DURHAM

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CITY OF MEDICINE

Permit Modification

City of Durham

Solid Waste Transfer Station

February 10, 2011

Solid Waste Director, Donald Long

Solid Waste Department

101 City Hall Plaza

Durham, NC 27704

919-560-4186

Facility Permit #: 32-12T
Type of facility: Solid Waste Transfer Station
Location: 2115 E Club Blvd. Durham, NC 27704

1.0

We are requesting a modification to our transfer station permit that was originally issued December 9, 1997 and was last amended on April 4, 2010. All portions of the existing operation plan will continue to be in effect. This document will be an appendix to the existing plan and outlines a shingle recycling operation that will occur at the same location.

This document also updates the emergency contact personnel for facility operations.

2.0

Proposed Shingle Recycling segregation and transport

The City currently landfills all shingle material brought into the facility by all customers. In order to reduce the amount of shingle material placed into the waste stream; the City would like to modify its current permit to allow for the collection/segregation of post consumer (tear off) shingles. The planned start date for this program is **May 1, 2011**.

The City will collect the shingles from our customers in a segregated area, load the materials, and haul them to GreenCycle Materials, LLC located at 1419 Camden Avenue Durham, NC 27704 which is approximately 1.5 miles from the transfer station location.

The tipping floor will also continue to receive shingles that are mixed with trash and cannot not be segregated as currently outlined in our operations plan.

The tonnage of shingles transported to GreenCycle will be tracked for record keeping and data reporting purposes.

City staff attendants will ensure that only "clean shingle" waste is segregated and that no trash or other materials will be included in with the recyclable shingle materials to be transported.

At the completion of the daily routine; all shingle related materials will transported to the GreenCycle or stored in their respective bins.

Expected Tonnage

For the entire year of 2010, the City received 3,813 tons of shingles. We anticipate removing 40 to 50 percent of that figure from the waste stream by recycling the clean shingle materials.

Approved Operation Plan for asbestos testing

GreenCycle has an approved operations plan from the North Carolina Department of Health and Human Services-Health Hazards Control Unit for the screening for asbestos testing. This document is attached for review.

Length of service and use

The City anticipates this program to run for a six (6) month period. After that; the City will evaluate the program and may choose to continue the program for an additional year. The City or GreenCycle may sever the partnership with due notice as noted in the Pilot Shingle Program agreement. Also, GreenCycle will report to the City exactly how the recycled shingle materials were used. The agreement document is attached for review.

End Of Modification

Revised Emergency Contacts On The Next Page

EMERGENCY CONTACT INFORMATION

City of Durham Transfer Station, Facility ID # 32-12T

2115 E Club Blvd. Durham, NC 27704

Updated 02/10/11

Responsible agency:	Solid Waste Management Department
Mailing address:	101 City Hall Plaza, Durham, NC 27701
Physical address:	1833 Camden Ave, Durham, NC 27704
Main phone line:	919-560-4186

City Staff - Primary Contacts

Emergency coordinators, listed in the order they should be contacted.

Bruce Woody, Assistant Disposal Manager email: Bruce.Woody@durhamnc.gov
1833 Camden Ave, Durham, NC, 27704
office: 919-560-4186 ext 32228 cell: 336-504-2323 home: 336-504-2323

Donald Long, Director email: Donald.Long@durhamnc.gov
1833 Camden Ave, Durham, NC, 27704
office: 919-560-4186 ext 32222 cell: 919-201-0258 home: 919-957-0234

Robert Williams, Assistant Director Email: Robert.Williams@durhamnc.gov
1833 Camden Ave, Durham, NC, 27704
office: 919-560-4186 ext 32224 cell: 919-201-3483 home: 919-381-4613

Operating Contractor – Primary Contacts

Dan Jarboe, Durham Terminal Manager email: dan.jarboe@mrbults.com
MBI, cell: (708) 243-7270

Rick Prather, Republic Services email: Rick.Prather@awin.com
5111 Chin Page Rd, Durham NC, 27703
office: 919-433-0901 cell: 919-669-3696

North Carolina Department of Health and Human Services
Division of Public Health • Epidemiology Section
Occupational and Environmental Epidemiology Branch
1912 Mail Service Center • Raleigh, North Carolina 27699-1912
Tel 919-707-5950 • Fax 919-870-4808

Beverly Eaves Perdue, Governor
Lanier M. Cansler, Secretary

Jeffrey P. Engel, M.D.
State Health Director

August 13, 2010

Mr. Stirling Robertson, PhD.
GreenCycle Materials, Inc.
P.O. Box 80687
Raleigh, NC 27623

Subject: Fourth and Final Review for Asbestos Operations Plan
GreenCycle Materials, Inc.
Location for Winston-Salem and Durham, North Carolina

Dear Mr. Robertson:

After reviewing the fourth draft of your written "Operational Plan", dated August 13, 2010, we believe that you have adequately addressed all of our questions about the project. It is expected that you will adhere to the existing plan as written for both of your facilities. Should you decide to expand your operation or modify your existing plan to address future needs, remember that you must submit an amendment to our office for review and comment. The (HHCU) will conduct periodic inspections to assess the effectiveness of your operation and provide written recommendations for improvement or corrections as necessary.

In closing, should either facility accidently grind any asbestos-containing building material, all grinding operations will stop and we will be contacted. Also, bear in mind that any landfill approved to receive non-regulated asbestos roofing waste will have the final authority on how the waste will be packaged, labeled and properly disposed. We look forward to working towards a project that allows the recycling and grinding of "asbestos free" post-consumer asphalt roofing shingles.

Should you have any questions, please feel free to contact me or Pat Wylie at (919) 707-5950.

Sincerely,

Jeffery W. Dellinger
Industrial Hygiene Consultant
Health Hazards Control Unit

Ed Mussler, DSWM
Mary Giguere, Program Manager
Danny Lineback, IH Supervisor
Pat Wylie, IH Consultant

GreenCycle Materials

P.O. Box 80697
Raleigh, NC 27623
Phone: 919-961-3355
Fax: 919-869-1996

13 August 2010

Mr. Jeffrey W. Dellinger
N.C. Department of Health and Human Services
Health Hazards Control Unit
1912 Mail Service Center
Raleigh, N.C. 27699-1912

Dear Mr. Dellinger:

GreenCycle Materials, LLC (GreenCycle) proposes to enhance its current asphalt and concrete recycling operations by including post-consumer asphalt roofing shingles. These shingles will be processed into a form that can be utilized by the paving industry for inclusion into asphalt products. There are several environmental benefits to recycling asphalt roofing shingles, such as reduction in landfill waste due to recycling materials that are typically wasted and reduction in regional air pollution emissions by offsetting some fraction of the production of new asphalt binder by others. There are two challenges present when recycling asphalt roofing shingles. First, asphalt shingle, as delivered to for processing, may contain deleterious materials (e.g., metal, plastic, and wood). Second, some small fraction of asbestos may be present, though current research indicates that this risk is small. This letter presents GreenCycle's proposed operating plan which specifically addresses the procedures that will be used to provide Recycled Asphalt roofing Shingles (RAS) that meet or exceed all specifications and regulatory requirements.

1. GREENCYCLE'S FACILITY

GreenCycle operates an approximately 12-acre materials stockpile yard at 2410 West Clemmonsville Rd, Winston-Salem, NC (Fig. 1). The yard is used solely for processing post-consumer asphalt roofing shingles. The areas where shingle recycling is proposed to occur is shown in Figure 1, including the routing of raw materials onto the site, the partitioning of pre- and post-testing raw materials, and the stockpiling of processed product. Representative ground-level site photographs are shown in Appendix A.

GreenCycle operates another site that is an approximately 17-acre materials stockpile yard at 1419 Camden Ave, Durham, NC (Fig. 2). The yard is used to stockpile concrete and recycled asphalt product. The yard will accommodate the proposed shingle recycling operations with minimal change to existing operations. The area where shingle recycling is proposed to occur is currently part of the Recycled Asphalt Product (RAP) storage area. The facility includes a stormwater runoff detention pond that captures runoff from the site and prevents untreated runoff from reaching nearby surface waters.

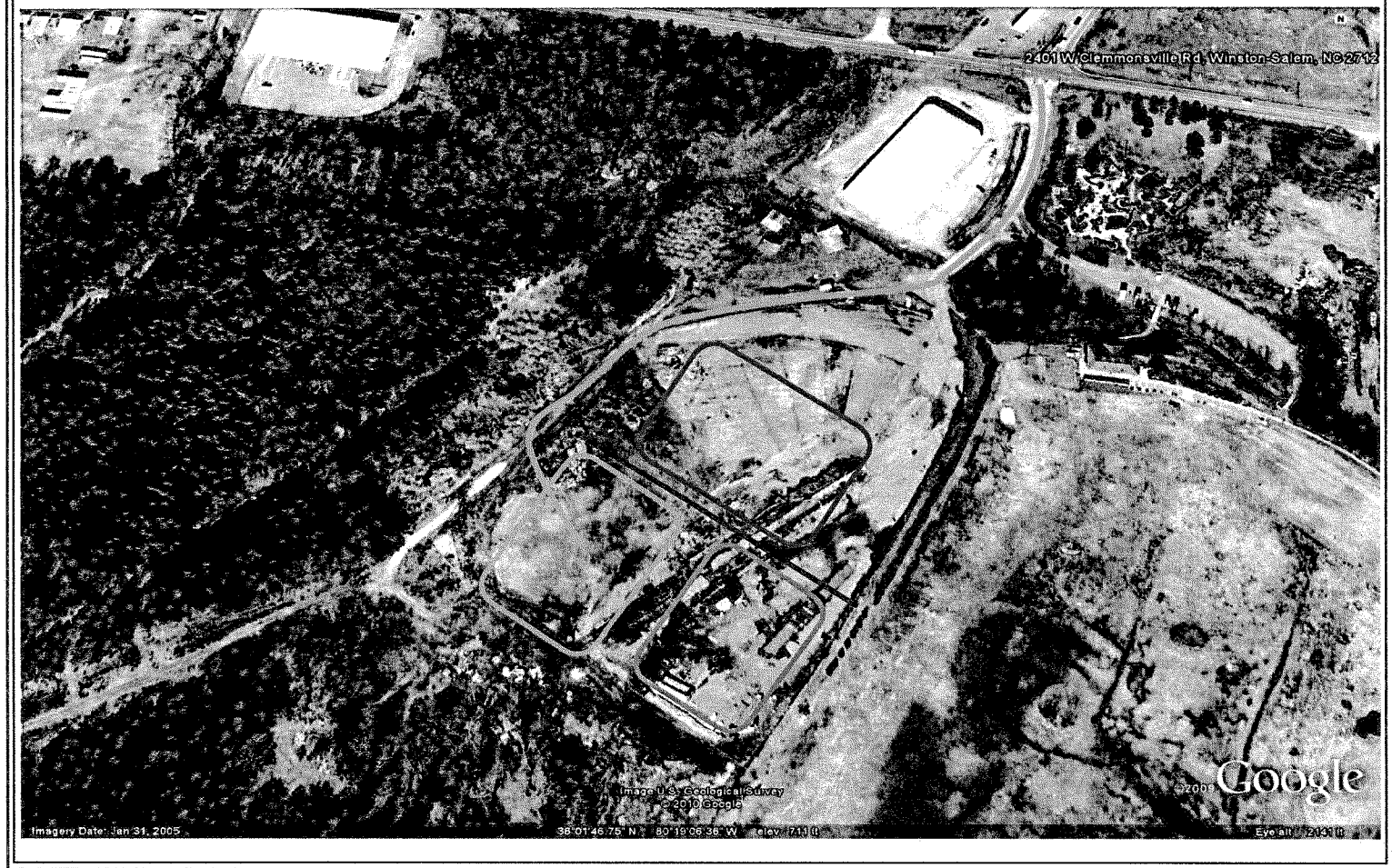


Figure 1. Greencycle Materials Site at 2410 W. Clemmonsville Rd., Winston Salem, NC. The aerial is from 2005 and no longer reflects site conditions. The orange arrow indicates inbound traffic flow. The red line divides the site between processed material (green rectangle) and raw material (orange and blue rectangles). The orange rectange represents shingle that have not been tested for ACM. The blue rectangle represents stockpiled shingles that have been tested for ACM are cleared for further processing. The pre- and post-testing materials are physically separated from one another by concrete barriers.

Source: Greencycle Materials 2010, GoogleEarth 2010

GreenCycle Materials

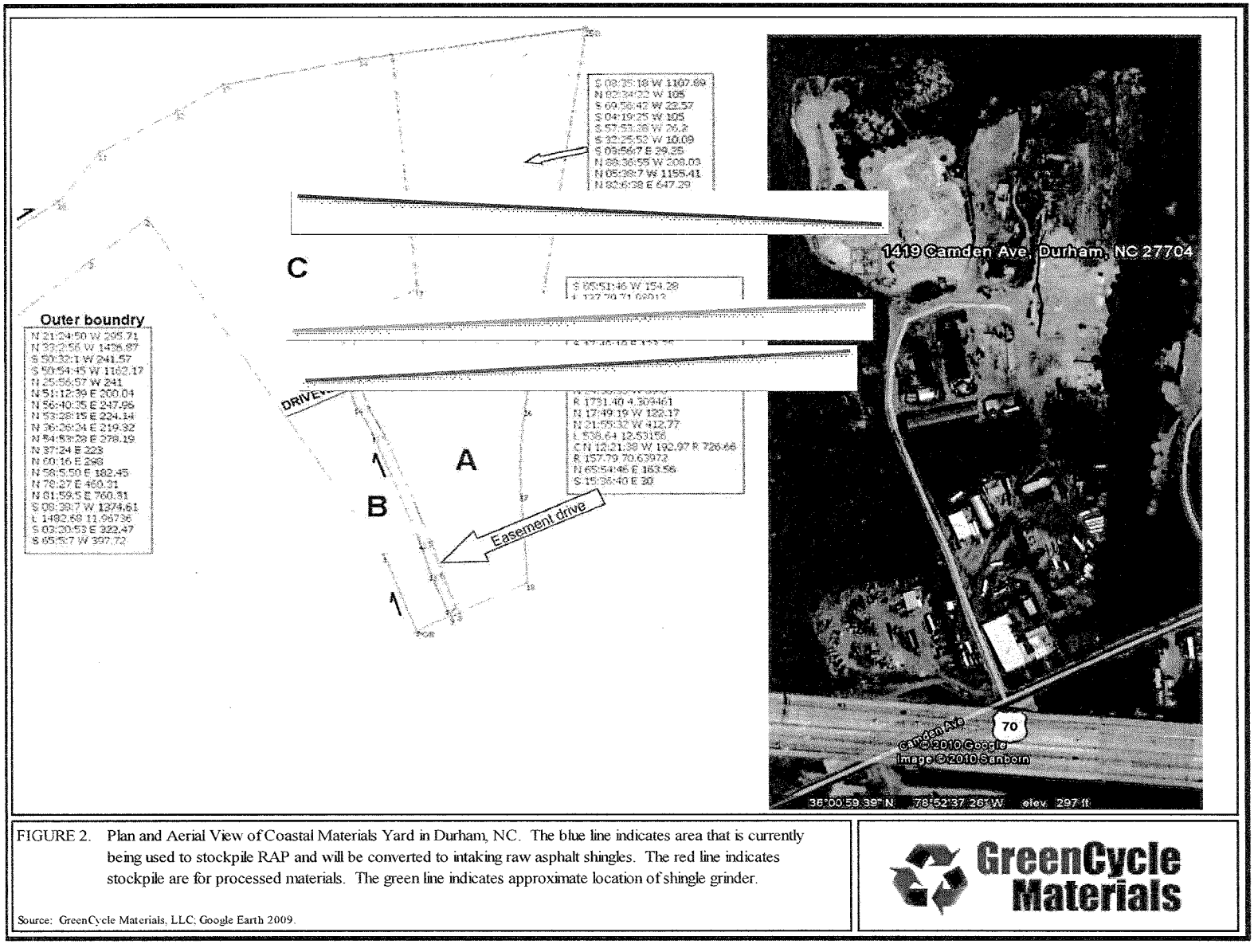
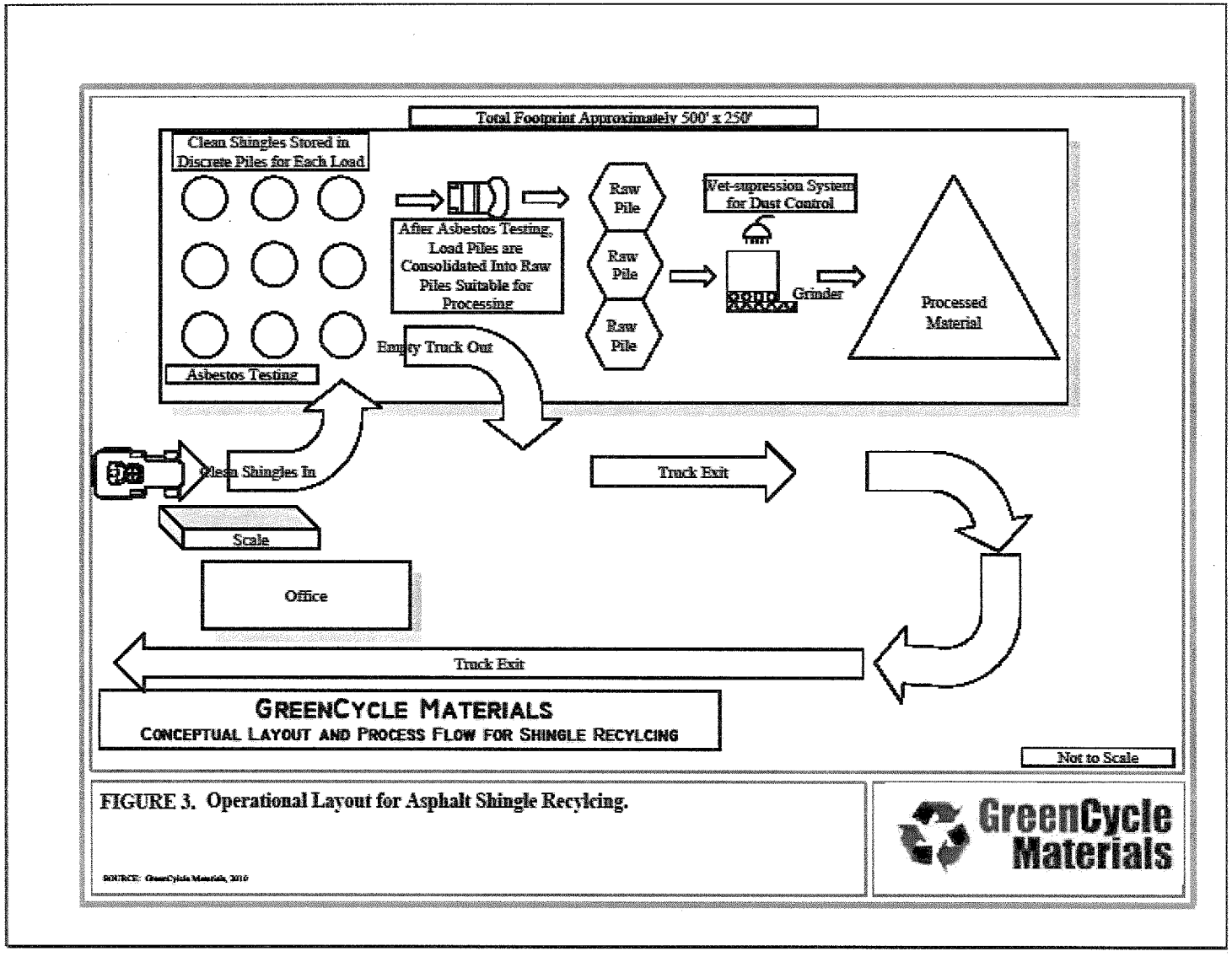


FIGURE 2. Plan and Aerial View of Coastal Materials Yard in Durham, NC. The blue line indicates area that is currently being used to stockpile RAP and will be converted to intaking raw asphalt shingles. The red line indicates stockpile are for processed materials. The green line indicates approximate location of shingle grinder.

Source: GreenCycle Materials, LLC; Google Earth 2009.

GreenCycle Materials


Total Footprint Approximately 500' x 250'
Clean Shingles Stored in Discrete Piles for Each Load
After Asbestos Testing, Load Piles are Consolidated Into Raw Piles Suitable for Processing
Raw Pile
Raw Pile
Raw Pile
Wet-supression System for Dust Control
Grinder
Processed Material
Empty Truck Out
Asbestos Testing
Clean Shingles In
Truck Exit
Scale
Office
Truck Exit
GREENCYCLE MATERIALS
CONCEPTUAL LAYOUT AND PROCESS FLOW FOR SHINGLE RECYLCING
Not to Scale
FIGURE 3. Operational Layout for Asphalt Shingle Recylcing.
GreenCycle Materials

2. PROCESS DESCRIPTION

Shingles may be obtained from many sources (suppliers). Suppliers will qualitatively ensure that deleterious materials are excluded from the shingles supplied to GreenCycle (clean shingles). The certification form is shown in the Appendix. Clean shingles will be transported to GreenCycle's facility in single batches. Clean shingles from different sources will not be mixed. Figure 3 shows the diagrammatic layout and process flow for the shingle recycling operations described below.

Trucks hauling clean shingles will be inspected for deleterious materials and potentially asbestos containing material (ACM) when they enter the facility. Trucks entering the facility will be inspected primarily for deleterious materials. This intake inspector will not be responsible for conducting sampling or make visual determinations that asbestos is not present for the purpose of authorizing shingles to be ground. A second inspection will occur at the time that each load is dumped. This second inspection will be carried out by qualified asbestos personnel who have completed the five-day asbestos supervisor course and annual refresher training. This training will meet the NESHAP requirements and also meets the intent of the competent person under OSHA Asbestos in Construction Standard 1926.1101. The asbestos trained supervisor will have the knowledge and authority to determine if a load of asphalt roofing shingles is unacceptable and reject the load if necessary (competent person). If asbestos accidently enters the process stream, then this asbestos trained supervisor, serving as the competent person, shall have the knowledge and authority to stop work as needed so that corrective action can be taken. A NC accredited asbestos inspector will visually inspect and sample each load of asphalt roofing shingles for asbestos to determine if the material is suitable for grinding.

Each truck load will be piled separately. The piles will not be comingled. Each pile will be visually inspected by a NC accredited asbestos inspector and quantitatively sampled according to the current ASTM standards and EPA test methods for asbestos concentration in bulk building materials prior to being approved for grinding. Samples will only be tested by a North Carolina accredited asbestos inspector. Only piles that do not contain asbestos will be approved for further processing. Rejected piles will be disposed of at a licensed facility. The North Carolina Asbestos Waste Shipment Record form is shown in the Appendix.

Clean shingle piles that pass the asbestos testing will be consolidated in to a stockpile of raw materials that are ready to be further processed into saleable product. Periodically, these raw materials will be processed by a shingle grinder. The shingle grinder and related process equipment uses a water spray as wet suppression for dust emissions. The process reduces the shingles into an aggregate that is less than ½ inch in diameter. This aggregate is the final product. The final product is stockpiled for bulk sale to asphalt producers (customers). All post-consumer asphalt roofing shingles which will be ground must contain less than 1% asbestos. Should material containing more than 1% asbestos be detected in the grinding feedstock, then operations would stop and the Health Hazards Control Unit would be contacted.

3. OPERATING PROCEDURES

The two main differences between processing shingles as opposed to RAP are the potential presence of deleterious materials and asbestos. Deleterious materials and asbestos must be removed from the process flow in order to avoid compliance issues with 40 CFR 61 Subpart M (National Emissions Standard for Hazardous Air Pollutants – Asbestos Standards; NESHAP), state and local regulations, and to meet the specifications of the American Association of State Highway Transportation Officials (AASHTO) Specification M2005ATS-2c. A list of acceptable and unacceptable materials is shown in the Appendix and suppliers will be awareness trained to these requirements. This includes no "Flat Built-up" roofing, asbestos cement products, asbestos painted shingles, or asbestos mastic painted shingles will be allowed.

Deleterious materials are typically construction debris that is being disposed of with the shingles. There is a possibility of deleterious materials being included with deliveries of shingle loads. Operating procedures that minimize the incorporation of deleterious materials into the final product are presented below.

Asbestos may be present in very old shingles, mastic, or roofing felt, et al. There is a low probability of asbestos being included with shingle loads. Asbestos is a hazardous material and is regulated under the EPA NESHAP Subpart M (40 CFR 61 Subpart M) and state and local regulations. The operating procedures for asbestos exclusion below are designed to eliminate ACM from GreenCycle's processes.

A. MANAGEMENT OF DELETERIOUS MATERIALS

Shingles that are suitable for processing will be free of deleterious materials to the extent practicable. Examples of deleterious materials include wood, metal flashing, gutters, plastic wrap, buckets, paper waste or other garbage, trash or dirt.

GreenCycle anticipates that the primary source for shingles will be landfills and construction/demolition materials recycling facilities. Shingles from these sources will be "source sorted" to remove deleterious materials. A secondary source of shingles may be from roofing or hauling contractors. Shingles from these sources will be sorted onsite and the deleterious material will be removed from the load and disposed of in a landfill that is permitted to accept the materials.

Regardless of the source of the shingles, qualified GreenCycle personnel will inspect each incoming load. Source sorted loads will be stockpiled according to the procedure described below for asbestos testing.

1. Each load of shingles will be dumped in a discrete pile.
2. Each load will be inspected by qualified personnel at time of dumping for deleterious materials and ACM.
    i. Qualified personnel may inspect incoming loads, but only a North Carolina accredited inspector may collect samples.

3. Acceptable loads that are source sorted shall contain only incidental deleterious material or they will be rejected.
4. Loads from construction activities must be sorted to obtain only incidental deleterious material and the waste properly disposed.

B. MANAGEMENT OF POTENTIALLY ASBESTOS CONTAINING MATERIAL

It is GreenCycle's intention to completely exclude ACM from entering the process flow. Therefore, only tear-off shingles from facilities at which NESHAP does not apply will be accepted. The supplier will be required to provide assurance that each load was generated at a non-regulated facility or provide pre-renovation ACM test results (Appendix). Alternatively, shingles may be obtained from solid waste facilities that are permitted to handle ACM materials and have their own procedures in place for screening for ACM. It is GreenCycle's intention to only accept post-consumer tear-off asphalt roofing shingles that originated at a residential site and that contain less than 1% ACM. GreenCycle will use qualified asbestos personnel to implement the procedures described below. Accredited labs will be used to test samples using approved methods.

All incoming loads will be inspected by qualified personnel. All loads will be sampled by a North Carolina accredited asbestos inspector unless documentation is supplied that verifies previous inspection (Appendix C). If loads of post-consumer asphalt roofing shingles enter the facility from a non-regulated facility and no asbestos survey is supplied at the time of intake, then the material will tested by a NC accredited asbestos inspector. This includes loads from Solid Waste Landfills, which do not have a process in place to screen asbestos-containing materials.

In the unlikely event that ACM is inadvertently incorporated into the product (i.e., passed through the shingle grinder), then operations would cease, the material will be wetted and contained, and the Health Hazards Control Unit would be contacted for guidance.

1. Incoming loads of shingles will be accepted by qualified asbestos personnel trained to identify potential ACM and deleterious materials.
2. All loads of shingles shall be sampled and tested for ACM as follows:
    a. Each load will be inspected, ticketed, and stockpiled separately in an assigned area. Stockpiles will be marked and placed in the order of arrival.
    b. Representative samples will be collected from each load by a NC accredited asbestos inspector, unless they have been previously certified to contain less than 1% asbestos (Appendix C). The inspector will determine the number of samples to be collected based on color and homogenous material.
    c. Samples will be sent to an accredited laboratory for testing for ACM using the polarized light method (PLM) analysis as the initial diagnostic procedure. The samples will be analyzed in accordance with the current ASTM and EPA sampling protocols and test methods.
    d. Documentation of results will be recorded and maintained on site,
    e. In the event that a sample is found to contain >1% ACM:

i. The shingle pile will be rejected and will be disposed of in a landfill permitted to accept asbestos.
    1. For the Clemmonsville site, rejected materials will be transported to WCA, 5830 Riverdale Rc., Jamestown NC 27282.
    2. For the Durham site, rejected materials will be transported to WCA, 421 Raleigh View Rd., Raleigh NC 27610.

ii. Disposal documentation (North Carolina Asbestos Waste Shipment Record, Appendix) will be recorded and maintained on site.

3. Shingles shall be stored in a defined area to prevent mixing or contamination of the shingle pile prior to testing. Operation of the area shall include:
    a. Access to the storage facility is controlled by a gated entrance and exit.
    b. A sign will be posted at the entrance indicating the name and hours of operation.
    c. Incoming loads will be inspected for unacceptable waste.
    d. Storage and unloading of the shingles will be restricted to an approved designated area.
    e. Storage of the shingles shall be a minimum of 100 feet from surface waters.
4. All recyclable material will be separated and delivered to a recycling facility. All non-recyclable material will be separated and stored in a roll-off container for disposal at a permitted landfill.
5. Sorting of shingles will be accomplished daily or for every 2,500 tons collected.

C. RECORD KEEPING

Record keeping and data collection will be an important aspect of this operation. The following records will, at a minimum, be maintained at each facility.

1. A copy of this operations plan.
2. Test results of the pre-processed shingles
3. Suppliers source certification forms
4. Amount of shingles accepted and rejected and the source from which they originated.
5. Customer sales by name, address, quantity of material sold, date, and product description.
6. Record of daily production of shingle grinder in total tons processed and the number of hours that the grinder was operated. Total daily throughput will be reported as tons per hour.
7. Asbestos Waste Shipment Records

GreenCycle appreciates your attention to this matter. We look forward to your approval of this operating plan. Please feel free to contact me with any questions regarding this request at srobertson@Greencyclematerials.com or (321) 626-9104.

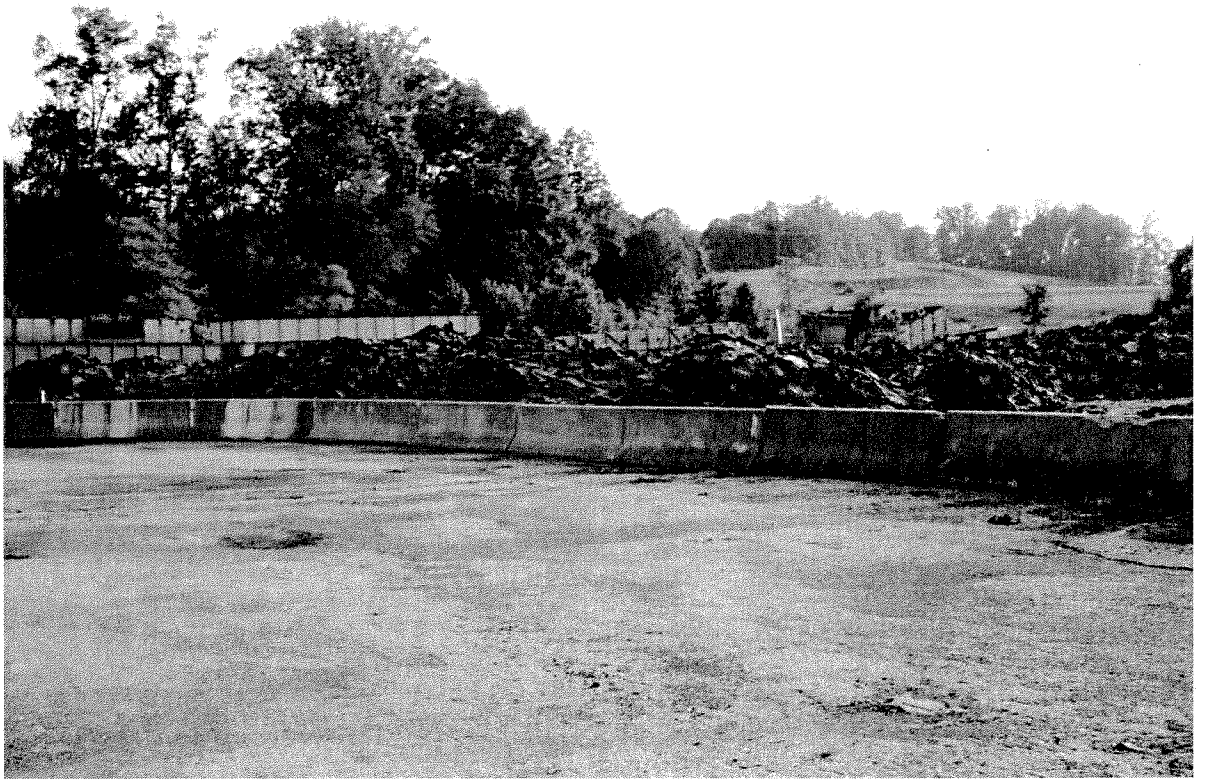
Thank You,

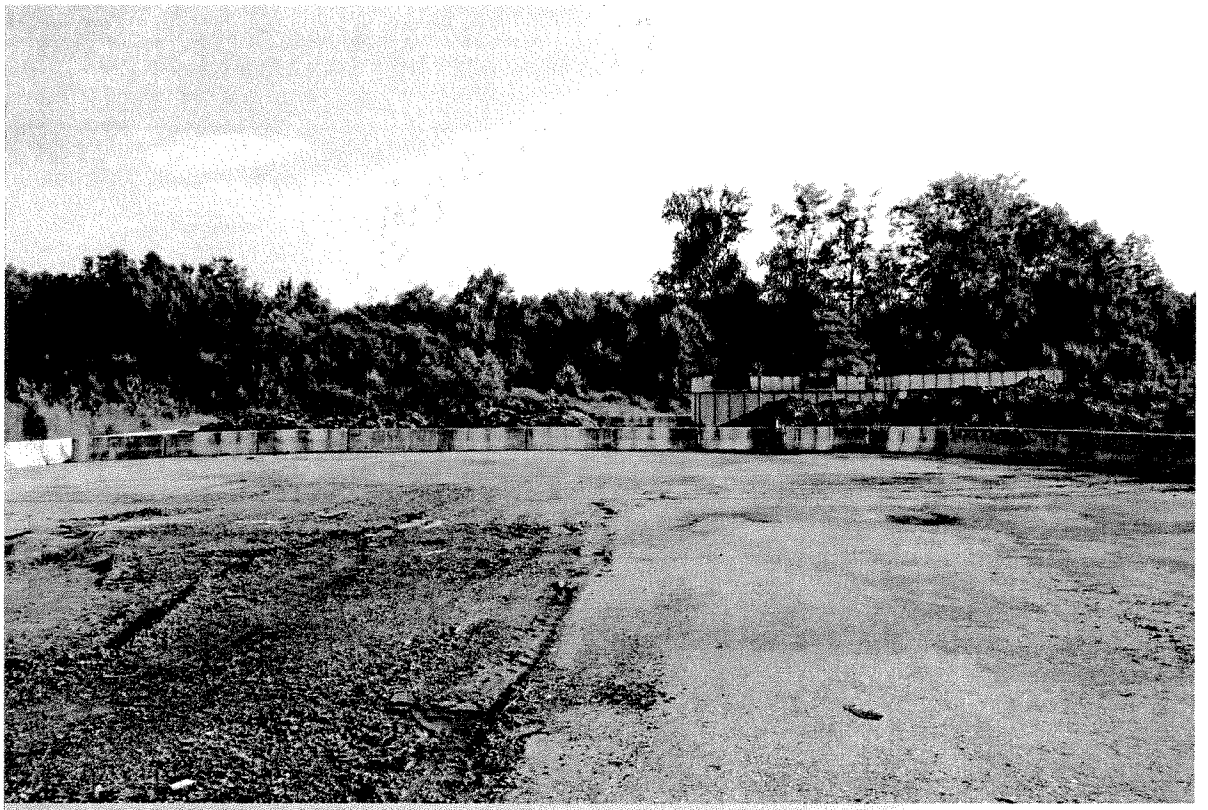
S. Robertson Ph.D.

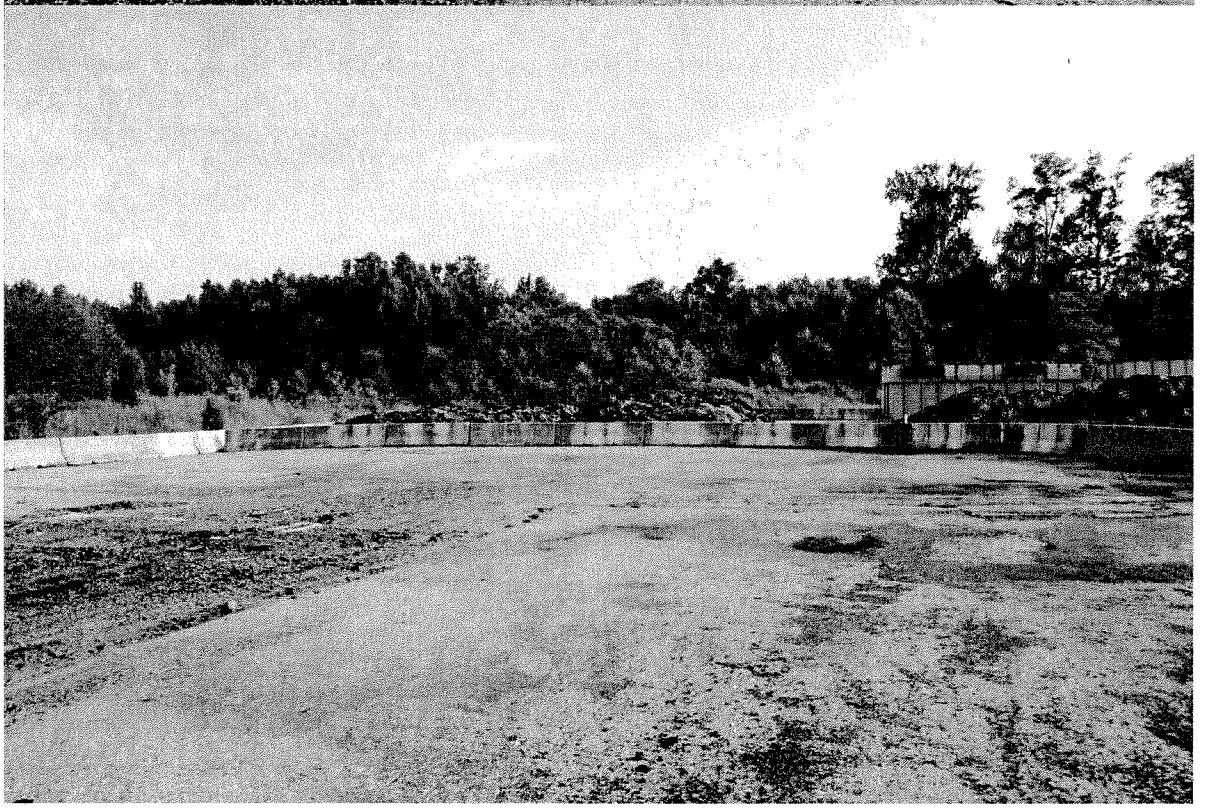
Stirling Robertson, Ph.D.
EHS Director
GreenCycle Materials, LLC

Appendix A

1. Representative Ground-level Photos of the Clemmonsville Site








WCA

Appendix B

1. Expanded View of Durham Site Boundaries

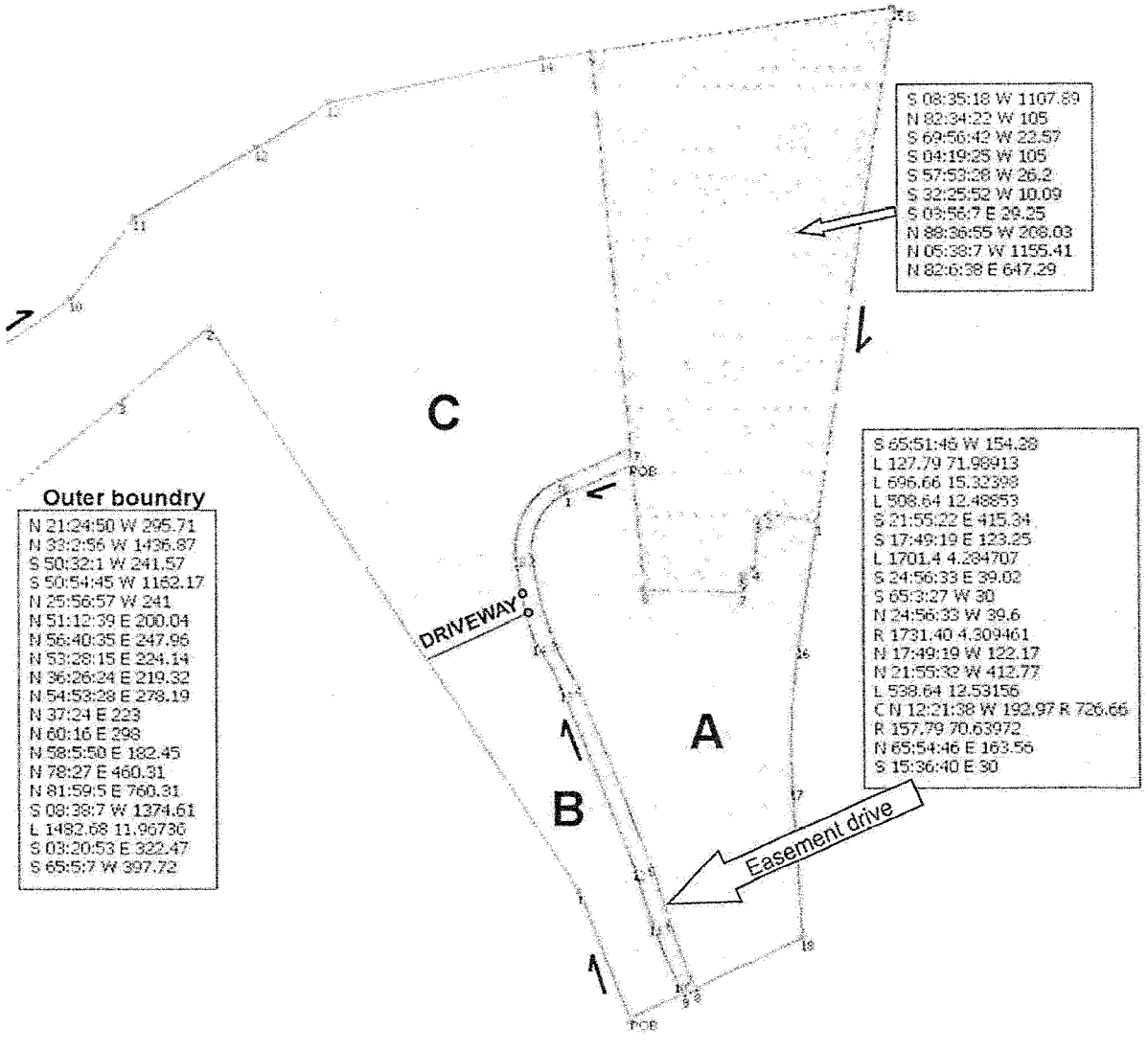


Figure B-1. Expanded View of Durham Facility Boundaries. Reproduced here because boundary coordinates are illegible in Figure 1.

Appendix C

1. Supplier Certification Form
2. North Carolina Asbestos Shipping Record Form
3. List of Acceptable and Unacceptable Materials for Suppliers

Roofing Company or Other Supplier of Whole Tear-Off Shingles

Delivery Company Name:

_____

Address: _____

_____

Contact: _____

Phone: _____

E-mail: _____

We the undersigned, certify that:

1. All tear-off shingle scrap came from residential buildings having four or fewer dwelling units (see addresses below or attached);
2. These residential buildings are not "regulated facilities" according to state and federal NESHAP rules; and
3. The roofing waste material delivered consists of asphalt roofing shingles and normal roofing debris only and contains no known hazardous material (e.g., asbestos).
4. Attach certification from a North Carolina accredited asbestos inspector that certifies that this load contains less than 1% asbestos.

Residential re-roof customer address(es) where the tear-off shingle scrap originated:

_____

_____

(Please attach additional sheets as needed to record each customer address)

Name and address of processor where the shingle scrap was supplied to:

_____

_____

_____

_____ _____

Tear – Off shingles supplier: **Signature** **Date**

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
HEALTH HAZARDS CONTROL UNIT

TYPE OR USE BALLPOINT PEN
PRESS FIRMLY - ALL COPIES
MUST BE LEGIBLE

NORTH CAROLINA ASBESTOS WASTE SHIPMENT RECORD

1. Waste Generator/Owner Name and Address:	Work Site Name and Physical Address:	Waste Generator/Owner Phone Number: ( )
2. Contractor Name and Address:		Contractor Phone Number: ( )
3. Waste Disposal Site (WDS) Name, Mailing Address:	WDS Physical Site Location: NC Landfill Permit #:	WDS Phone Number: ( )

4. Name of Responsible Agency:

[ ] Forsyth Co. Environmental Affairs Dept.
[ ] Mecklenburg Co. Dept. of Environmental Protection
[ ] NC DHHS - Health Hazards Control Unit
[ ] WNC Regional Air Pollution Control Agency

Permit #:_____ NESHAP (ACTS) ID #:_____
Start Date:_____ Complete Date:_____

5. Description of materials:

6. Containers: Number:_____ Type:_____	Volume: _____ _____	RQ, ASBESTOS, CLASS 9 NA 2212, III	7. Total Quantity (yd3/m3):

8. Special Handling Instructions and Additional Information:

EMERGENCY CONTACT: DIVISION OF EMERGENCY MANAGEMENT AT 1-800-858-0368

9. CONTRACTOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Printed/Typed Name & Title:_____

Signature:_____ Date (MM/DD/YY):_____

10. Transporter 1 (Acknowledgment of Receipt of Materials):

Printed/Typed Name & Title:_____

Address:_____ Phone Number:_____

Signature:_____ Date (MM/DD/YY):_____

11. Transporter 2 (Acknowledgment of Receipt of Materials):

Printed/Typed Name & Title:_____

Address:_____ Phone Number:_____

Signature:_____ Date (MM/DD/YY):_____

12. Discrepancy Indication Space:

13. Waste Disposal Site: Owner or Operator Certification of Receipt of Asbestos Materials Covered by this Manifest, Except as Noted in Item #12.

Printed/Typed Name & Title:_____ Total Weight (Tons):_____

Signature:_____ Date (MM/DD/YY):_____

DHHS 3787 (Revised 8/98)
Health Hazards Control Unit

[1 copy- Waste Generator/Owner; 1 copy- Contractor; 1 copy - Transporter; 1 copy -Disposal Site; 1 copy - Health Hazards Control Unit]

Acceptable and Unacceptable Materials from Shingle Suppliers

This facility will not accept any material that contains more than 1% asbestos. Inspections and tests are required for all loads.

"YES"

Include these items:

- Shingles
- Felt attached to shingles

"NO"

Do NOT include these items:

- Asbestos
- Wood
- Metal flashings, gutters, etc
- Nails (best effort)
- Plastic wrap, buckets
- Paper waste
- Other garbage, trash or dirt