October, 7th 2021

Town of Glen Planning Board
7 Erie Street
Fultonville, NY 12072
ATTN: Tim Reilly

RE: Decommissioning Plan
Borrego Solar Project #: 67-1901

Project Introduction:

The proposed action is to install a large-scale, ground-mounted, solar photovoltaic system. The existing parcel is owned by Jeffrey Lanfear and it has an area of 47.0 AC±. The project will consist of a 5 MW AC system with 12,688 ± panels. The panels will be mounted on a system of steel posts & racks. The system will be secured with a 7'H chain-link fence. The area inside the fence will be 19.17 AC±. Equipment pads will be located near the panels & will consist of inverters, transformers, data systems & switch gear.

Scope of Decommissioning Work Required:

Decommissioning will occur at the end of our lease with the landowner, which is typically after 25 years and will be completed through a third-party Subcontractor. The subcontractor' typical scope includes a pre-decommissioning inspection at the job site prior to decommissioning, decommissioning checklist & supervision, labor to remove all system parts. During this pre-decommissioning inspection, the subcontractor shall perform soil testing per the attached Cornell specifications in the locations as outlined in the attached map with GPS points.

Other activities associated with removing a photovoltaic system from service include removal of all other electrical equipment such as transformers, breaking up concrete pads and footings, removing electrical wiring, fencing and power poles. The site will be re-graded to match existing conditions.

Establishment of Decommissioning Fund:

Prior to the start of construction, a security to cover the full cost of the removal and disposal of the utility-scale solar collector system and any associated accessory structures less the salvage value of the utility scale solar collector system upon abandonment of said facility shall be provided by the owner/operator. The owner/operator shall provide an updated Decommissioning Cost Estimate prepared by a N.Y.S. Licensed Engineer every five (5) years, and the decommissioning surety shall be adjusted, if necessary, to reflect the then current decommissioning cost. Any such security must be provided pursuant to a written security agreement with the Town, approved by the Town Board and also approved by the Town Attorney as to form, sufficiency and manner or execution. The form of security shall be limited to those permissible under NYS Town Law. If the owner of the site fails to comply with any conditions of the approval during construction or as part of the long-term maintenance of the site, all costs of the Town incurred to comply with conditions of the approval shall be paid using the surety provided by the applicant. Failure to comply with the conditions of the approval or to maintain an acceptable level of surety will result in revocation of the certificate of occupancy.

Decommissioning Estimate/Plan

borrego

Date: 06/30/2021

2621 State Highway 5S
Fultonville, NY

This Decommissioning Estimate has been prepared by Borrego Solar in an attempt to predict the cost associated with the removal of the proposed solar facility. The primary cost of decommissioning is the labor to dismantle and load as well as the cost of trucking and equipment. All material will be removed from the site, including the concrete equipment pads, which will be broken up at the site and hauled to the nearest transfer station.
Solar panels out of use for 12 months must be removed at owner's/operator's expense.
Expected lifetime of solar system is 25 years.

No salvage values have been assumed in this calculation.

Contractor shall seed and top soil the site as necessary during decommissioning to estabilish vegetation at conclusion of project.
Decommissioning Plan is to be executed no more than nine (9) months after written notice to remove solar collector system has been issued by Town.

The following values were used in this Decommissioning Estimate:

System Specifications	
Number of Modules	12,402
Number of Racks	477
Number of Inverters	2
Number of Transformers	2
Electrical Wiring Length (ft)	3,814
Number of Foundation Screws	1,908
Length of Perimeter Fence (ft)	4,116
Number of Power Poles	9
Access Rd Material Volume (YD)	984
Total Disturbed Area (SF)	41,145
Total Fence Weight (lbs)	2,922
Total Racking Weight (lbs)	405,450
Total Foundation Screw Weight (lbs)	76,320

Equipment & Material Removal Rates	
Module Removal Rate (min/module)	2
Rack Wiring Rem. Rate (min/mod)	0.5
Racking Dismantling Rate (min/rack)	20
Inverter Removal Rate (hr/unit)	0.5
Transformer Removal Rate (hr/unit)	1
Rack Loading Rate (min/Rack)	10
Elect. Wiring Removal Rate (min/LF)	0.5
Screw Rem. Rate (screws/day)	600
Fence Removal Rate (min/LF)	1
Days req. to break up concrete pads	1
Days req. with Rough Grader	1
Days req. with Fine Grader	1
Total Truckloads Required	24
Round-Trip Dist. to Trans. Sta.(miles)	15
Round-Trip Time to Trans. Sta. (hr)	1.25

Labor and Equipment Costs		
Labor Rate ($/hr)	$	33.30
Operator Rate ($/hr)	$	49.43
Bobcat Cost ($/hr)	$	96.10
Front End Loader Cost ($/Day)	$	797.63
Excavator Cost ($/Day)	$	1,287.74
Trucking Cost ($/hr)	$	120.13
Backhoe Cost ($/hr)	$	96.10
Power Pole Removal Cost ($/pole)	$	1,500.00
Grader Cost ($/day)	$	1,249.30
Gravel Export Cost ($/YD)	$	8.00
Loam Import Cost ($/YD)	$	20.00
Seeding Cost ($/SF)	$	0.15
Fuel Cost ($/mile)	$	0.50

Labor, Material, and Equipment Costs

1. Remove Modules

The solar modules are fastened to racking with clamps. They slide in a track. A laborer needs only unclamp the module and reach over and slide the module out of the track.

Module Removal Rate • Total Number of Solar Modules • Labor Rate = Module Removal Cost

Total = $ 13,766.22

2. Remove Rack Wiring

The modules are plugged together in the same manner as an electrical cord from a light is plugged into a wall socket. The string wires are in a tray. A laborer needs only unplug the module, reach into the tray and remove the strands of wire.

Wire Removal Rate • Total Number of Solar Modules • Labor Rate = Rack Wiring Removal Cost

Total = $ 3,441.56

3. Dismantle Racks

The racking is supported by screw foundations. The racking will be disconnected from the foundation and removed seperately.

Number of Racks • Rack Dismantling Rate • Labor Rate = Rack Dismantling Cost

Total = $ 5,294.70

4. Remove and Load Electrical Equipment

Electrical equipment includes transformers and inverters.

(Number of Inverters • Inverter Removal Rate + Number of Transformers • Transformer Removal Rate) • (Operator Rate + Bobcat Cost) = Electrical Equipment Removal Cost

Total = $ 436.59

5. Break Up Concrete Pads

Concrede pads are broken up using an excavator and jackhammer.

Number of Demolition Days • (Excavator Cost + Operator Cost) = Total Concrete Pad Removal

Total = $ 1,683.18

6. Load Racks

Once the racks have been dismantled, they will be loaded onto trucks for removal from the site. The trucking cost associated with this line item represents the additional time a truck will be needed during loading. Please see item # 13 for additional trucking costs.

Number of Racks • Rack Loading Rate • (Operator Cost + Front End Loader Cost + Trucking Cost) = Total Rack Removal Cost

Total = $ 21,119.57

7. Remove Electrical Wiring

Electrical wiring will be removed from all underground conduits.

Cable Length • Cable Removal Rate • (Operator Cost + Backhoe Cost) = Total Cable Removal Cost

Total = $ 4,625.43

8. Remove Foundation Screws

Foundation screws will be backed out of the ground and loaded onto a truck to be removed from site.

(Total Number of Screws / Daily Screw Removal Rate) • (Operator Rate + Excavator Cost) = Total Screw Removal Cost

Total = $ 5,352.51

9. Remove Fencing

Fencing posts, mesh, and foundations will be loaded onto a truck and removed from site. Trucking costs included in this line item are for the removal process. Trucking to a recycling facility are included in item #13.

(Total Length of Fence • Fence Removal Rate) • (Operator Rate + Bobcat Cost + Trucking Cost) =

Total = $ 18,223.93

10. Remove Power Poles

Power poles will be removed and shipped off site.

Number of Power Poles • Pole Removal cost = Total Power Pole Removal Cost

Total = $ 13,500.00

11. Gravel Road Reclamation

Reclamation of the gravel access road will entail removing the gravel material and exporting it off site. The area will then be backfilled with loam and graded.

(Days with Rough Grader + Days with Fine Grader) • (Grader Cost per Day+Operator Cost per Day) + [Roadway Material Volume • (Gravel Export Cost + Loam Import Cost)] = Gravel Road Reclamation Cost

Total = $ 30,835.89

12. Seed Disturbed Areas

Seeding cost includes labor and materials for reseeding all disturbed areas including the reclaimed gravel road area, former electrical areas, and areas disturbed by racking foundation removal.

Seeding Cost • Disturbed Area = Total Seeding Cost

Total = $ 6,171.69

13. Truck to Transfer Station

All material will be trucked to the nearest Transfer station that accepts construction material. The nearest transfer station is MOSA Amsterdam Transfer

(Total Truckloads • Roundtrip Distance • Fuel Cost) + (Total Truckloads • Round Trip Time • Trucking Cost) = Total Trucking Cost to Transfer Station

Total = $ 3,783.75

Salvage Values | Salvage Value Not Included

Summary of Decommissioning Costs and Salvage Values

Line Item	Task	Cost
1	Module Removal	$ 13,766.22
2	Rack Wiring Removal	$ 3,441.56
3	Rack Dismantling	$ 5,294.70
4	Electrical Equipment Loading and Removal	$ 436.59
5	Break Up Concrete Pads	$ 1,683.18
6	Load Racks	$ 21,119.57
7	Electrical Wiring Removal	$ 4,625.43
8	Foundation Screw Removal	$ 5,352.51
9	Fence Removal	$ 18,223.93
10	Power Pole Removal	$ 13,500.00
11	Gravel Road Reclamation	$ 30,835.89
12	Seed Disturbed Areas	$ 6,171.69
13	Trucking to Transfer Station	$ 3,783.75
14	Cornell Soil Testing*	$ 800.00
	Sub Total =	$ 129,035.02

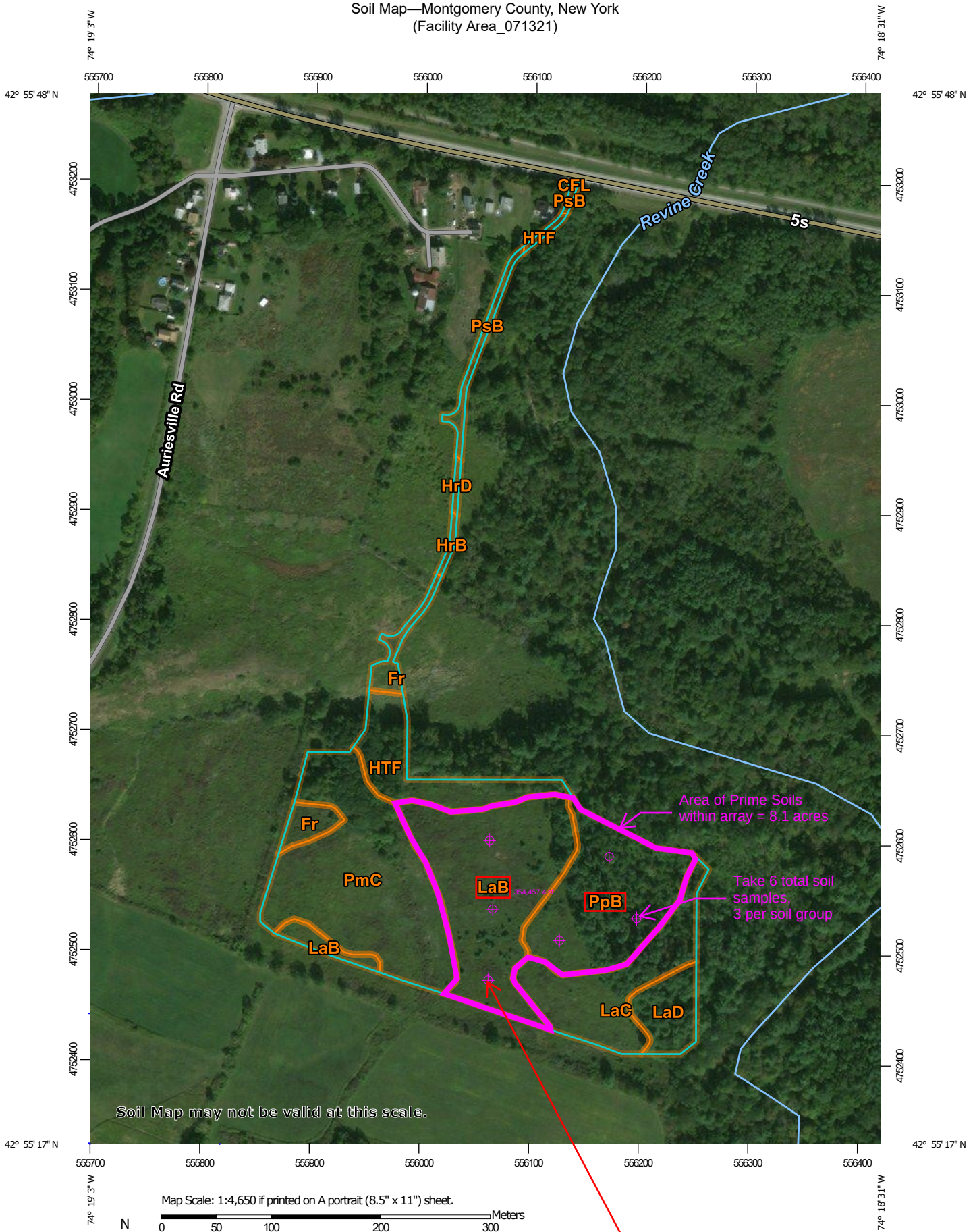
*Soil testing at time of decommissioning requested by Planning Board. Attached documents show locations of tests, testing procedure, and quote for services from a geotechnical contractor to complete the work

Total = $ 129,035.02

Task	Future Value
Inflation	
# of Years= 25	
Inflation Rate= 2.5%	
Total • (1+ Inflation Rate)^Number of Years =Grand Total	

Grand Total = $ 239,223.71

Soil Map—Montgomery County, New York
(Facility Area_071321)



SOIL TESTING GPS POINTS

1,1489866.7114,542199.1409,null,Soil Test_1
2,1490123.8459,542195.9379,null,Soil Test_2
3,1490315.0970,542201.4340,null,Soil Test_3
4,1489994.4398,542409.3611,null,Soil Test_4
5,1490064.4489,542641.3514,null,Soil Test_5
6,1490229.7009,542538.1853,null,Soil Test_6

Soil Sampling for Field Crops

Soil testing is done to determine pH and organic matter as well as levels of macronutrients [phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg)] and micronutrients [iron (Fe), manganese (Mn), zinc (Zn)]. When paired with data from crop response trials, chemical soil test results can be used to determine crop-specific nutrient needs for profitable and environmentally sound applications of soil amendments, including fertilizer, manure, and lime. Soil test results and the fertility management guidelines derived from them are heavily dependent on the quality and representativeness of the samples collected. As such, the main goal of a sampling program should be to obtain a reasonably representative sample of the field or sub-field that is in line with the farmer's field management objectives and yield potentials. This fact sheet provides guidance on soil sampling for field crop production.

Establish a Regular Sampling Time

It is recommended to take soil samples at least once every 2 to 3 years. Where it is desired to track nutrient fluctuations more closely, having soil test results before the next crop is planted will help refine management decisions. Soil samples are best taken in the fall after harvest of the main season crop but can also be taken in the spring or summer. Consistently sampling around the same month of the year will help reduce seasonal variation in soil tests and as a result create more reliable information on impact of crop management decisions on soil fertility and pH over time.

Use Proper Sampling Tools

Soil probes are often the best tool for the job because they collect soil in a continuous core from the surface through the entire sampling depth with minimal soil disturbance. In stony soils, an auger may work better. A spade or shovel may be used, but with care to avoid over-sampling surface soil and under-sampling at depth. All sampling tools must be clean and free of rust. Brass or galvanized tools or containers can contaminate the sample with copper and zinc, so stainless steel probes or augers are recommended. Collect samples in a clean plastic bucket.

Sample the Proper Depth

Lightly scrape the soil surface before sampling to remove surface residue. Remove all visible stones, plant and animal residues from the sample after taking the core. For field crops, under conventional tillage, sample the top 0-8 inches (Figure 1). This depth is important because fertility guidelines derived from field-based research in New York are based on soil test results of samples taken at this depth. Sampling depth is important because nutrients can be stratified in the plow layer which can impact the soil test result and the fertility guidelines. For pastures, it is recommended to sample the top 0-6 inches. For no-till or minimum-till cropping systems, take two samples: one for pH from the 0-1 inch depth and another from the 0-6 inch depth for nutrient analyses. The two samples should be clearly labeled with "0-1 inch" and "0-6 inch". The 0-1 inch sample is needed for the timely determination of a pH decline. In a no-till system, nitrogen fertilizer is often surface applied, and this reduces the pH near the soil surface, which can be masked if only taking a full-depth core. Early detection of low pH in the soil surface is important if the farmer intends to maintain a no-till system because the liming material cannot be incorporated into the soil. Without tillage, lime can take a long time to react beyond the top inch or so of soil.

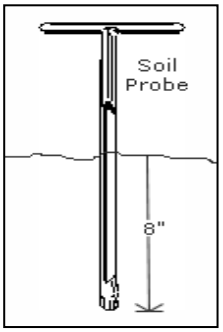


Figure 1: For field crops under tillage systems sample the top 0-8 inches.

Obtain a Representative Sample

To adequately represent the field or section of the field and to minimize sample variation, individual soil cores taken across a similar area should be composited into one sample for

analysis. Generally, each sample should represent 15 acres or less, and separate samples should be collected from areas with different crop history, fertility management, crop growth, slope, etc. Larger or smaller areas may be used depending on the soil uniformity, management history, and farm objectives. For soil pH, general soil fertility, and determination of soil nitrogen supply potential with the Illinois Soil Nitrogen Test, do not sample within 5-6 weeks of fertilizer or manure application or sod termination. This delay reduces the risk of highly variable and non-representative results. Avoid sampling in or near atypical areas within fields such as dead or back furrows, windbreaks or fence lines, old manure or lime pile areas, wet areas, boundaries between slopes and bottomland, fertilizer bands from the previous crop, manure injection slots, areas with severely eroded steep slopes, or tree stump burn piles. Also, avoid extremely wet soil conditions. As a rough guide, if soil moisture conditions are suitable for traffic or tillage, they are likely suitable for soil sampling.

The actual sampling pattern within a field can vary depending on farmer management objective, capabilities of sampling and field management equipment, field size and features, and availability of field-specific information, including yield:

- If a sample is needed to represent the entire field, and no prior information is available, take samples along a zig-zag pattern through the field. For best results, multiply the total acreage of the field by 2 to know roughly how many cores to combine across the field, with a 10-15 core minimum for smaller fields.
- Grid sampling may be used for larger fields and when zone-based management is desired. Grid cell size can vary depending on farmer management objectives, equipment capabilities, and field features (slope, elevation, soil type, drainage, etc.). Grid cell size often ranges from 0.5 to about 6 acres. Sampling intensity (number of cores to combine per grid cell) should target an average of two soil cores per acre or a full cup of soil to subsample for analysis. Grid cells can be sampled separately over time or used to develop larger management zones, which can then be sampled separately in future years. Smaller initial grid cells are more expensive but also better suited for deriving soil-test based management zones.
- Once management zones are determined, subsequent soil sampling can be targeted to these zones. Each management zone should be sampled at an intensity that targets an average of two soil cores per acre or a full cup of soil to subsample.

While grid- or zone-based sampling is encouraged, intensive sampling raises questions about converting soil test results into field averages for manure and/or fertilizer applications and managing the New York P Index. See Agronomy Factsheet #106 for more information on determining average soil test P and pH values from grid sample results.

Sample Submission

If a moist or wet sample cannot be mailed to a laboratory right away, samples should be stored in a refrigerator or air-dried as soon as possible to limit biological transformations that can affect the amounts and forms of soil nutrients. Break up any lumps or clods and mix the sample thoroughly before subsampling about 1-2 cups to submit to the laboratory.

In Summary

Soil sampling will help make the most of manure, fertilizer, and lime for crop production and protection of the environment. Sampling methods can differ, depending on management objectives, equipment, and field features.

Additional Resources

- Soil Sampling Techniques. Proceedings of the 2006 Indiana CCA Conference, Advanced Soil Fertility, Indianapolis, IN. Ron Olson, Mosaic Crop Nutrition, LLC. https://www.agry.purdue.edu/CCA/2006/PDF/Olson.pdf

Disclaimer

For more information

Cornell University Cooperative Extension

Nutrient Management Spear Program
http://nmsp.cals.cornell.edu

Quirine Ketterings, Karl Czymmek, Greg Albrecht
(Kristen Keryk, Kristen Stockin, Jen Beckman)

2020 (updated from 2005)

borrego

Gregory Gibbons <ggibbons@borregosolar.com>

RE: 2621 Rte 5s Geotech request

1 message

Joseph Benoit <Joseph.Benoit@gza.com> Fri, Sep 17, 2021 at 1:19 PM
To: Gregory Gibbons <ggibbons@borregosolar.com>
Cc: Steven Riggall <sriggall@borregosolar.com>, Bruce Fairless <Bruce.Fairless@gza.com>, Steve Long <slong@borregosolar.com>, Reneth Ly <rly@borregosolar.com>

Greg and Team,

Please find the attached contract addendum. The added cost will be $800 for collecting, testing, and coordination. We are still awaiting a signed contract for this work, but we have begun the scheduling process. Unfortunately, drilling contractors in New York are booked out 6 to 7 weeks. We have had them pencil us in for now for about the last week of October or the first week of November. The test pit contractor is able to schedule it sooner, but we budgeted for the test pits to occur at the same time as the borings to avoid a separate mobilization to the site.

Please let us know if you have any questions.

Thanks,

Joe

Joseph Benoit, P.E.

Project Manager – Geotechnical Engineer

GZA | 249 Vanderbilt Avenue | Norwood, MA 02062

o: 781.278.5799 | c: 617.352.2994 | joseph.benoit@gza.com | www.gza.com | LinkedIn

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From: Gregory Gibbons <ggibbons@borregosolar.com>
Sent: Wednesday, September 15, 2021 2:08 PM
To: Joseph Benoit <Joseph.Benoit@gza.com>
Cc: Steven Riggall <sriggall@borregosolar.com>; Bruce Fairless <Bruce.Fairless@gza.com>; Steve Long <slong@borregosolar.com>; Reneth Ly <rly@borregosolar.com>
Subject: Re: 2621 Rte 5s Geotech request

If the standard nutrient test doesn't include the pH I think we should do both to be safe. Thanks!

On Mon, Sep 13, 2021 at 2:55 PM Joseph Benoit <Joseph.Benoit@gza.com> wrote:

> Greg,
>
> We should have this over soon. The costs for the tests are as follows:
>
> pH test (for up to 3 samples) - $5.00
> pH testing kits - $10.00 normal range; $8 expanded range (from 4.0 to 8.6)
> Standard nutrient test - $12.00 per sample
>
> Are we just doing the nutrient tests or should we also include pH testing as well?
>
> Thanks,
>
> Joe
>
> ---
>
> **From:** Gregory Gibbons <ggibbons@borregosolar.com>
> **Sent:** Thursday, September 9, 2021 3:06 PM
> **To:** Joseph Benoit <Joseph.Benoit@gza.com>
> **Cc:** Steven Riggall <sriggall@borregosolar.com>; Bruce Fairless <Bruce.Fairless@gza.com>; Steve Long <slong@borregosolar.com>; Reneth Ly <rly@borregosolar.com>
> **Subject:** Re: 2621 Rte 5s Geotech request
>
> Joe,
>
> As discussed, we would like GZA to gather and test soil samples per the guidelines (attached) with the Cornell Cooperative Extension. The Town agreed on six (6) locations within the site (map attached). I have provided the GPS coordinates of the locations in CSV PNEZD format (attached), does that work for you? Or do you also need a .KML file?
>
> Please confirm the additional cost to complete the samples and testing. Per the website (http://albany.cce.cornell.edu/agriculture/soils-climate/how-to-take-a-soil-sample), I believe Cornell charges $12 per sample. The results should be shared with myself as well as the Town Planning Board Chair Tim Reilly (thr56@frontier.com) and Planning Board Secretary Sandra Hemstreet (Sandra.Hemstreet@americannational.com).
>
> Thanks,
> Greg
>
> On Thu, Sep 2, 2021 at 5:34 PM Joseph Benoit <Joseph.Benoit@gza.com> wrote:
>
> > Greg,

We have collected soil for other university soil labs for similar testing, so this is something we can do. Once you have a number of tests, we can update you on the added fees for the tests and coordination.

As a reminder, we will need a PO number and signed contract before we can schedule the work.

Thanks,

Joe

Joseph Benoit, P.E.

Project Manager – Geotechnical Engineer

GZA | 249 Vanderbilt Avenue | Norwood, MA 02062

o: 781.278.5799 | c: 617.352.2994 | joseph.benoit@gza.com | www.gza.com | LinkedIn

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From: Gregory Gibbons <ggibbons@borregosolar.com>
Sent: Thursday, September 2, 2021 3:23 PM
To: Joseph Benoit <Joseph.Benoit@gza.com>
Cc: Steven Riggall <sriggall@borregosolar.com>; Bruce Fairless <Bruce.Fairless@gza.com>; Steve Long <slong@borregosolar.com>
Subject: Re: 2621 Rte 5s Geotech request

Joe/Bruce,

Has your team ever gathered soil samples for Cornell Cooperative Extension testing? We will need some for this site, but still determining exactly where and how many.

Here is a link on soil testing procedure: http://albany.cce.cornell.edu/agriculture/soils-climate/how-to-take-a-soil-sample

Thanks,

Greg

On Wed, Sep 1, 2021 at 10:21 AM Gregory Gibbons <ggibbons@borregosolar.com> wrote:

> Joe,
>
> This looks good to us, please proceed. When would you anticipate being in the field for this one?
>
> For all of our PV projects, please continue to copy Ren who is handling the geotech coordination for us.
>
> Thanks,
>
> Greg
>
> On Tue, Aug 24, 2021 at 12:20 PM Joseph Benoit <Joseph.Benoit@gza.com> wrote:
>
> > Steve,
> >
> > Please find our revised proposal attached. We propose performing an additional day of borings near the proposed retaining wall, proposed cattle guard, and improved roadway. When the time comes, will you be able to provide a more detailed profile of the retaining wall? The snip included below shows a steep slope at the toe of the wall. It would be good to look into the details of the wall further before working on the report.
> >
> > Please let me know if you have any questions for us.
> >
> > Thanks,
> >
> > Joe
> >
> > **Joseph Benoit, P.E.**
> >
> > **Project Manager – Geotechnical Engineer**
> >
> > GZA | 249 Vanderbilt Avenue | Norwood, MA 02062
> >
> > o: 781.278.5799 | c: 617.352.2994 | joseph.benoit@gza.com | www.gza.com | LinkedIn
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