

Technical Memorandum

United Illuminating Renewable Energy

Bridgeport, Connecticut

Wetland Delineation and Impact Assessment Report

Prepared under contract to:

Weston & Sampson

For:

THE UNITED ILLUMINATING COMPANY

By:

FITZGERALD & HALLIDAY, INC.
72 Cedar Street
Hartford, CT 06106



August 2014

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1.0 INTRODUCTION

Fitzgerald & Halliday, Inc. (FHI) was retained by Weston & Sampson to identify and delineate wetlands and watercourses that may be impacted by work related to the construction and installation of a new fuel cells adjacent to and solar panel array atop the Seaside Park Landfill in the City of Bridgeport, Connecticut. The project area is depicted in the Figure 1 series (Figures 1a, 1b, and 1c). The wetland investigation was confined to the project area, shown on Figure 1a within the black boundary and Figure 1b within the red dot-dash boundary.

The entire project area was investigated for the presence of wetlands. Wetlands identified within the project area were delineated. FHI soil scientist Daniel Hageman conducted the delineation in June of 2014. Impacts to one wetland were identified, and a broad mitigation strategy was proposed.

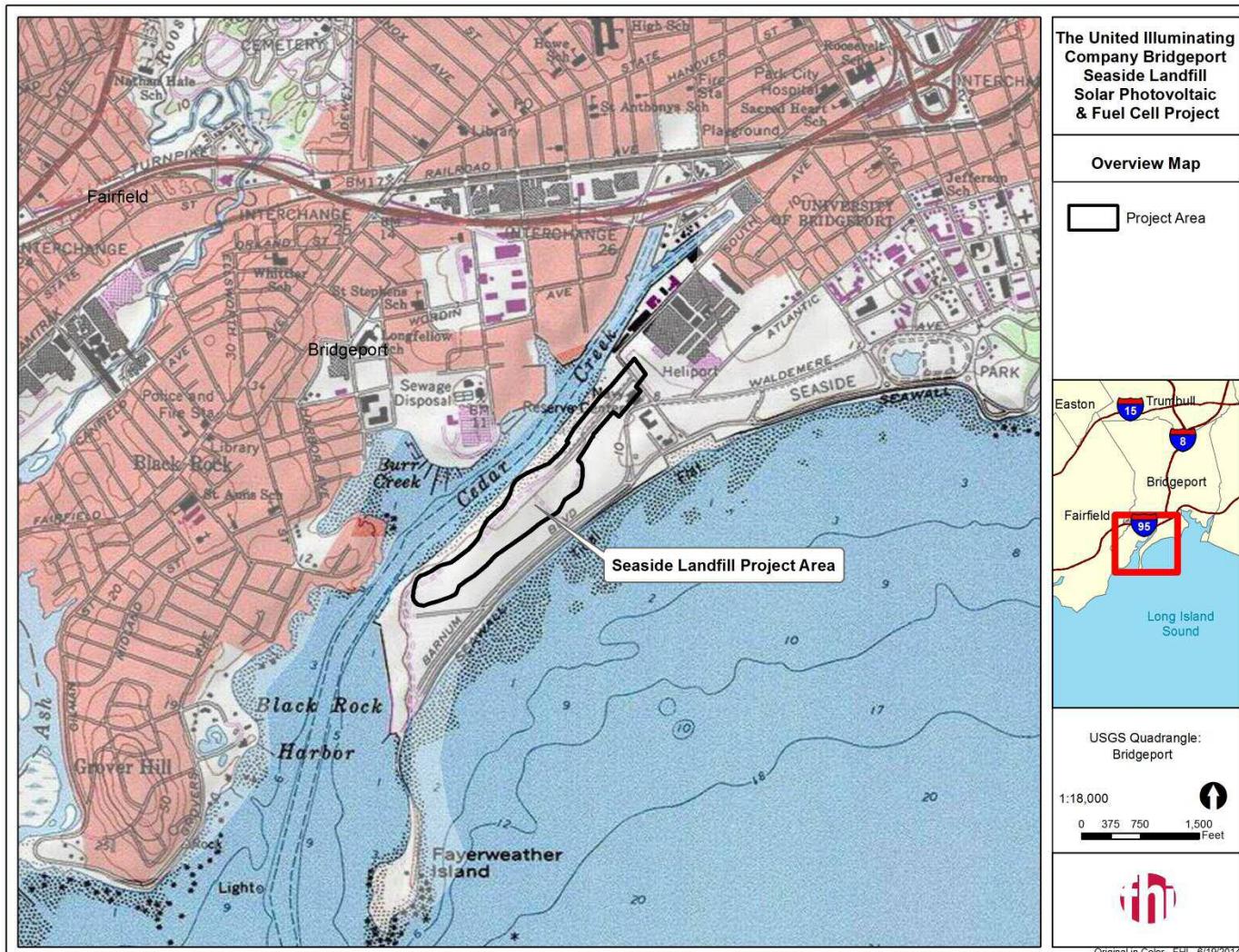


Figure 1a – Overview

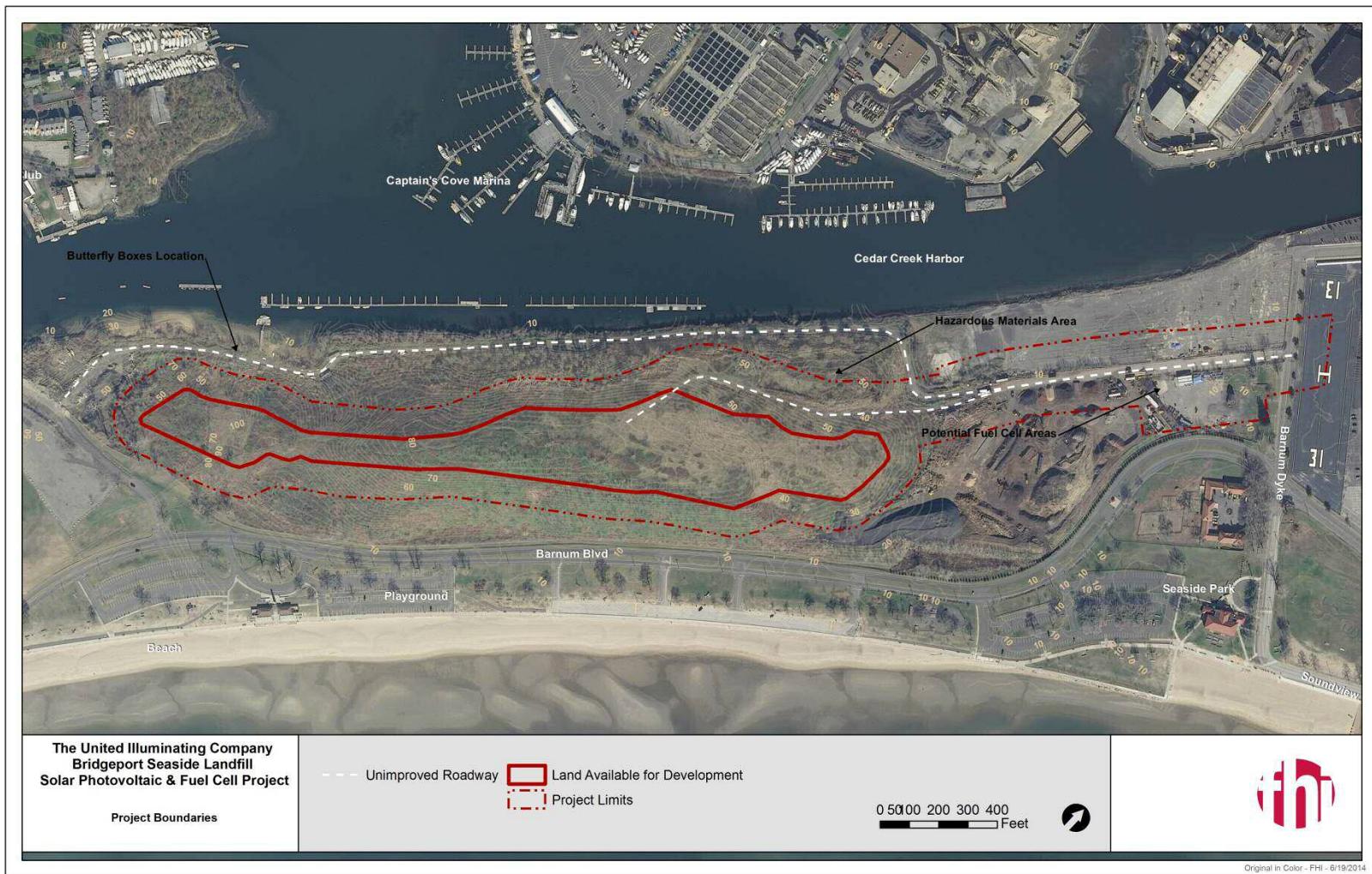


Figure 1b – Project Boundaries

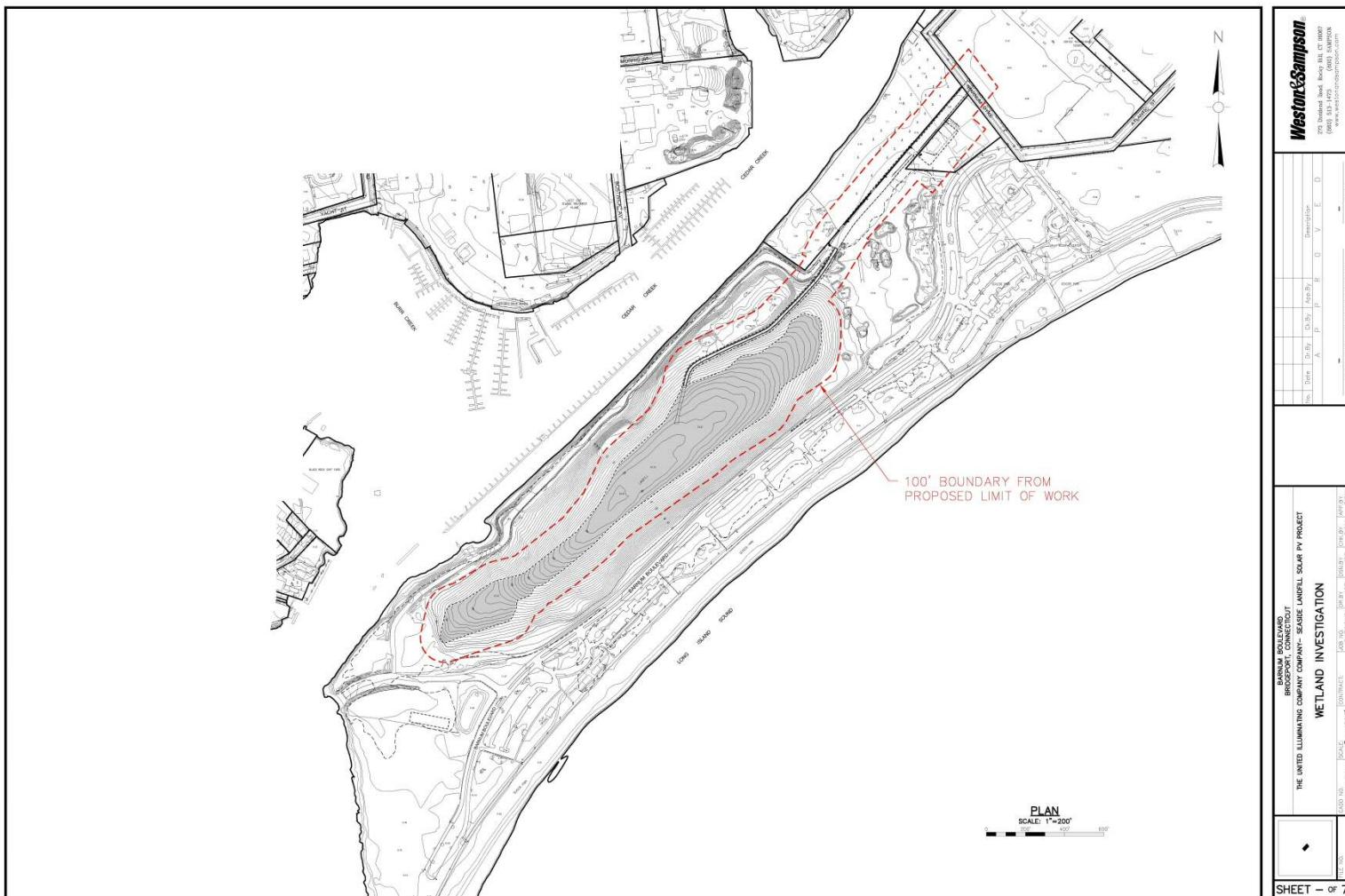


Figure 1c – Wetland Investigation Area

2.0 METHODS

FHI delineated wetland resources in accordance with state and federal definitions and guidelines. The identification of inland wetlands and watercourses, as regulated by Connecticut, were based upon the definitions contained in Section 22a-38 of the General Statutes of Connecticut. Connecticut inland wetland boundaries are determined by the limit of *any of the soil types designated as poorly drained, very poorly drained, alluvial, and flood plain by the National Cooperative Soils Survey, as may be amended from time to time, of the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture* (§22a-38-15). NRCS soil surveys were consulted to compare observed soil types to those generally expected in the project area. Hydric soils were identified for conformance with the *Field Indicators for Identifying Hydric Soils in New England Version 3* (2004) and *Field Indicators of Hydric Soils in the United States, Version 7.0* (2010).

Federal wetlands were identified per the U.S. Army Corps of Engineers (USACE) 1987 *Wetland Delineation Manual* and the USACE 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region – Version 2.0*. The federal wetland boundary was determined by the limit of wetland vegetation (limit of plant community dominated, 50% or more cover, by species adapted to living in wetland conditions) by visual inspection, as well as indicators of hydric soils and wetland hydrology.

Wetland areas were marked in the field using consecutively-numbered flags along the wetland/upland interface. A hand-held GPS unit was used to capture the location of each flag for the purposes of preparing a field sketch. The GPS lines in this report should not be used for engineering design purposes.

3.0 RESULTS

FHI flagged the boundaries of three (3) wetlands, each identified by a separate flag series number. The delineations of several wetland series ended in an open fashion because the wetland systems continue beyond the project area; these are noted in the detailed descriptions below.

FHI prepared field sketches for the delineated wetlands using a hand-held GPS unit (Garmin GPS 62stc). FHI's delineation sketch sheets (useful only for reference, not for design) are depicted in the Figure 2 series (Figures 2a, 2b, and 2c). Wetland delineation flags were located by instrument survey, conducted by others, for portrayal on engineering drawings and use during design.

The field work confirms and supports the Natural Resource Conservation Service (NRCS) mapped designation of Dumps, Udorthents, and Urban Land Complex soils in the project area. See Section 5.0 for the NRCS maps and soils descriptions.



Figure 2a – Delineated Wetlands

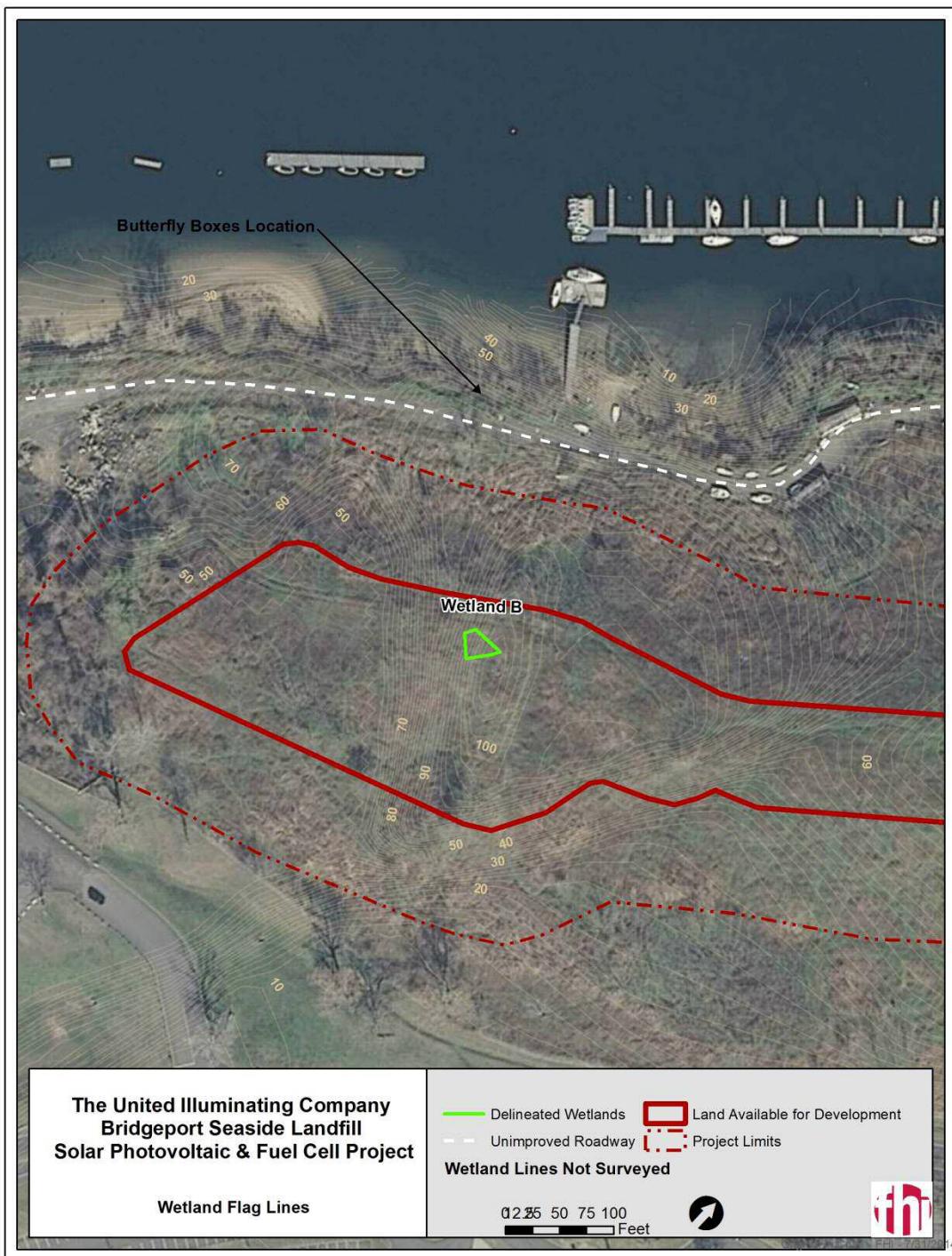


Figure 2b - Delineated Wetlands

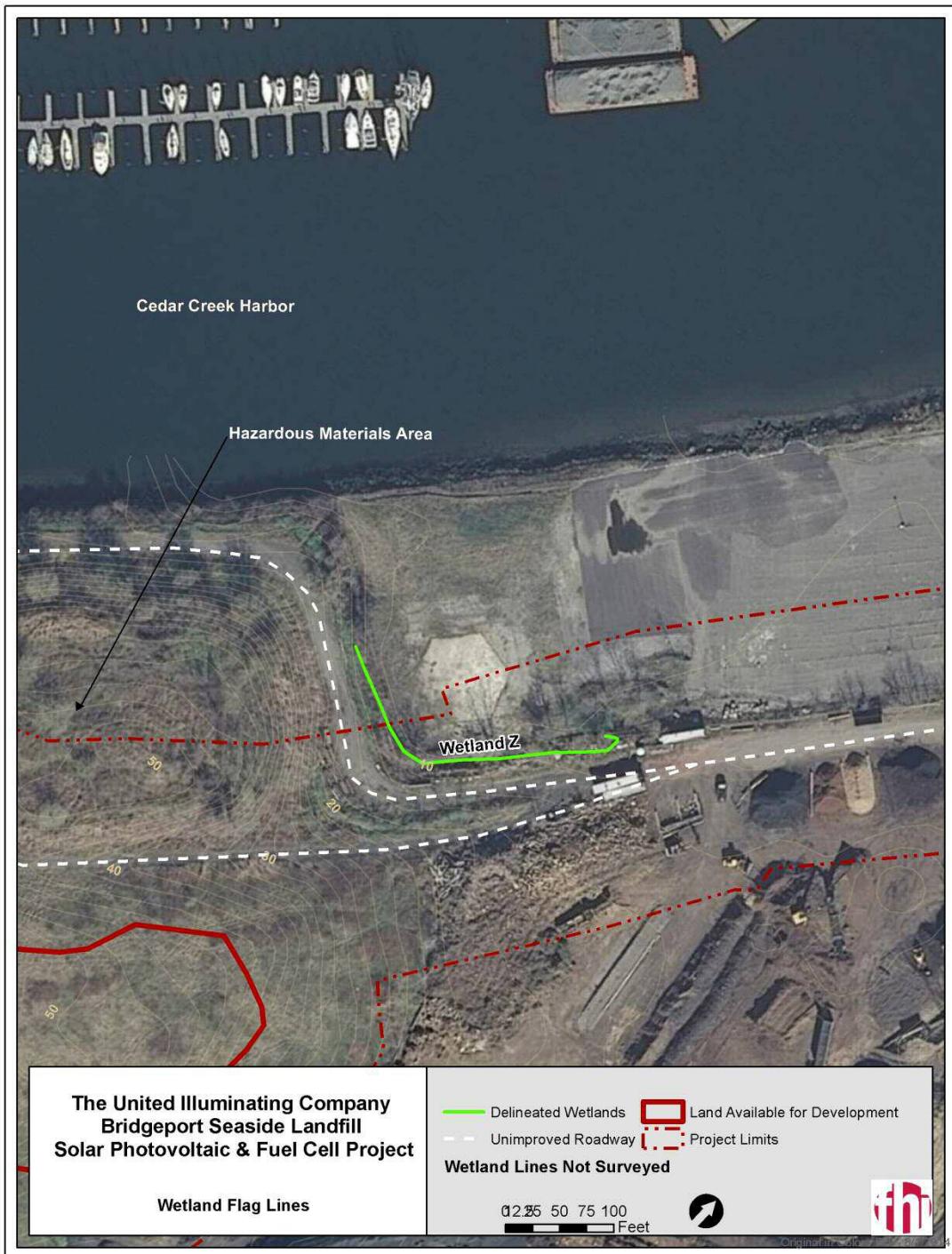


Figure 2c - Delineated Wetlands

4.0 DETAILED WETLAND DESCRIPTIONS AND IMPACT ASSESSMENT

The detailed descriptions of each flagged wetland presented below include information about the approximate location of the flag series, the wetland's connectivity to watercourses and adjacent wetlands, NRCS mapped soils, dominant vegetation, and principal wetland functions and values of the described wetland areas.

Wetland A (Flag Numbers A1 to A32, C1 to C3 and D1 to D2)

Wetland A is located along the south east property adjacent to Barnum Blvd. This palustrine emergent and palustrine open water state and federal wetland is situated at the toe of a slope created from piles of landfill debris and recyclable materials southeast of the Seaside Landfill. The northern portion of the wetland is wider with areas of emergent vegetation and open water (delineated by wetland line A).

The wetland flows northeast to southwest and connects with a state and federal wetland, before transitioning into a long linear storm water ditch to the south (delineated by wetland lines C and D) which parallels Barnum Blvd and the landfill's perimeter. Flag line C delineates the southern side of the system, while Flag line D delineates the northern side of the system. This palustrine emergent state and federal wetland was delineated on site for approximately 60 feet before it transitions into a storm water retention ditch outside the scope of this project. This wetland is directly connected to flag line A at a 6-foot metal fence. The upland area around this wetland consists of maintained grass (lawn) area.

The NRCS mapped soil associated with Wetland A is Smoothed Udorthent. Vegetation in the drainage ditch is dominated by common reed (*Phragmites australis*) along the northern shared edge with Wetland A, and horsetail (*Equisetum arvense*) in the middle. The principal function of this wetland is groundwater recharge and sediment/toxicant retention.

Wetland A is located outside the project area, and there will be no direct or indirect impacts to this wetland from the proposed installation of solar panel arrays.

Wetland B (Flag Numbers B1 to B5)

Wetland B is located at the north western end of the landfill. It is located within a depression atop of the landfill, at a lower elevation than the peak of the landfill (see Figure 2b above). This depression was created when the landfill was capped and graded. This palustrine emergent wetland meets the definition of both a state and federal wetland. During a June 16, 2014 site visit, the presence of water in the wetland was visually detected at approximately 5 inches below the surface in the soil. However, on a subsequent site visit (on June 26th), evidence of water in the wetland was not visually observed; although indicators of hydrology present for substantial amounts of time at or near the surface were identified.

The NRCS mapped soil associated with Wetland B is “Dump”. Vegetation is dominated by path rush (*Juncus tenuis*) and mugwort (*Artemisia vulgaris*). The principal function of this wetland is sediment/toxicant retention.

Wetland B is located where the solar array is proposed to be installed. The current design would include filling of the 529.3 square foot wetland and grading of the land prior to installation of the solar panels. This filling and grading would constitute a direct impact and complete taking of the wetland. Avoidance measures will be considered, including locating the solar panels elsewhere on the landfill site. However, if avoidance is not feasible, then the loss of the wetland will be mitigated for elsewhere on the landfill site. Due to the low function and value and very small area of Wetland B, mitigation, rather than avoidance or minimization, may ultimately be pursued by the project proponent.

Wetland Z (Flag Numbers Z1 to Z13)

Wetland Z is located between a vacant paved area surrounded by a fence, and a gravel access road on the northeastern corner of the Seaside Landfill property (see Figure 2c). This palustrine emergent and palustrine open water wetland meets the definition for a state and federal wetland.

The NRCS mapped soil associated with Wetland B is Smoothed Udorthent. Vegetation is dominated by common reed (*Phragmites australis*) in the eastern half, and mugwort in the western half. The principal functions of this wetland are groundwater recharge and sediment/toxicant retention.

Although Wetland Z is located outside the area proposed for installation of the solar panel area, this wetland is located adjacent to an access road which will be used during the temporary construction period. Therefore, to avoid direct and/or indirect impacts to this wetland during the construction period, the wetland will be identified on project plans and a temporary protective silt fence placed between the access road and the wetland for the duration of the project. The silt fencing will be removed when the project is completed.

5.0 NRCS MAPPED SOILS

The NRCS has published a series of soil surveys for most of the United States. The NRCS soil surveys are used to enhance understanding of, and to help describe a particular geographic area. These surveys have recently been updated for the State of Connecticut, and are available as a digital GIS layer. The soil surveys contain taxonomic descriptions of different soil series, as well as soil maps depicting soil map units.

NRCS soils classifications on the project site are depicted in Figure 3 by their soils number. Only those on the project site are described below.

Dumps (302)

Dumps are those lands where the native soils are either built upon, mixed with non-native soils, or otherwise disturbed by human activities, typically resulting from purposeful deposition of assorted manmade waste materials. Slopes range from nearly level to strongly sloping.

Urban Land (307)

Urban land is land mostly covered by streets, parking lots, buildings, and other structures of urban areas. Slopes range from 0 to 45 percent. Onsite investigations are required for interpretations.

Udorthents, smoothed (308)

Udorthents consist of earthy materials that have been shaped or otherwise disturbed by man. Slopes range from 0 to 25 percent. Onsite investigations are required for interpretations.

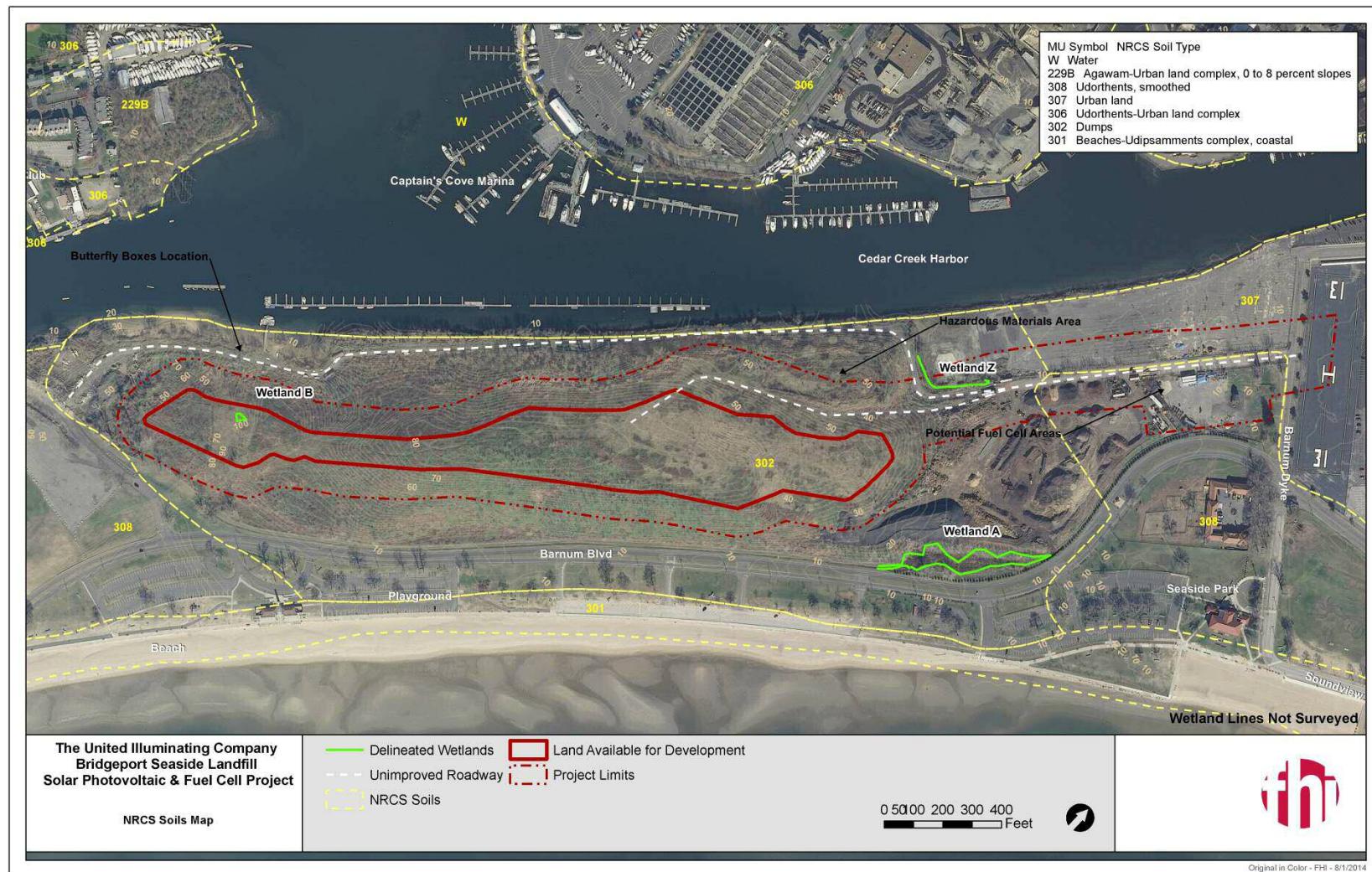


Figure 3 – NRCS Mapped Soils

6.0 SUMMARY

FHI delineated wetland resources within the project area in accordance with both federal and state definitions and guidelines. Three (3) wetland areas were identified by separate flag series. The project area falls within a highly developed portion of Connecticut; much of the soil within the project area has previously been disturbed by human activities including a former landfill area. All three wetland areas identified in or near the project area are anthropogenic in nature, due to historic human activities; all are relatively low in function. Despite the disturbed surroundings, all wetlands within the project area are regulated under state and/or federal jurisdiction.

Only one wetland, Wetland B, will be directly impacted by the installation of the solar panel array. Neither Wetland A nor Wetland Z will be impacted by the project. The current design would include filling of the 529.3-square foot Wetland B and grading of the land prior to installation of the solar panels. Measures to avoid impacts to Wetland B will be considered by project proponents, including locating the solar panels elsewhere on the landfill site. However, if avoidance is not feasible, then the loss of the wetland will be mitigated for elsewhere on the landfill site. Due to the low function and value and very small area of Wetland B, mitigation, rather than avoidance or minimization, may ultimately be pursued by the project proponent.

Although Wetland Z is located outside the area proposed for installation of the solar panel area, this wetland is located adjacent to an access road which will be used during the temporary construction period. Therefore, to avoid direct and/or indirect impacts to this wetland during the construction period, the wetland will be identified on project plans and a temporary protective silt fence placed between the access road and the wetland for the duration of the project. The silt fencing will be removed when the project is completed.

Wetland photographs, U.S. Army Corps transect forms, and function and value forms are attached to this report in Appendices A, B, and C, respectively.

Delineations carried out for this project are valid for a maximum of five years, depending on changing conditions as a result of cultural or environmental influences.

Respectfully submitted,



Daniel Hageman
Professional Soil Scientist
Fitzgerald & Halliday, Inc.

7.0 REFERENCES

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APPENDIX A: WETLAND PHOTOGRAPHS



Wetland A – Facing West



Wetland B – Facing East



Wetland C/D – Facing Northeast



Wetland Z – Facing North

APPENDIX B: WETLAND TRANSECT DETERMINATION FORMS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014
 Applicant/Owner: _____ State: CT Sampling Point: A/N-U
 Investigator(s): Josh Weiss (FHI) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Land Fill Local relief (concave, convex, none): None
 Slope (%): 10 Lat: 41°9'26.12"N Long: 73°12'23.52"W Datum: A-26
 Soil Map Unit Name: Dumps NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)
 Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No NO
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>NO</u>	Is the Sampled Area within a Wetland?	Yes _____	No <u>NO</u>
Hydric Soil Present?	Yes _____	No <u>NO</u>	If yes, optional Wetland Site ID: _____		
Wetland Hydrology Present?	Yes _____	No <u>NO</u>			
Remarks: (Explain alternative procedures here or in a separate report.)					

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1) Water-Stained Leaves (B9)
- High Water Table (A2) Aquatic Fauna (B13)
- Saturation (A3) Marl Deposits (B15)
- Water Marks (B1) Hydrogen Sulfide Odor (C1)
- Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
- Drift Deposits (B3) Presence of Reduced Iron (C4)
- Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
- Iron Deposits (B5) Thin Muck Surface (C7)
- Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No NO Depth (inches): _____
 Water Table Present? Yes _____ No NO Depth (inches): _____
 Saturation Present? Yes _____ No NO Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A/N-U

<u>Tree Stratum</u> (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
1. Quaking Aspen (<i>Populus tremuloides</i>) 35 YES _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ = Total Cover								
<u>Sapling/Shrub Stratum</u> (Plot size: _____)								
1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ = Total Cover								
<u>Herb Stratum</u> (Plot size: _____)								
1. Common Mugwort (<i>Artemisia vulgaris</i>) 70 YES _____ 2. Common Milkweed (<i>Asclepias syriaca</i>) 4 NO _____ 3. Phragmites (<i>Phragmites australis</i>) 1 NO _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____ = Total Cover								
<u>Woody Vine Stratum</u> (Plot size: _____)								
1. _____ 2. _____ 3. _____ 4. _____ = Total Cover								
Remarks: (Include photo numbers here or on a separate sheet.)								
Quaking Aspen found in a thin row along transforation line into the wetland								
				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.				
				Hydrophytic Vegetation Present? Yes _____ No _____				

SOIL

Sampling Point: A/N-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: HTM

Depth (inches): 12"

Hydric Soil Present? Yes No NO

Remarks:

* large quantities of compacted debris ranging from plastics, glass, asphalt, brick forming a restrictive layer.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014
 Applicant/Owner: _____ State: CT Sampling Point: A/N-W
 Investigator(s): Josh Weiss (FHI) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Land Fill Local relief (concave, convex, none): Concave
 Slope (%): 2-5 Lat: 41°9'26.38" N Long: 73°12'23.56" W Datum: _____
 Soil Map Unit Name: Dumps NWI classification: PEM1T

Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)
 Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>YES</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>YES</u>	No _____
Hydric Soil Present?	Yes <u>YES</u>	No _____	If yes, optional Wetland Site ID: <u>A (Northern Transect)</u>		
Wetland Hydrology Present?	Yes <u>YES</u>	No _____			
Remarks: (Explain alternative procedures here or in a separate report.)					

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Microtopographic Relief (D4)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <u>YES</u>	No _____	Depth (inches): <u>0-3"</u>
Water Table Present?	Yes <u>YES</u>	No _____	Depth (inches): <u>16"</u>
Saturation Present? (includes capillary fringe)	Yes <u>YES</u>	No _____	Depth (inches): <u>14"</u>

Wetland Hydrology Present? Yes YES No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Transect plot was Approx. 15ft from open surface water slightly up slope from the lowest point in the wetland

VEGETATION – Use scientific names of plants.

Sampling Point: A/N-W

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
1. Quaking Aspen (<i>Populus tremuloides</i>) _____ 20 YES _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ = Total Cover								
Sapling/Shrub Stratum (Plot size: _____)								
1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ = Total Cover								
Herb Stratum (Plot size: _____)				80	YES	Hydrophytic Vegetation Indicators: _____ Rapid Test for Hydrophytic Vegetation _____ Dominance Test is >50% _____ Prevalence Index is $\leq 3.0^1$ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)		
1. Phragmites (<i>Phragmites australis</i>) _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____ = Total Cover						¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
Woody Vine Stratum (Plot size: _____)						Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.		
1. _____ 2. _____ 3. _____ 4. _____ = Total Cover						Hydrophytic Vegetation Present? Yes _____ No _____		
Remarks: (Include photo numbers here or on a separate sheet.)								

SOIL

Sampling Point: A/N-W

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (**LRR R, MLRA 149B**)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

Oil coating soil at 28"

Depth (inches):

Hydric Soil Present? Yes YES No

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014Applicant/Owner: _____ State: CT Sampling Point: A/S -UInvestigator(s): Josh Weiss (FHI) Section, Township, Range: _____Landform (hillslope, terrace, etc.): Maintained Grass Local relief (concave, convex, none): NoneSlope (%): 0-1 Lat: 41°9'24.907"N Long: 73°12'25.956"W Datum: D-1

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>NO</u>	Is the Sampled Area within a Wetland?	Yes _____	No <u>NO</u>
Hydric Soil Present?	Yes _____	No <u>NO</u>	If yes, optional Wetland Site ID: _____		
Wetland Hydrology Present?	Yes _____	No <u>NO</u>			
Remarks: (Explain alternative procedures here or in a separate report.)					

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes _____ No NO Depth (inches): _____Water Table Present? Yes _____ No NO Depth (inches): _____Saturation Present? Yes _____ No NO Depth (inches): _____ (includes capillary fringe)Wetland Hydrology Present? Yes _____ No NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A/S -U

<u>Tree Stratum</u> (Plot size: _____)		<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	Dominance Test worksheet:		
1. NA					Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)		
2. _____					Total Number of Dominant Species Across All Strata: _____ (B)		
3. _____					Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)		
4. _____							
5. _____							
6. _____							
7. _____							
= Total Cover							
<u>Sapling/Shrub Stratum</u> (Plot size: _____)					Prevalence Index worksheet:		
1. NA					Total % Cover of: _____ Multiply by: _____		
2. _____					OBL species _____ x 1 = _____		
3. _____					FACW species _____ x 2 = _____		
4. _____					FAC species _____ x 3 = _____		
5. _____					FACU species _____ x 4 = _____		
6. _____					UPL species _____ x 5 = _____		
7. _____					Column Totals: _____ (A) _____ (B)		
= Total Cover					Prevalence Index = B/A = _____		
<u>Herb Stratum</u> (Plot size: _____)					Hydrophytic Vegetation Indicators:		
1. • Common plantain (Plantago)		80	YES	Rapid Test for Hydrophytic Vegetation			
2. _____					Dominance Test is >50%		
3. _____					Prevalence Index is $\leq 3.0^1$		
4. _____					Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)		
5. _____					Problematic Hydrophytic Vegetation ¹ (Explain)		
6. _____							
7. _____							
8. _____							
9. _____							
10. _____							
11. _____							
12. _____							
= Total Cover							
<u>Woody Vine Stratum</u> (Plot size: _____)					Definitions of Vegetation Strata:		
1. NA					Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
2. _____					Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
3. _____					Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
4. _____					Woody vines – All woody vines greater than 3.28 ft in height.		
= Total Cover							
Remarks: (Include photo numbers here or on a separate sheet.)					Hydrophytic Vegetation Present?		
					Yes _____ No _____		

SOIL

Sampling Point: A/S -U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: HTM

Depth (inches): 8"

NO

Remarks:

*Restrictive layer may be HTM. several test pits where made 1-2 meters apart with a similar restrictive layer observed. transect site located between landfill and drainage ditch (wetland C/D) associated with a paved road.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014Applicant/Owner: _____ State: CT Sampling Point: A/S-WInvestigator(s): Josh Weiss (FHI) Section, Township, Range: _____Landform (hillslope, terrace, etc.): Maintained Grass Area Local relief (concave, convex, none): ConcaveSlope (%): 0-1 Lat: 41°9'24.703"N Long: 73°12'25.87"W Datum: C-2

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>YES</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>YES</u>	No _____
Hydric Soil Present?	Yes <u>YES</u>	No _____	If yes, optional Wetland Site ID: <u>A (Southern Transect)</u>		
Wetland Hydrology Present?	Yes <u>YES</u>	No _____			
Remarks: (Explain alternative procedures here or in a separate report.)					

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Microtopographic Relief (D4)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes YES No _____ Depth (inches): 1"Water Table Present? Yes _____ No NO Depth (inches): _____Saturation Present? Yes YES No _____ Depth (inches): 0
(includes capillary fringe)Wetland Hydrology Present? Yes YES No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A/S-W

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Phragmites (Phragmites australis)	5	NO	_____
2. Horsetail (Equisetum arvense)	40	YES	_____
3. Common plantain (Plantago)	5	NO	_____
4. Witch (or Quack) grass (Agropyron repens)	10	NO	_____
5. Ladies thumb (Polygonum persicaria)	5	NO	_____
6. Goldenrod (Solidago spp.)	5	NO	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	_____	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____	= Total Cover	
Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____			
Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.			
Hydrophytic Vegetation Present? Yes <u>YES</u> No <u>_____</u>			
Remarks: (Include photo numbers here or on a separate sheet.)			

SOIL

Sampling Point: A/S-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R. MLRA 149B)**

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

See Remarks*

Depth (inches):

Hydric Soil Present? Yes YES No

Remarks:

* Started finding oil coated sand at 20" restricting the depth of accurate soil classification

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014
 Applicant/Owner: _____ State: CT Sampling Point: B-U
 Investigator(s): Josh Weiss (FHI) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Land Fill Local relief (concave, convex, none): Concave
 Slope (%): 0-2 Lat: 41°9'13.18"N Long: 73°12'50.57"W Datum: B-5
 Soil Map Unit Name: Dumps NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)
 Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>NO</u>	Is the Sampled Area within a Wetland?	Yes _____	No <u>NO</u>
Hydric Soil Present?	Yes _____	No <u>NO</u>	If yes, optional Wetland Site ID: _____		
Wetland Hydrology Present?	Yes _____	No <u>NO</u>			
Remarks: (Explain alternative procedures here or in a separate report.)					

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1) Water-Stained Leaves (B9)
- High Water Table (A2) Aquatic Fauna (B13)
- Saturation (A3) Marl Deposits (B15)
- Water Marks (B1) Hydrogen Sulfide Odor (C1)
- Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
- Drift Deposits (B3) Presence of Reduced Iron (C4)
- Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
- Iron Deposits (B5) Thin Muck Surface (C7)
- Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No NO Depth (inches): _____
 Water Table Present? Yes _____ No NO Depth (inches): _____
 Saturation Present? Yes _____ No NO Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B-U

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
1. Sumac (Rhus XXXXX)	5	NO						
2. _____								
3. _____								
4. _____								
5. _____								
6. _____								
7. _____								
				= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)								
1. _____								
2. _____								
3. _____								
4. _____								
5. _____								
6. _____								
7. _____								
				= Total Cover				
Herb Stratum (Plot size: _____)								
1. Common Mugwort (Artemisia vulgaris)	5	NO						
2. Phragmites (Phragmites australis)	80	YES						
3. _____								
4. _____								
5. _____								
6. _____								
7. _____								
8. _____								
9. _____								
10. _____								
11. _____								
12. _____								
				= Total Cover				
Woody Vine Stratum (Plot size: _____)								
1. _____								
2. _____								
3. _____								
4. _____								
				= Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)								
				Hydrophytic Vegetation Indicators: _____ Rapid Test for Hydrophytic Vegetation _____ Dominance Test is >50% _____ Prevalence Index is $\leq 3.0^1$ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)				
				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.				
				Hydrophytic Vegetation Present? Yes _____ No _____				

SOIL

Sampling Point: B-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: HTM

Depth (inches): 20"

Encountering Ash/soot and other debris

Hydro-Soil Present? Yes No

Remarks:

Moderately strong redox noted most likely due to water movement from a higher location through this transect to the wetland as water moves along the restrictive layer

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014
 Applicant/Owner: _____ State: CT Sampling Point: B-W
 Investigator(s): Josh Weiss Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Land Fill Local relief (concave, convex, none): concave
 Slope (%): 4-7 Lat: 41°9'13.35"N Long: 73°12'51.78"W Datum: _____
 Soil Map Unit Name: Dumps NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>YES</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>YES</u>	No _____
Hydric Soil Present?	Yes <u>YES</u>	No _____	If yes, optional Wetland Site ID: <u>B</u>		
Wetland Hydrology Present?	Yes <u>YES</u>	No _____			
Remarks: (Explain alternative procedures here or in a separate report.) Water has been observed previously at this transect within 5" of the surface					

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1) Water-Stained Leaves (B9)
- High Water Table (A2) Aquatic Fauna (B13)
- Saturation (A3) Marl Deposits (B15)
- Water Marks (B1) Hydrogen Sulfide Odor (C1)
- Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
- Drift Deposits (B3) Presence of Reduced Iron (C4)
- Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
- Iron Deposits (B5) Thin Muck Surface (C7)
- Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <u> </u>	No <u>NO</u>	Depth (inches): _____
Water Table Present?	Yes <u> </u>	No <u>NO</u>	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes <u> </u>	No <u>NO</u>	Depth (inches): _____

Wetland Hydrology Present? Yes YES No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B-W

Tree Stratum (Plot size: _____)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. Sumac (<i>Rhus XXXX</i>)		1	NO		Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
2. _____					Total Number of Dominant Species Across All Strata: _____ (B)	
3. _____					Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)	
4. _____						
5. _____						
6. _____						
7. _____						
		= Total Cover			Prevalence Index worksheet:	
Sapling/Shrub Stratum (Plot size: _____)					Total % Cover of:	Multiply by:
1. _____					OBL species	x 1 = _____
2. _____					FACW species	x 2 = _____
3. _____					FAC species	x 3 = _____
4. _____					FACU species	x 4 = _____
5. _____					UPL species	x 5 = _____
6. _____					Column Totals:	(A) (B)
7. _____					Prevalence Index = B/A = _____	
		= Total Cover			Hydrophytic Vegetation Indicators:	
Herb Stratum (Plot size: _____)					<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
1. Common Mugwort (<i>Artemisia vulgaris</i>)		30	NO			
2. Swallow wort (<i>Cynanchum louiseae</i>)		5	NO			
3. Narrow Leaf Golden Rod (<i>Solidago graminifolia</i>)		5	NO			
4. Fox tail (<i>Alopecurus L.</i>)		40	YES			
5. Path Rush (<i>Juncus tenuis</i>)		5	NO			
6. <i>Carix</i> scooperia		5	NO			
7. Red Top (<i>Panicum rigidulum</i>)		5	NO			
8. _____						
9. _____						
10. _____						
11. _____						
12. _____						
		= Total Cover				
Woody Vine Stratum (Plot size: _____)						
1. _____						
2. _____						
3. _____						
4. _____						
		= Total Cover			Hydrophytic Vegetation Present? Yes <u>YES</u> No <u>_____</u>	
Remarks: (Include photo numbers here or on a separate sheet.)						

SOIL

Sampling Point: B-W

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: HTM

Dense layer of debris, possibly ash or soot and other trash (glass, plastic)

Depth (inches): 12"

Hydric Soil Present? Yes YES No

Remarks:

Seems as if water is flowing from a higher location through this wetland depleting the iron as it flows through the soil approx. 5" below grade. There are no visible signs of surface water present implying the water seeps back into the land fill

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014Applicant/Owner: _____ State: CT Sampling Point: Z-UInvestigator(s): Josh Weiss (FHI) Section, Township, Range: _____Landform (hillslope, terrace, etc.): Land Fill - Adjacent to access Road Local relief (concave, convex, none): Sloping downwardSlope (%): 30 Lat: 41°9'30.155"N Long: 73°12'30.033"W Datum: Z-4Soil Map Unit Name: Dump NWI classification: _____Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>NO</u>	Is the Sampled Area within a Wetland?	Yes _____	No <u>NO</u>
Hydric Soil Present?	Yes _____	No <u>NO</u>	If yes, optional Wetland Site ID: _____		
Wetland Hydrology Present?	Yes _____	No <u>NO</u>			
Remarks: (Explain alternative procedures here or in a separate report.) Upland area is adjacent to paved access road at/near the top of a steep 8-10ft bank sloping down into the wetland at the bottom					

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes _____ No NO Depth (inches): _____Water Table Present? Yes _____ No NO Depth (inches): _____Saturation Present? Yes _____ No NO Depth (inches): _____Wetland Hydrology Present? Yes _____ No NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water is present in the wetland but none is in the upland transect location

VEGETATION – Use scientific names of plants.

Sampling Point: Z-U

<u>Tree Stratum</u> (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
1. <u>Empress Tree</u> (<i>Paulownia tomentosa</i>) _____				30	NO	_____		
2. <u>Quaking Aspen</u> (<i>Populus tremuloides</i>) _____				10	NO	_____		
3. <u>Black Locust</u> (<i>Robinia pseudoacacia L.</i>) _____				40	YES	_____		
4. <u>Box Elder</u> (<i>Acer negundo L.</i>) _____				5	NO	_____		
5. _____				_____	_____	_____		
6. _____				_____	_____	_____		
7. _____				_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)	
								Prevalence Index = B/A = _____
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				_____ = Total Cover		Hydrophytic Vegetation Indicators: _____ Rapid Test for Hydrophytic Vegetation _____ Dominance Test is >50% _____ Prevalence Index is $\leq 3.0^1$ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)		
1. _____								
2. _____								
3. _____								
4. _____								
5. _____								
6. _____								
7. _____								
				_____ = Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
<u>Herb Stratum</u> (Plot size: _____)						Definitions of Vegetation Strata:		
1. <u>Common Mugwort</u> (<i>Artemisia vulgaris</i>) _____				80	YES	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
2. <u>Common Milkweed</u> (<i>Asclepias syriaca</i>) _____				10	NO	Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
3. <u>daisy fleabane</u> (<i>Erigeron annuus (L.) Pers.</i>) _____				2	NO	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
4. <u>Phragmites</u> (<i>Phragmites australis</i>) _____				5	NO	Woody vines – All woody vines greater than 3.28 ft in height.		
5. _____								
6. _____								
7. _____								
8. _____								
9. _____								
10. _____								
11. _____								
12. _____								
				_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)						Hydrophytic Vegetation Present? Yes _____ No _____		
1. <u>Asiatic bittersweet</u> (<i>Celastrus scandens L.</i>) _____				3	NO			
2. _____								
3. _____								
4. _____								
				_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)								
Trees provide canopy over this upland transect location but are not growing within the transect								

SOIL

Sampling Point: Z-U

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: HTM

Unsure what type of HMT are causing the restriction, could be road materials

Depth (inches): 9+

Hydric Soil Present? Yes No NO

Remarks:

Test hole was dug on the top of a steep slope

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: United Illuminating Renewable Energy City/County: Bridgeport/Fairfield Sampling Date: 06/26/2014
 Applicant/Owner: _____ State: CT Sampling Point: Z-W
 Investigator(s): Josh Weiss (FHI) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Land Fill Local relief (concave, convex, none): NONE
 Slope (%): 0-2 Lat: 41°9'30.053"N Long: 73°12'30.267"W Datum: _____
 Soil Map Unit Name: DUMP NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes YES No _____ (If no, explain in Remarks.)
 Are Vegetation YES, Soil YES, or Hydrology YES significantly disturbed? Are "Normal Circumstances" present? Yes YES No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>YES</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>YES</u>	No _____
Hydric Soil Present?	Yes <u>YES</u>	No _____	If yes, optional Wetland Site ID: <u>Wetland Z</u>		
Wetland Hydrology Present?	Yes <u>YES</u>	No _____			
Remarks: (Explain alternative procedures here or in a separate report.) Small drainage ditch paralleling a paved access road located down a steep embankment (8-10ft). Other side of ditch is a non-maintained paved parking lot. Some areas in the wetland where holding water, tends to dry out towards the northern end.					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)			
Primary Indicators (minimum of one is required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)			
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)			

Field Observations:			
Surface Water Present?	Yes <u>YES</u>	No _____	Depth (inches): <u>SURFACE</u>
Water Table Present?	Yes <u>YES</u>	No _____	Depth (inches): <u>8"</u>
Saturation Present? (includes capillary fringe)	Yes <u>YES</u>	No _____	Depth (inches): <u>6"</u>
Wetland Hydrology Present? Yes <u>YES</u> No _____			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
surface water present along the east-west section of the wetland, no surface water present along the north-south portion though signs of water are present.

VEGETATION – Use scientific names of plants.

 Sampling Point: Z-W

<u>Tree Stratum</u> (Plot size: _____)				<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
1. <u>Empress Tree (Paulownia tomentosa)</u>				40	YES			
2. <u>Quaking Aspen (Populus tremuloides)</u>				10	NO			
3. <u>Black Locust (Robinia pseudoacacia L.)</u>				30	NO			
4. <u>Box Elder (Acer negundo L.)</u>				10	NO			
5. _____								
6. _____								
7. _____								
<u>= Total Cover</u>								
<u>Sapling/Shrub Stratum</u> (Plot size: _____)							Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)	
<u>= Total Cover</u>								
<u>Herb Stratum</u> (Plot size: _____)							Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Vegetation Dominance Test is >50% Prevalence Index is $\leq 3.0^1$ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain)	
<u>= Total Cover</u>								
<u>Woody Vine Stratum</u> (Plot size: _____)							¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
<u>= Total Cover</u>								
<u>Remarks:</u> (Include photo numbers here or on a separate sheet.)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.				
<u>Hydrophytic Vegetation Present?</u>				Yes <u>YES</u> No <u>_____</u>				
The wetland was surrounded by Common Reed on the east-west portion and mug wart/ vines on the north-south portion. Transect was taken towards the bend of the wetland in the transition zone of the plant species.								

SOIL

Sampling Point: Z-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	2.5YR 2.5/1		N/A				Fine Sand	Mucky feel, very dark color not an Oa
10-16	7.5YR 2.5/1		10YR 3/6	2	C	M	Fine Sand	Dark colored soil

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) **(LRR R, MLRA 149B)**

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- Coast Prairie Redox (A16) (**LRR K, L, R**)
- 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- X** Dark Surface (S7) (**LRR K, L**)
- Polyvalue Below Surface (S8) (**LRR K, L**)
- Thin Dark Surface (S9) (**LRR K, L**)
- Iron-Manganese Masses (F12) (**LRR K, L, R**)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): +40 in

Hydric Soil Present? Yes YES No

Remarks:

APPENDIX C: WETLAND FUNCTION-VALUE EVALUATION FORMS

Wetland Function-Value Evaluation Form

Total area of wetland N/A Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? Yes

Adjacent land use landfill, roadway Distance to nearest roadway or other development est. 10 ft.

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. A North
 Latitude 41 09 28.79 N Longitude 73 12 21.07 W
 Prepared by: L.Stegina Date 6/26/14

Wetland Impact:
 Type _____ Area _____

Evaluation based on:
 Office _____ Field
 Corps manual wetland delineation completed? Y N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	<input checked="" type="radio"/>	<input type="radio"/>	4,5,10,15	X	standing water; evidence of recharge
 Floodflow Alteration	<input checked="" type="radio"/>	<input type="radio"/>	3,4,5,7,8,9,15,18		no associated watercourse
 Fish and Shellfish Habitat	<input type="radio"/>	<input checked="" type="radio"/>			no associated watercourse
 Sediment/Toxicant Retention	<input checked="" type="radio"/>	<input type="radio"/>	1,2,4,7,9	X	sediment/toxicant from landfill
 Nutrient Removal	<input type="radio"/>	<input checked="" type="radio"/>	3,7,8,9		no nutrient sources
 Production Export	<input type="radio"/>	<input checked="" type="radio"/>	2,4,7		few consumptive elements within wetland
 Sediment/Shoreline Stabilization	<input type="radio"/>	<input checked="" type="radio"/>	2,3,15		no associated watercourse
 Wildlife Habitat	<input checked="" type="radio"/>	<input type="radio"/>	6,7,8,13,23		limited habitat for mostly birds/insects, urban adapted mammals
 Recreation	<input type="radio"/>	<input checked="" type="radio"/>			restricted access with health & safety risks
 Educational/Scientific Value	<input type="radio"/>	<input checked="" type="radio"/>			restricted access with health & safety risks
 Uniqueness/Heritage	<input type="radio"/>	<input checked="" type="radio"/>	1		not unique or culturally significant
 Visual Quality/Aesthetics	<input type="radio"/>	<input checked="" type="radio"/>	6		restricted access; noisy, foul odor
 ES Endangered Species Habitat	<input type="radio"/>	<input checked="" type="radio"/>			none observed
Other	<input type="radio"/>	<input checked="" type="radio"/>			

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland N/A Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? Yes

Adjacent land use landfill, roadway Distance to nearest roadway or other development est.10 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. A South
Latitude 41 09 27.85 N Longitude 73 12 21.32 W

Prepared by: L.Stegina Date 6/26/14

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	<input checked="" type="radio"/> <input type="radio"/>	4,5,15		evidence of recharge; signs of standing water
 Floodflow Alteration	<input type="radio"/> <input checked="" type="radio"/>	3,4,5,9,18		no associated watercourse
 Fish and Shellfish Habitat	<input type="radio"/> <input checked="" type="radio"/>	2		no associated watercourse
 Sediment/Toxicant Retention	<input checked="" type="radio"/> <input type="radio"/>	1,2,3,4,5	X	sediment/toxicant from road & landfill
 Nutrient Removal	<input type="radio"/> <input checked="" type="radio"/>	2,3,5,7,8,9		no nutrient sources
 Production Export	<input checked="" type="radio"/> <input type="radio"/>	1,2,4,7,12		Few consumptive elements within wetland
 Sediment/Shoreline Stabilization	<input type="radio"/> <input checked="" type="radio"/>	1,2,3,15		no associated watercourse
 Wildlife Habitat	<input type="radio"/> <input checked="" type="radio"/>	7,8,13		limited habitat for mostly insects
 Recreation	<input type="radio"/> <input checked="" type="radio"/>			long, narrow wetland between road & landfill
 Educational/Scientific Value	<input type="radio"/> <input checked="" type="radio"/>	14		long, narrow wetland between road & landfill
 Uniqueness/Heritage	<input type="radio"/> <input checked="" type="radio"/>	1		not unique or culturally significant
 Visual Quality/Aesthetics	<input type="radio"/> <input checked="" type="radio"/>	6		landfill within viewshed to the west; noisy, foul odor
 ES Endangered Species Habitat	<input type="radio"/> <input checked="" type="radio"/>			none observed
Other	<input type="radio"/> <input checked="" type="radio"/>			

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 529.3 SF Human made? Yes Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use landfill Distance to nearest roadway or other development 0

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. B
 Latitude 41 09 14.95 N Longitude 73 12 47.08 W
 Prepared by: L.Stegina Date 6/26/14

Wetland Impact:
 Type _____ Area _____

Evaluation based on:
 Office _____ Field X
 Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	<input type="radio"/> <input checked="" type="radio"/>	4,6		limited evidence of recharge
 Floodflow Alteration	<input type="radio"/> <input checked="" type="radio"/>	3,4,9,18		no associated watercourse
 Fish and Shellfish Habitat	<input type="radio"/> <input checked="" type="radio"/>			no associated watercourse
 Sediment/Toxicant Retention	<input checked="" type="radio"/> <input type="radio"/>	1,2,4,7	X	minimal sediment/toxicant from landfill
 Nutrient Removal	<input type="radio"/> <input checked="" type="radio"/>	3,7,8,9,11		no nutrient sources
 Production Export	<input type="radio"/> <input checked="" type="radio"/>	1,7		few consumptive elements within wetland
 Sediment/Shoreline Stabilization	<input type="radio"/> <input checked="" type="radio"/>	3,15		no associated watercourse
 Wildlife Habitat	<input checked="" type="radio"/> <input type="radio"/>	5,7,8,13		limited habitat for mostly birds/insects, urban adapted mammals
 Recreation	<input type="radio"/> <input checked="" type="radio"/>			restricted access with health & safety risks
 Educational/Scientific Value	<input type="radio"/> <input checked="" type="radio"/>			restricted access with health & safety risks
 Uniqueness/Heritage	<input type="radio"/> <input checked="" type="radio"/>	1,17,19		not unique or culturally significant
 Visual Quality/Aesthetics	<input type="radio"/> <input checked="" type="radio"/>	12		restricted access; noisy, foul odor
 ES Endangered Species Habitat	<input type="radio"/> <input checked="" type="radio"/>			none observed
Other	<input type="radio"/> <input checked="" type="radio"/>			

Notes: wetland formed in landfill cap material

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland N/A Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? Yes

Adjacent land use landfill, utility plant Distance to nearest roadway or other development est.10 feet

Dominant wetland systems present PEM, PFO Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Z

Latitude 41 09 30.07 N Longitude 73 12 30.14 W

Prepared by: L.Stegina Date 6/26/14

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	<input checked="" type="radio"/>	<input type="radio"/>	4,5,15	X	evidence of recharge; signs of standing water
 Floodflow Alteration	<input checked="" type="radio"/>	<input type="radio"/>	3,4,5,9,18		no associated watercourse
 Fish and Shellfish Habitat	<input type="radio"/>	<input checked="" type="radio"/>	2		no associated watercourse
 Sediment/Toxicant Retention	<input checked="" type="radio"/>	<input type="radio"/>	1,2,3,4,5	X	sediment/toxicant from road & landfill
 Nutrient Removal	<input type="radio"/>	<input checked="" type="radio"/>	2,3,5,7,8,9		no nutrient sources
 Production Export	<input checked="" type="radio"/>	<input type="radio"/>	1,2,4,7,12		Few consumptive elements within wetland
 Sediment/Shoreline Stabilization	<input type="radio"/>	<input checked="" type="radio"/>	1,2,3,15		no associated watercourse
 Wildlife Habitat	<input checked="" type="radio"/>	<input type="radio"/>	7,8,13		limited habitat for mostly birds/insects
 Recreation	<input type="radio"/>	<input checked="" type="radio"/>			restricted access with health & safety risks
 Educational/Scientific Value	<input type="radio"/>	<input checked="" type="radio"/>	14		restricted access with health & safety risks
 Uniqueness/Heritage	<input type="radio"/>	<input checked="" type="radio"/>	1		not unique or culturally significant
 Visual Quality/Aesthetics	<input type="radio"/>	<input checked="" type="radio"/>	6		restricted access; trash/landfill debris visible; noisy, foul odor
 ES Endangered Species Habitat	<input type="radio"/>	<input checked="" type="radio"/>			none observed
Other	<input type="radio"/>	<input checked="" type="radio"/>			

Notes:

* Refer to backup list of numbered considerations.