

April 16, 2004

Ms. Elsie Patton
Connecticut Department of Environmental Protection
Planning and Standards Division
Bureau of Waste Management
79 Elm Street
Hartford, CT 06106

RE: Response to March 8, 2004
CTDEP Comments on
Phase III Environmental Site Investigation
Former New Haven Water Company Property
Hamden, Connecticut
Consent Order No. SRD-128

Dear Ms. Patton:

The attached responds to general and specific comments identified in the Connecticut Department of Environmental Protection (CTDEP) March 8, 2004 letter concerning the December 2002 Leggette, Brashears & Graham, Inc. (LBG) report entitled "Phase III Environmental Site Investigation, Former New Haven Water Company Property, Hamden, Connecticut." The aforementioned report was prepared for South Central Connecticut Regional Water Authority (RWA). The investigation was completed pursuant to the "Revised Work Plan, Former New Haven Water Company Property, Hamden, Connecticut" dated July 11, 2002, and revised August 27, 2002. The revised work plan was prepared to address the comments set forth in the July 31, 2002 letter from the CTDEP. In addition, the field investigation reflects comments made by the CTDEP during communications on August 5, 2002 and September 9, 2002.

Please note that the term "Site" used in the comments refers to the properties formerly owned by New Haven Water Company that have been investigated as of Consent Order No. SRD-128.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.

Michael Manolakas
Associate

Reviewed by:

Jeffrey B. Lennox, CPG
Principal

MM:cmm
cc: T. Chaplik
Attachments

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“I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, that the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information is punishable as a criminal offense under §53a-157b of the Connecticut General Statutes and any other applicable law.”

South Central Connecticut Regional Water Authority
Thomas V. Chaplik
Vice President

Leggette, Brashears & Graham, Inc.
Jeffrey B. Lennox
Principal

RESPONSE TO GENERAL COMMENTS

General Comment 1

A significant portion of the Phase III Report evaluates remedial options under land use and groundwater classification scenarios different from what currently exists at this site. This evaluation is premature because the investigation has not fully defined the extent and degree of fill materials and pollution to soils, surface water and ground water at the site. The nature of contamination at the site must be fully defined before remedial alternatives can be considered. Further, the Department cannot consider groundwater reclassification until a thorough evaluation of groundwater flow direction is completed.

Response

While remedial options are discussed in the report, the report does not conclude the extent of contamination has been fully defined, as reflected in the results and conclusions portion of the report. This is further reiterated in the October 20, 2003 addendum to the report entitled "Addendum to December 2002 "Phase III Environmental Site Investigation, Former Hew Haven Water Company Property, Hamden, Connecticut" Consent Order No, SRD-128." This addendum letter acknowledges that the site has not been fully characterized and additional investigations are necessary. The CTDEP does not appear to acknowledge the receipt of the addendum in the March 8, 2004 CTDEP comment letter; comments repeatedly state characterization is not complete. We agree.

LBG believes the presentation of the potential remedial options under alternate land use and ground-water classification is appropriate for this report. This information provides preliminary insight to the responsible parties of potential future remedial and financial obligations. We agree that it would be inappropriate to make conclusions at this time regarding particular remedial techniques.

General Comment 2

A conceptual site model must be prepared that evaluates all information, factual and anecdotal, relating to waste disposal at the former New Haven Water Company property; all sampling completed to date by the RWA, DEP, EPA, and the Town of Hamden; and identifies data gaps that exist. Introductory sections of the Phase III Report do contain an adequate summary of the site history, however, further analysis of this information to focus the investigation was not included in the Phase III Report. The scope of study must include the conceptual site model as well as a discussion of identified data gaps to guide future investigation activities.

Response

A conceptual site model is included in the attached supplemental scope of study.

General Comment 3

The Phase III Report does not fully define the extent and composition of waste materials disposed at the former New Haven Water Company portion of the site. Supplemental investigation is necessary to better define the perimeter extent of waste materials present on the site. Investigation of the area beneath the existing tennis and basketball courts and in the vicinity of the swale north of the Middle School is also required. The scope of study must provide for the sampling and analysis of potential asbestos containing materials in construction and demolition debris and other fill that resembles asbestos containing materials (e.g. shingles, sheet rock, tiles, etc.). Additional borings are necessary to better define the vertical extent of fill. The volume of waste material present below the water table must be evaluated.

The scope of study must consider the use of geophysical techniques in evaluating subsurface conditions, as was suggested in the Department's July 31, 2002 comments on the work plan for the Phase III investigation. Anecdotal reports indicate that waste including drums, boilers, and water tanks may have been disposed on the former New Haven Water Company property. Additional investigation should confirm the presence or absence of large buried objects that could cause a release in the future.

As presented in text and geologic cross-sections in the Phase III Report, there is no distinction between undisturbed, native soils consisting of sand and silt and disturbed, artificially placed fill with the same grain description. For example, the "soil cap" placed on the athletic fields in the mid-1990s by the Town of Hamden is mapped the same as materials the Department assumes to be native, underlying organic silt and clay deposits. There is no clear boundary established between native materials and all fill. A more detailed soil and waste description is necessary.

In an effort to use consistent terminology in describing soil and waste materials encountered at the Newhall site, the Department requests that the RWA discuss proposed terminology with the Department. No descriptions of "non-typical fill" shown in Figure 6 appear in the text of Section 5.1, Composition of Unconsolidated Materials. The description of each fill type identified on the former New Haven Water Company property must also include chemical characteristics.

Because native materials are not clearly identified in the Phase III Report, there is no way to evaluate potential impacts to native soil located beneath the waste fill. Potential impacts to native soils underlying fill must be evaluated.

Response

No evidence of asbestos containing material was identified in any of the geologic borings or test pits at the site. The "construction debris" nomenclature was used to describe a reddish brown sand which contained materials such as stone blocks (generally rectangular, cobble size), typical red housing bricks, wood, glass and plastics. However, if potential asbestos containing material is identified, a sample would be collected for asbestos.

The attached supplemental scope of study does implement the use of geophysics.

Other than the perimeter soil boring investigation completed in December 2002, all soil borings were drilled to below the observed industrial fill and domestic/municipal waste fill. Because the construction debris fill was similar in texture, grain size and color to the natural sediments in the region, it is unclear if all of these soil borings were drilled beneath the base of this fill. Note that soil samples were collected for analyses of the constituents of concern from beneath the observed fill from all soil boring in which any samples were collected for analyses. Therefore, potential impacts to the underlying native fill were evaluated during this investigation. As part of the attached supplemental scope of study, LBG will be drilling additional soil borings at the site to characterize the occurrence of specific contaminants of concern and to further delineate ground-water flow at the site. In addition, the supplemental scope of study includes the drilling of additional soil borings in the location of the existing tennis and basketball courts and in the vicinity of the swale north of the Middle School. These soil borings will also be drilled to the beneath the base of the observed fill.

The text and geologic cross-sections in the Phase III Report make no distinction between the between undisturbed, native soils consisting of sand and silt and the soil cap placed on the athletic field during the mid-1990s. Documentation provided to LBG by Barakos-Landino Design Group and files reviewed at the Town of Hamden Engineering Department indicate that the planned filling activity was to extend to the northern, western and southern edges of the property in areas in which fill was not identified during the field investigation. As shown on the cross sections, the soil cap and underlying “native” materials in these areas are identified as a single material, “primarily sand and silt.” This is because the characteristic of these materials are extremely similar. LBG will complete a review of geologic logs, available soil capping documentation and historical and current survey data in an effort to define the contact between the cap and underlying materials in these areas. If a distinction can be made, the cross sections will be refined to show this distinction of unconsolidated material boundaries.

LBG would consider using any proposed nomenclature for the unconsolidated materials identified at the site.

General Comment 4

The Phase III Report does not fully characterize the extent and degree of soil pollution throughout the former New Haven Water Company portion of the site. In some portions of the site, the spatial distribution of borings is insufficient to characterize the extent and degree of soil pollution. The Phase III Report also relies upon the results of limited surface soil sampling of the soccer fields previously conducted by the Department, the purpose of which was to verify the presence or absence of a soil cap placed on the field by the Town in the mid-1990s. The DEP only analyzed the soil samples collected from the 0-3” soil horizon for metals and polynuclear aromatic hydrocarbons. Soil samples from many borings advanced along the perimeter of the property during this Phase III investigation were not chemically analyzed. Therefore, in order to determine the extent and degree of soil pollution, additional surface and subsurface soil samples

must be collected from locations along the fringes of identified waste disposal areas. Soil samples must be analyzed for pollutants attributable to the waste materials disposed at the site.

Additional soil sampling and analysis is also necessary in the vicinity of LBG-TB-4/LBG-MW-7 cluster to determine the extent and degree of the solvent release area, in the vicinity of LBG-TB-25 to determine the extent and degree of polychlorinated biphenyl contamination, and beneath the tennis and basketball courts.

The scope of study shall include provisions for the analysis of dioxins and furans for any soil or waste sample in which polychlorinated biphenyls (PCBs) or chlorinated solvents are detected at any concentration.

Response

This comment is addressed below in the section which responds to CTDEP specific comments.

General Comment 5

The Phase III Report does not fully evaluate the impact to ground water from the leaching of all pollutants identified in soil and waste to the ground water.

Response

The evaluation will be discussed in a future submitted report.

General Comment 6

The Phase III Report does not fully characterize the extent and degree of ground water pollution at the former New Haven Water Company portion of the site. Paragraph B.3.b(1) of Consent Order No. SRD-128 states that the scope of study “shall include, at a minimum, a plan to further determine the extent and degree of soil, surface water, and ground water pollution resulting from the disposal of waste materials at the site.” Therefore, the source area and extent of the solvent plume identified in the vicinity of monitoring well clusters LBG-MW-7, LBG-MW-15 and LBG-MW-4 must be defined, even if this requires additional investigation beyond the boundary of the former New Haven Water Company property. Groundwater analytical data must be evaluated relative to the Department’s Proposed Revisions to Volatilization Criteria dated March 2003.

Additional shallow and deep ground water monitoring wells must be installed to evaluate ground water quality in the vicinity of the swale located north of the Middle School.

Ground water samples must be analyzed for landfill leachate indicator parameters and the results evaluated for other potential impacts to ground water quality that may be attributable to the waste disposal.

Response

The Consent Order was not in place until after work started on the Phase III and the proposed volatilization criteria were issued after the Phase III report was issued.

The attached supplemental scope of study does include the installation of additional deep and shallow monitor wells in the location of the swale located north of the Middle School. These monitor wells will be used to evaluate water-quality and further delineate the ground-water flow at the site. Monitor wells will also be installed onsite and beyond the property boundary as part of the halogenated volatile organic compound investigation.

Ground-water samples were collected from all site monitor wells during the 2002 investigation and analyzed landfill leachate parameters. An evaluation of this data will be made in a future submitted report.

General Comment 7

Additional information must be provided to support the groundwater flow gradients and direction presented in the Phase III Report. Text in Section 5.3.3 and Plate 9 indicate that the hydraulic gradient across the former New Haven Water Company property is very flat. Groundwater elevation and hydraulic head data from several wells along the northern portion of the site and the shallow and deep wells from monitoring well clusters were excluded on Plate 9 and must be included on subsequent plates. Separate plates depicting the water table elevation and potentiometric surface must be prepared. An isopleth map showing the fine silt and clay/potential semi-confining layer must be provided, along with an evaluation of how this layer is or is not affecting groundwater flow at the site.

Additional shallow and deep ground water monitoring wells must be installed in the vicinity of LBG-MW-11 to evaluate ground water flow direction in the vicinity of the swale located north of the Middle School. Groundwater data for the SNET facility located at 325 Morse Street, adjacent to the west site boundary, must also be evaluated when mapping groundwater flow.

Additional explanation must be provided to justify the appropriateness of the location and lengths of screened sections used in monitoring well construction.

Site features including utilities and fill placement must be evaluated to determine whether they affect groundwater flow or contaminant transport at the site. The sprinkler line should be tested to ensure that it is not leaking and potentially affecting groundwater elevation measurements. The location of subsurface utility conduits and storm drains should be depicted on figures, and any effects the utility conduits and storm drains may have on groundwater flow

and contaminant pathways should be evaluated. The effects of storm water discharge to the swale located north of the Middle School on groundwater flow should also be evaluated.

Response

Additional information will be provided to further delineate the ground-water flow at the site. The additional information will include the completion of an isopleth map of the wetland organic materials identified at several of the site soil borings. The attached supplemental scope of study does include the installation of additional site monitor wells. These monitor wells will be used to further delineate the ground-water flow at the site. If permission is granted by the SNET facility located at 325 Morse Street, LBG will incorporate water levels from their well network into the site monitoring well network.

The attached supplemental scope of study does include the installation of additional deep and shallow monitor wells in the location of the swale (near MW-11) located north of the Middle School.

The selection of screen locations and lengths for monitor wells was discussed with the CTDEP during an August 8, 2002 conference call. Note that the CTDEP concurred with our approach of the well settings and design. The attached supplemental scope of study provides justification for future monitor well screen lengths and settings as did the August 2002 Revised Work Plan.

Site features including utilities and fill placement will be evaluated to determine whether they affect ground-water flow or contaminant transport at the site. The storm water discharge to the swale located north of the Middle School will also be included in this evaluation. In addition, the sprinkler line will be tested to ensure that it is not leaking and potentially affecting ground-water elevation measurements. The location of subsurface utility conduits and storm drains will be depicted on future figures.

We strongly disagree with the concept of a different "water table" map and "potentiometric surface" map. We characterize the flow directions through analysis of geologic impacts, showing our interpretation of flow directions. Our analysis shows that a classic water-table map, arbitrarily including all water table wells, would show improper flow directions, due to localized impacts of the silty clay layer. We will show elevations at the wells we exclude, as well as provide a more detailed discussion in future reports. If the additional wells show a different interpretation is necessary, we will do so.

General Comment 8

The Phase III Report does not characterize the extent and degree of surface water pollution at the non-public properties portion of the site. Potential impacts to surface water were not evaluated during the Phase III investigation. Therefore, surface water found in the swale located north of Hamden Middle School must be evaluated for potential impacts from

pollutants identified in waste materials on the former New Haven Water Company site, should it be determined that groundwater flows toward this swale.

Response

A surface water sample will be collected from the swale located north of the Middle School and analyzed for all constituents of concern. Details are discussed in the attached supplemental scope of study.

General Comment 9

Analytical detection limits for many parameters were not low enough to meet the analytical detection limits required by the Remediation Standard Regulations (RCSA Section 22a-133k-1(a)(1)). Detection limits for groundwater samples must be equal to or less than the groundwater protection criteria, and for soil samples, equal to or less than the residential direct exposure criteria or pollutant mobility criteria, whichever is lower. A discussion of samples for which required detection limits could not be achieved must be included in the text, along with an explanation of why the required detection limits could not be met.

Response

All analytical detection limits for soil and ground-water samples collected during the investigation are being recertified by York Analytical Laboratories of Stratford, Connecticut. The results for the soil and ground-water samples are to be issued with new detection limits equal to or less than criteria outlined in the CTDEP Remediation Standard Regulations (RSRs). The updated analytical data will be forwarded to the CTDEP. Note that lowered analytical detection limits which were raised as a result of diluting the sample to identify peak constituent concentrations were not requested for recertification. This is a standard laboratory practice.

General Comment 10

The scope of study shall describe all sample collection procedures and include a quality assurance project plan.

Response

A Quality Assurance Project Plan (QAPP) is provided in Section 6 of the August 2002 "Revised Work Plan, Former New Haven Water Company Property, Hamden, Connecticut." A QAPP is also included in the attached supplemental scope of study.

RESPONSE TO SPECIFIC COMMENTS

Specific Comments 1

p. 1, Section 1.0, Introduction

In paragraph 1, please note that the Hamden Housing Authority owns the two residential properties located at 249-251 and 253-255 Morse Street.

Response

This will be noted in future reports.

Specific Comments 2

p. 1, Section 1.0, Introduction

In paragraph 2, please note that the Revised Work Plan addressed most, but not all, comments provided in the Department's July 31, 2002 comment letter. The Department's comments regarding analysis of dioxins and furans, geophysical investigation, and recommended monitoring well screen lengths were not addressed.

Response

As discussed in the general comments, during an August 5, 2002 conference call, the members of the CTDEP staff (Shannon Windisch and Tom RisCassi) approved the screen lengths proposed in the August 2002 Revised Work Plan. The July 31, 2002 CTDEP comments letter recommended the use of geophysics; however, did not require it. This was also discussed during the conference call and was not implemented in the 2002 investigation because of limited time available to investigate the property during the 2002 summer school recess. As identified in the attached supplemental scope of study, geophysics will be incorporated into the upcoming investigation. As for Dioxins and Furans, the CTDEP contacted LBG on September 9, 2002 and indicated that based on input from the Connecticut Department of Public Health (CTDPH), the CTDEP had determined it was not necessary to analyze for dioxins and furans.

Specific Comments 3

p. 8, Section 2.2, Investigation History at Middle School Site

The source of much of this information has not been cited.

Response

We will include additional references in future reports.

Specific Comments 4

p. 13, Section 3.3, Alternatives

The Department disagrees that all conditions have been met in order to utilize self-implementing options for evaluating compliance with pollutant mobility criteria in the Remediation Standard Regulations (RCSA Section 22a-133k-2(c)(2)(C)). The release area is adjacent to the downgradient property boundary. Therefore, the self-implementing options in the Remediation Standard Regulations referenced in this paragraph are not available for use at this site.

Response

It is our experience that in similar situations, the CTDEP does allow this self-implementing option (RCSA Section 22a-133k-2(c)(2)(C)). In similar situations, the CTDEP has indicated this option is available to the entire site excluding a 25-foot boundary along the downgradient property boundary. Regardless, the remedy for the site will likely include site-specific solutions that require CTDEP approval.

Specific Comments 5

p. 15, Section 4.1.1, Initial Phase Investigation Drilling Program

The Department does not agree with the statement in paragraph 3 that reads, “the top two feet of the material at the subject property has been extensively characterized.” The Town of Hamden and the Department have collected many samples from the 0 – 3-inch soil horizon immediately around the school buildings and widely spaced across the athletic field, but the remainder of the 0 – 2-foot interval has had minimal sampling, especially in the soccer fields to the rear of the school. Further, much of the soil sampling previously conducted focused on analysis of metals and polynuclear aromatic hydrocarbons. Other contaminants of concern have been identified since the earlier sampling was conducted.

Response

The following final document was issued by the CTDPH on January 8, 2004:

- “Public Health Assessment Evaluation of Soil, Groundwater, Soil Gas and Indoor Air Data, Hamden Middle School (a.k.a. Newhall Street Field), Hamden, Connecticut, EPA Facility ID: CTD982544355”

This document was reviewed and available for comment by the public and the CTDEP. The documents states in reference to the soil cap “It must be emphasized that existing surface soils which were added as part of capping of the field have been tested and are not contaminated. The athletic field at the Hamden Middle School was evaluated previously in a health consultation (ATSDR 2001) and was found to present no public health threat, as long as digging through the soil cap did not occur. The athletic field has a covering of clean soil which ranges in depth from

approximately 2 feet to four feet.” Note that the CTDEP has also issued similar statement to this effect.

The 2002 investigation identified the cover material to be generally homogeneous. It is reasonable to conclude that results of the samples collected from the top three inches would be indicative of materials throughout the cap. Considering this material is not of a similar origin of the underlying materials, the above noted “constituents of concern” identified by the CTDEP for the underlying materials would not apply to the cover material.

LBG has completed a comparison of a 1991 and 1995 survey of the athletic field. The surveys were completed prior to and after the placement of the initial soil cap on the athletic field in 1995. The results showed the only locations not covered during the initial capping event were the southeast portion of the athletic field, east of the tennis and basketball courts and the berm located on the north-central portion of the Middle School property (near wetland corridor). The southeast portion and area east of the tennis and basketball courts have been mitigated through CTDEP emergency remedial measures. The attached supplemental scope of study does present plans to investigate the north-central berm.

Specific Comments 6

p. 16, Section 4.1.1, Initial Phase Investigation Drilling Program

Please note that there has been little correlation observed between the results of total and SPLP metals analyses for soil samples collected from other portions of the Newhall site.

Response

Noted. This can often occur due to non-homogeneity of the soil in a sample container.

Specific Comment 7

p. 17, Section 4.1.1, Initial Phase Investigation Drilling Program

In the discussion of monitoring well construction, please provide information relative to the varied lengths of the screened section used for each type of well including the rationale used for the selection of the screened lengths and the characteristics of the unconsolidated materials through which each well is screened.

Response

As discussed in the general comment section, the selection of screen locations and lengths for monitor wells was discussed with the CTDEP during an August 8, 2002 conference call with the CTDEP. The CTDEP (Shannon Pociu and Tom RisCassi) concurred with our approach of the well settings and design. The attached supplemental scope of study provides justification for future monitor well screen lengths and settings as did the 2002 work plan. Future reports will include a table that identifies the stratigraphy of each screen section.

Specific Comment 8

p. 18, Section 4.1.2, Second Phase Investigation Drilling Program

In paragraph 1, please provide additional information in the text to describe the halogenated VOCs detected in unconsolidated materials at LBG-TB-4, such as the depths the VOCs were encountered, and whether the contaminants were detected above or below the water table.

Response

This topic is discussed in detail in section 6.1.5.1 of the report.

Specific Comment 9

p. 19, Section 4.1.2, Second Phase Investigation Drilling Program

Please provide additional information to characterize the “unique soft pliable material” found while drilling LBG-MW-16.

Response

The material had similar color and texture of typical interior caulking.

Specific Comment 10

p. 22, Section 5.1, Composition of Unconsolidated Materials

Please clarify the description of “non-fill”. Does “non-fill” also include native soils? A distinction between native materials and soil fill must be made.

Response

The “non-fill” nomenclature does include native materials. As discussed in the general comment section, LBG will complete a review of geologic logs, available soil capping documentation and historical and current survey data in an effort to better define the contact between the cap and underlying materials. If a distinction can reasonably be made extrapolated, the cross sections will be refined to show this distinction of material boundaries.

Specific Comment 11

p. 24, Section 5.1.2, Extent and Thickness of Fill Materials

Paragraph 1 states that the area of domestic/municipal waste fill may be more extensive than shown in Plate 8. Please provide additional information as to why this may be possible.

Response

The comment refers to the two small areas of domestic/municipal waste fill mapped near Test Pits LBG-TP-7 and LBG-TP-8. These test pits were excavated on the eastern edge of the school and along Newhall Street. This waste was clearly identified in these test pits; however because of the nature of this waste, it was difficult to identify in test boring samples. To be conservative, only small areas delineating the potential extent of this waste was mapped around these test pits locations. It reasonable to conclude that the disposal of this waste was not localized as shown on the map; however, without additional test pits to verify the presence of this waste, it is difficult to document the extent of the waste. In addition, this is the type of waste you would expect to find along Newhall Street, since it was constructed prior to the documented dumping of Winchester Arms.

Specific Comment 12

pp. 24-25, Section 5.1.2, Extent and Thickness of Fill Materials

The Department disagrees with statements made in paragraph 2 that discuss filling along the southern site boundary and states that houses on Morse Street were fully developed before any filling occurred on the Middle School site near their property lines. A former resident had reported that one home on Morse Street received truckloads of waste from the Winchester factory in the 1930s. In addition, dozers were reportedly used to grade waste materials on the site.

Response

The statements in the report are based on the review of historical maps (provided in report), materials identified in test pits (including several dated objects), test boring samples and topography. The report provides more than adequate justification for this claim. In addition, property line soil borings and test pits completed on and near the southern boundary were overseen by the Olin and the Town of Hamden representatives. The Town of Hamden field representatives concurred with the materials identification, while no opinion was provided by the Olin representative. The report clearly documents that “spill over” from the site did not occur as a direct result of filling of the Former New Haven property.

The conclusions identified in the LBG 2002 report were also substantiated in a letter to the CTDEP by a Hamden resident (Ref. 20 in the attached supplemental scope of study). The resident whom attended school at the Newhall Community Center in the 1930s indicated that all houses on the north side of Morse Street were fully developed and separated from the dump by approximately 100 feet of trees and shrubs. She also indicated that materials dumped behind the Hamden Community Center consisted of domestic waste from people in the community.

Specific Comment 13

p. 28, Section 6.0, Results of Investigation

The results of previous investigations completed by DEP, the Town, and EPA must be evaluated with the new data generated during this investigation to identify any spatial trends or variations in the fill composition as well as the extent and degree of soil contamination related to the landfill materials.

Response

An evaluation of historic environmental data is included in the attached supplemental scope of study.

Specific Comment 14

pp. 31, 32, 34, 36, and 38, Section 6.1, Soil Quality Results

Any tables appearing within the text should have a title and table number.

Response

Future reports will include titles and table numbers for all tables.

Specific Comment 15

p. 29, Section 6.1.2.1, Total Cyanide and Metals

Chemical analysis for chromium must be for total chromium. If elevated levels of total chromium are detected, then speciation is warranted.

Response

The analyses of hexavalent chromium was discussed in the 2002 Work Plan; no comment concerning the analyses was provided by the CTDEP. Nonetheless, LBG requested York Analytical Laboratories to provide the total chromium results. The total chromium results will be provided in a subsequent submission.

Specific Comment 16

p. 29, Section 6.1.2.1, Total Cyanide and Metals

Soil data shown on Plate 12 indicates that lead was detected in soils at a concentration significantly greater than the RDEC at LBG-MW-1 at a depth of 3.5 feet. However, plates depicting the extent of fill do not include the northwest corner of the site in the vicinity of LBG-MW-1. Clearly, the soil at this location is not representative of native soil and therefore represents fill material.

Response

Polynuclear aromatic hydrocarbons and extractable total petroleum hydrocarbons were also identified in this soil sample. However, as shown in the photographs of the soil cores (on diskette provided with report), no visual evidence of fill material was identified in the soil samples from this soil boring. Considering the detections were identified in the upper most soil sample collected for analyses, it is possible this area may have been impacted by a surface release.

Specific Comment 17

p. 30, Section 6.1.2.2, SPLP Cyanide and Metals

Please evaluate the correlation between total and SPLP metals results to determine if the rationale used for selecting samples for SPLP analysis is valid. Sampling data collected by others within the consent order boundary show no correlation between elevated total metals results and elevated SPLP metals results.

Response

As indicated in the report, the protocol for analyzing metals through synthetic precipitation leaching procedure (SPLP) was as follows: Target metals identified in soil samples from above the seasonal low water-table greater than 1.5 times the local background concentrations or average concentration of the element found in uncontaminated soil in the Eastern United States (whichever is lower) were analyzed by SPLP for the target metal. Because of cost savings achieved by analyzing the entire set of priority pollutant metals (PPMs) plus barium, rather than analyzing a few individual metals, most samples were analyzed for all the metals regardless of which metal triggered the need to perform the analyses. Therefore, a sufficient quantity of samples was analyzed by SPLP. Nonetheless, LBG will review the total and SPLP data to determine if a correlation between the two is present. There often is a poor correlation, due to non-homogeneity of soil in the sample container.

Specific Comment 18

p. 31, Section 6.1.2.1, SPLP Cyanide and Metals

SPLP analysis of soils for thallium and antimony did not achieve the required detection limits.

Response

All analytical detection limits for thallium and antimony are being recertified by York Analytical Laboratories and will be equal to or less than applicable criteria outlined in the CTDEP RSRs. The updated analytical data will be forwarded to the CTDEP.

Specific Comment 19

p. 32, Section 6.1.2.2, SPLP Cyanide and Metals

Sentence 3 of paragraph 2 incorrectly states that plate 13 and table 9 show exceedances of the RDEC, while the GA PMC is the appropriate comparison criteria.

Response

Noted.

Specific Comment 20

p. 33, Section 6.1.3, Petroleum Hydrocarbons

Sentence 3 of paragraph 1 states that ETPH was identified in all fill types at the site. Based on plate 14, the majority of exceedances of the RDEC and GA PMC for ETPH occur in the black matrix fill.

Response

This statement is true; however, it is of greater importance to note that ETPH is present in all materials sampled at the site. In addition, the lateral distribution of the ETPH detections is generally evenly distributed throughout the site. This may indicate that the presence of ETPH is the result of an outside release, such as the historic regional practice of spraying of wetland areas with oil.

Specific Comment 21

p. 34, Section 6.1.4, Semi-Volatile Organic Compounds

Based on the summary data presented in Table 11, adequate detection limits were not achieved for several samples. Better efforts must be used to achieve detection limits required by the Remediation Standards Regulations, or explanation must be provided as to why required detection limits could not be achieved.

Response

The baseline laboratory detection limits for all samples are below applicable RSR criteria. Laboratory detection limits are higher in samples which semi-volatile organic compound constituents were detected at elevated concentration. The dilution of the sample is performed to accurately identify the peak concentrations detected. This is a standard laboratory practice.

Specific Comment 22

p. 36, Section 6.1.5.1, Halogenated Volatile Organic Compounds

As recommended in the Phase III Report, additional soil and groundwater samples must be collected in the vicinity of LBG-TB-4 to determine the extent and degree of the halogenated VOC contamination and if dense non-aqueous phase liquids are present.

Response

A detailed investigation of this area is included in the attached supplemental scope of study.

Specific Comment 23

p. 38, Section 6.1.6.1, Total Polychlorinated Biphenyls

Additional investigation is necessary in the vicinity of LBG-TB-25 to determine the extent and degree of PCB contamination. Analysis of dioxins and furans at this location is also required.

Response

An investigation of all polychlorinated biphenyl (PCB) occurrences is included in the attached supplemental scope of study.

The supplemental scope of study does not include the analyses of dioxins and furans, but rather indicates a subset of soil samples collected from the investigation would be stored for potential analyses of dioxins and furans using the Xenobiotic Detection System's Calux Bio-Assay. This analysis is utilized in the United States by the Food and Drug Administration has been certified in the European Union as an acceptable analysis for dioxins, furans and PCBs. Note that dioxins and furans have a hold time of one year.

The purpose of not analyzing samples for dioxins and furans is because a consensus between the CTDEP and CTDPH has not been reached as to whether these environmental constituents should be investigated. As you are aware, dioxins are commonly produced through everyday activities such activities as cigarette smoking, heating of homes, operation of internal combustion engines (cars), wood burning in fireplaces and grilling, in addition to the industrial activities such as incineration. Dioxins are also commonly found in the world's food supply. Dioxins are typically transported through the atmosphere and are expected to be identified at higher concentrations in urban areas like Hamden. In addition to the common occurrence of dioxins in the environment, the 2001 United States Environmental Protection Agency (USEPA) "Dioxin Reassessment" completed by the Science Advisory Board (SAB) highlights recent changing views and acknowledgment of dioxins present in the environment. As noted in the aforementioned document, nearly half of the SAB did not support the listing of 2,3,7,8-tetrachlorobibenzo-p-dioxin (TCDD) as a human carcinogen. Considering these differing opinions in the scientific and regulatory community, we seek coherent guidance from

Connecticut's Health and Environmental agencies on how and whether to include dioxins as part of the investigation. We also seek scientifically supported guidance on how dioxins should be regulated.

Specific Comment 24

p. 39, Section 6.2, Ground-Water Quality Results

Laboratory detection limits for the following compounds exceeded established groundwater protection criteria for the following substances: dieldrin, dibromochloromethane, 1,1,2,2-tetrachloroethane, polynuclear aromatic hydrocarbons, bis(2-ethyl hexyl)phthalate, thallium and antimony. Detection limits specified in the Remediation Standard Regulations must be achieved, especially for metals and PAHs, to determine whether groundwater has been affected by contaminants found in waste and polluted soils on site.

Response

Detection limits for the above constituents are being re-issued by York analytical laboratory. The results are to establish detection limits at or below RSR criteria. This information will be forwarded to the CTDEP.

Specific Comment 25

p. 43, Section 6.2.6.1, Halogenated Volatile Organic Compounds

Volatile organic compound analytical results must be evaluated relative to CT DEP's Proposed Revisions to the Volatilization Criteria dated March 2003.

Response

Noted.

Specific Comment 26

p. 44, Section 6.2.8, Landfill Leachate Indicators

Evaluation of the chemical data for landfill leachate indicator parameters must be provided.

Response

The evaluation will be presented in a future submitted report.

Specific Comment 27

Cross-section figures

Please check lengths of the screened sections of monitoring wells in all figures relative to the information provided in the boring logs. For example, on Figure 4 and 9, the screened

section of monitoring well LBG-MW-15A appears to be 19 feet in length in comparison to the boring log states 15 feet.

Response

All cross sections will be reviewed. Revisions will be reflected in a future submitted report.

Specific Comment 28

Appendix 1, Figure 3

Please verify date of the map as being either 1890 or 1892.

Response

The map is identified as the August 1892 edition of the New Haven Quadrangle Map.

Specific Comment 29

Plates

None of the plates cite references to base maps or fill lines that extend off of the former New Haven Water Company property. For those plates that include summary data tables, there is no clear indication on the data table of where the water table was encountered and which samples were collected above and below the water table.

Response

LBG oversaw the drilling on the southerly located properties; therefore, this offsite fill line was generated by LBG. All plates submitted in future reports will address the above comments.

Specific Comment 30

Plate 3

This plate is missing a key for the dashed contour lines.

Response

A dashed line indicates the line is inferred. All plates submitted in future reports will include this notation in the legend.

Specific Comment 31

Plate 1

Please include a table that identifies whether each monitoring well on site is used in generating this map. Explanations should be provided for any well not used in developing groundwater elevation and potentiometric surface maps.

Response

An explanation for the generation of this plate is provided in the report. Monitor wells used in generating the contours are identified with a potentiometric head below the monitor well identification. Monitor wells not identified with a head; were not used in generating the map.

Specific Comment 31

Plate 14

Most sample results exceeding the RDEC also exceed the GAPMC, but this is not clearly conveyed in the data summary tables.

Response

All plates submitted in future reports will address the above comment.

Specific Comment 31

Plate 19

No concentration units are given for the analytical results presented in the data tables.

Response

All tables submitted in future reports will address the above comment.