

April 18, 2001

Mr. Kenneth Feathers  
Supervising Sanitary Engineer  
Connecticut Department of Environmental Protection  
79 Elm Street  
Hartford, CT 06106

**SUBJECT: Request for Approval of Permanent Cover System  
Causeway Non-time Critical Removal Action  
Stratford Army Engine Plant, Stratford, CT**

Dear Mr. Feathers,

As a result of our meeting at the U.S. Army Corps of Engineers (USACE) in Concord, Massachusetts on March 21, 2001, Harding ESE is submitting this letter as a request for Connecticut Department of Environmental Protection (CTDEP) approval of the proposed cover system for the Causeway Non-time Critical Removal Action Design at the Stratford Army Engine Plant (SAEP) as an "existing permanent structure" under the Remediation Standards Regulations (RSRs). In the meeting, CTDEP requested that the U.S. Army provide a description of the proposed Causeway cover system and its ability to render soil contaminant concentrations exceeding CTDEP RSRs Direct Exposure Criteria (DEC) "inaccessible", as defined in the RSRs.

The Final Causeway Engineering Evaluation/Cost Analysis (EE/CA) (Foster Wheeler/HLA, September 2000) presents a summary of soil contamination exceeding CTDEP RSR DEC. Causeway soil contaminants with concentrations exceeding CTDEP RSR DEC include vinyl chloride, semivolatiles organic compounds, the polychlorinated biphenyl (PCB) Aroclors-1016 and -1260 (maximum concentration 2.9 parts per million by weight), and inorganics. The depth interval of identified soil vadose zone contamination is from existing ground surface to approximately 5 feet below ground surface.

Per Section 22a-133k-2 (b)(3) of the CTDEP RSRs:

"The direct exposure criteria for substances other than PCB do not apply to inaccessible soil at a release area provided that if such inaccessible soil is less than 15 feet below ground surface an environmental land use restriction is in effect with respect to subject parcel or to the portion of such parcel containing such release area, which environmental land use restriction ensures that such soils will not be exposed as a result of excavation, demolition or other activities and that any pavement which is necessary to render such soil inaccessible is maintained in good condition unless and until such restriction is released in accordance with section 22a-133q-1..."

Per Section 22a-133k-1 (a)(28) of the CTDEP RSRs:

"'Inaccessible soil' means polluted soil which is: (A) more than four feet below the ground surface; (B) more than two feet below a paved surface comprised of a minimum of three inches of bituminous concrete or concrete, which two feet may include the depth of any material used as

sub-base for the pavement; or (C)(i) beneath an existing building or (ii) beneath another existing permanent structure provided written notice that such structure will be used to prevent human contact with such soil has been provided to the Commissioner.”

The proposed cover for the Causeway consists of a side slope cover system and a crest cover system. The side slope cover system, which will be emplaced around the perimeter of the Causeway below the high tide elevation, contains the following materials, from bottom to top:

- A geotextile filter material
- Twelve-inch thick polymeric marine mattresses composed of high-strength geogrid gabion baskets, filled with rock

The crest cover system, which will be placed over the top portion of the Causeway, contains the following materials, from bottom to top:

- A 2-inch to 6-inch thick sand bedding layer
- A geotextile layer
- A layer of 4-inch thick interlocking concrete blocks
- Pea gravel in the gaps of the interlocking blocks, and to a depth of 2 inches over the blocks

In addition, Approximately 6 inches of vegetative support soil, seeded with suitable grass cover material will be placed on top of the interlocking concrete block covered area.

Between the side slope cover system and the crest cover system a layer of riprap will be placed as a transition between the two covers (the polymeric marine mattresses and the interlocking concrete blocks). This riprap layer will be approximately 18-inches thick and 3-feet wide, and will be composed of stone with a minimum average diameter of 6-inches. This transition area will fill the gaps between the two cover systems and is required to provide drainage for the crest cover system.

The cover thickness has been minimized due to geotechnical constraints associated with the stability and compressibility of the tidal sediments beneath the Causeway fill material. Should additional thickness be added to the causeway, calculations indicate that a failure would be more likely to occur. Due to the expected differential movement expected, the cover system needs to be flexible while still rendering the underlying soils inaccessible. The side slope cover system will consist of roughly 10-15 tons of rock in each mattress, encased in a high strength plastic webbing type material. The concrete blocks in the crest cover system are slightly wider at the top, with the pea-stone between the blocks acting to lock the blocks in-place, making their removal extremely difficult. These two types of covers will allow movement as the causeway settles and are not expected to develop cracks, such as those that would develop if a more rigid type cover system like concrete or asphalt were used.

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Therefore, we believe that, in conjunction with an environmental land use restriction, the proposed cover system meets the intent of the CTDEP RSRs as an equivalent "existing permanent structure" to make the Causeway soils inaccessible. On behalf of the U.S. Army, Harding ESE is requesting written approval of the proposed Causeway cover system by CTDEP.

If you have any questions regarding this request please contact me at (207) 828-3637.

Sincerely,

**HARDING ESE, INC.**  
*A MACTEC Company*



Nelson Walter  
Project Manager

cc: John Burlison (TACOM)  
Michelle Brock (USACE-NAE)  
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