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RE: Florida Tire

DATE: OCT 7, 1993

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NUMBER OF PAGES (includes cover sheet): 10

SENDER'S NAME: Cheryl Johnson

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DRAFT

10/7/93

**ANALYSIS OF
ADDITIONAL STABILIZATION ALTERNATIVES
FOR THE
FLORIDA TIRE RECYCLING, INC WASTE TIRE SITE**

**Prepared for
The Florida Department of Environmental Protection**

**by
Terry A. Gray and Andrew E. Ronchak,
TAG Resource Recovery**

October, 1993

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JANET BOWMAN, ESQ. AND IS CONSIDERED A CONFIDENTIAL DOCUMENT
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T.A.G.
RESOURCE RECOVERY

FAX COVER PAGE

Date: 10/7/93

From: Terry Gray
TAG Resource Recovery
(713) 463-7552To: Jan ChadePages (including cover page): 9

Message: Draft that hopefully contains requested
information. Graphics will be done by
Andy over weekend if you approve by
Friday morning (earlier the better).

Florida Tire Recycling, Inc
Additional Stabilization Analysis
DRAFT 10/7/93

OBJECTIVE

The Florida Tire Recycling, Inc. Waste Tire Site has been estimated to contain approximately 5,734,000 passenger tire equivalents (PTE) as of March 11, 1993. The site represents a potentially serious public health hazard. The Florida Department of Environmental Protection (DEP) requested analysis of additional questions related to stabilization of the site. The following sections summarize the methodology and results of this analysis.

CURRENT ON-SITE QUANTITIES

Since the Florida Tire Recycling, Inc (Florida Tire) Site is an active operation, site conditions continually change. Since Florida Tire has denied site access to DEP, previous on-site quantity estimates can't be accurately updated to reflect interim site changes. However, the site was overflown on September 19, 1993 to view current site conditions. Appendix A contains a site schematic reflecting the following major site alterations since the March 11, 1993 visit:

- (1) Piles T-2 and T-4 containing whole passenger tires have been removed.
- (2) Two narrow (approximately 8 feet wide) fire lanes were being cut through the main shred pile and it appears that one fire lane was being widened by an additional estimated 8 feet.
- (3) Significant additional quantities of shreds have been, and are being, added to the top of existing shred pile segments. Ramps that were not previously present have been added to facilitate shred movement to the top of these piles.
- (4) Significant quantities of shreds have also been used to raise the level of internal and perimeter roadways.
- (5) Additional whole off-road and truck tires have been stored in the area south of the central access roadway and trailers.

Although accurate quantity estimates can't be updated without surface site access, aerial observation and analysis of a recent professional aerial photograph taken by DOT indicate that the on-site quantity has not been significantly reduced since March 11, 1993. The current quantity may actually be greater than previously estimated. A thorough revised estimate should be made before DEP establishes a detailed budget for site stabilization.

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ON-SITE STORAGE CAPACITY

Shredded tires could be moved into piles conforming to DEP waste tire storage regulations. Such shred movement is not normally a recommended action due to additional shred contamination and costs associated with ultimately double-handling of shreds, but it can accelerate the rate of site stabilization. Appendix B contains a schematic pile configuration based on site dimensions from the DOT aerial photograph and the approximated Florida Power and Light right-of-way boundary.

The schematic allows 24 piles with ground level dimensions of 200 feet by 50 feet, the maximum size allowed by DEP regulations. Two additional piles approximately one-half this size are also shown, so an effective total of 25 full-size piles can potentially be configured on-site. It is undesirable to have piles closely bordering the central access roadway and rail car spur, but this appears to be permissible under DEP regulations and has been done to maximize on-site storage capacity. This scenario requires processing and removal of all whole tires to create space for the shred piles. The northeast portion of the site has been left vacant to serve as a required processing area.

Assuming a pile height of 15 feet (maximum allowed under DEP regulations) and an angle of repose of 60 degrees, each pile will contain approximately 4,350 cubic yards. Extensive historical data indicates a typical density of 600-700 pound/cubic yard (22-26 pounds/cubic foot) for uncompacted coarse shreds similar to those present in the main shred pile. Higher densities can be achieved by compaction with heavy equipment (as in the existing shred piles), but such compaction greatly increases the probability of anaerobically initiated internal pyrolytic reactions that can generate high temperatures and oils during long term storage. Due to the potentially severe environmental consequences associated with permeation of such oils containing potentially carcinogenic chemicals into the underlying aquifer, the new piles should not be intentionally compacted. Assuming a maximum density of 700 pounds/cubic yard, each pile can contain an estimated 1,522 tons of shreds. Therefore, total on-site shred storage is estimated to be 38,050 tons. Relocation of this quantity at Florida Tire's projected rate of 100 tons/day would require 381 days or 54 weeks (representing over 1 year) if operations were conducted 7 days/week, 64 weeks at 6 days/week and 76 weeks at 5 days/week. Detailed calculations are contained in Appendix C.

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REQUIRED WASTE TIRE/SHRED REMOVAL

Based upon previous quantity calculations (as of March 11, 1993) and recent observations that the current quantity may be even larger, the site is believed to contain at least 57,340 tons of waste tires and shreds. If 38,050 tons are reconfigured into on-site storage piles, then at least 19,290 tons must be removed from the site.

Florida Tire has proposed that they remove material from the site at a rate equal to 125% of incoming quantities stated to be approximately 100 tons/day or 500 tons/week. This would result in a net removal rate of 125 tons/week. At this rate, removal of the required 19,340 tons would be projected to take over 154 weeks or almost 3 years.

WHOLE TIRE PROCESSING RATES

In order to implement the above plan, all whole tires must be processed and/or removed from the site. Based upon previous estimates, the site contained 2,940 tons of off-road tires, 3,340 tons of truck tires and 2,210 tons of passenger tires representing a total of 8,490 tons as of March 11, 1993. If the quantity of passenger tires is reduced by 940 tons to reflect removal of piles T-2 and T-4, the revised passenger tire and total quantities become 1,270 tons and 7,550 tons, respectively. Based on aerial observation, the actual quantity as of September 19, 1993 is probably greater due to additional new storage areas behind the trailers.

Off-road tires are generally not shredded in the type of equipment owned by Florida Tire due to equipment limitations and maintenance impact. As a result, DEP generally either cuts such tires into at least 8 pieces with a LaBounty-type shear or uses a massive hog-type shredder to reduce volume prior to disposal in an approved landfill. Based on DEP's historical experience with a LaBounty-type shear, normal processing rates are approximately 30 tons/day or 150 tons per 5 day week. At this rate, processing and removal of the estimated 2,940 tons of off-road tires will require almost 20 weeks. This rate may be accelerated by use of a hog-type shredder if such equipment is available at the time of implementation.

Processing rates for passenger and truck tires are dependent upon the equipment, its condition, and the product produced. Mr. Jack Wilson of Florida Tire has indicated that he currently owns

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two shredders manufactured by Columbus McKinnon. These machines, if properly operated and maintained, have historically been able to produce coarse shreds at a rate of 9 tons/hour, flowable chips at 6 tons/hour and 1 inch nominal TDF at 3 tons/hour on a sustained 40 hours/week operating basis. In addition, Florida Tires owns two older Triple S shredders, one of which is equipped with a recycling trammel allowing production of flowable chips (or TDF if the trammel screen size was reduced). The other is only capable of coarse shred production. If these two machines were placed in series, their production capacity would roughly approximate one of the CM machines due to their age and observed condition. The following table summarizes the time required to process 4,610 tons of whole truck and passenger tires as a function of the number of machines used and product type.

Required Whole Passenger/Truck Tire Processing Time				
Shred Type	Weekly Rate (tons/shredder)	Required weeks		
		1 shredder	2 shredders	3 shredders
Coarse	360	12.8	6.4	4.3
Flowable	240	19.2	9.6	6.4
TDF	120	38.4	19.2	12.8

APPENDIX A - FLORIDA TIRE RECYCLING, INC. - SITE SCHEMATIC

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TEL:904-488-2439

DEPT OF ENVIR. PROT.



POWER LINES

KEY

- WHOLE TRUCK/
PASSENGER TIRES
- WHOLE OVERSIZE
TIRES
- SHREDDED TIRES
- PROPERTY LINE
- WATER TANKS

MIAMI TANK FACILITY

Railroad Spur

Range Line Road

INITIAL NARROW
PIRE LANES

SHREDDER TWO

SHREDDER ONE

SHREDDER THREE

OFFICE

EXISTING

STABILIZED

ROADWAY

POND

Revised 07/1998

APPENDIX B
FLORIDA TIRE RECYCLING, INC SITE
STORAGE PILE SCHEMATIC

RANGE LINE ROAD

MIAMI TANK FACILITY

DESIGNATED
OPERATING
AREA

CENTRAL ACCESS ROADWAY

Total property length = 937' - 060' (road) - 277' (clear)

FP+L

RIGHT-OF-WAY

