This situation results in the lanes along side of the conveyors being constricted making materials transport to processing stations (crushers and balers) slower and less efficient. Likewise, processing areas are also being encroached upon which limits maneuverability of personnel and equipment. This situation could be readily resolved by providing an alternative storage area for the material stored in the processing area.

Currently the Township is using two (2) bays of its equipment storage building to store baled material. This storage space does not meet its current needs and also results in displacing valuable equipment and leaving it exposed to the elements.

Based on the review of materials through-put data, changes in materials processing and consultation with the facility's operators, it is recommended that the Township construct a 40' X 45'' expansion on its existing vehicle storage building to provide for current and future storage needs.

Due to the fact that the equipment building is in close proximity to the loading dock, minimal transport of the bales (approximately 50 ft.) will be required. The expansion of the existing equipment building is considered the most economical option for gaining additional storage space. The metal equipment building can be readily expanded and minimal site preparation is required. The additional storage space will also allow some

flexibility in marketing materials. Bales of material can be maintained in storage for a period of time during depressed market conditions. This is especially important to the Township in that it uses spot markets. A limited amount of bale storage in the processing area will still be required during routine operations due to increased size of bales produced by new balers (see Section 3.2). Plans to bale newsprint and add additional types of materials will require more floor space in the processing area. Further expansion of the processing area will be required.

Eliminating excessive storage of bales in the processing area is essential to allow the transport and processing system to work as designed. The system for transporting materials from delivery point to processing stations does not appear to require modification at this time. The system is time and energy efficient and minimizes material handling.

### **3.2 Processing Equipment**

Processing equipment at the facility is aging. Glass is crushed by three (3) separate crushers, one for each color of glass. The glass crushers are hopper fed and have been modified with an innovatively designed stainless steel shoot, which protrudes from the building, and gravity drops crushed glass into storage bins located outside. The grinders have provided dependable service, however, they are ten years old. They now require frequent maintenance and are slow. The maintenance problems associated with these old units include processing delays and interruptions resulting in inefficient operation. The current units need to be replaced with more efficient and reliable ones. The Township

has expressed that it has been pleased with the performance, over term, of the current units. It is suggested that they procure the same type of glass crusher, however, with the ever-increasing amounts of materials more efficient and powerful models will be required.

The downstroke balers used by the Township to bale plastics were undersized and malfunctioning, it was recommended they be replaced with larger units capable of producing larger bales. Two (2) new downstroke balers were purchased by the Township in May, they have been installed and are in operation. The balers produce a 60" X 30" X 48" bales weighing (dependant on material feed) 1,100 to 2,000 lbs. The previous bales were only capable of producing 24" X 30" x 30" bales weighing only +/- 200 lbs. One (1) baler is used for HDPE and PET plastic and one (1) for cardboard and aluminum foil. These balers are performing well and material handling has been reduced due to the larger bale size. The Township is considering baling newspaper (currently placed loose in a roll-off container). ARI concurs with the Township.

Market value could be enhanced by the baling of newspaper. Baling also greatly improves storage ability and may reduce cost of transport to market.

In that the Township also plans to collect additional types of plastic, which will also require baling, it is recommended that the Township consider the purchase of a third baler for the expanded line of plastics and for newspaper. The third baler will provide for efficient processing of newspaper and plastic. Three units will provide a limited amount of redundancy in the event of a breakdown and during routine maintenance.



A conceptual plan developed, by the Township, for the expansion of the recycling building was reviewed by ARI. The plan proposes to extend the west wall of the building to enlarge the glass processing area. This expansion would suspend the glass processing area over the glass collection bins with the new roofline covering the glass bins. The expansion would position the glass delivery chutes so that the glass would be more evenly distributed in the bins reducing the man and machine hours required to do so now. Relocation of the glass crushers and of the feed conveyors will not be difficult. Relocation of the glass crushers will provide additional space for maneuvering equipment and temporary bale storage adjacent to the main processing area. This area will be needed for the additional baler and temporary storage of the larger bales.

The extended roof overhang will provide weather protection for the open glass storage bins. This will prevent storm water and snow from coming in contact with the processed glass and reduce any potential for storm water run-off problems and freezing. It is recommended that the Township move forward in developing a final design and cost estimate for this expansion.

Collection containers used for transporting material are cracked and damaged. It is recommended that the Township replace its 18-gallon collection containers. Containers are cracked and damaged as a result of the years of use. Replacing the containers is a small item but an important one. Cracked bottoms on containers could stick in the

conveyor or allow broken glass to protrude creating a safety hazard. Appearance is also important to participation.

#### **4.0 Education and Outreach**

The Township has done an excellent job in promoting the merits of recycling and maintaining the interest and participation of its residents. The Township is aware that it will have to continue these efforts in order to maintain the program's momentum.

The Township accomplishes public education via public notices, public service announcements and the distribution of educational and promotional material to school students and residents (particularly new residents).

The Township has for many years provided tours of their facility to elementary students. Every elementary student in the Pleasant Valley School District has had an opportunity to visit the recycling facility. This program has unfortunately been abandoned recently due to budget restrictions in the school district. Education of youth is extremely important. They are the best advertisement and educator that recycling has. "Hey, Dad, that can is recyclable!"

It is recommended that the Township request that the school district provide a cost for reinstatement of the field trips to the recycling facility. The cost for continuing the program is grant eligible. It is suggested that the Township contact the County Conservation District Environmental Education Centers (Head Naturalist Mr. Roger

Spotts (570) 629-3060). The County Environmental Education Staff (working with the Township) could develop a program to prepare the children for a visit and a follow-up presentation after the visit re-emphasizing the importance of the three R's: Reduce, Reuse, Recycle. This would enhance and reinforce the educational experience. I am sure that the school board would recognize the value of this type of comprehensive program. The school district could possibly provide the required 10% match in cash or in kind. Distribution of instructional coloring and recycling activity books has been popular with both students and teachers. It is suggested that this practice continue. Perhaps a book specific to the Township could be developed by the County Naturalists. It is recommended that the Township budget \$10,000.00 (in excess of the school program costs) for its education/outreach program to continue ongoing efforts and upgrade brochures, posters, and promotional items.

## **5.0 Conclusion and Recommendations**

The Township operates a user friendly and well-run drop-off facility. As a result of the Township's active promotion of recycling and its rapidly growing population, participation continues to grow, as does the amount of materials collected. Due to the increase of materials collected and condition of its processing equipment, upgrading of facilities and equipment is required.

It is recommended that the Township:

- Expand its storage capabilities for baled materials by constructing a 40' x 45' expansion on its vehicle storage building. This option is considered the most cost efficient and practical due to location and ease of construction.

- Add one (1) additional downstroke baler to its processing line to bale newspapers and expanded varieties of plastic containers.
- Replace the three (3) existing glass crushers with more efficient and powerful units.
- Replace its cracked and worn rectangular stackable collection containers for function and safety purposes.
- Continue its efforts to complete the design and develop a cost estimate for the required expansion to the facility.
- Continue and expand its education/outreach program to include local school children.
- Apply for an Act 101 Section 902 Grant to assist in funding required and planned upgrades and improvements.

### **5.1 Economics/Budget**

ARI has received the following quotes for equipment and building expansion and has estimated the cost of the education program for the Township's use and consideration.

One (1) baler @ \$10, 625.00

Three (3) glass crushers @ \$20, 950.00 (\$6,988.00 per unit)

Fifty (50) 10 gallon containers @ \$7.37/unit = \$362.00

Building expansion of 40' x 45' = \$24,000.00

Design and cost estimate for expansion of glass processing area = \$2,000.00

Education/outreach = \$10,000.00

**TOTAL = \$69,937.00**

## **6.0 Outcome**

The Township met with Mr. Chris Fritz, Regional Recycling Coordinator for PADEP, on June 10, 2003. The meeting was held to discuss the Township's intent to apply for an Act 101 Section 902 Grant. ARI attended the meeting to share its findings from this report with Mr. Fritz. Mr. Fritz was very receptive to the program's needs and encouraged the submission of a grant application. The Township has since submitted its grant application for the recommended program and facility improvements.