

**EAST LYME INLAND WETLANDS AGENCY
SHOW CAUSE HEARING
Monday, JUNE 9th, 2014
MINUTES**

FILED IN EAST LYME
CONNECTICUT
June 17, 2014 AT 10:00 AM/PM
Jessie A. Blain
EAST LYME TOWN CLERK

The East Lyme Inland Wetlands Agency held a Show Cause Hearing on the Cease, Desist & Correct Order issued to GRE 314 East Lyme, LLC & Centerplan Construction Co. for property located at 20 Farm Meadow Road, Assessor's Map #52.0, Lot #126, on June 9, 2014 at Town Hall, 108 Pennsylvania Ave., Niantic, CT. Chairman Lozanov opened the Show Cause Hearing and called it to order at 7:07 PM.

PRESENT: Cheryl Lozanov, Chairperson, Chuck Reluga, Vice-Chair, Phyllis Berger, Keith Hall, Kim Barber Bradley, Alternate

ALSO PRESENT: Attorney Theodore Harris, Representing the Owner
Michael Klein, Soil & Professional Wetland Scientist
Ryan McNamara, Project Mgr., Centerplan Construction
Michael Lombardi, Engineer
Attorney Edward O'Connell, Town Counsel
Gary Goeschel, Inland Wetlands Agent
Karen Zmitruk, Recording Secretary

ABSENT: Norm Bender (Recused), Harry Clarke, Joe Mingo

Call to Order

Ms. Lozanov called this Show Cause Hearing to order at 7:07 PM and introduced the members seated, Inland Wetlands Agent and Recording Secretary. It was noted that Mr. Bender had recused himself from the hearing as he is a member of the Land Trust.

Pledge of Allegiance

The Pledge was observed.

Show Cause Hearing

- 1. Cease, Desist & Correct Order Issued to GRE 314 East Lyme, LLC, Owner of 20 Farm Meadow Road, East Lyme, CT and Centerplan Construction Company for the pollution of an onsite inland wetlands and watercourse. More specifically, the deposition of sedimentation within an onsite wetlands and watercourse as a result of storm water management system failures and failures of erosion and sedimentation controls associated with the construction of a solar field/array on property located at 20 Farm Meadow Road, Assessor's Map #52.0, Lot #126, East Lyme, CT.**

Ms. Lozanov asked for an update.

Attorney Harris, place of business 351 Main Street, Niantic, CT recalled the events that had led up to this and where they are now. He noted that Michael Klein, Biologist & Soil Scientist, Environmental Planning Services LLC, West Hartford, CT had proposed some mitigation methods at the last meeting and that they had also received a report on the progress for this meeting. He said that throughout all of this that they had notified the proper authorities that there were some impacts downstream. He added that they could see from the pictures that some of the areas are already re-vegetating. While this also involves some of the Cranberry Brook area some of the deposits there are not consistent with this issue but rather are due to the road sand and some run-off from work that the DOT is doing in the area. The pictures show that the vast majority of the stream did not show deposition and the question then is if it is necessary to remediate the areas of smaller deposits. It is their opinion that they are already vegetating on their own and it is also their belief that the more appropriate course of action is to concentrate/focus on the deeper areas once the drier weather comes rather than areas that would create a lot of disturbance in just trying to get to them. They are proposing that

the middle of July would be a dry time and a good time to work with the Inland Wetland Officer to focus on removal in those areas.

Ms. Lozanov asked how they would get the vacuum equipment in without destroying any additional wetlands. Mr. Klein said that the 3" in depth is a ball park number and they want to wait to see what is out there in the area. Any skunk cabbage will re-grow without problems. Also, there is an old road that can be used and one of the advantages of doing work during the dry season is that they would be able to get in without causing a lot of damage. Further there is more volume higher on the slope and those areas would be easier to get to.

Ms. Lozanov asked what mitigation has been done and if other damage has occurred.

Mr. Klein said that the basins have been cleaned out and areas repaired; the southerly portion is showing grass growth as it was seeded first. Some additional measures have been implemented such as the polymer flocking.

Ms. Barber Bradley said that she was not clear where the farm road was but she agrees with his recommendation to focus on areas that really need it rather than the areas that are coming back on their own. She further agreed that this determination could be made once they were out on the site with the Inland Wetland Officer.

Mr. Hall asked about the submission of a staging plan or if they were working with the Inland Wetland Agent. Mr. Goeschel said that he has a written recommendation and that the April 30, 2014 letter to Ryan McNamara was the plan. The concern is where they would bring the equipment in and that was also Mr. Klein's last question – they could probably get access to areas on the stone surfaced roads already in the area and anything other they would work out with him.

Mr. Klein noted that the hoses are several hundred feet in length and that would help.

Ms. Barber Bradley said that her thought was that they should determine the areas out in the field when they get there and see what is there.

Mr. Goeschel asked about any problematic areas that may fall within the conservation easement. Attorney O'Connell said that he would need to know the precise type of work that would need to be done within the easement area. He added that the Town is the easement holder/owner and asked that they define the type of work that would be done. He made it clear that the Town is the holder of the easement and not the Land Trust and that he highly doubted that they would object to remediation of the area however they do want to be informed of it prior to any work being done.

Attorney Harris said that it would be done by hand or vacuum and that he would agree with Attorney O'Connell that it is highly doubtful that the Town would object to the remediation work being done. He said that they would work with the Inland Wetland Agent and define the work to be done. It was agreed that the easement is in favor of the Town. He suggested that they continue with the process of stabilization as it seems that they have a system that is functioning as it was supposed to. Last week they had another rain event and did have some turbid water on the first flush. They went back to the basins to muck out the sediment. They are also looking at skimmer technology. This moves the outlet closer to the water and cleaner water is allowed to leave. The flocking is being used and is working.

Mr. McNamara said that they have brought samples of the flocking and that they would do a demonstration of the flocking process using some of the turbid water from the site to show how it works to separate the sediment particles.

Ms. Lozanov expressed her concerns regarding the use of an acrylic polymer.

Ms. Barber Bradley asked if the use of it is a temporary method until stabilization occurs.

Mr. Klein said yes.

Ms. Barber Bradley said that they would probably have to weigh the effects of what would happen if they did not use this product in the interim to help stabilize the area.

Mr. McNamara completed his demonstration (showing the sediment on the bottom of the glass) noting that the basin is cleaned out as much as is warranted.

Mr. Lombardi noted the installation of some additional stone check dams; stone walls and sedimentation measures already installed. He said that the issue now seems to be one of turbid water and not the erosion and mass transport of sediment. They will be adding more stone to further refine areas. Flocking is the means to control the quantity/quality of the storm water that leaves the site. After flocking the sediment is removed from the bottom of the pond. He said that the last thing that they would want to do is to use something that would create more issues. He noted that they have planted low-mow shade mix under the panels. They have come in tonight with a three prong approach and they are doing more hydro-seeding in strategic areas to get the grass to grow quickly. This has been an on-going evolutionary process and once the grass is established they should not see this issue.

Ms. Berger asked what happens to the sediment taken from the basins.

Mr. Lombardi said that it would be hauled off-site.

Mr. Goeschel noted that he had looked up information on the flocking and that it is not a plastic.

Ms. Barber Bradley said that they have to look at the effect of the turbid water moving off-site and the use of the flocking and that it is temporary until stabilization occurs.

Mr. Goeschel said at the end of the day the question is if it is better to use flocking or to let the turbid water float off-site to other areas. He said that the goal is to stabilize the site with a staging plan and utilizing the existing stone roads. He asked that they provide him with further information on the product.

Attorney Harris said that the flocking has been used in a variety of situations and that this is only a means to be used right now to stop the turbidity. They have spent a great deal of time trying to find solutions to this.

Mr. Hall asked if Mr. Lombardi's team has any trouble meeting the outline of Mr. Goeschel's letter and if they would follow the conditions of the memo.

Mr. Lombardi said that he had just received the memo dated 6/9/2014 a few minutes ago. With regard to items 1 through 6 he said that 1 - they do plan to stabilize the areas and hydro-seed and would not limit areas; 2 - they do not intend to install erosion control under the drip edges; 3 - they have done this already and will continue to do so; 4 - they will re-inspect measures already taken and ask if more are needed; 5 - the plan set forth on 4/30/2014 was the plan in text that they are using. They intend to continue to act on what was already presented. They are looking to work during the dry season in mid to late July. 6 - Yes, the area to the south is included in the remediation plan.

Ms. Lozanov asked Mr. Goeschel if he was comfortable with Item 2 being a no.

Mr. Goeschel said that he is comfortable with having the area hydro-seeded and 6" to 7" in height of material with everything vegetated and that they will also clean out the basins. He said that he has correspondence from the Siting Council stating that they will also act on these items. He would like further information on Item 2 and why they are not in agreement with that recommendation.

Mr. Hall said that he would like information regarding the email Mr. Clarke sent on Temporary Sediment Traps #2 and 3 and if they are there or have been removed and how they propose to handle the run-off from 10 acres if they are not there.

Attorney O'Connell suggested ordering Items 1, 3, 4, 5 & 6 and requesting a report back on Item #2 as things unfold.

Mr. Lombardi said that they will come up with the specifics and report back to Mr. Goeschel on it. He added that they will be hydro-seeding where areas are bare.

Mr. Goeschel said that he would like a completion date for the remediation.

Mr. Klein said that he would suggest September 30, 2014.

Mr. Lombardi noted that he would not want to remove the erosion controls too early and that the Siting Council was also aware of wanting to leave them in place as long as necessary.

Ms. Lozanov asked about requiring an 80% survival rate.

Mr. Klein said that the 80% figure comes from the Army Corps of Engineers and can only be applied to woody plants and shrubs and not to areas that are seeded. He added that he would research what would be a quantitative success rate for seeded areas.

Ms. Lozanov polled the members regarding the use of polymer flocking; with the majority of members being in favor of it as it is being used as a temporary measure to stabilize the site.

Mr. Hall said that he was ready to make a motion regarding the re-issue of the cease, desist and restore order with changes reflecting their discussion.

****MOTION (1)**

Mr. Hall moved that the East Lyme Inland Wetlands Agency Re-Issue the Cease, Desist and Restore Order for the Antares Solar Field, 20 Farm Meadow Road, East Lyme, CT; Tax Assessor's Map 52.0, Lot #126 with the following additional directives:

1. Stabilize all bare and exposed soils with a mat of hydro-seed at, around, and between the rows of panels including the slopes of the detention basins once repaired/reshaped and have additional erosion control measures available and ready to install if high intensity rainfall events are predicted (e.g. hay bales, silt fence, geo-textiles and turf reinforcement mats). Allow the use of flocculent logs or crystals in a temporary condition as approved by the Inland Wetlands Agent.
2. Return to the Commission with further information about the need for installing erosion control below the drip edges of solar panel (i.e. crushed stone, turf reinforcement mat, etc.) to reduce erosion and slow channelized flow down-gradient perpendicular to the panels as recommended by Freeman Companies. Further, the developer shall return to the Commission with recommendations for quantitative survival rates for landscaping installed as part of the project.
3. Install check dams along drip edge erosion control, and temporary sediment traps at the end of each drip edge erosion control, prior to discharge to the detention basins. Traps and basins should be cleaned regularly.
4. As noted in the remediation plan, the stabilization of existing sediment now present within the wetland is critical in order to prevent additional downstream sediment migration. These measures which were installed to control the migration of these sediments must be re-inspected and repaired and or improved to accommodate rain events until the sediment removal is complete and adequate vegetation has been established.
5. Follow the sediment removal and the restoration of vegetation plan as proposed by Michael S. Klein in his letter dated April 30, 2014 to Ryan C. McNamara and reiterated June 3, 2014. Such work shall be supervised in the field by a wetland scientist with special consideration in accessing any of the areas with machinery so as not to create greater disturbance and unnecessary impact. In July 2014, following sediment removal Michael S. Klein will do a site walk to determine areas that need to be re-vegetated.
6. Included in the remediation plan is the area identified along the woods road to the south of the site. Additional check dams, water bars, or other appropriate measures shall be installed along this woods road to slow the velocity of water down the driveway to help prevent gulling.
7. Remediation and re-vegetation shall be completed by September 30, 2014.

Ms. Berger seconded the motion.

Vote: 5 - 0 - 0. Motion passed.

Mr. Goeschel noted that he was also directed to forward the above directives to the CT Siting Council.

Ms. Lozanov adjourned this hearing at 9:09 PM.

Respectfully submitted,

Karen Zmitruk,
Recording Secretary



May 8, 2014
File No. 2014-0402

Mr. Robert A. Landino, P.E.
c/o Centerplan Construction Company LLC
10 Main Street, Suite B
Middletown, CT 06457

**Re: Services: Engineering Review
Geotechnical and Sedimentation/Erosion Control Design**
Project: Antares Solar Field
Site: Grassy Hill and Walnut Hill Roads, East Lyme, Connecticut

Dear Mr. Landino:

This letter summarizes our review of the geotechnical and sedimentation/erosion control design for the Antares Solar Field in East Lyme, Connecticut. Freeman Companies, LLC (Freeman) performed the following tasks:

- Reviewed photographs of the site taken by Greenskies.
- Made a site visit to observe site conditions.
- Reviewed the 2002 revision of the Connecticut Department of Energy and Environmental Protection (DEEP) guidelines titled "Soil Erosion and Sediment Control Design".
- Reviewed geotechnical and civil engineering aspects of the sedimentation and erosion control design, to evaluate whether the design is consistent with DEEP design criteria.

Site Visit Observations

On March 31, 2013, Nathan Whetten visited the site with Mr. Steven DeNino (Greenskies). Mr. Whetten observed the following items:

- Soils at the Antares Solar Field site consist of glacial till, a well-graded mixture of sand, silt, gravel, cobbles, and boulders. Glacial till was observed to contain variable amounts of silt fines estimated to range from about 15 percent to 40 percent.
- Numerous deep gullies were observed indicating that erosion of the glacial till soils upstream from the detention basins was significant.
- A large amount of sediment (silt, sand and gravel) was observed within Detention Basin 1 at the time of the site visit, and appears to have flowed out of Basin 1 into areas downstream. Basin 2 and the Leaky Berm areas also contained significant amounts of sediment.
- Basin 1 failed at the approximate location of the outlet pipe, however, no evidence was observed indicating that the outlet pipe contributed to failure.
- Localized erosion of the crest in several areas of Basin 1 indicates that Basin 1 failed by overtopping. Localized sloughing of the downstream slope occurred at overtopping locations.

Design Review - Sedimentation and Erosion Control

Freeman Companies reviewed the geotechnical and civil engineering aspects of the sedimentation and erosion control design, and compared the design information with criteria provided in the 2002 DEEP guidance document "Soil Erosion and Sediment Control Design". A summary of selected design parameters and DEEP criteria regarding those parameters follows:

- **Freeboard: Minimum 1.0 foot.** The design calls for 1.0 foot of freeboard.
- **Top Width: Minimum 8 feet.** The design calls for a 10-foot-wide crest width.

Attachment IwA Show Base 6/9/14 3/80

- **Side Slopes:** *Maximum 2H:1V; sum of horizontal components of upstream and downstream slopes ≥ 5 .* The design called for side slopes ranging from 2H:1V to 3H:1V, suggests sum ≥ 5 .
- **Emergency Spillway:** *At least 20 feet in length; required to pass the 100 year storm.* The emergency spillway in the design calculations is 22 feet long. Hydraulic calculations indicate that the emergency spillway was designed for the 100 year storm.
- **Materials:** *Clean mineral soil free from organic or unsuitable material with at least 15% passing the No. 200 sieve.* The design drawings do not specify the source of the material, but the Contractor placed existing on-site glacial till materials for the basins, which was observed to have more than 15 percent fines.
- **Anti-Seep Collars:** *Required if the settled height of the embankment exceeds 10 feet, or if embankment soils have less than 15% passing the No. 200 sieve.* The design shows the Basin 1 embankment height is about 8 feet and embankment soils appear to have more than 15% passing the No. 200 sieve, which suggests that anti-seep collars are not required. Although not required, anti-seep collars were included in the design.
- **Drainage Calculations and Sediment Storage Volume:** *Drainage calculations should account for sizing of detention basins to handle 2 to 100-year storm events.* The drainage calculations appeared to be appropriate, as well as the size of the basins. The storage volume provided meets the guidelines.
- **Sediment and Erosion Controls:** Overall, the plans showed appropriate sediment and erosion controls. However, no specific attention was given to the panel orientation relative to the topography. The geometry of the panel orientation, facing due south, creates sheet flow to the drip edge, then discharges onto the ground and flows perpendicular to the panels at an approximate 5% slope, is conducive to creating shallow concentrated flow versus typical sheet flow.

Recommendations

Install erosion control below the drip edges of the solar panels (i.e., crushed stone, turf reinforcement mat, etc.) to reduce erosion and slow channelized flow down-gradient perpendicular to the panels. Install check dams along drip edge erosion control, and temporary sediment traps at the end of each drip edge erosion control, prior to discharge to the detention basins. Traps and basins should be cleaned regularly.

Stabilize all bare and exposed soils at and around the panels. Cover with temporary seeding, straw mulch, blown in mulch, tackifier, etc. Have additional erosion control measures available (e.g. hay bales, silt fence, geotextiles and turf reinforcement mats) and ready to install if high intensity rainfall events are predicted.

References

The documents reviewed for analysis include the Stormwater Management Report for the Antares Solar Field, dated 07/16/13, by BL Companies, LLC and the Site Plans also by BL Companies.

The documents reviewed for recommended stormwater management and sediment and erosion controls include:

- 2002 Soil Erosion and Sediment Control Guidelines
- 2004 Stormwater Quality Manual both by CT DEEP
- Maryland Department of the Environment, Best Management Practices (BMPs) For Solar Sites

Robert A. Landino, P.E.
Antares Solar Field, East Lyme, Connecticut
May 8, 2014



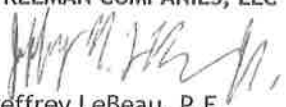
Closure

This letter was prepared for the exclusive use of Centerplan Construction Company. The information provided is based on the project information provided to us at the time of this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made. If you have any questions or require additional information, please do not hesitate to call.

Sincerely,

FREEMAN COMPANIES, LLC 


Jeffrey LeBeau, P.E.
Civil Engineering Project Manager


Nathan L. Whetten, P.E., D.GE
Geotechnical Manager

June 3, 2014

Ryan C. McNamara, Project Manager
CENTERPLAN Construction Company
10 Main Street, Suite D
Middletown, CT 06457

RE: Antares Solar Farm
Grassy Hill Road, East Lyme

Dear Mr. McNamara:

On May 13, 2014 EPS wetland scientist James Cowen conducted a field survey with town wetland agent Gary Goeschel to identify areas of sediment deposition downstream of those previously mapped in the immediate vicinity of the referenced site (as documented in our April 16, 2014 letter). Approximately 22 small, sediment deposits were observed scattered along the unnamed tributary of Cranberry Meadow Brook to which the solar farm drains. In addition there were scattered sediment coatings less than one inch in depth. Most of the deposits were in the stream, consisting of 1-12" of sand to coarse sand. In some overbank areas there are also fine-grained deposits (fine sand and silt) that are generally vegetated and had leaf litter. We also observed limited deposits in Cranberry Brook downstream of its confluence with the un-named tributary. However, other sediment sources to Cranberry Meadow Brook were observed at Walnut Hill Road, including road sand from Walnut Hill Road itself and an actively eroding stream bank. Further downstream in Cranberry Meadow Brook there are additional sediment sources, including road sand and DOT riprap repairs along RT 161.

Access to the sediment in and adjacent to the un-named tributary (with the exception of two at its mouth), is difficult due to the moderately dense vegetation and steep slopes along the brook. It should also be noted that these deposits are on private property, far removed from a town road. The two deposits at the mouth of the tributary are also on private property but are accessible via a plank bridge from an adjacent town open space parcel.

I have attached a series of photographs that are typical of the conditions we encountered, as well as a map (on East Lyme GIS base map) that shows the approximate location of the survey area and the sediment deposits. I have also reviewed the photos and mapping prepared by Mr. Goeschel, and they are consistent with my findings and observations. In my opinion, sediment remediation in the area we surveyed on May 13 is not warranted for several reasons:

- The thin, fine grained deposits in the overbank areas are very likely be stabilized by vegetation and incorporated into the soil. This would not result in an adverse impact.

Attachment Snow Cover
IWA 6/19/14 Brg.

- The coarser deposits in the stream average only 5” in thickness and are likely be cleansed naturally over time during high velocity storm events, without any long term adverse impact.
- The sedimentation at the confluence of the un-named tributary with Cranberry Meadow Brook has several sources other than your site.
- With the exception of the deposits at the confluence of the un-named tributary with Cranberry Meadow Brook, access would require traversing extensive areas of steep slopes, wetlands, and dense, mature forest and riparian vegetation.

We continue to believe that removal of the more extensive, thicker deposits at and immediately adjacent to your site during the upcoming dry season is appropriate. If you have any questions regarding our findings, or if you require further assistance in this matter, please feel free to contact us.

Yours truly,

Michael S. Klein, Principal
Registered Soil Scientist
Professional Wetland Scientist



Medium deposit which will likely be stabilized by vegetation, 5/13/14



Small sand bar vegetated at its edges, 5/14/14



Medium deposit, partially vegetated, 5/13/14



Small deposit at edge of stream (Note steep slope), 5/13/14



Medium sized deposit, shallow and spread out, partly vegetated, 5/13/14



Majority of the stream has no sediment deposition, 5/13/14



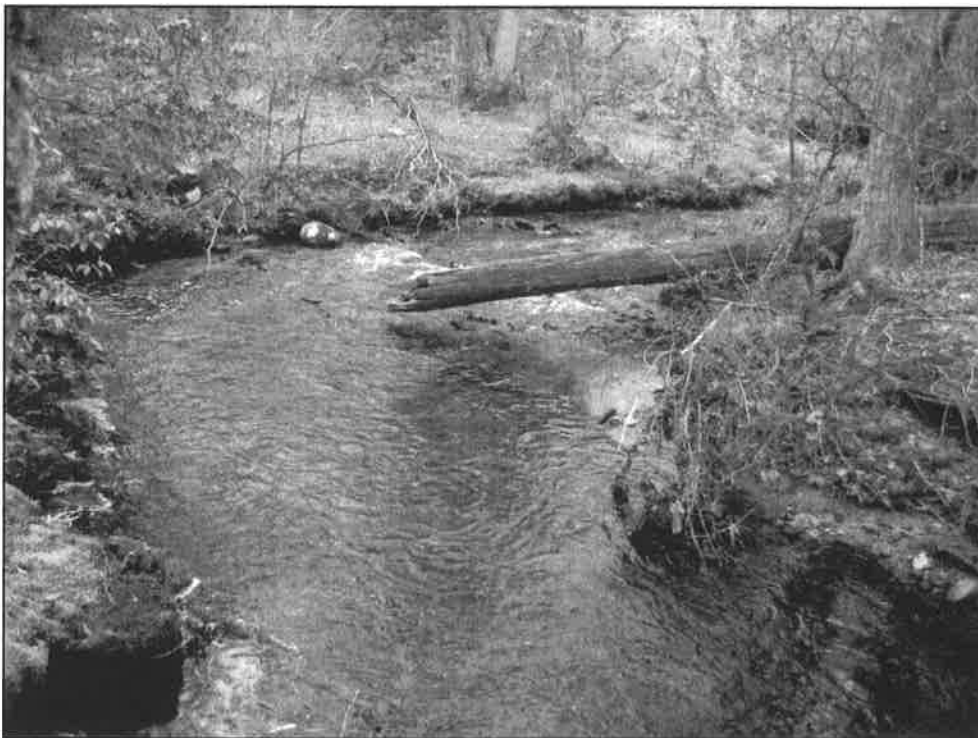
Plank bridge across Cranberry Meadow Brook to deposits at tributary mouth, 5/13/14



West sediment deposit at mouth of the tributary, 5/13/14



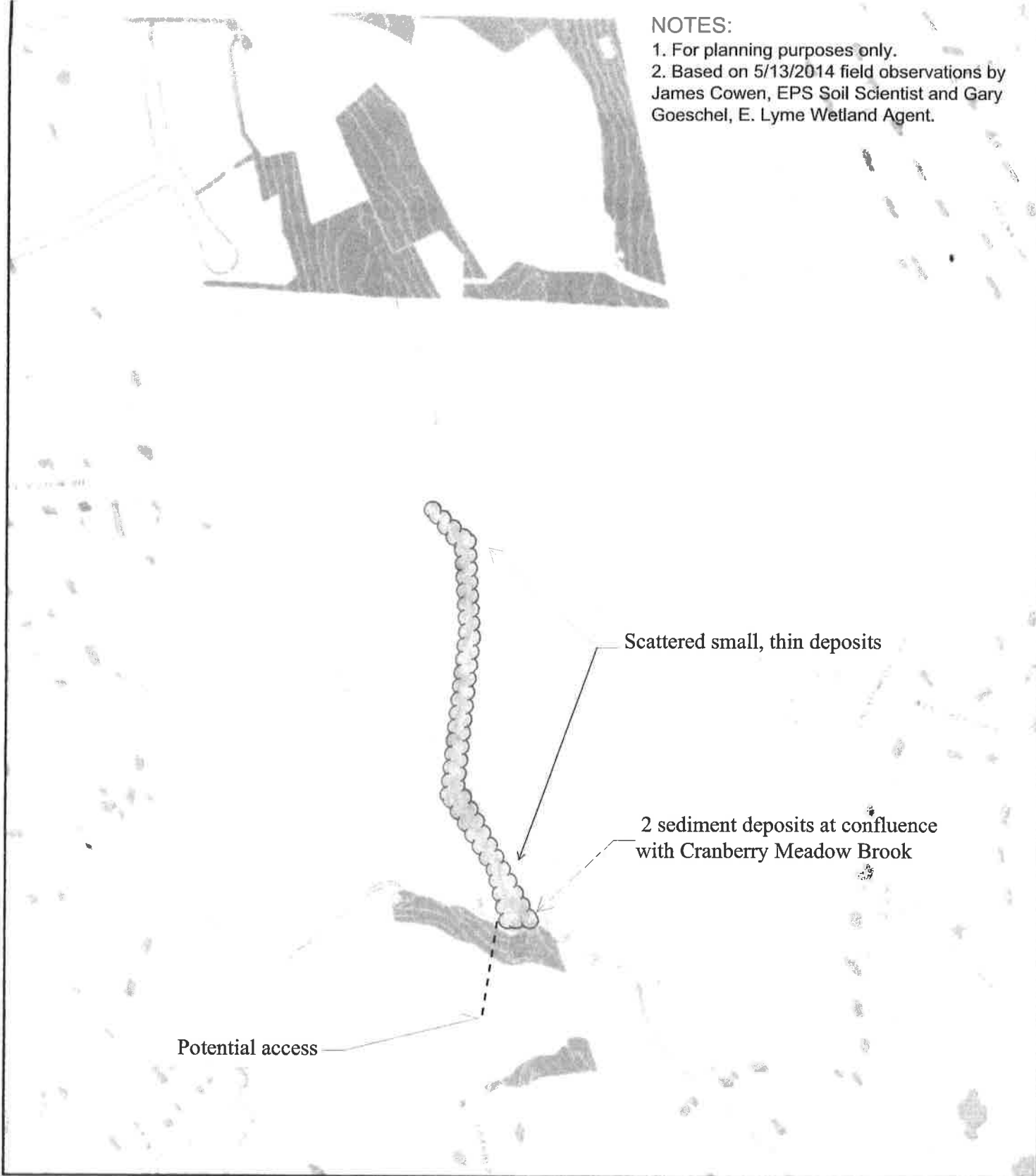
Sediment deposit on the east side of the tributary mouth, 5/13/14



Cranberry Meadow Brook downstream of tributary with minor deposit, 5/13/14

NOTES:

- 1. For planning purposes only.
- 2. Based on 5/13/2014 field observations by James Cowen, EPS Soil Scientist and Gary Goeschel, E. Lyme Wetland Agent.



**DOWNSTREAM SEDIMENT DEPOSITS
UN-NAMED TRIBUTARY
CRANBERRY MEADOW BROOK**

ENVIRONMENTAL PLANNING SERVICES, LLC
89 BELKNAP ROAD
WEST HARTFORD, CT 06117

(860) 236-1578

www.epsct.com



1:6000

