From: Marriott, Chris [mailto:Chris.Marriott@durhamnc.gov]
Sent: Tuesday, September 20, 2011 4:20 PM
To: Scott, Michael
Cc: Watkins, Jason; Patrone, John; Shackelford, Dennis
Subject: City of Durham Compost Facility (SWC32-04) stormwater pond repair

Michael,

Please find the attached letter and 4 (four) attachments (A, B, C, and D) to address the tear in the liner of the pond at the City of Durham's Compost Facility.

Please let me know if you have any questions or require any further information.

Thank you,

Chris Marriott
Solid Waste Disposal Manager
City of Durham, Solid Waste Management Dept.
919-560-4186 ext. 32253
919-560-1228-fax

Chris.Marriott@durhamnc.gov

http://www.durhamnc.gov/departments/solid/

DURHAM
1 8 6 9
CITY OF MEDICINE

CITY OF DURHAM
Department of Solid Waste Management
101 CITY HALL PLAZA 27701
1833 CAMDEN AVENUE | DURHAM, NC 27704
919.560.4186 | F 919.560.1197

September 20, 2011

Michael Scott
Section Chief
Solid Waste Section – NCDENR
1646 Mail Service Center
Raleigh, NC 27699-1646

Re: Compost Site Pond Liner Repair
City of Durham Compost Facility (Permit No. SWC32-04)
Durham, North Carolina

Dear Mr. Scott,

The City of Durham is providing the attached information for proposed repair of the liner of the retention pond that has been damaged by suspected animal activity. In an email from Mr. Jason Watkins to Mr. Bruce Woody on May 16, 2011, it was stated that any alternative repair would have to be approved by the Solid Waste Section after recommendation by a Professional Engineer. The City hired a materials testing engineer (Kleinfelder) to research if there is any alternative repair method that would meet the 1 x 10(-7) permeability that standard plastic welding would provide. Attachment A to this letter is a letter from Kleinfelder that recommends the use of Tam Tech Polypropylene adhesive to bond a HDPE patch over the area of compromise in the liner as an alternative repair method. Furthermore, Kleinfelder will complete inspections of the adhesive repairs on a quarterly basis for a period of one year. These quarterly inspections will be more comprehensive to the integrity of the repair than the weekly pond inspections completed by City of Durham staff. If Kleinfleder recognizes any problems with the repairs, they will notify the City, which will intern notify the SWS.

Supplemental reference information on the requested repair material is also included as attachments to this letter. Attachment B is the Tam Tech Adhesive information sheet provided by the manufacturer. Attachment C is the Material Safety Data Sheet (MSDS) for Tam Tech Adhesive. The last attachment (Attachment D) is the instructions for the application gun that will be utilized to apply the Tam Tech Adhesive that will bond the HDPE over the area where the original HDPE liner has been compromised.

The City has kept the water level in the pond well below the elevation of the hole in the pond liner and continue to do so (under normal operating conditions) until repairs are made.

Should you have any questions or require clarification, please contact me at your earliest convenience at (919)-560-4186.

Sincerely,

Chris Marriott, Disposal Manager
CITY OF DURHAM
SOLID WASTE MANAGEMENT

ATTACHMENTS:
A-Letter from Kleinfelder
B-Tam Tech Adhesive Information Sheet
C-Tam Tech Adhesive MSDS
D-Tam Tech Adhesive Dispensing Gun Instructions

CC: Jason Watkins, NCDENR-SWS
Dennis Shackelford, NCDENR-SWS
John Patrone, NCDENR-SWS

KLEINFELDER
Bright People. Right Solutions.

September 8, 2011
File: RAL11LO60

Donna Maskill, PE
Construction Project Manager
City of Durham – General Services Department
2011 Fay Street
Durham, NC 27704

Subject: Durham Yard Waste Pond Liner

Dear Ms. Maskill:

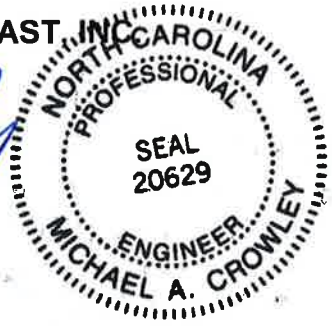
After a thorough investigation into possible solutions for the repair of the yard waste pond liner at 2115 East Club Boulevard, we recommend that the City of Durham use Tam Tech Polypropylene adhesive from Tamarron Technologies, Inc. to apply HDPE patches to the damaged portions of the pond liner. We believe that this will be a suitable repair procedure and as good as or better than standard plastic welding.

As a precautionary measure to ensure that the remedy is viable and that the adhesive remains intact, we are proposing quarterly evaluations of the effectiveness of the repair. Should we notice any problems with the patches or adhesive during our inspections, we will contact you immediately and reevaluate the repair as necessary.

Please let us know if you have any questions or need any additional information.

Sincerely,

KLEINFELDER SOUTHEAST, INC.



Michael Crowley, PE
Senior Project Manager

cc Jonathan Stephenson; Jon Frazier

3500 Gateway Centre Blvd. Suite 200, Morrisville, NC 27560 **p** | 919.755.5011 **f** | 919.755.1414

TAMARRON
TECHNOLOGY INC.

Ph: 800-277-3207 Fax: 888-845-9491
E-mail: info@tamarrontechnology.com
www.tamarrontechnology.com
Springboro, Ohio

Tam Tech Adhesive

(Adhesive For "Hard To Bond" Materials)

Product Description:
Tam Tech Adhesive is one of the top performing adhesives in the industry. It is a very high performance adhesive designed to work with "hard to bond" materials like: HDPE (high density polyethylene), LDPE (low density polyethylene), polypropylene, ABS, nylon, teflon, rubber, TPV, fiberglass and it bonds to concrete, steel and aluminum. It is a modified polymer in a proprietary formulation supplied in a 10-1 ratio with cartridges.

Features & Benefits:

- One of top adhesives in the industry
- Use on "hard to bond" materials
- Bonds polyethylene & polypropylene
- Replaces mechanical fasteners
- Fast and easy to use cartridges

Technical Data:

- **VOC Content: 0 %**

Cured Materials	**Lap Shear Strength (ASTM D1002) lbs/square inch at 75 degrees**	
	24 Hours	**48 Hours**
HDPE TO HDPE	163	860
ABS to ABS	280	685
Polypropylene to Polypropylene	105	760
Nylon to Nylon	226	310
Polycarbonate to Polycarbonate	286	632
Teflon to Teflon	205	212
Styrene to Styrene	184	337
Steel to Steel	335	1256
Aluminum to Aluminum	320	1025
PVC to PVC	203	1260

Tam Tech Adhesive will also bond combinations of the materials listed above in the chart.

TAMARRON
TECHNOLOGY INC.

Instructions:
If material to be bonded is smooth, first rough up surface with 120 grit sandpaper or emery cloth. Clean surface from dirt, grease, sanding particles, etc. Then place cartridge in dispensing gun and twist off cap. Pump the gun until both the black and white material comes out. Wipe the end of the cartridge clean. Then attach static nozzle mixer with a twisting motion. Apply uniform pressure and dispense adhesive until color and consistency is a uniform gray. (3" to 6" of material) Then apply Tam Tech Adhesive to surfaces to be bonded and attach materials within the three minute working time at 74 degrees F (23 degrees C).
Storage: store cartridges on their side in the shade or a cool location.

Packaging:
35 ml (1.18 fl oz) and 825 ml (28 fl oz) cartridges, bulk units available

Curing Time:

	42 Degrees (lbs/sq in)	74 Degrees (lbs/sq in)	95 Degrees (lbs/sq in)
1 Hour	9	10	47
2 Hours	21	24	49
3 Hours	22	42	96
4 Hours	26	44	127
5 Hours	31	49	284
6 Hours	35	58	392
7 Hours	39	67	510
8 Hours	42	74	533
9 Hours	44	93	545
24 Hours	74	287	558
48 Hours	141	562	569

Limitations:
Store product on it's side at less than 85 degrees F. (29 degrees C). Substrate and air temperature should be above 40 degrees F (4 degrees C) during application. Cool weather will slow down cure time and hot weather will accelerate it. Always test a small portion of the Tam Tech Adhesive to insure it is mixed properly and will gain strength before proceeding.

Warning:
Skin contact may cause irritation, redness or rash. Wash thoroughly with soap and water after handling. Use safety glasses and wear protective gloves. Use with adequate ventilation or if ventilation is poor, refer to MSDS for further information. See MSDS for complete information. For industrial use only. Keep out of reach of children.

M A T E R I A L S A F E T Y D A T A S H E E T

ADHESIVE MATERIAL – TAMARRON TECHNOLOGY INC. Page 1
PRODUCT NAME: Tam Tech Adhesive

SECTION I – COMPANY IDENTIFICATION

COMPANY NAME: Tamarron Technology Inc.
ADDRESS : 1660 E. Tamarron Ct.
Springboro, OH 45066

INFORMATION PHONE : 800-277-3207
FAX: 888-845-9491
EMAIL: info@tamarrontechnology.com
WEBSITE: www.tamarrontechnology.com
DATED: 1-25-10

SECTION II – DATA ON COMPONENTS

Ingredients:

Cas #	Chemical Name	Percent
Part A		
Trade Secret	Modified Polymer	70-90%
14808-60-7	Silica	10-30%
Part B		
14808-60-7	Silica	50-70%
Trade Secret	Modified Amine	30-50%

None of the remaining components are not considered a hazard.

VOC Content: 0 %

SECTION III – HEALTH HAZARDS DATA

Route of Entry:	Eyes, Skin, Ingestion, Inhalation
Target Organs:	None known
Inhalation:	May cause irritation to nose and throat.
Skin Contact:	May cause irritation and dermatitis.
Eye Contact:	Vapors during cure may cause eye irritation.
Ingestion:	May cause irritation of the mouth, stomach and sensitization.

HMIS II-ratings (scale 0-4): Health = 2, Fire = 1, Reactivity = 0
HMIS III-ratings (scale 0-4): Health = 2, Fire = 1, Physical Hazard=0
NFPA-ratings (scale 0-4): Health = 2, Fire = 1, Reactivity = 0

OSHA Regulation 29 CFR 1910.1000 Requires the following permissible exposure limits:

Modified Polymer CAS No.: Trade Secret	OSHA/ACGIH (TWA/STEL) Not established
Silica CAS No.: 14808-60-7	OSHA/ACGIH (TWA/STEL) 10 mg/m3 - 0.05 mg/m3
Modified Amine CAS No.: Trade Secret	OSHA/ACGIH (TWA/STEL) Not established

SECTION IV –EMERGENCY AND FIRST AID MEASURES

Inhalation: If overexposure occurs, remove victim to fresh air. If breathing stops, administer artificial respiration. Seek immediate medical attention.

Skin Contact: Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation persists, consult a physician. Launder contaminated clothing before reuse. Extremely contaminated clothing should be discarded. Symptoms may include redness, dermatitis, blistering and severe irritation.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. If necessary, gently hold open eyelids during the flush. Immediately seek medical attention.

Ingestion: If large amounts of material is swallowed, do not induce vomiting. Should vomiting occur, be sure to keep victim's head below hips to avoid aspiration of vomit into the lungs. Immediately consult a physician. Do not attempt to give liquid to an unconscious person.

SECTION V – PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Handling Precautions: For professional use only. Use as directed. Avoid eye/skin contact. Wash after using and before eating or smoking. Avoid breathing vapors. Avoid uncontrolled mixing. Respiratory protection is required when ventilation is inadequate. Refer to NIOSH/OSHA approved respirators if ventilation is inadequate.

Storage Requirements: Store in a cool/dry location. Store away from sparks and open flames. Containers of this material may be hazardous when emptied. Since containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

SECTION VI – FIRE FIGHTING DATA

Flash Point:	>200 deg. F.
Flash Point Method:	Pensky Martins Closed Cup Method
Burning Rate:	No data available
Auto ignition Temperature:	No data available
LEL:	No data available
UEL:	No data available
Flammability Classification:	Combustible Liquid

Special Fire Fighting Procedures: None. Avoid breathing smoke. NFPA Class B - extinguisher (dry chemical or foam) for class 1C fires. Water spray may be ineffective on fire but can protect fire-fighters and cool closed containers. Use fog nozzles if water is used. Use supplied breathing masks. At higher temperature, pressure builds up in sealed containers.

NOTE:

Combustible material can release vapors that form flammable/combustible mixtures at temperatures at or above the flashpoint. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

ACCIDENTAL RELEASE MEASURES

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Contain spill with inert materials (sand, vermiculite, etc.). Sweep or scoop up and put into containers. Keep containers closed with material covered with a water blanket.

M A T E R I A L S A F E T Y D A T A S H E E T

ADHESIVE MATERIAL - TAMARRON TECHNOLOGY INC. Page 4
PRODUCT NAME: Tam Tech Adhesive

SECTION VII – EXPOSURE CONTROL AND PERSONAL PROTECTION

Engineering Controls: The use of local exhaust ventilation is recommended to control process emissions near the source. Provide mechanical ventilation of confined spaces.

Protective Equipment: HMIS PP, B | Goggles, Gloves
RESPIRATORY PROTECTION: If ventilation is inadequate, seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear OSHA/NIOSH approved organic vapor respirator if ventilation is inadequate.

PROTECTIVE CLOTHING/EQUIPMENT: Wear protective rubber gloves to prevent prolonged or repeated skin contact. Wear protective goggles or safety glasses per OSHA eye and face protection regulations (29 CFR 1910.133).

CONTAMINATED EQUIPMENT: Remove contaminated clothes immediately. Launder before reuse.

OTHER PRECAUTIONS: Never eat, drink or smoke in work areas.

SECTION VIII – PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance:	A: White B: Clear		
Physical State:	Paste/Gel	**Boiling Point:**	No data available
Odor:	A : Mild	**Freezing/Melting Pt.:**	Not applicable
pH:	Not applicable	**Solubility:**	Slight
Vapor Pressure:	Not determined		
Spec Grav./Density:	A: 1.063 g/cc B: 0.984 g/cc		
Vapor Density:	Not determined		

Viscosity:	A: 49000 cps B: 25000 cps
Percent Volatile:	A: 6.15% B: 39.86% ASTM D2369@110 C

SECTION IX - REACTIVITY & STABILITY DATA

Stability: Stable
Conditions to avoid: Heat and Flames.
Materials to avoid (incompatability): Strong acids
Hazardous Decomposition products: Carbon Monoxide, Carbon Dioxide and oxides of Nitrogen. Gases may contain toxic vapors and gases particles.
Hazardous Polymerization: Will not occur with normal handling

M A T E R I A L S A F E T Y D A T A S H E E T

ADHESIVE MATERIAL - TAMARRON TECHNOLOGY INC. Page 5
PRODUCT NAME: Tam Tech Adhesive

SECTION X - DISPOSAL CONSIDERATIONS

Consult municipal authorities, landfill personnel, disposal companies prior to any disposal activity. Always follow local, state and federal regulations. Waste must be incinerated.

SECTION XI - TRANSPORT INFORMATION

DOT Hazard Class: Not Hazardous, Not regulated per U.S. DOT, IATA or IMO.

SECTION XII- REGULATORY INFORMATION

This MSDS has been prepared in accordance with federal OSHA Hazard Communication Standard 29
CFR 1910.1200.
This product contains the following components listed as Extremely Hazardous Air Pollutants:
NONE

SARA Section 302:
This product contains the following components listed as Extremely Hazardous Substances:
NONE

SARA Section 313:
This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: NONE

TSCA:
This product or its components are listed in or exempt from the TSCA inventory requirements.

New Jersey:
This product contains the following non-hazardous components subject to disclosure under New Jersey Right-To-Know legislation:
NONE

Pennsylvania:
This product contains the following non-hazardous components subject to disclosure under Pennsylvania Right-To-Know legislation: NONE

California (Proposition 65):
This product contains the following substances known to the State of California to cause cancer: NONE

SECTION XIII - DISCLAIMER

The product information is believed to be accurate as of the date of the Material Safety Data Sheet, and is provided without warranty, expressed or implied, as to the results of use of this information or the product to which it relates. Recipient assumes all responsibility for the use of this information and the use (alone or in combination with any other product), storage or disposal of the product, including any resultant personal injury or property damage.

Tam Tech Adhesive

Instructions For 35 ml Cartridge & Dispensing Gun

1. Twist cap off of cartridge to remove.

2. Unsnap and flip down the black cartridge holder in front of the cartridge dispensing gun.

3. Slide the cartridge into the black frame. Line up the larger plunger on the gun with the larger side of the cartridge. (The cartridge is a 10 to 1 ratio.) Snap back into place.

4. Pump the gun to dispense the Tam Tech Adhesive until both the black and white material comes out. Wipe the end of the cartridge clean.

5. Attach mixing nozzle to cartridge with a twisting motion to lock in place.

6. Pump the gun to dispense the Tam Tech Adhesive until the adhesive is a uniform gray, then start applying the adhesive for bonding. Do not use the adhesive until it is a uniform gray color.

7. To stop, push up on the silver lever under the plunger and pull the plunger all the way back.

8. Then remove the cartridge, remove the mixing nozzle and twist the cap back on.

9. Storage: store cartridges on their side in a cool location or in the shade.