TAMS
AN EARTH TECH COMPANY

INTEROFFICE CORRESPONDENCE

To	Mike Thiagaram/Martin Derby	Location	NJ,Amherst-NY	Date	May 3, 2003
From	Mambu Kawa	Location	NJ	Job No.	61440-2.01
Subject	Richardson Hill Landfill	Reference	Slurry Calculations Review		

I have completed my review of the slurry trench calculations, and consider the design unsafe for the following reasons:

1. A review of the boring logs shows the subsurface soils to be mainly Sand and Silt, i.e. a cohesionless coarse grained and non-plastic fine grained soil combination. Yet in the design Shaw performs their computations using a presumed cohesive strength of 250 psf. While the described soil may actually have some cohesive strength, in principle it is considered to be negligible. The usual practice in design for such soils is to use only the frictional strength, especially when there is no lab test data available to justify otherwise.

2. In the calculations performed by Shaw, the lateral surcharge load (the load due to **A,** see Shaw's calculations) is calculated using the following formula

$$(K_a \times q - 2 \times c \times \sqrt{K_a}) \times (E1 - E3)$$

The factor of safety is equal to

$$FS = \frac{\text{Resisting Force From Slurry Pressure}}{\text{Total Driving Force}}$$

The lateral surcharge load is a component of the Total Driving Force. The addition of the cohesion term $(-2 \times c \times \sqrt{K_a})$ to the lateral surcharge load *reduces* the driving force, thus *increasing* the factor of safety.

A review of the spreadsheet calculations for PSB-23 for example shows the lateral force due to the surcharge to be negative. This results in a reduced Total Driving Force, giving a factor of safety of 1.21. If however the cohesive strength is omitted, the Total Driving Force increases, and the factor of safety drops to 0.88. (See attached calculations).

3. The lateral force computed due to the surcharge is negative. In effect the calculations are saying that the surcharge provides a resisting force not a driving force, in practice an unlikely possibility.

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In redoing the calculations the following points are worth considering:

1. Using the same angle of friction for the entire soil renders the calculations amenable to the use of a spreadsheet. However the values used may be high based on the blow counts for the top 7', of soil. It may be more advisable to break the 30' of soil into layers, and assign representative friction strengths to each layer. If the same frictional strength is to be used for the entire 30', then the angle of frictions must be more conservative than the values being used at present.

2. It is my opinion that the cohesive strength should <u>not</u> be used, as stated before. If you decide to use it however, it cannot be applied selectively to only the surcharge lateral pressure term. The cohesive strength is a property of the soil, not the surcharge, and should be applied to all the lateral pressure terms of the soil i.e.

$$K_a \times (\text{vertical soil pressure}) - 2 \times c \times \sqrt{K_a} \text{ instead of } K_a \times (\text{vertical soil pressure})$$

so the force due to **B** for example will become

$$(K_a \times (\gamma 1 \times (E1 - E2)) - 2 \times c \times \sqrt{K_a}) \times (E1 - E2)/2 \text{ instead of } (K_a \times (\gamma 1)) \times (E1 - E2) \times (E1 - E2)/2$$

The current use of the cohesion in the equations in the spreadsheet is therefore incorrect.

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via e-mail, facsimile, and mail

May 2, 2003

Joseph Bianchi
Supervisor, Safety and Environmental Affairs
Amphenol Corporation
40-60 Delaware Avenue
Sidney, NY 13838-1395

RE: **Richardson Hill Road Landfill Site**
Remedial Action Work Plan (RAWP) - Earthwork- Stage 2 Task Comments and Comments to Site Operation Plan for Groundwater Extraction Trench Construction

Dear Mr. Bianchi:

The US Environmental Protection Agency (EPA), TAMS (EPA's oversight contractor), New York State Department of Environmental Conservation, New York City Department of Environmental Protection(NYC DEP), and New York State Office of Attorney General have reviewed the sections pertaining to the **Stage 2** of the *Remedial Action Work Plan for Construction of Earthwork at the Richardson Hill Road Landfill* prepared by Parsons and Shaw on behalf of the Respondents (Honeywell and Amphenol Corp.), submitted March 18, 2003. We have also reviewed the *Site Operation Plan for Groundwater Extraction Trench Construction* (SOP GETC), submitted on April 14, 2003 by Shaw via email.

On April 7, 2003, the Respondents were given conditional approval to mobilize and to proceed with Stage 1 tasks. The Respondents construction contractor Shaw mobilized to site on April 8, 2003 and are currently into their fourth week at site with Stage 1 work. The respondents were directed not to proceed with Stage 2 activities until agency comments have been submitted and concerns addressed to EPA's satisfaction.

The comments to Stage 2 portion of the RAWP are enclosed. First, please address the comments in a response letter to EPA and the above listed agencies within seven consecutive days from receipt of this letter. Once EPA reviews and approves of the responses, the RAWP for Earthwork should be revised accordingly and submitted to the agencies within two weeks from EPA approval. Also, enclosed are the comments to the Site Operation Plan for Groundwater Extraction Trench Construction.

As noted previously, EPA reserves the right to stop work on Site if the responses are unsatisfactory or the work deviates from the approved portions of the Work Plan and approved Field Change Orders. To expedite review please send e-mail or fax of your responses.

If you have any questions concerning this letter, please call me at (212) 637-4253.

Sincerely,

Young S. Chang
Project Manager

Enclosure

cc: G. Burke, NYSDEC
J. Damrath, NYCDEP
M. Derby, TAMS
A. Belensz, NYSOAG
C. Bethoney, NYSDOH
R. Galloway, Honeywell
S. Waldo, Amphenol
W. Long, Parsons
M. Millias, Parsons
B. Carr, ORC

COMMENTS TO STAGE 2 TASKS OF REMEDIAL ACTION WORK PLAN FOR EARTHWORK CONSTRUCTION AT THE RICHARDSON HILL ROAD LANDFILL SITE (DATED MARCH 2003)

General Comment

G1. Comments to Stage 1 Tasks were provided to the PRPs on April 7, 2003. As a reminder, the following comment was provided in G1 of Stage 1 comment letter. The Construction Contractor's Work Plan was to detail the erosion and sediment control, construction bench for South Pond and the access road construction for Herrick Hollow Creek excavation. This detailed plan must be submitted and approved prior to commencement of work platform work.

G2. The Revised Remedial Action Work Plan for Earthwork *Sections 3.4 Stage 1 Earthwork Tasks - Means and Methods* and *Sections 3.5 Stage 2 Earthwork Tasks - Means and Methods* should cite where within the Final Design Report and Specification the pertinent section information can be found.

G3. The Stage 1 and Stage 2 SOP for Soil Erosion and Sediment Controls which was submitted to EPA on April 30, 2003 must be approved by EPA prior to Respondents commencing with Stage 2 work activities. Refer to Specific Comment 1 below.

G4. As mentioned at the monthly meeting and site walk on 4/23/03 with NYC DEP, per the Blue Book guidelines, hay bale dikes should not be used in a channel or within any other concentrated flow area.

G5. The locations of the decontamination pads and tire scrubbers with specifications and details for decontamination pads and collection of the water generated from on-site steam cleaning of all equipment must be provided.

Specific Comment

1. Page 14, Section 3.4.5: The Erosion and Sediment Control Plan needs to be submitted in a detailed format prior to sediment removal, creek diversion measures, creek sediment removal, and sediment traps/beaver dams removal.

Section 3.5.1.1 Biopolymer Slurry QA/QC

2. Page 17, Section 3.5.1.1, 1st ¶, 1st sentence: State the name of the Shaw QC Inspector.

3. Page 17, Section 3.5.1.1, 2nd ¶, 2nd sentence: The text states trench slurry with excess fines will be pumped out and used for backfill preparation. The term "backfill preparation" is unclear. How will the slurry be removed from the trench due to excess sand content be handled?

   2nd ¶, last sentence: State how the sample will be retrieved from the bottom of the trench.

Section 3.5.1.2 Trench Excavation

4. Pages 17, Section 3.5.1.2, 2nd ¶: How will the surface water infiltration into the biopolymer trench be minimized?

   Where is the "designated areas" where the excavated materials will be placed? The excavated stockpiles should be depicted in the revised drawing submittal. The Specification 02250-11 Part 3.05 E mentions that the runoff from the excavated soil should be managed in accordance with Section 02140 - Dewatering Construction Water Management. **Please submit this section 02140, immediately**, it was never submitted in the RD Appendix K.

   The 4th sentence should read as follows: "...keyed into the bedrock"

5. Pages 17, Section 3.5.1.2, 3nd ¶: State the name of the QA/QC Engineer.

6. Pages 17, Section 3.5.1.2: Submit a Contingency Plan for steps to be implemented in the event of slurry loss or trench collapse prior to excavation of the trench as stated in the Specification 02250 Part 3.05A.

7. Pages 18, Section 3.5.1.2, first bullet The trench depth should be measured at the start of the shift, the end of the shift, and immediately prior to backfill and/or HDPE barrier placement. Soundings should be collected at 10 foot stations (as per the specifications) over the entire active trench area. (It is recommended stations be established prior to construction to ensure reliability.)

8. Pages 18, Section 3.5.1.2, last bullet: What are the appropriate tools and equipment that the QC Inspector will be using to ensure that the trench excavation work is performed within "specified tolerance?"

Section 3.5.1.3 HDPE Vertical Barrier Installation

9. Pages 18, Section 3.5.1.3: If you still plan to deviate from the Design Spec 02250 Part 3.06, then the Field Change Order #1 submitted to EPA needs to be signed by all parties. Parsons was provided with EPA comments regarding Field Change Order #1. The Respondents/representatives need to respond to the comments before EPA can sign the change order.

   The installation of the vertical barrier wall is not adequately addressed in this Work Plan. How and when will the panels be connected? Will several panels be installed at once? Specification 02406, Part 3.04 defines the general installation, but does not go into detail. This section of the Work Plan should detail the actual contractor installation procedure.

10. Page 18, Section 3.5.1.3, 2nd ¶: Storm water penetrations should be shown on the revised Figure 1.2A.

Section 3.5.1.4 Backfill Operation

11. Pages 18, Section 3.5.1.4: Same as above, the Field Change Order #1 which is not approved yet had backfill material change specified.

It may be necessary to install more than one panel prior to backfilling. The angle of repose for the drainage media may run out beyond a single panel width. It is not clear from this paragraph if "backfill" means full depth, or partial depth (to allow one panel at a time progress).

Also, describe the cover material for the 2-foot groundwater extraction trench cap.

Section 3.5.1.5 Delivery System

12. Pages 18, Section 3.5.1.5: What is the specified groundwater elevation mentioned in the first sentence? As noted above, EPA did not sign the Field Change Order #1 as of today.

Section 3.5.2 Satellite Excavation Areas

13. Pages 19, Section 3.5.2: Per email message from Parsons dated 4/24/03 and monthly meeting communication on 4/23/03, the Respondents were granted permission to excavate satellite area L-3 as part of Stage 1 work in order to complete the E&S drainage swale along the south end of the landfill near the southern side of the fence.

    Please note that the material to be placed within the TSCA cell is "**equal to** or greater than 50 ppm but less than 500 ppm..." and "soil contaminated with PCBs **equal to** or greater than 500 ppm will be disposed of off-site..." Please correct.

14. Pages 19, Section 3.5.2, 2nd ¶: Section 4.1.4 of Appendix H (CQAPP) of the Final Design report provides some guidance on the procedures for creating a composite sample. Please provide additional details on compositing procedure (e.g., respect to sample/grab volume is required). ASTM D6051-96 provides guidance on composite sampling.

15. Pages 20, Section 3.5.2, 1st complete ¶: Please verify that the silt curtain to be utilized is suitable for actual water depth at the North Pond edge. Verbally, Parsons has communicated to EPA that due to the closeness of the N1 and N2 excavation areas to the edge of the pond, Shaw was planning to pump water from North Pond to lower its water level. If this is planned, please request for this change in a written form.

    Please state a contingency plan for situation where the surface water from the North Pond enters the N1 and N2 excavations. The Final Design Report (section 3.3.1) briefly discussed the potential options, but this work plan did not specify. If surface water does enter the excavations, then the water should be deemed as contaminated and handled/disposed of appropriately.

Section 3.5.3 South Pond Sediment Excavation and Handling

16. Pages 20, Section 3.5.3: Page 20, first paragraph. Please state the micron-size of the filter sock, and discharge point. Please also state monitoring frequency to ensure sock has not failed.

    What is the contingency plan if contaminated material breeches over the sides of the haul truck, and lands on areas designated as "clean".

    From reading the third sentence of this section, it seems that the excavated sediment from South Pond will need to be staged prior to consolidation in the landfill. If this is correct,

where will it be staged/stockpiled? Will there be three separate staging area for the potential three separate levels of contamination? Will the "fine layer of solidification reagent" be applied on top of the excavated sediment while being staged? Or once loaded on to the off-road dump trailer?

Additionally, haul truck drivers should be outfitted with two-way radios. If contaminated material is observed to be "leaking", the driver needs to be contacted immediately, so that contaminated material is not spread for long distances.

Section 3.5.4 Herrick Hollow Creek Sediment Excavation and Handling

17. Pages 20-21, Section 3.5.4: This section states that the size of each section of the Herrick Hollow Creek that will be worked on depends on a number of factors. Please note per page 3-13, Section 3.6.5 of the *Final 100% Design Report*, **the maximum creek length to be worked on at any one time will be 250 feet.**

    Channel remediation and temporary stabilization of each section must occur before the start of excavation in the next downstream section. This phasing will assure that the entire disturbed areas are not left exposed to scour and all other types of erosion during a storm event. This aspect should be detailed in the Stage 2 E&SC Plan and presented as the sequence of excavation and remediation. Specifics regarding the location and E&SC measures for the staging of stream cobble and topsoil for remediation of each phased section must also be included. This phased approached should also be noted in the drawings submitted with the E&SC Plan.

18. Pages 20, Section 3.5.4, 4th ¶: State the micron-size of the filter sock, and discharge point. Also state monitoring frequency to ensure sock has not failed.

    last sentence: The text should state that turbidity measurements will be taken during all Herrick Hollow Creek excavation activities. If the turbidity exceeds 50 NTUs (above background) at 100 feet downstream of the activity, then the excavation activity will cease until turbidity levels are below acceptable levels.

19. last sentence of Page 20, 1st word of page 21, Section 3.5.4: What does it mean by "area will be completely cleaned before moving downstream." How will be be "cleaned completely?".

    1st full ¶ of page 21: Where within the landfill will the solidification of the excavated sediment occur?

    2nd full ¶ of page 21: The plan or lack of plan in this paragraph is not acceptable. Details for stabilized temporary access roads providing access for the off-road dump trucks and other vehicles between Richardson Hill Road and access to the Herrick Hollow Creek and downstream beaver ponds must be submitted to and approved by EPA prior commencement of Stage 2 work. Provision for restoring the access roads after construction completion should also be included.

    Provide details for stabilized construction access routes. Water bars should be installed in the assess routes where rutting from machinery may direct concentrated run-off toward

Herrick Hollow Creek. Please see the "Blue Book" for the acceptable standard regarding both measures. All access routes should be returned to original grade and stabilized and appropriated planted/seeded before demobilization or sooner if no longer in use.

Section 3.5.6 Final Landfill and TSCA Cell Capping

20. Pages 21, Section 3.5.6: Daily inspections of the liner should be performed. If rips or punctures are noted during inspections, then repairs are to be made immediately. All repairs shall be documented, and repair information shall be submitted to the EPA or its representative. This should be stated in the text.

Section 3.5.7 Restoration

21. Pages 21-22, Section 3.5.7: As noted in the general comment above, appropriate sections of the Final Design and or Specification should be cited in the RAWP subsections. For this section add "...as stated in Appendix E of the Final Design document."

    This section mentions that rock cross vanes will be constructed as shown on the drawings. Per NYC DEP review, they have noted that the drawing is incorrect and it shows the structure backward. Flow should occur in the opposite direction as shown. Please refer to the specifications and details sent by DEP. Corrected details and placement of these structures must be shown on the E&SC Plan.

Section 3.6.2.1 Materials Testing

22. Page 23, Section 3.6.2.1, last sentence: Please add to the text that copies of all testing results shall be provided to the EPA field representative for review.

Comments to Site Operation Plan
for Groundwater Extraction Trench Construction
Richardson Hill Road Landfill
(Shaw dated April 3, 2003, provided to EPA 4/14 via email)

General Comments

G-1. The SOP contains numerous deviations from the technical specification section 02250, Groundwater Extraction Trench of the EPA approved Final Design (July 2002). However, proposed design changes are not supported by backup data/information or design change rationale. Therefore, in order for the EPA to approve of the proposed design changes, detailed information must be submitted along with the appropriate design change rationale. Specific comments on the proposed design changes are noted below.

Some of the changes which are covered in the Field Change Form #1 are acceptable as long as it gets approved and signed by EPA before proceeding with construction. For those which were not covered in the Field Change Form #1, backup information are necessary.

Specific Comments

23. Page 2, Section 2.0, 2nd and 3rd bullet: Soil Erosion and Sediment Control Plan is necessary relating to the construction at Richardson Hill Road Landfill Site. And since Shaw has prepared the draft ESC Plan, that plan should be referenced in this section.

24. Page 3, Section 3.0, 1st ¶ and 3rd bullet: The first sentence of the first paragraph states that the top of the working platform is approximately 5 to 8 feet to the groundwater table. The third bullet states that the working platform must be at least 3 feet above the groundwater level. Will the top of the platform be 3, 5, or 8 feet from the groundwater table? Please clarify.

25. Page 3, Section 4.0, 1st ¶, 6th sentence: The sentence states that the excavated material will be temporary stored in the South Pond. However, the design specifications, section 3.08 (A) of 02250, states that material will be disposed within the landfill limits. If you are planning to store temporarily in the South Pond, this should be conveyed in a Field Change Form with specifics as to how it will be stored, segregated between different levels of contamination, and also separated such that there is no cross-contamination and no contact with water.

26. Page 5, Section 6.0, 3rd ¶, 1st sentence: Where exactly is this source of water which is "from a pond that is located approximately 1.5 miles"? Please provide the water chemistry data. Considering EPA was not given the opportunity to oversee the "pond"(location unknown to EPA) water collection and it was collected by the construction contractor Shaw, EPA may decide to get independent pond water sample analyzed.

As previously stated by EPA in response email (4/15/03) to Parsons email (4/11/03),

Shaw's requests to utilize the water from Herrick Hollow Creek downstream of the Segment 9 location for the biopolymer slurry is unacceptable and therefore denied. Spec. 02250-7 states that the Contractor shall furnish potable water for use in preparing the slurry. Water is also specified to be clean and free from deleterious substances and contaminants. The spec also clearly informs the contractor that the nearest potable water source is approximately 10 miles from site.

Mixing of the biopolymer shall not commence until EPA confirms and approves of the water source.

27. Page 5, Section 6.0, 5th ¶, 1st sentence: The design specification calls for 60 to 61 lbs. of Rantec. The SOP indicates 50 lbs, please provide technical rationale for the use of 50 lbs.

28. Page 5, Section 6.0, 6th ¶, 2nd sentence: Please state the length of approximate time required for hydration.

29. Page 6, Section 6.0: Testing ranges (for pH, viscosity and density) presented on page 6 are not the same as noted in the technical specifications (02250-page 6 and 02250-page 7) for the biopolymer slurry. Please provide a rational for the design changes. Additionally, the SOP does not include a test for "sand content". Please revise the SOP to include the sand test.

30. Page 6, Section 6.0, 5th ¶, 2nd sentence: See comment to Section 3.5.1.1 Biopolymer Slurry QA/QC of the Stage 2 RAWP. The text states that the trench slurry with excess fines will be pumped out and used for backfill preparation. The term "backfill preparation" is unclear.

31. Page 7,Section 6.0, Table 1: See comment #7, above.

32. Page 7, Section 7.0, 3rd ¶: See comment #3, Page 3, Section 4.0, 1st ¶, 6th sentence.

33. Page 8, Section 7.0, last bullet: EPA or its oversight contractor representative may require additional measurements for top of rock confirmation.

34. Page 8, Section 7.0: Refer to Stage 2 RAWP comment to Page 17, Section 3.5.1.2, 2nd ¶. Please state how surface water infiltration into the biopolymer trench will be minimized.

35. Page 9, Section 8.0, 4th ¶: As stated in the comments to the Stage 2 of RAWP, the Field Change Order #1 which was submitted for review had some change in the drainage material from NYSDOT #1 specified in the Final Design Specification to NYSDOT #1A stated in the text of this SOP. EPA provided comments to Parsons regarding this change, however has yet to receive reply and thus the Field Change Order #1 has not been approved by the EPA.

36. Page 10, Section 10.0, 1st ¶: The discharge of the slurry must follow the approved technical specifications. Please include a discussion on how the slurry will be removed and transported to the landfill.

37. Page 10, Section 11.0, 2nd ¶, 5th sentence: Soil from the trench shall **not** be used for the final grade of the trench. Soil excavated from the trench should be assumed to be contaminated. The remaining trench shall be backfilled with a "clean" backfill. Please state the location of backfill source.

38. Page 11, Section 11.0: The removal of the horizontal drain pipe was mentioned in the Field Change Order #1, to which EPA has reviewed and provided comments to Parsons. On April 30, EPA received a single page copy of a email transmittal from Steve Rossello of Parsons to Matt Millias of Parsons, no cover letter was attached. Parsons should respond fully to the email sent by EPA on 4/23/03 regarding the Field Change Order #1.

39. Page 11, Section 11.0, last ¶: Provide the revised forcemain (delivery system) design from the groundwater collection trench to the groundwater treatment plant to Tams/EarthTech.

40. Page 12, Section 13.0, table: As noted previously, the testing parameters do not correspond with those stated in the technical specifications.

41. Page 12, Section 13.0, Dust Control, last sentence on daily watering: Add "...or as required by the EPA field representative."

42. The document contains a slope stability analyses (Appendix B). The text should include a discussion on the parameters and results of the slope stability analysis. Attached is the memo from TAM/EarthTech geotechnical engineer regarding the slope stability evaluation. Based on our evaluation of Appendix B and the PSB boring logs, the **slope is unsafe (potential to collapse, FS<1)**. [attachment: *c:\ychang\cnyrs\richard\richardson hill slurry trench review comments.doc*]

Urban Safety Bulletin - Draft

We, as Spill Responders and Facility Inspectors, are required to respond to all areas of the state as part of the obligations to our work. This includes economically depressed areas, and locations of high crime activity due to drug availability, etc. You should be aware of the "High-Crime" areas in your Region and should be alert to when you enter such areas. With skill and careful thought, you should be able to conduct your job without compromising your mission to respond to spill emergencies and to check bulk storage facilities for their integrity

The following list is a summary of the attached guidance for safety in urban environments:

- **Buddy System** -When responding to spills in **unsafe sectors of** urban areas, be sure you are not the only public official on site prior to your arrival.
- **Communications** - Always have communications equipment close at hand in the event of an emergency. Keep emergency numbers handy.
- **Driving** - Drive defensively at all times. Be aware of unsafe or unusual vehicle movements. *Always* **P**lan an escape route**, if you feel you are in a bad area.**. **As comfort allows, k**eep your windows up and your doors locked. Always lock your doors when you leave the vehicle, and keep a spare key on your person. Try to avoid parking in *dead end streets* **isolated locations**.
- **Money** - Never show your wallet or money in public. Keep valuables hidden in the vehicle. Plan ahead for when you will need to get money.
- **Assault** - **In unsafe neighborhoods, b**eware objects being thrown from buildings. Walk near parked cars rather than close to buildings. Keep objects you are carrying close to your body and securely gripped under your arm. Only place objects in a secure zone all parties recognize. Be wary of *people* **strangers** who approach you.
- **Site Safety** - Be especially cautious in condemned buildings, warehouses, and confined areas, as they are prone to decay and hazards. Watch out for hypodermic needles on the floor. Ensure proper lighting on site. Ask for police or fire assistance where you feel there is an unusual hazard. Be alert for dogs. Try to find a guide who knows an area. Be cautious for utilities *in walls(? - not mentioned in text)* and underground. They are frequently incorrectly marked.
- **Coalitions** - Shake-down artists have been known to show up at spill remediation sites. No remediation effort is worth the health and safety of State employees or contractors. If you feel a situation is getting dangerous, close it down and obtain police or ECO assistance.

Please see the attached to gain a greater understanding of the myriad hazards inherent in an urban environment.

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URBAN SAFETY BULLETIN - GUIDANCE

BUDDY SYSTEM

When responding to spills in such areas, ensure that you will not be the only public official at the site prior to arriving. Typically, other agencies, including the police department, the fire department, local health and environmental agencies, State and local DOT, etc., can all be called to provide an on-scene presence when you are entering such sites. In fact, any or all of these agencies may also be responding, and they may be available to provide you with "safety in numbers". As per OSHA regulations.,[*29 CFR 1910.120 (q)(3)(v)*], you are obligated to have an associate accompany you when going into an emergency response site. Regional Spill Engineers should discuss this matter with their field staff, and come up with a procedure that accommodates this requirement. The span of solutions goes from routine notification to a secondary responder or other person not on the site, to going out in pairs to respond to incidents. These extremes, however, either do not provide practical protection to the individual (and OSHA's 1910.120 definition of a "Buddy System" is a group of workers that are "observed by at least one other employee in the work group"), or are costly due to duplicative response by staff. The use of other agency responders as "buddies" may be the most practical solution. With that in mind, be cognizant of their presence, and their departing from the scene without your knowledge. Ensure that they understand that their presence ensures yours, and their absence may mean that you depart for safety reasons. You should not go alone into an isolated location (basement, cul-de-sac, or other confined space) with a stranger, as you may not know his intentions, or how stable that person will be in dealing with you. Wait for a back-up.

COMMUNICATIONS

Adequate communications gear is imperative when you are out on your own in the field. Make sure that two-way radios and mobile phones operate properly, and be aware of when you are out of range of repeaters or mobile phone towers. Keep emergency numbers (such as those in a vehicle emergency contingency plan) available to assist yourself or those who may need your help. Different Regions have set up agreements with dispatchers from other agencies to cover their off-hours staff. All RSEs should consider having analogous procedures in place, to cover the security of their responders.

SAFE DRIVING

Driving in an urban environment can pose additional health and safety risks. Many drivers in urban areas are unlicenced, and potentially dangerous. Defensive driving is critical. Be aware that most motor vehicle fatalities happen early Sunday mornings between 1 and 5 am. If a person is driving recklessly, pull over and let them pass, or get out of their way.

When driving your vehicle in questionable areas, recognize the fact that people who stop at lights/stop signs with their windows open can become potential crime targets. You could be victimized for everything from a "snatch and run" theft to a car jacking". When comfort allows, keep you window rolled up, your door locked, and valuables (wallets, money, jewelry, cameras,

metering equipment, etc.) out of sight or access. Keep a cars length away from the car in front of you when stopping, to assure that you are not "locked in" to the lane if you are approached for assault. Police agencies recommend that if you feel that you are at risk from an approaching individual at a stop, you should drive away from the scene. Since we are representing a government agency, and are routinely approached by honest citizens who have questions about what we do, we should not over-react every time we are approached. However, if the person approaching your vehicle does not appear friendly, then you may wish to drive away. Be careful of oncoming traffic when doing this, so that you do not "T-bone" someone in the intersection. Use of the light bar, siren, and public address system on the vehicle to attract the attention of those who can help can be a good deterrent, as well.

Other things to be aware of is driving in high summer temperatures. Dehydration and heat exhaustion is inevitable in vehicles where the temperature may break 120 degrees. It is always a good idea to have potable water with you to replace fluids lost through perspiration. Keeping the windows closed and the doors locked for security purposes can be difficult under these non-air conditioned conditions! If squee-gee" people are working a corner in front of you, allow at least one car length of space from the car ahead of you. As they approach your car, slowly move forward to get away from the solicitor.

Carrying an extra car key is a wise idea, as well. Locking one's self out of your own truck , or losing the key while away from it, is humiliating, annoying, and in the wrong neighborhood, dangerous. It costs a buck to make a spare key, and they weigh a half an ounce. Keep it in your wallet or on a separate key chain. Don't secure it to the body of the truck, as thieves know all the places (bumpers, wheel wells, etc.) To check for such items.

Even though it may seem obvious, close windows and lock doors when leaving your vehicle, even for a short duration of time. One vulnerability we have in this area is back windows on the sport/utility and pick-up trucks. We open these windows for access and/or ventilation, and then forget that they are open when we leave the truck. Try to minimize leaving this window open, and make a conscientious effort to remember that it is open so that you close it upon departure from the truck.

Keep your vehicle in good shape. If you break down in a remote area, you can become prey for the criminal "vultures". Don't be afraid to call for assistance when you become disabled; you should seek help from reliable sources, not strangers who may want more than just to help.

VULNERABILITY

Access is a critical part of vulnerability when working in the field. Therefore, minimizing a thief's or mugger's ability to isolate and physically reach you becomes a strategy that field staff should keep in mind when in dangerous situations.

Keep the following ideas in mind:

- Do not show your wallet or money in public. Be discrete when you have to use these

items, so that you don't become an attractive target.

- Be aware of who is around you. You may become so involved with your activities at a site that you fail to notice the three guys watching you from the street corner.

- Another trick we learned from veteran cops is the "dead end mugging". If you park your truck with the back end of it facing the dead end of a street with the tail gate down, you are venerable to being assaulted, and being pushed into and locked up in your own vehicle! This is due to the fact that people cannot see you behind your truck in this isolated location. Amazing as it seems, this type of mugging has actually happened to several people!

In some poor neighborhoods, you may come across a situation where the inhabitants of a building throw their garbage out the windows, to assault those who are strangers. Batteries, bicycle frames, chicken bones, cans, bottles, and used diapers are frequent flyers in these depressed areas. When you are doing your investigations, you want to stay on the sidewalk, but keep a safe distance from the building. Remember, a person may want to drop something on you, but they won't drop it on their neighbor's car. Be particulary careful in alleyways between buildings in late afternoons and evenings. If you see household refuse on the ground, think of how it got there!

Items that are carried can be snatched away. This is particularly true for women's handbags. It has been recommended by knowledgeable sources that the best way to inhibit "grab and run" crimes is to place the shoulder strap of the item diagonally across the body so that the top of the strap is over the shoulder which is across from the area under the other arm where the item would hang. This "anchors" the item, and such placement would discourage any attempt to take it away. Also, as stated before, be aware of those around you and determine if anyone is sizing you up for a "hit". Be careful with cameras, meters, sonic tapes, binoculars, etc.

When working on sites, items such as meters, cameras, sampling gear, etc. are typically laid out for use. Try to place such items in a "secure zone", i.e. an area where the public has minimal access. Cordoned off areas, areas where there is the continual presence of reliable persons, niches that are blocked off from public access, etc, are all examples of such "zones". Keep track of what you pull out of your truck, so that you get it all back by the end the event, and it is not taken by someone "by mistake". Try to minimize what you have out at any particular time.

Many economically depressed locations may have drug addicted street people in the neighborhood. These people may make money by prostitution and muggings, and commonly use intravenous drugs. There are several health and safety concerns in being in this environment. Be wary of where you walk, and look out for used hypodermic needles. Getting stuck in by one of these can be disastrous. Expect aggressive panhandling, which could evolve into a mugging. Be conscious of the presence of such individuals, and avoid confrontations, where possible.

SITE SAFETY

Look for the" Do Not Enter" signs. Buildings are condemned for safety reasons, so look for

postings or, in some cases, a 3' x 3' box with an "x" inside to denote a condemned property. Often, these properties are spill locations, and a cleanup requires access to the interior of the building. You should be notified by the governing agencies of all the risks at that site before you or your contractors proceed with the cleanup.

Be aware of lighting, or the lack thereof. Dark places foster criminal activities, and bright areas tend to inhibit it. Try to stay where the lights are in the area. Also, lighting helps safety in general, because vision is an important element in insuring against tripping, falling, hitting against something, stepping in haz. materials, etc. Don't forget that flashlight, either!

Pit Bulls and trained attack dogs are often present in side yards and backyards of economically challenged residential areas. Frequently, these dogs are not chained up, and will wait quietly for you to stumble into their presence. It is always a good idea to have an escort who has knowledge of the property. If no one can assist you, then it is a good idea to look for tell-tale signs such as bowls, dog toys, etc. Many abandoned buildings are used for dog fighting, so be very wary if you need to investigate these locations.

Old piers and other supported structures can pose a safety risk. You should think twice about walking on such structures (particularly at night, where you can't see any holes, weakened boards, etc.) But if you do, remember the following procedure. Walk on top of the horizontal support beams instead of on the edge or center of the walkway. The "stringer beams" are typically stronger than the top boards, and would provide better support. Always consider the risks when working on elevated structures that are dilapidated!

Accurate utility mark outs are the law [N.Y. State Industrial Code Rule 53], but seldom the norm. At many sites where you are conducting subsurface investigations, drilling and excavation equipment is used. Frequently, even though mark outs are provided, there are unmarked utilities, tunnels, transit systems, tanks, piping, cable, and unknowns that at best may ruin your day, and at worst, injure yourself or others. Extreme caution must always be exercised when excavating or drilling in the urban environment.

CONTRACTOR EXTORTION

A recent shake-down phenomenon in urban areas is groups nicknamed "coalitions". These consist of laborers who approach working contractors (including the ones doing State directed or funded petroleum clean-ups) and demand immediate employment on the site. Failure to comply can result in vandalism or assault against the reluctant contractor. These groups are nothing more than extortionists. The presence of State employees on such sites has had mixed results; sometime the groups back off from their strong-arm tactics, sometimes they don't. Many contractors are fearful of bringing the police into the matter, as it is perceived that this may make a bad situation worse. We as State representatives have no direct control over such groups, but we should ensure that everyone understands the following:

- There is NO remedial activity that is worth the safety and well being of either State employees or their contractors. Therefore, close down work if things get rough, and

call for help.

- If the need arises, we have the ability to get both police and ECOs out to a site FAST to secure the site and to allow us to work without fear.

In urban areas, with many construction activities occurring, many of these groups move on to other targets. Some contractors have even provided a "peace offering" of a case of cognac to negate such threats!

via e-mail, facsimile, and mail

May 2, 2003

Joseph Bianchi
Supervisor, Safety and Environmental Affairs
Amphenol Corporation
40-60 Delaware Avenue
Sidney, NY 13838-1395

RE: **Richardson Hill Road Landfill Site**
Remedial Action Work Plan (RAWP) - Earthwork- Stage 2 Task Comments and Comments to Site Operation Plan for Groundwater Extraction Trench Construction

Dear Mr. Bianchi:

The US Environmental Protection Agency (EPA), TAMS (EPA's oversight contractor), New York State Department of Environmental Conservation, New York City Department of Environmental Protection(NYC DEP), and New York State Office of Attorney General have reviewed the sections pertaining to the **Stage 2** of the *Remedial Action Work Plan for Construction of Earthwork at the Richardson Hill Road Landfill* prepared by Parsons and Shaw on behalf of the Respondents (Honeywell and Amphenol Corp.), submitted March 18, 2003. We have also reviewed the *Site Operation Plan for Groundwater Extraction Trench Construction* (SOP GETC), submitted on April 14, 2003 by Shaw via email.

On April 7, 2003, the Respondents were given conditional approval to mobilize and to proceed with Stage 1 tasks. The Respondents construction contractor Shaw mobilized to site on April 8, 2003 and are currently into their fourth week at site with Stage 1 work. The respondents were directed not to proceed with Stage 2 activities until agency comments have been submitted and concerns addressed to EPA's satisfaction.

The comments to Stage 2 portion of the RAWP are enclosed. First, please address the comments in a response letter to EPA and the above listed agencies within seven consecutive days from receipt of this letter. Once EPA reviews and approves of the responses, the RAWP for Earthwork should be revised accordingly and submitted to the agencies within two weeks from EPA approval. Also, enclosed are the comments to the Site Operation Plan for Groundwater Extraction Trench Construction.

As noted previously, EPA reserves the right to stop work on Site if the responses are unsatisfactory or the work deviates from the approved portions of the Work Plan and approved Field Change Orders. To expedite review please send e-mail or fax of your responses.

If you have any questions concerning this letter, please call me at (212) 637-4253.

Sincerely,

Young S. Chang
Project Manager

Enclosure

cc: G. Burke, NYSDEC
J. Damrath, NYCDEP
M. Derby, TAMS
A. Belensz, NYSOAG
C. Bethoney, NYSDOH
R. Galloway, Honeywell
S. Waldo, Amphenol
W. Long, Parsons
M. Millias, Parsons
B. Carr, ORC

COMMENTS TO STAGE 2 TASKS OF REMEDIAL ACTION WORK PLAN FOR EARTHWORK CONSTRUCTION AT THE RICHARDSON HILL ROAD LANDFILL SITE (DATED MARCH 2003)

General Comment

G1. Comments to Stage 1 Tasks were provided to the PRPs on April 7, 2003. As a reminder, the following comment was provided in G1 of Stage 1 comment letter. The Construction Contractor's Work Plan was to detail the erosion and sediment control, construction bench for South Pond and the access road construction for Herrick Hollow Creek excavation. This detailed plan must be submitted and approved prior to commencement of work platform work.

G2. The Revised Remedial Action Work Plan for Earthwork *Sections 3.4 Stage 1 Earthwork Tasks - Means and Methods* and *Sections 3.5 Stage 2 Earthwork Tasks - Means and Methods* should cite where within the Final Design Report and Specification the pertinent section information can be found.

G3. The Stage 1 and Stage 2 SOP for Soil Erosion and Sediment Controls which was submitted to EPA on April 30, 2003 must be approved by EPA prior to Respondents commencing with Stage 2 work activities. Refer to Specific Comment 1 below.

G4. As mentioned at the monthly meeting and site walk on 4/23/03 with NYC DEP, per the Blue Book guidelines, hay bale dikes should not be used in a channel or within any other concentrated flow area.

G5. The locations of the decontamination pads and tire scrubbers with specifications and details for decontamination pads and collection of the water generated from on-site steam cleaning of all equipment must be provided.

Specific Comment

1. Page 14, Section 3.4.5: The Erosion and Sediment Control Plan needs to be submitted in a detailed format prior to sediment removal, creek diversion measures, creek sediment removal, and sediment traps/beaver dams removal.

Section 3.5.1.1 Biopolymer Slurry QA/QC

2. Page 17, Section 3.5.1.1, 1st ¶, 1st sentence: State the name of the Shaw QC Inspector.

3. Page 17, Section 3.5.1.1, 2nd ¶, 2nd sentence: The text states trench slurry with excess fines will be pumped out and used for backfill preparation. The term "backfill preparation" is unclear. How will the slurry be removed from the trench due to excess sand content be handled?

   2nd ¶, last sentence: State how the sample will be retrieved from the bottom of the trench.

Section 3.5.1.2 Trench Excavation

4. Pages 17, Section 3.5.1.2, 2nd ¶: How will the surface water infiltration into the biopolymer trench be minimized?

   Where is the "designated areas" where the excavated materials will be placed? The excavated stockpiles should be depicted in the revised drawing submittal. The Specification 02250-11 Part 3.05 E mentions that the runoff from the excavated soil should be managed in accordance with Section 02140 - Dewatering Construction Water Management. **Please submit this section 02140, immediately**, it was never submitted in the RD Appendix K.

   The 4th sentence should read as follows: "...keyed into the bedrock"

5. Pages 17, Section 3.5.1.2, 3nd ¶: State the name of the QA/QC Engineer.

6. Pages 17, Section 3.5.1.2: Submit a Contingency Plan for steps to be implemented in the event of slurry loss or trench collapse prior to excavation of the trench as stated in the Specification 02250 Part 3.05A.

7. Pages 18, Section 3.5.1.2, first bullet The trench depth should be measured at the start of the shift, the end of the shift, and immediately prior to backfill and/or HDPE barrier placement. Soundings should be collected at 10 foot stations (as per the specifications) over the entire active trench area. (It is recommended stations be established prior to construction to ensure reliability.)

8. Pages 18, Section 3.5.1.2, last bullet: What are the appropriate tools and equipment that the QC Inspector will be using to ensure that the trench excavation work is performed within "specified tolerance?"

Section 3.5.1.3 HDPE Vertical Barrier Installation

9. Pages 18, Section 3.5.1.3: If you still plan to deviate from the Design Spec 02250 Part 3.06, then the Field Change Order #1 submitted to EPA needs to be signed by all parties. Parsons was provided with EPA comments regarding Field Change Order #1. The Respondents/representatives need to respond to the comments before EPA can sign the change order.

   The installation of the vertical barrier wall is not adequately addressed in this Work Plan. How and when will the panels be connected? Will several panels be installed at once? Specification 02406, Part 3.04 defines the general installation, but does not go into detail. This section of the Work Plan should detail the actual contractor installation procedure.

10. Page 18, Section 3.5.1.3, 2nd ¶: Storm water penetrations should be shown on the revised Figure 1.2A.

Section 3.5.1.4 Backfill Operation

11. Pages 18, Section 3.5.1.4: Same as above, the Field Change Order #1 which is not approved yet had backfill material change specified.

It may be necessary to install more than one panel prior to backfilling. The angle of repose for the drainage media may run out beyond a single panel width. It is not clear from this paragraph if "backfill" means full depth, or partial depth (to allow one panel at a time progress).

Also, describe the cover material for the 2-foot groundwater extraction trench cap.

Section 3.5.1.5 Delivery System

12. Pages 18, Section 3.5.1.5: What is the specified groundwater elevation mentioned in the first sentence? As noted above, EPA did not sign the Field Change Order #1 as of today.

Section 3.5.2 Satellite Excavation Areas

13. Pages 19, Section 3.5.2: Per email message from Parsons dated 4/24/03 and monthly meeting communication on 4/23/03, the Respondents were granted permission to excavate satellite area L-3 as part of Stage 1 work in order to complete the E&S drainage swale along the south end of the landfill near the southern side of the fence.

    Please note that the material to be placed within the TSCA cell is "**equal to** or greater than 50 ppm but less than 500 ppm..." and "soil contaminated with PCBs **equal to** or greater than 500 ppm will be disposed of off-site..." Please correct.

14. Pages 19, Section 3.5.2, 2nd ¶: Section 4.1.4 of Appendix H (CQAPP) of the Final Design report provides some guidance on the procedures for creating a composite sample. Please provide additional details on compositing procedure (e.g., respect to sample/grab volume is required). ASTM D6051-96 provides guidance on composite sampling.

15. Pages 20, Section 3.5.2, 1st complete ¶: Please verify that the silt curtain to be utilized is suitable for actual water depth at the North Pond edge. Verbally, Parsons has communicated to EPA that due to the closeness of the N1 and N2 excavation areas to the edge of the pond, Shaw was planning to pump water from North Pond to lower its water level. If this is planned, please request for this change in a written form.

    Please state a contingency plan for situation where the surface water from the North Pond enters the N1 and N2 excavations. The Final Design Report (section 3.3.1) briefly discussed the potential options, but this work plan did not specify. If surface water does enter the excavations, then the water should be deemed as contaminated and handled/disposed of appropriately.

Section 3.5.3 South Pond Sediment Excavation and Handling

16. Pages 20, Section 3.5.3: Page 20, first paragraph. Please state the micron-size of the filter sock, and discharge point. Please also state monitoring frequency to ensure sock has not failed.

    What is the contingency plan if contaminated material breeches over the sides of the haul truck, and lands on areas designated as "clean".

    From reading the third sentence of this section, it seems that the excavated sediment from South Pond will need to be staged prior to consolidation in the landfill. If this is correct,

where will it be staged/stockpiled? Will there be three separate staging area for the potential three separate levels of contamination? Will the "fine layer of solidification reagent" be applied on top of the excavated sediment while being staged? Or once loaded on to the off-road dump trailer?

Additionally, haul truck drivers should be outfitted with two-way radios. If contaminated material is observed to be "leaking", the driver needs to be contacted immediately, so that contaminated material is not spread for long distances.

Section 3.5.4 Herrick Hollow Creek Sediment Excavation and Handling

17. Pages 20-21, Section 3.5.4: This section states that the size of each section of the Herrick Hollow Creek that will be worked on depends on a number of factors. Please note per page 3-13, Section 3.6.5 of the *Final 100% Design Report*, **the maximum creek length to be worked on at any one time will be 250 feet.**

    Channel remediation and temporary stabilization of each section must occur before the start of excavation in the next downstream section. This phasing will assure that the entire disturbed areas are not left exposed to scour and all other types of erosion during a storm event. This aspect should be detailed in the Stage 2 E&SC Plan and presented as the sequence of excavation and remediation. Specifics regarding the location and E&SC measures for the staging of stream cobble and topsoil for remediation of each phased section must also be included. This phased approached should also be noted in the drawings submitted with the E&SC Plan.

18. Pages 20, Section 3.5.4, 4th ¶: State the micron-size of the filter sock, and discharge point. Also state monitoring frequency to ensure sock has not failed.

    last sentence: The text should state that turbidity measurements will be taken during all Herrick Hollow Creek excavation activities. If the turbidity exceeds 50 NTUs (above background) at 100 feet downstream of the activity, then the excavation activity will cease until turbidity levels are below acceptable levels.

19. last sentence of Page 20, 1st word of page 21, Section 3.5.4: What does it mean by "area will be completely cleaned before moving downstream." How will be be "cleaned completely?".

    1st full ¶ of page 21: Where within the landfill will the solidification of the excavated sediment occur?

    2nd full ¶ of page 21: The plan or lack of plan in this paragraph is not acceptable. Details for stabilized temporary access roads providing access for the off-road dump trucks and other vehicles between Richardson Hill Road and access to the Herrick Hollow Creek and downstream beaver ponds must be submitted to and approved by EPA prior commencement of Stage 2 work. Provision for restoring the access roads after construction completion should also be included.

    Provide details for stabilized construction access routes. Water bars should be installed in the assess routes where rutting from machinery may direct concentrated run-off toward

Herrick Hollow Creek. Please see the "Blue Book" for the acceptable standard regarding both measures. All access routes should be returned to original grade and stabilized and appropriated planted/seeded before demobilization or sooner if no longer in use.

Section 3.5.6 Final Landfill and TSCA Cell Capping

20. Pages 21, Section 3.5.6: Daily inspections of the liner should be performed. If rips or punctures are noted during inspections, then repairs are to be made immediately. All repairs shall be documented, and repair information shall be submitted to the EPA or its representative. This should be stated in the text.

Section 3.5.7 Restoration

21. Pages 21-22, Section 3.5.7: As noted in the general comment above, appropriate sections of the Final Design and or Specification should be cited in the RAWP subsections. For this section add "...as stated in Appendix E of the Final Design document."

    This section mentions that rock cross vanes will be constructed as shown on the drawings. Per NYC DEP review, they have noted that the drawing is incorrect and it shows the structure backward. Flow should occur in the opposite direction as shown. Please refer to the specifications and details sent by DEP. Corrected details and placement of these structures must be shown on the E&SC Plan.

Section 3.6.2.1 Materials Testing

22. Page 23, Section 3.6.2.1, last sentence: Please add to the text that copies of all testing results shall be provided to the EPA field representative for review.

Comments to Site Operation Plan
for Groundwater Extraction Trench Construction
Richardson Hill Road Landfill
(Shaw dated April 3, 2003, provided to EPA 4/14 via email)

General Comments

G-1. The SOP contains numerous deviations from the technical specification section 02250, Groundwater Extraction Trench of the EPA approved Final Design (July 2002). However, proposed design changes are not supported by backup data/information or design change rationale. Therefore, in order for the EPA to approve of the proposed design changes, detailed information must be submitted along with the appropriate design change rationale. Specific comments on the proposed design changes are noted below.

Some of the changes which are covered in the Field Change Form #1 are acceptable as long as it gets approved and signed by EPA before proceeding with construction. For those which were not covered in the Field Change Form #1, backup information are necessary.

Specific Comments

23. Page 2, Section 2.0, 2nd and 3rd bullet: Soil Erosion and Sediment Control Plan is necessary relating to the construction at Richardson Hill Road Landfill Site. And since Shaw has prepared the draft ESC Plan, that plan should be referenced in this section.

24. Page 3, Section 3.0, 1st ¶ and 3rd bullet: The first sentence of the first paragraph states that the top of the working platform is approximately 5 to 8 feet to the groundwater table. The third bullet states that the working platform must be at least 3 feet above the groundwater level. Will the top of the platform be 3, 5, or 8 feet from the groundwater table? Please clarify.

25. Page 3, Section 4.0, 1st ¶, 6th sentence: The sentence states that the excavated material will be temporary stored in the South Pond. However, the design specifications, section 3.08 (A) of 02250, states that material will be disposed within the landfill limits. If you are planning to store temporarily in the South Pond, this should be conveyed in a Field Change Form with specifics as to how it will be stored, segregated between different levels of contamination, and also separated such that there is no cross-contamination and no contact with water.

26. Page 5, Section 6.0, 3rd ¶, 1st sentence: Where exactly is this source of water which is "from a pond that is located approximately 1.5 miles"? Please provide the water chemistry data. Considering EPA was not given the opportunity to oversee the "pond"(location unknown to EPA) water collection and it was collected by the construction contractor Shaw, EPA may decide to get independent pond water sample analyzed.

As previously stated by EPA in response email (4/15/03) to Parsons email (4/11/03),

Shaw's requests to utilize the water from Herrick Hollow Creek downstream of the Segment 9 location for the biopolymer slurry is unacceptable and therefore denied. Spec. 02250-7 states that the Contractor shall furnish potable water for use in preparing the slurry. Water is also specified to be clean and free from deleterious substances and contaminants. The spec also clearly informs the contractor that the nearest potable water source is approximately 10 miles from site.

Mixing of the biopolymer shall not commence until EPA confirms and approves of the water source.

27. Page 5, Section 6.0, 5th ¶, 1st sentence: The design specification calls for 60 to 61 lbs. of Rantec. The SOP indicates 50 lbs, please provide technical rationale for the use of 50 lbs.

28. Page 5, Section 6.0, 6th ¶, 2nd sentence: Please state the length of approximate time required for hydration.

29. Page 6, Section 6.0: Testing ranges (for pH, viscosity and density) presented on page 6 are not the same as noted in the technical specifications (02250-page 6 and 02250-page 7) for the biopolymer slurry. Please provide a rational for the design changes. Additionally, the SOP does not include a test for "sand content". Please revise the SOP to include the sand test.

30. Page 6, Section 6.0, 5th ¶, 2nd sentence: See comment to Section 3.5.1.1 Biopolymer Slurry QA/QC of the Stage 2 RAWP. The text states that the trench slurry with excess fines will be pumped out and used for backfill preparation. The term "backfill preparation" is unclear.

31. Page 7,Section 6.0, Table 1: See comment #7, above.

32. Page 7, Section 7.0, 3rd ¶: See comment #3, Page 3, Section 4.0, 1st ¶, 6th sentence.

33. Page 8, Section 7.0, last bullet: EPA or its oversight contractor representative may require additional measurements for top of rock confirmation.

34. Page 8, Section 7.0: Refer to Stage 2 RAWP comment to Page 17, Section 3.5.1.2, 2nd ¶. Please state how surface water infiltration into the biopolymer trench will be minimized.

35. Page 9, Section 8.0, 4th ¶: As stated in the comments to the Stage 2 of RAWP, the Field Change Order #1 which was submitted for review had some change in the drainage material from NYSDOT #1 specified in the Final Design Specification to NYSDOT #1A stated in the text of this SOP. EPA provided comments to Parsons regarding this change, however has yet to receive reply and thus the Field Change Order #1 has not been approved by the EPA.

36. Page 10, Section 10.0, 1st ¶: The discharge of the slurry must follow the approved technical specifications. Please include a discussion on how the slurry will be removed and transported to the landfill.

37. Page 10, Section 11.0, 2nd ¶, 5th sentence: Soil from the trench shall **not** be used for the final grade of the trench. Soil excavated from the trench should be assumed to be contaminated. The remaining trench shall be backfilled with a "clean" backfill. Please state the location of backfill source.

38. Page 11, Section 11.0: The removal of the horizontal drain pipe was mentioned in the Field Change Order #1, to which EPA has reviewed and provided comments to Parsons. On April 30, EPA received a single page copy of a email transmittal from Steve Rossello of Parsons to Matt Millias of Parsons, no cover letter was attached. Parsons should respond fully to the email sent by EPA on 4/23/03 regarding the Field Change Order #1.

39. Page 11, Section 11.0, last ¶: Provide the revised forcemain (delivery system) design from the groundwater collection trench to the groundwater treatment plant to Tams/EarthTech.

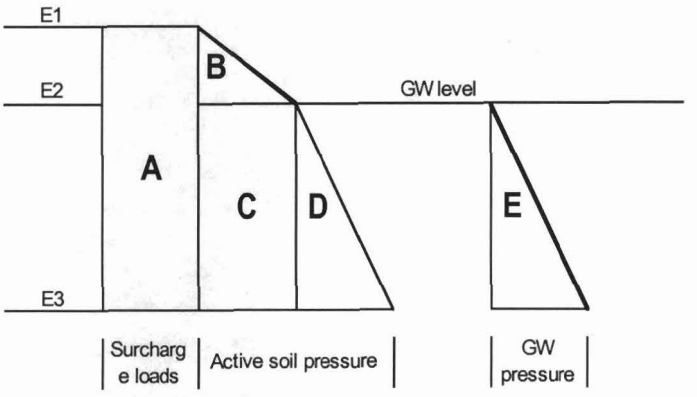
40. Page 12, Section 13.0, table: As noted previously, the testing parameters do not correspond with those stated in the technical specifications.

41. Page 12, Section 13.0, Dust Control, last sentence on daily watering: Add "...or as required by the EPA field representative."

42. The document contains a slope stability analyses (Appendix B). The text should include a discussion on the parameters and results of the slope stability analysis. Attached is the memo from TAM/EarthTech geotechnical engineer regarding the slope stability evaluation. Based on our evaluation of Appendix B and the PSB boring logs, the **slope is unsafe (potential to collapse, FS<1)**. [attachment: *c:\ychang\cnyrs\richard\richardson hill slurry trench review comments.doc*]

Trench stability calculation

Purpose: to determine the slurry trench stability
Method : To determine the factor of safety as the ratio of Resisting force of slurry pressure to the driving force of soil and groundwater pressure driving force
Determine the lateral pressure of soil , groundwater and slurry as follows



Active soil presuure coef. Ka = $Tan^2(45-\phi/2)$
Internal friction angle : ϕ Based on SPT blow count
Cohesion, psf = C Based on Soil classification and SPT blow count
Total unit weight of in-situ soil = $\gamma 1$ pcf
unit weight of in-trench slurry = $\gamma 2$ pcf
unit weight of groundwater = $\gamma 3$ pcf
Surchage Loads = q psf

Driving Load from active soil pressure and groundwater pressure, lb/ft :

A = (Ka*q)*(E1-E3)
Pa1 = (Ka*γ1□(E1-E2)-2C*sqrt(Ka))
B = Pa1*(E1-E2)/2 = ((Ka*γ1□(E1-E2)-2C*sqrt(Ka)) * (E1-E2) /2
C = Pa1*(E2-E3) = (Ka*γ1 * (E1-E2)-2C*sqrt(Ka)) * (E2-E3)
Pa2 = (Ka*(γ1+γ 3)*(E2-E3))
D = Pa2*(E2-E3) = (Ka*(γ1+γ 3)*(E2-E3)) * (E2-E3) /2
E = γ3((E2-E3) ^{2}) /2

Total driving force = F1 = A + B + C + D + E

Resisting load from slurry pressure
assume slurry level = h , feet below working platform
R1 = γ2((E1-h)- E3) ^{2}) /2

Factor of safety = R1 / F1

Working Platform at El. 1755 Honeywell-Richardson Hill Road Landfill 5/8/03

		PSB-23	PSB-3	PSB-25	PSB-4	PSB-5	PSB-27	PSB-6	PSB-7	PSB-28	PSB-8	PSB-29
friction angle, deg		33.5	34.2	30.0	33.3	34.8	36.3	36.1	33.2	33.9	30.4	33.8
Cohesion, psf		250	250	250	250	250	250	250	250	250	250	250
GS		1747	1747.5	1747.5	1747	1759	1761.5	1759.5	1752	1749	1747.5	1748
work platform		**1755**	**1755**	**1755**	**1755**	**1755**	**1755**	**1755**	**1755**	**1755**	**1755**	**1755**
slurry difference =	1	1754	1754	1754	1754	1754	1754	1754	1754	1754	1754	1754
GW level		1748	1747	1747	1746	1747	1748	1748	1748.25	1748.5	1748.75	1749
bottom of trench		1725	1725	1724	1714.5	1726	1732	1732	1728.5	1728	1726	1725
surcharge,psf		300	300	300	300	300	300	300	300	300	300	300
total unit weight (pcf)		120	120	120	120	120	120	120	120	120	120	120
Water unit weight (pcf)		62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4
in-trench unit weight (pcf)		63	63	63	63	63	63	63	63	63	63	63
Output												
Coefficient of active soil pressure		0.28906	0.28034	0.33333	0.29083	0.27331	0.25683	0.25882	0.29205	0.28391	0.32773	0.28510
Active Force	a	2,601.5	2,523.1	3,100.0	3,533.6	2,377.8	1,772.1	1,785.8	2,321.8	2,299.6	2,851.2	2,565.9
	b	(91.0)	17.6	125.3	200.0	3.9	(131.8)	(129.4)	(113.6)	(146.1)	(126.4)	(185.1)
	c	(598.3)	96.6	720.5	1,400.3	20.6	(602.5)	(591.4)	(664.5)	(921.8)	(920.1)	(1,480.8)
	d	4,403.8	3,907.7	5,078.4	8,311.1	3,471.2	1,893.5	1,908.2	3,280.8	3,436.2	4,885.0	4,729.5
	e	16,504.8	15,100.8	16,504.8	30,958.2	13,759.2	7,987.2	7,987.2	12,170.0	13,111.8	16,148.0	17,971.2
total active forve		22,820.8	21,645.8	25,529.0	44,403.3	19,632.7	10,918.5	10,960.4	16,994.5	17,779.7	22,837.7	23,600.7
Slurry pressure resisting force		26,491.5	26,491.5	28,350.0	49,147.9	24,696.0	15,246.0	15,246.0	20,482.9	21,294.0	24,696.0	26,491.5
Factor of safety		**1.16**	**1.22**	**1.11**	**1.11**	**1.26**	**1.40**	**1.39**	**1.21**	**1.20**	**1.08**	**1.12**
		Minimum FS = 1.08										
Trench depth, feet		30.0	30.0	31.0	40.5	29.0	23.0	23.0	26.5	27.0	29.0	30.0
differential head, feet		6.0	7.0	7.0	8.0	7.0	6.0	6.0	5.8	5.5	5.3	5.0
Fill (or Cut) thickness, feet		8.0	7.5	7.5	8.0	(4.0)	(6.5)	(4.5)	3.0	6.0	7.5	7.0

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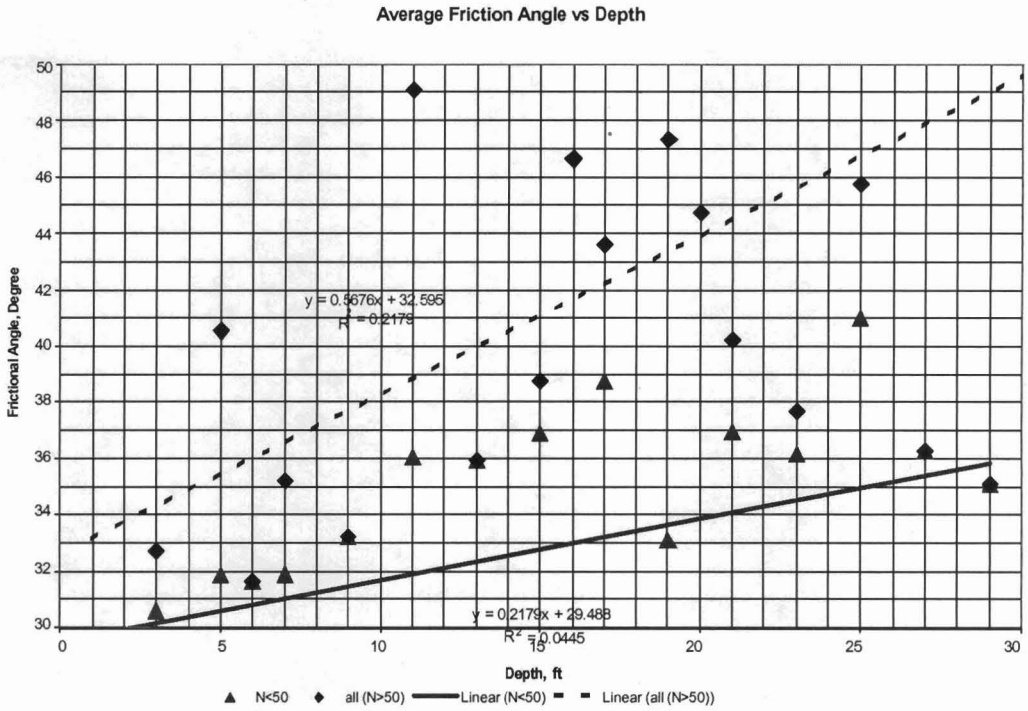

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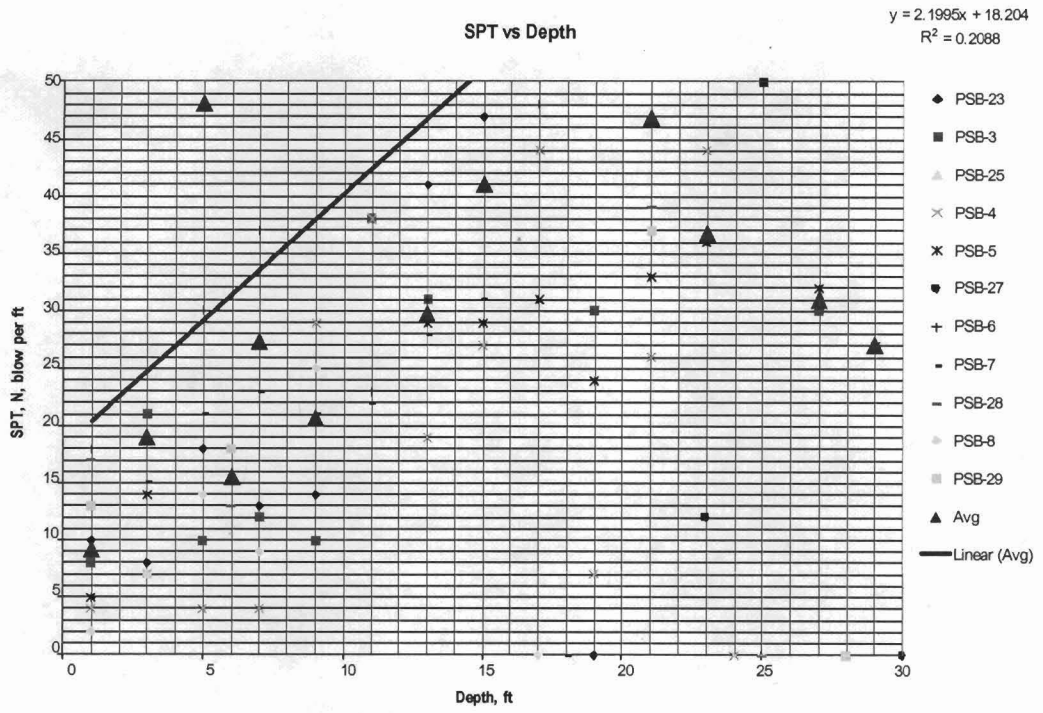

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Summary of SPT blow count vs depth

Depth feet		Standard Penetration Test, N, Blow per feet															friction angle deg		
From	To	PSB-23	PSB-3	PSB-25	PSB-4	PSB-5	PSB-27	PSB-6	PSB-7	PSB-28	PSB-8	PSB-29	Min	Max	Avg	Min	Max	Avg
ground surface elevation		1753	1753.1	1753	1754.5	1762	1762	1759	1756	1754	1753	1753						
0	1	10	8		4	5		18	5	17	2	13	2	18	9	28	32	30
1	2																	
2		3	8	21		7	14		61	15		7		7	61	19	29	44
3	4																	
4		5	18	10		4	240		80	21		14		4	240	48	28	89
5	6									13		18	13	18	16	31	32	32
6	7	13	12		4	93		37	23		9		4	93	27	28	52	35
7	8																	
8		9	14	10		29			25	21		25		10	29	21	30	36
9	10																	
10	11	81	38		38	240		23	22	72	77	150	22	240	82	34	89	49
11	12																	
12	13	41	31		19	29		31	28				19	41	30	33	39	36
13	14																	
14	15	47	60		27	29		52	31				27	60	41	35	44	39
15	16									69		76	69	76	73	46	48	47
16	17	61	74		44	31		48	105	AR			31	105	61	36	55	44
17	18								AR									
18	19	AR	30		7	24		240					7	240	75	29	89	47
19	20			65									65	65	65	45	45	45
20	21		56		26	33	90			39		37	26	90	47	35	51	40
21	22																	
22	23		55		44	36	12						12	55	37	31	42	38
23	24				AR													
24	25		50	86		90	50	AR		BR			50	90	69	41	51	46
25	26											240	240	240	240	89	89	89
26	27		30			32							30	32	31	36	37	36
27	28	AR	BR									BR						
28	29					27							27	27	27	35	35	35
29	30						BR											
30	31					70							70	70	70	46	46	46
31	32																	
32	33					56							56	56	56	43	43	43
33	34																	
34	35					120							120	120	120	59	59	59
35	36					AR												
	Minimum	8	8	65	4	5	12	18	5	13	2	13	2					
N-value	Maximum	81	74	86	44	240	90	240	105	72	77	240		240				
	Average	33	35	76	21	69	51	57	30	42	22	89			45			
	Minimum	28	28	45	28	28	31	32	28	31	28	31	28					
Internal friction angle,deg	Maximum	49	47	50	40	89	51	89	55	47	48	89		89				
	Average	37	37	47	33	46	41	43	36	39	34	51			40			

Note : Rock refusal = Auger refusal (AR), and Boring refusal (BR) has blow count of 50 and over 50.

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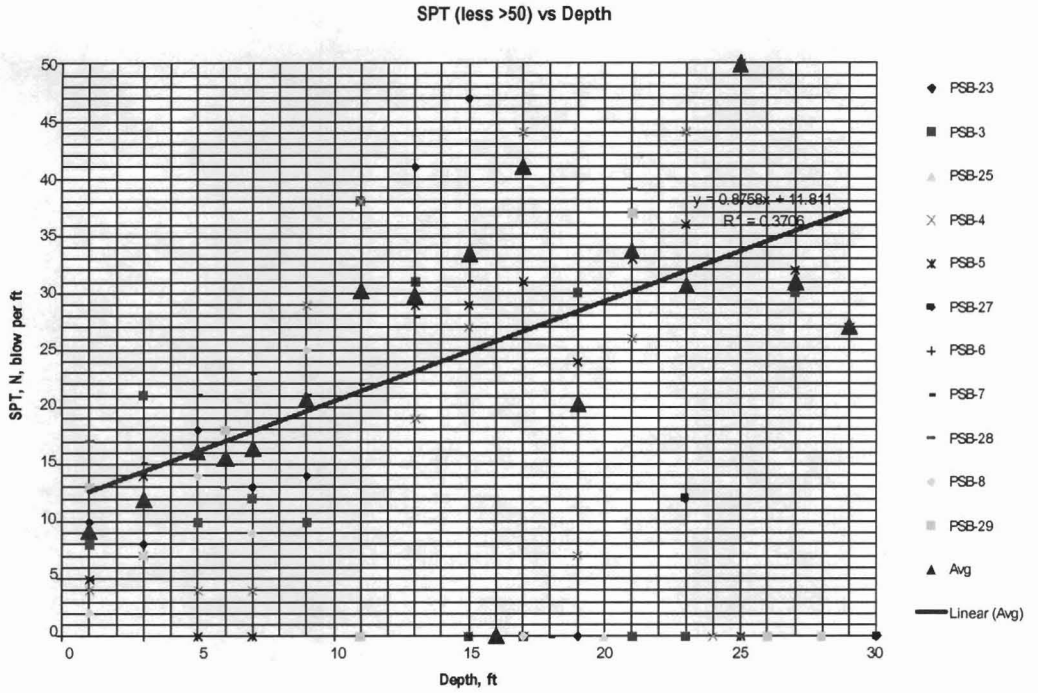

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Summary of SPT blow count vs depth

	Depth From	Depth To	Standard Penetration Test, N, Blow per feet															Friction angle deg					
			PSB-23	PSB-3	PSB-25	PSB-4	PSB-5	PSB-27	PSB-6	PSB-7	PSB-28	PSB-8	PSB-29	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
ground surface elevation			1753	1753.1	1753	1754.5	1762	1762	1759	1756	1754	1753	1753									
	0	1	10	8		4	5		18	5	17	2	13	2	18	9	28	32	30			
	1	2																				
	2		3	8	21		7	14	>50		15		7		7	21	12	29	33	31		
	3	4																				
	4		5	18	10		4 >50			30	21		14		4	30	16	28	36	32		
	5	6										13		18	13	18	16	31	32	32		
	6	7	13	12		4	>50		37	23			9		4	37	16	28	38	32		
	7	8																				
	8		9	14	10		29			25	21		25		10	29	21	30	36	33		
	9	10																				
	10	11	>50	38		38	>50		23	22	>50	>50	>50	22	38	30	34	38	36			
	11	12																				
	12	13	41	31		19	29		31	28				19	41	30	33	39	36			
	13	14																				
	14	15	47	>50		27	29		>50	31				27	47	34	35	40	37			
	15	16											>50									
	16	17	>50	>50		44	31		48	>50		AR		31	48	41	36	41	39			
	17	18								AR												
	18	19	AR	30		7	24		>50					7	30	20	29	36	33			
	19	20			>50																	
	20	21		>50		26	33				39		37	26	39	34	35	38	37			
	21	22																				
	22	23		>50		44	36	12						12	44	31	31	40	36			
	23	24				AR																
	24	25		50	>50		>50	50	AR		BR			50	50	50	41	41	41			
	25	26											>50									
	26	27		30			32							30	32	31	36	37	36			
	27	28		AR	BR								BR									
	28	29					27							27	27	27	35	35	35			
	29	30						BR														
	30	31					>50															
	31	32																				
	32	33					>50															
	33	34																				
	34	35					>50															
	35	36					AR															
N-value	Minimum		8	8	0	4	5	12	18	5	13	2	13	2								
	Maximum		47	50	0	44	36	50	48	31	39	25	37		50							
	Average		22	24	0	21	26	31	30	21	23	11	23			25						
Internal friction angle,deg	Minimum		29	29	30	26	29	31	32	29	31	26	31	26								
	Maximum		40	41	30	40	38	41	41	36	38	35	38		41							
	Average		33	34	30	33	35	36	36	33	34	30	34			34						