March 2, 2004

Mr. Anthony D'Ippolito
Red Hill Borough
56 West Forth Street
Red Hill, PA 18076

Subject: **Technical Assistance Project**

Dear Tony:

This letter summarizes the findings of our evaluation of the Red Hill Borough Material Recovery Facility (MRF) for the range of recyclable materials collected, processed, and marketed. The evaluation was performed as part of the Recycling Technical Assistance program sponsored by the Pennsylvania Department of Environmental Protection (DEP) and the Solid Waste Association of North America (SWANA).

This letter report summarizes the findings of R. W. Beck's evaluation and provides recommendations for the Borough to consider. The report is divided into the following sections, which correspond with the Tasks provided in the revised scope.

- Operational and Financial Review and Recommendations; and
- Projected Financial and Operational Impacts.

Task 1 – Operational and Financial Review and Recommendations

Background Information

Red Hill Borough is a small suburb of Philadelphia located in Montgomery County. The Borough has approximately 860 residential households, and spans 0.78 square miles. A large proportion of its residents are mature, middle-class individuals with a strong interest in recycling. The Borough has a pay-as-you-throw refuse collection system that promotes recycling. The system entails the use of yellow refuse bags, which are sold at the Borough office and at several commercial locations.

Description of Recycling Drop-Off Center

The Borough currently operates a community drop-off center for recyclables. The drop-off center is available to residents 24 hours per day. Many residents from outside the Borough use the facility, due to its convenient location and around-the-clock availability. Borough officials estimated that 45 percent of the recyclables collected at the facility are generated outside of Borough limits.

The recycling center allows local residents to recycle the following materials:

- #1 and #2 plastic bottles;

800 N.Magnolia Avenue, Suite 300, PO Box 538817, Orlando, FL 32803-3274, Phone (407) 422-4911, Fax (407) 648-8382

- Aluminum cans;
- Steel cans; and
- Clear, green, and brown glass.

The facility used to accept old newspaper (ONP), but discontinued accepting ONP after it had a problem with bale breakage and poor markets. The facility then tried a loose-ONP collection program. This program was not cost effective, as the Borough was being charged $75 per month for collection, with no revenue share in return. As of 2004 the facility also ceased accepting OCC and chip board for processing.

The facility has a unique design that permits recyclers to deposit materials in separate containment bunkers located inside a closed building. There are two separate buildings – one for PET, pigmented HDPE, and natural HDPE (and, in the past, chipboard). The other is for aluminum cans, tin cans and three colors of glass. Facility design features include a shelf that runs the entire length of the building, on which residents can rest their recycling containers while they separate their recyclables into the correct chute, and a flexible piece of rubber covering the chutes from the inside to keep materials dry. Figure 1 shows the plastic and chipboard depository.

Figure 1
Red Hill Borough MRF Plastic & Chipboard Depository

At the current time, a MRF in nearby Pennsburg Borough has ceased operations. The Red Hill Borough facility is anticipating potentially accepting the Pennsburg and East Greenville recyclables that are collected from their residential curbside programs, as well as the drop-off center. This would add an additional 254 tons per year.

Facility Operations Review

A review of the facility operations reveals that inefficiencies at the facility include:

- Double handling of all materials (except glass), which occurs because materials are manually loaded into fiber drums and subsequently manually loaded into balers.
- Manual loading of balers for all material types (except glass);
- When OCC was accepted, excessive handling and transport of the OCC, which was caused by the OCC needing to be transported from a drop-off area located in one building to the baler located in a adjacent building;
- Manual, labor-intensive task of removing bottle caps from plastic bottles to make more dense bales; and
- Transport of bales using a manually-pulled flatbed cart, rather than a forklift, because only the road supervisor is qualified to operate a forklift.

Figure 2 shows an employee manually loading aluminum cans into a baler. Note that the aluminum cans were loaded into the barrel with a shovel, then moved to the baler using a hand cart.

Figure 2
Manual Loading of Material into a Baler

Table 1 shows the quantity of materials received and processed at the Red Hill Borough MRF in 2001 and 2002.

Table 1
Tons Processed in 2001/2002

Material for Red Hill Borough	2001 Tons	2002 Tons	% Change
Mixed Paper/ ONP	86.32	78.85	-9%
Clear Glass	53.86	66.19	23%
Colored Glass	57.49	71.43	24%
Aluminum Cans	7.5	4.53	-40%
Steel & Bimetal Cans	23.64	23.18	-2%
Plastics	49.86	42.66	-14%
OCC	48.52	154.14	218%
Total Tons Recyclables Processed	327.19	440.98	35%

As of December 2003, the facility employed five part-time laborers, each of whom worked two to five five-hour shifts per week for an average of 80 total labor hours per week. The facility processes 8.48 tons of recyclables, on average, per week. This means that, based on 80 hours worked per week, the facility processes 212.0 pounds per labor hour (based on 2002 tons).

In late 2003 it was decided that the Pennsburg MRF would close, and that the Red Hill Borough MRF would begin processing the materials previously received at that facility. These materials include curbside recyclables from Pennsburg and East Greenville Borough, totaling 254 tons per year.

Table 2 compares the average tons per labor hour processed at the Red Hill and Pennsburg MRFs in 2002. Note that the facilities are comparable in their processing efficiency.

Table 2
Tons per Labor Hour Analysis

MRF	Red Hill 2002	Pennsburg 2002
Annual Tons [1]	441	254
Annual Hours	4,160 [2]	2,080 [3]
Tons per Labor Hour	0.11	0.12
Pounds per Labor Hour	212	242

[1] Tons from 2002 annual Montgomery County Waste & Recycling reports

[2] 2 employees working 25 hours per week and 3 (one of whom is a volunteer) working 10 hours per week.

[3] 1 employee working 40 hours per week.

Facility Financial Review

The Red Hill MRF operated at a net loss of $28,393 in 2001 excluding the impact of performance grants (net loss of $21,337.40 including performance grant impacts[1]). The facility operated at a net loss of $39,335 in 2002 excluding performance grant impacts (net loss of $25,225.59 including grant impacts). The facility actually operated at a net gain for the first ten months of 2003, due to:

- Reducing labor costs by no longer accepting OCC and chip board;
- An increase in revenues due to higher commodity pricing for the sale of the recyclable materials; and
- Lower than expected hauling costs due to changes in end markets.

Table 3 summarizes the MRF's financial performance over the past three years.

[1] All performance grant dollars were received in 2003, but have been retroactively applied to the appropriate fiscal year to give a more accurate picture of that year's financial results

Table 3
Red Hill Borough MRF Financial Summary

Recycling MRF	Actual 2001	Actual 2002	Budget 2003	Budget 2003 (10 month)	Actual 2003 (10 month)
Revenue	$36,418.51	$18,377.00	$20,000.00	$16,666.67	$14,298.15
Expenses					
Hauling	$1,770.00	$954.00	$2,000.00	$1,666.67	$400.00
Supplies	$12,590.33	$18,949.85	$5,000.00	$4,166.67	$4,117.88
Salaries	$37,721.58	$37,365.18	$48,000.00	$40,000.00	$30,414.02
Capital	$12,730.00	$443.56	$5,000.00	$4,166.67	-
Subtotal Expenses	$64,811.91	$57,712.59	$60,000.00	$50,000.01	$34,931.90
Gross Income/(Loss)	$(28,393.40)	$(39,335.59)	$(40,000.00)	$(33,333.34)	$532.25
Processing Cost per Ton[1]	$198.09	$130.87	NA		
Grant Revenue	$7,056	$14,110	$14,110[2]		
Net Income/(Loss) After Grant	$(21,337.40)	$(25,225.59)	$(25,890)[2]		

[1] 327.19 tons were processed in 2001, and 440.98 tons were processed in 2002.

[2] Based on budgetary figures, and assuming the same grant revenue is earned for 2003 as was earned in 2002.

Recommendations to Improve Efficiency/Financial Position

Based on our operational observations and analysis of the MRF's financial condition, we offer the following list of recommendations for consideration by the Borough:

1) **Resume ONP Recycling**: Accept ONP in the drop-off recycling program. Nearby communities are successfully recovering ONP, finding sufficient markets, and successfully processing ONP using downstroke balers.

2) **Resume OCC Recycling**: Accept OCC in the program. This material could be accepted in the bunker where chipboard once was, eliminating the need for transfer to the other building, and the newest baler could be moved to the spot next to the storage bunker to make OCC processing more efficient.

3) **Balancing Labor**: If OCC is not accepted, then reduce labor to employ just one person for each shift. If necessary, shifts could be increased to six hours per day.

4) **Use Gaylords for Material Storage**: Obtain and use the storage Gaylord containers from the Pennsburg MRF. They could be placed under the chutes, and used for the storage and processing of plastic, eliminating the manual loading into fiber drums.

5) **Train Employees on Forklift**: This may require that some or all of the employees become certified to operate the forklift, so the Gaylords can be moved and emptied using the forklift. This change in operation alone will reduce hand shoveling and lifting, and may allow the facility to reduce one laborer.

6) **Store Materials in Baler Room**: Keep all collection/storage bunkers inside the baler room for plastics and fiber. Bunkers could be smaller if Gaylords were used, leaving enough room to add an additional bunker for ONP.

7) **Retrofit Balers**: Retrofitting the plastics balers with a chute such as that used at the Pennsburg MRF to make the loading of the plastic from the Gaylords more efficient will prevent employees from having to stoop and remove contaminants/lids. A similar device could be added to the metals baler to ensure that the materials flow from the Gaylord boxes directly into the baler without spillage.

8) **Increase Public Education:** Education and outreach initiatives should promote the fact that residents should remove all bottle caps from the recyclables. This will help the facility make denser bales, and decrease the contamination rate.

9) **Do not collect chipboard:** Continuing to not accept chipboard is economically appropriate, as this material is of low value and therefore is not cost-effective to process.

10) **Purchase a metal self-dumping hopper:** Adapting the glass handling operations in this manner would help process the materials from Pennsburg. The trailer from the Pennsburg curbside program could be dumped directly into a self-dumping hopper and then into the roll-off container. This would eliminate dumping the glass compartments onto the concrete floor and having the employees shoveling/sweeping up the broken glass. The metal self-dumping hopper would make operations more efficient and safe for workers.

11) **Implement a per-household user fee:** Based on input from Red Hill and other local elected officials and borough managers, there is consensus that a nominal per-household user fee would be financially appropriate and politically acceptable to recoup the cost of the Red Hill MRF's recycling services. Based on feedback from the borough managers, it is recommended that a user fee be established at $10 per household per year to be charged for the residents of Red Hill, Pennsburg, East Greenville, and Upper Hanover, generating annual processing revenues of $52,240.

Task 2 – Projected Financial and Operational Impacts

Table 4 provides an estimate of the costs associated with the recommended facility and program enhancements, and include Red Hill Borough's recyclables, as well as the materials from Pennsburg and East Greenville's curbside programs. It is also assumes that 40 percent of East

Hanover's residents will bring their recyclables to the Red Hill Borough Facility, as the program is formalized and outreach and education efforts in East Hanover are implemented.

Table 4
Financial Impacts Associated with Implementing the Recommendations

Recommendation	Description	Estimated Financial Impact
1	Resume ONP Recycling	No financial impact if processing recommendations are implemented
2	Resume OCC Recycling Move Baler	 $300 one-time cost
3	Balance Labor (If OCC not recycled)	Up to $12,000 per year
4	Use Gaylords for Material Storage	No financial impact, assuming Pennsburg MRF Gaylords are donated to Red Hill Borough MRF
5	Train Employees to Operate Forklift	No external training cost, but will require time for training
6	Store Fibers and Plastics in Baler Room	No cost, just time to initially re-arrange.
7	Retrofit two to four balers with chutes – plastics balers and metal baler with chute, depending on how processing is done.	$600 to $1,200 one-time cost ($300 per baler)
8	Public education	$1 per household per year or $5,224
9	Continue to not accept chipboard	No financial impact
10	Purchase self-dumping metal hopper for glass container	$350 one-time cost
11	Charge municipalities $10 per hh for processing recyclable containers	Revenue gain of $52,240

Table 5 provides a listing of revenues and expenditures if the suggested retrofits are made, under the "containers only" scenario, and if the facility decides to accept OCC and ONP. The "containers only" scenario assumes half as many labor hours (35 per week for paid employees and 10 hours per week for volunteer labor) as the "fibers and containers" scenario, which assumes 70 labor hours per week plus 10 hours per week for volunteer labor.

Table 5
Estimated Processing Revenues and Expenditures

	Tons – Containers Only	Tons – Fibers and Containers
Estimated Tons Received[1]	225	695
Estimated Sales Revenues[2]	$20,307	$38,400
Estimated Grant Revenue	$6,000	$18,000
Estimated Processing Revenue[3]	$52,240	$52,240
Subtotal Revenues	$78,547	$108,640
Average $/Ton Total Revenues	$349.10	$156.32
Expenses[4]		
▪ Hauling	$3,000	$3,000
▪ Supplies	$6,000	$6,000
▪ Salaries	$24,000	$48,000
▪ Capital[5]	$5,000	$10,000
▪ Education	$5,220	$5,220
Subtotal Expenses	$43,220	$72,220
Average $/Ton Processing Cost	$192.09	$103.91
Net Income/(Loss)	$35,327	$36,420

[1] Based on current tons; Upper Hanover's tons are estimated based on the same generation rate as the other communities, but assuming a 40% participation rate.

[2] Based on current commodity prices

[3] Includes $10 per housing unit per year from Pennsburg (1,126 units), East Greenville (1,076 units), and Upper Hanover (2,162 units).

[4] Estimated, based on industry experience and 2003 budget.

[5] Includes costs associated with implementing recommendations, except education.

As Table 5 indicates, the Red Hill Borough MRF has the opportunity to generate a surplus of roughly $36,000 per year, if the recommended processing changes and per-household user fee are implemented. From the standpoint of establishing a sustainable recycling processing center, we advise that this surplus be set aside for future facility and equipment upgrades in the form of an equipment replacement fund or account. Such an account will enable this program to remain sustainable in the event future grant monies are curtailed or eliminated, or if recycled material market prices drop significantly.

The suggested changes are relatively inexpensive and quick to implement. Although the net income under the "fibers and containers" scenario is not significantly different with fibers continuing to be collected, it is still advisable for the Borough to keep fibers in their recycling program. This will keep residents "in the habit" of recycling these items, will improve the

Borough's recycling rate, and may result in higher revenues when markets for these materials improve. Also, keeping these materials from the landfill avoids disposal costs.

We appreciate the opportunity to work with the Borough on this project. Please contact me at (301) 607-6428 should you have any questions.

Very truly yours,

R. W. BECK, INC.

Walt Davenport
Special Projects Director

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