RESPONSE TO COMMENTS ON
REVISED DRAFT
ENGINEERING EVALUATION/COST ANALYSIS FOR THE CAUSEWAY AND DIKE
(DATED JULY 31, 2000)
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
CONCORD, MASSACHUSETTS

by

FOSTER WHEELER ENVIRONMENTAL CORPORATION
and
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SEPTEMBER 2000

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Comment # Comment/Response

CTDEP Comments dated September 13, 2000 on Revised Draft EE/CA Report
Causeway and Dike Area, SAEP, Stratford, CT
July 2000

General Comments

1. **Comment:** Section 2.2 describes the RCRA closure as completed, including the drum storage area, however this has not yet been finalized.

   Response: Section 2.2 has been revised to indicate that RCRA closure activities for the drum storage area have been initiated, but not completed.

2. **Comment:** The citation of ARARs is incorrect in detail for the Remediation Standard Regulations. The Connecticut General Statutes (CGS) Section 22a-133k required adoption of remediation standard regulations, which were promulgated as Regulations of Connecticut State Agencies (RCSA) Sections 22a-133k 1 to 22a-133k 3. Environmental Land Use Restrictions are statutorily defined in CGS Sections 22a-133n through 22a-133r, and the format for filing is detailed in RCSA Section 22a-133q.

   Response: Table 3-1 has been revised to reference both the Connecticut General Statutes and the Regulations of Connecticut State Agencies associated with the Remediation Standard Regulation (RSR).

3. **Comment:** Alternative 4 is the installation of a cover/structure which renders underlying soil inaccessible as specified in the definition of inaccessible soil at RCSA Section 22a-133k 1(a)(28). This definition should be cited. As provided in RCSA Section 22a 133k 2 (b)(3), the Direct Exposure Criteria do not apply to inaccessible soil which is subject to an Environmental Land Use Restriction (ELUR). Because of this exemption, the proposed remedy in alternative 4 is not strictly considered an engineered control under the Remediation Standard Regulations, thus many of the specific provisions of RCSA 22a 133k 2(f)(2) do not apply. However, DEP recommends that appropriate engineering design and postclosure care be included in the remedy to ensure long-term continued inaccessibility. The timing of and procedure for the ELUR placement should be indicated.

   Response: Table 3-1 has been revised to provide more detail regarding the "Requirement

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Synopsis" and "Action to be taken to attain ARAR" relative to the RSR and the use of engineered controls, a cover or structure to render contaminated soil inaccessible, and ELURs.

Text has been added to Section 4.0 regarding the timing and procedure for establishing the ELUR.

4. **Comment:** Note that the provisions for approval of an engineered control present at RCSA Section 22a 133k 2(f)(2) do apply to alternatives 1 and 2. DEP recommends that, to ensure implementation is not delayed in the event alternative 1 or 2 is selected as the remedy, the specified Section 22a 133k 2(f)(2)(A)(iv) public notification be concurrent with other public notifications for the project. Also, the detailed design and decision documents should address all the required elements at Section 22a 133k 2(f)(2)(B) if alternative 1 or 2 is selected.

   Response: The public notice to announce the availability of the EE/CA for public comment, will be prepared to address the requirements of CERCLA and the NCP, as well as the requirements of the CTDEP RSR. Additionally, if Alternative 1 or 2 is the selected remedy, the decision document and design will address the requirements of the CTDEP RSR Section 22a 133k 2(f)(2)(B).

5. **Comment:** DEP notes that the activity specific ARARs will be identified during the design phase, and reserves comment until these ARARs are identified in detail. The EE/CA should include any consideration of activity specific ARARs which may affect the selection of the preferred remedy.

   Response: Table 3-3 presents the potential action-specific ARARs that may apply to the removal action alternatives evaluated in the EE/CA. The action-specific ARARs associated with the selected removal action alternative will be presented in the Causeway Non-Time-Critical Removal Action Decision Document and the Causeway Removal Action Design. Both of these documents will be submitted to the regulatory agencies for review.

6. **Comment:** The 600 pound rip-rap proposed for the side slopes of the causeway can be viewed as "another existing permanent structure", rather than soil, under the provisions of RCSA Section 22a 133k 1(a)(28)(C)(ii), since it will be existing at the time the Environmental Land Use Restriction is established. DEP can accept a final designed rip-rap

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thickness of less than four feet, provided the design clearly is demonstrated to meet the objective of maintaining long-term inaccessibility. The conceptual diagrams and discussion should be modified accordingly. This may reduce the proposed widening of the causeway landform at the mean high water level.

Response: The Army is pleased to hear that the CTDEP can accept a riprap layer that is less than four feet thick. Alternative 4 currently projects the overall "footprint" of the Causeway to increase by approximately 0.3 acres. Using a thinner layer of riprap could potentially reduce the final Causeway "footprint". However, the thickness of this layer is somewhat dependent upon the size of the rock used for the riprap (e.g., the thickness should be approximately two times the diameter of the minimum W_{50}, based on the gradation of the riprap). Several details must be evaluated and addressed during the detailed design of the selected removal action alternative, including the size and thickness of the riprap to provide the necessary protection from storm surge and wave action.

The Army prefers not to revise the "conceptual" design presented in the EE/CA at this time. The detailed design of the selected remedy will provide the recommended size and thickness of the riprap layer, as well as better define the amount, if any, of expansion of the overall Causeway "footprint".

7. **Comment:** DEP understands that groundwater quality will be addressed in a separate operational unit. RCSA section 22a 133k 3(b)(2) mandates that groundwater discharging to the tidal flat conform with surface water quality criteria. Note that these values are lower than the Remediation Standard Regulation Appendix D Surface Water Protection Criteria, which incorporate a default attenuation factor. To ensure the interim remedy is consistent with the final remedy, DEP recommends that the proposed spot removal of soils with mobile pollutants also consider potential impacts of leachable pollutants on surface water. This would limit the risk for further action in a final remedy to address soil as a pollutant source if groundwater exceeds evaluation criteria. The degree of concern depends on the difference between a pollutant's GB Pollutant Mobility Criterion (the target interim removal criterion) and its Aquatic Water Quality Benchmark value, and also on the potential for attenuation between the soil location and the receptor tidal flat. For example, DEP recommends a value of 280 ug/l for vanadium acute toxicity in water, as compared to a GB Pollutant Mobility Criterion of 500 ug/l. A removal criterion of 280 ug/l, as opposed to 500, would ensure that, even without any attenuation on the transport path from soil to surface water, there would be

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no possibility of acute toxicity. Suggested Aquatic Benchmark values for identified pollutants not listed in Connecticut's Water Quality Criteria and Standards can be obtained from Traci Iott (860-424-3082).

Response: The Army has compared the existing (thru 9/01/2000) SPLP organic and inorganic Causeway soils data to the Aquatic Water Quality Criteria (AWQC) benchmark values provided by the CTDEP. The following table provides information on the concentrations of analytes (from SPLP analyses) which exceed AWQC in Causeway soils:

Analyte	Location ID	Result (µg/L)	AWQC (µg/L)	GB-PMC(µg/L)
Vanadium	CB-99-03	5920	280	500
Vanadium	TP-DEP-11	807	280	500
Vanadium	TP-DEP-12	1070	280	500
Zinc	CB-99-01	293	120	50000

Of the locations listed above, CB-99-03, TP-DEP-11, and TP-DEP-12 were previously identified as areas where soil concentrations exceed the CTDEP GB PMC. At location CB-99-01, zinc does not exceed the GB PMC, but does exceed the AWQC.

The Army will consider use of the AWQC for definition of soils requiring excavation (during the Design phase of the project) to consider potential impacts of leachable pollutants on surface water.

8. **Comment:** DEP also reiterates earlier comment that polluted soils within the zone of diurnal tidally influenced groundwater fluctuation may require additional mitigation in the final remedy if they are found to be unacceptably affecting the environment.

Response: Comment noted.

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CTDEP (Office of Long Island Sound Programs) Comments dated September 7, 2000 on Revised Draft EE/CA Report
Causeway and Dike Area, SAEP, Stratford, CT
July 2000

In general, we are disappointed that our prior comments have not been adequately addressed in this revision (see discussion below). We must continue to stress that it is the responsibility of the Army to minimize any structural solution at this site in order to proceed with a project that is consistent to the maximum extent practicable with the enforceable policies of Connecticut's federally approved coastal management program. Encroachment into or over the intertidal flat must avoided if possible. If avoidance is not possible, any encroachment must be minimized to the maximum extent practicable and clearly and adequately justified. Significant changes from current conditions (e.g., changes in the size and location of the footprint of the causeway and dike, the character of the face of the causeway and dike including its slope and relative make-up) must be avoided if possible and, if not possible, must be well justified. Based on the information provided to date, there is no clear justification provided for enlarging the footprint of the dike and/or causeway nor is there adequate justification for altering the angle and general makeup of the side slopes.

As stated in our previous comments, it appears that the remedial solutions under consideration essentially consist of an "under barrier" and an "over cap" and that these components may, to some extent, be interchanged from one alternative to the other. The selection of the appropriate under barrier to prevent contact with the contamination is not within OLISP's area of expertise and we defer to others to determine which under barrier is most appropriate. We are, however, concerned about the type of material used for the outermost layer(s) of the over cap, its placement on the causeway and/or dike and the final overall configurations of these project components.

While one type of under barrier may be most appropriate, the associated over cap depicted in the series of alternatives presented here may not be the most appropriate from a coastal management perspective. The apparent ability to "mix and match" under barrier and over cap may prove especially useful in designing a project that achieves all ARARs to the maximum extent practicable.

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ALTERNATIVES

The current draft EE/CA contains four alternatives, three of which are illustrated by Figures 4-1, 4-2 and 4-3. Alternative 4 has been added since the last draft EE/CA, dated February 23, 2000, and is identified as the current preferred alternative. All three of the illustrated alternatives raise concerns from a coastal management perspective and, as discussed below, it is not clear from the information provided that the preferred alternative actually meets the applicable design criteria.

General Comments – Unfortunately, the plans provided appear to be diagrammatic only and are lacking sufficient detail to enable us to make reasonable evaluation of the alternatives for consistency with the policies and standards of Connecticut's coastal management program. While cross-sections are provided for three of the four alternatives, there are no plan views provided. Plan views showing both existing and proposed conditions are necessary to evaluate the alternatives for consistency with the enforceable policies of the Connecticut Coastal Management Program.

Additionally, there are several specific and critical elevations that must be shown on all plans and cross-sections to allow for a coastal consistency determination. These elevations are the high tide line, mean high water and mean low water. The figures provided in the revised draft EE/CA depict mean high water at elevation 4.1 and "low tide" at elevation 0.8. The high tide line is not provided nor is the reference datum indicated. If the reference datum is National Geodetic Vertical Datum (NGVD), the elevation of mean high water is correct at 4.1 feet; however, the corresponding elevation of mean low water is not elevation 0.8 as shown in the figures, but rather, it is -2.7 feet NGVD.

The location of the high tide line should also be shown on all plans and cross sections. Without a careful on-site investigation, its exact elevation cannot be determined. However, based on our experience its location will be somewhat higher than elevation 5.7 feet NGVD (the one-year frequency tidal flood elevation as calculated by the Army Corps of Engineers) and may in fact, be close to elevation 7 feet NGVD. For the purposes of this project, the depiction of elevation 7 feet NGVD on all the plans will suffice to approximate the high tide line.

Please be aware that because of the diagrammatic nature of the plans, these critical elevations cannot be shown with any degree of confidence. Without a reasonable representation of the existing and proposed conditions in relation to these critical elevations, a formal coastal consistency determination will not be possible.

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We have previously expressed our concern that the alternatives be designed to avoid any encroachment into the intertidal flat. Alternative 1 is described as maintaining the location of the existing toe of slope through the excavation of the side slope and toe materials with their consolidation on top of the causeway prior to construction of the under barrier and cap. The corresponding figure also includes a note that existing material will be excavated to maintain the existing toe of slope. However, since the existing condition is not shown on this figure, it cannot be verified that this approach will also maintain the existing locations of the high tide line and mean high water. Neither of the other figures appears to clearly depict the necessary excavation to ensure that the proposed alternatives will not ultimately alter the present locations of mean high water, mean low water and the high tide line. Accordingly, none of these alternatives is acceptable from a coastal management perspective without some additional refinement of the plans.

If there is confusion regarding this essential matter, I strongly recommend that we discuss it either over the phone or in person, or both. I understand that there are currently meetings of the RAB and BCT scheduled for September 28, 2000. Discussion of these issues should occur prior to those meetings. If necessary, and depending upon my schedule, I may be available to meet in Stratford when your consultant is due to be there, if it would be helpful.

Alternative 1 - Figures 4-1 - The plans do not show the existing profile(s) for this alternative. Lacking this information, it is not possible to determine either the degree, if any, of encroachment into public trust and intertidal flats that this alternative represents or whether this alternative represents an ultimate change in the type and/or angle of side slope currently present on the causeway. It is our understanding that the causeway is already armored. If this is the case, replacement in place and in kind is acceptable and consistent with our enforceable policies regarding shoreline flood and erosion control structures. Additional information regarding the existing contours and make-up of the causeway side slopes in comparison to the proposed condition is necessary to determine the acceptability of this alternative.

Alternative 2 - Figure 4-3 – Although the Army has indicated that this alternative is not the preferred project, we are compelled to reiterate our previous comments in the event that it comes under further consideration. Alternative 2 includes a vertical faced bulkhead. In prior discussion, we have discouraged the Army from considering such a structure as it constitutes a significant change from the existing condition. It also carries with it the potential to alter the localized wave energy patterns and we expect it would result in erosion of the intertidal flat.

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Such erosion would be unacceptable as intertidal flats are a protected resource in Connecticut and we strongly advise against any further pursuit of this alternative.

Alternative 4 - Figure 4-3 – The current draft EE/CA contains a new alternative, number 4, which is identified as the preferred alternative and is allegedly based, in part, on our prior comments. Unfortunately, the information provided regarding this alternative describes a design that is actually less consistent with Connecticut's coastal management program than some of the alternatives considered for this project.

The description of this alternative includes removal of contaminated soil "hot spot areas" and containment of the remaining contaminated fill material within the causeway by constructing an erosion control cover system. Although the text indicated that following removal of the contaminated soil hot spot areas, the causeway would be regraded by cutting and filing existing material to establish base grades, these grading activities are not evident in Figure 4-3. Unlike Alternative 1, where the plans specifically note that the existing toe will be maintained by excavating existing material, Alternative 4 appears to include simply placing riprap over the existing side slopes. This method of armoring will result in significant and unacceptable encroachment beyond the high tide line and mean high water and into intertidal flats.

Additionally, Figure 4-3 is very confusing. It shows two existing slopes and only one proposed slope. There is no clear indication of where along the length of the causeway these apparently separate profiles are found. Nor is it clear why the proposed slope would not follow and reflect the existing condition. Regardless of the original profile, as discussed above, this alternative represents significant fill and encroachment beyond both the existing mean high water and mean low water lines. Although the high tide line is not shown on the plans, presumably fill is also proposed waterward of this critical elevation. It is not likely that a convincing demonstration can be made that this alternative, as currently proposed, is consistent with applicable enforceable policies and standards regarding shoreline flood and erosion control structures, filling in coastal waters and intertidal flats.

Based on both the tentative selection of Alternative 4 as the preferred alternative and its depiction provided in Figure 4-3, it does not appear that the Army fully understands the need to design a project that: 1) will not result in degradation of sensitive coastal resources, including the intertidal flats present at this site; 2) is consistent with the enforceable policies and standards regarding the construction of shoreline flood and erosion control structures; and 3) minimizes

horizontal encroachment into coastal waters (i.e., encroachment beyond the high tide line, mean high water and/or mean low water).

If Alternative 4 is to remain the preferred alternative, it must be modified to eliminate, if possible, any encroachment beyond the existing location of the high tide line, mean high water, and mean low water. We strongly encourage the Army to investigate the potential to relocate existing material to the extent necessary to maintain the current causeway footprint. If elimination of all encroachments is not possible, adequate justification must be given as to why any encroachment should be found acceptable to the State of Connecticut.

Responses to Prior DEP-OLISP Comments

Unfortunately, several of the Army's responses, provided in Appendix A, do not adequately address the issues that we raised in our previous comments. Specifically, we note the following outstanding issues presented in the order that they appear in Appendix A.

Comment #4, pages 10 & 11 - The DEP-OLISP's comment was, in part, "it is important to maintain, to the extent practicable, the horizontal location of mean high water (4.1' NGVD), which is the landward extent of the public trust area." The response was to indicate on the plans the location of mean high water; however, no apparent effort was made to modify the plans to eliminate or reduce the indicated encroachment waterward of this critical line. Nor was an explanation offered as to why the project could not be designed to maintain the horizontal location of mean high water. This is a critically important issue to the State of Connecticut as we are the steward for the public trust land waterward of mean high water and, as such, must protect and preserve this area for the general public both for now and for the future. Any additional encroachment beyond the current location of mean high water must be avoided if at all possible, and if avoidance is not possible it must be both minimized to the maximum extent practicable and justified to our satisfaction.

It has recently been brought to our attention that there is concern that the proposed cap might, in fact, have to be designed with a larger footprint to spread the weight of the causeway and cap over a larger area. Apparently the issue is the potential for the extra weight of the causeway to produce an upward "bulging" of the adjacent intertidal flat. In our experience, increasing the weight on filled land has not lead to such bulging, but rather, has lead to the reverse. Increased loading, as has been seen with road construction on filled land, has more typically resulted in depressed areas alongside the filled area. In the case of the subject causeway, if depressions in

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the intertidal flat result from the proposed work, we expect increased sedimentation into the depressed areas until equilibrium has been reached and the surface is restored to its present state.

Comment #5, page 11 - The DEP-OLISP's comment was that the list of ARARs provided in the previous draft was incomplete. Of specific concern, in part, was that the list did not include Connecticut's Tidal Wetlands Act (Connecticut General Statutes 22a-28 through 22a-35). The response was that "the Inland Wetlands and Watercourses Act, also known as the Tidal Wetlands Act, was included" in the original list of ARARs. The Inland Wetlands Act and the Tidal Wetlands Act are separate and distinct statutes. They have never been interchangeable nor have they shared a title. To merge these two independent regulatory programs is incorrect and unacceptable. Although the current ARARs list (see Table 3-2) includes the *Tidal Wetlands Regulations*, it still fails to include the underlying statute. The Tidal Wetlands Act must be listed as an ARAR separate from both the Inland Wetlands and Watercourses Act and the Tidal Wetlands Regulations and it must be fully considered in the final development and consideration of alternatives for this action.

Additional Comments

We note that the description of the property on page ES-1 is incorrect. It is apparently carried forward from earlier property descriptions that we have continually attempted to have the Army correct. The Army does not own "48 acres of riparian rights." Riparian rights are not measured in acres or any other form of area measurement. Riparian rights are simply the rights of waterfront property owners to access navigable waters. This should be corrected in the final document.

We appreciate this opportunity to review and comment on the progress made to date on this project. We strongly encourage you to continue close coordination with this Office during the refinement of the final alternative(s) for this project. Please be aware that the formal federal consistency review will require additional detailed information including: 1) drawings that depict the existing and proposed footprint of the causeway; 2) existing and proposed locations of the high tide line, mean high water and mean low water on all plans and cross sections; 3) calculations of the total volume of fill to be placed waterward of the high tide line, mean high water and mean low water; and 4) adequate justification for such fill.

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Response: The Army understands the issues and concerns raised by the CTDEP OLISP, which are primarily related to avoiding encroachment into the intertidal flats of the Housatonic River and waterward of the high tide line. However, much of these concerns cannot be adequately addressed at this time due to the limited amount of data available. However, the Army will conduct additional on-site investigation activities to collect the necessary data that will allow the Army to address the CTDEP OLISP issues and concerns during the detailed design of the selected removal action alternative. Harding Lawson Associates initiated on-site investigation activities at the Causeway September 14, 2000. These activities include a geotechnical investigation and topographic survey of the Causeway and adjacent area. The information obtained from these activities will be used to evaluate settlement and stability of the Causeway and proposed cover system, determine the size and thickness of the riprap/stone armor for the cover system, prepare existing and final grading plans, and prepare material specifications and quantity estimates. The removal action design will be prepared with consideration given to the issues and concerns raised in these, and previous, comments provided by the CTDEP OLISP. The 30-percent design will be submitted to the regulatory agencies (i.e., USEPA, CTDEP, and OLISP) for review.

The Army will design the selected remedy to minimize encroachment into the intertidal flats of the Housatonic River and waterward of the high tide line to the extent practicable. After the additional field investigations are completed and the data evaluated, the Army suggests a working meeting with the USEPA and CTDEP, including OLISP, to review the data evaluation and design criteria in an attempt to address the concerns raised by the CTDEP OLISP. The Army looks forward to working with the USEPA, CTDEP, and OLISP to resolve these outstanding issues and arrive at a mutually agreeable solution for the Causeway non-time-critical removal action.

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USEPA Comments dated August 31, 2000 on Revised Draft EE/CA Report
Causeway and Dike Area, SAEP, Stratford, CT
July 2000

ARARs Tables 3-1 through 3-3

1. **Table 3-1**

- There should be an indication that there are no Federal chemical-specific ARARs.

- There should be some description of how contaminated soil will be remediated in accordance with CGS §§ 22a-133k and 22a-133q.

Response: Table 3-1 has been revised as requested.

2. **Table 3-2**

- There should be some description of how remedial activities that involve dredged or fill material will comply with 40 CFR § 230 and 33 CFR Parts 320-330.

- There should be some description of how remedial activities affecting the coastal zone of the site will be conducted in accordance with 16 USC §1451, et seq.

- There should be some description of how remedial activities will be conducted in accordance with CGS §§ 22a-28 through 22a-35 and RCSA §§ 22a-30-1 through
- 22a-30-17.

- There should be some description of how remedial activities will be conducted in accordance with CGS §§ 25-68b through 25-68h and RCSA §§ 25-68h-1 through
- 25-68h-3.

- There should be some description of how remedial activities will be concluded in accordance with CGS §§ §§ 22a-359 through 22a-363(f).

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Response: Table 3-2 has been revised as requested.

3. **Table 3-3**

- There should be some description of how remedial activities associated with design, monitoring and maintenance will comply with 40 CFR § 264.110 - 264.120.

Response: Table 3-3 has been revised as requested.