BRUCE L. MCDERMOTT
203.772.7787 DIRECT TELEPHONE
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BMCDERMOTT@MURTHALAW.COM

January 2, 2019

VIA ELECTRONIC MAIL
AND UPS NEXT DAY DELIVERY

Mr. Robert Stein, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Petition No. 1354 – Chatfield Solar Fund, LLC, petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 1.98-megawatt AC solar photovoltaic electric generating facility located in Killingworth, Connecticut

Dear Chairman Stein:

Enclosed for filing with the Connecticut Siting Council (the "Council") in the above-captioned petition are Chatfield Solar Fund, LLC's ("Chatfield") responses to the remaining outstanding interrogatories from the Council (CSC-1-69 and CSC-1-70).

Additionally, also enclosed for filing with the Council is Chatfield's Addendum to the Environmental Assessment ("EA Addendum"). The EA Addendum was necessary following the completion of further surveying of the property and the resulting reduction of the project size as stated in Chatfield's Letter to the Council dated December 19, 2018.

Please find the original and fifteen (15) copies of the responses and the EA Addendum.

Very truly yours,

Bruce L. McDermott

Enclosures

Murtha Cullina LLP
265 Church Street
New Haven, CT 06510
T 203.772.7700
F 203.772.7723

Interrogatory CSC-1-69

Chatfield Solar Fund, LLC
Petition No. 1354

Witness: George Andrews

Q-CSC-1-69: Petition Environmental Assessment p. 3-5 states best management practices will be installed to promote groundwater recharge through infiltration. What would be included in such practices, and where would they be installed?

A-CSC-1-69: Chatfield Solar Fund, LLC's best management practices for promoting groundwater recharge through infiltration would include implementing infiltration trenches at the site. Each trench will be sized according to the Connecticut Stormwater Quality Manual. The trenches will be located at the downstream end of the arrays to capture the runoff before overflowing into the wetlands. In addition, another trench will be located at the mid-point of the large solar array to intercept the runoff and slow down the runoff's velocity. A gravel apron will also be installed along the downstream edge of the water quality basin to serve as a level spreader/energy dissipater during overflow events.

See **Attachment CSC-1-69-1** and **Attachment CSC-1-69-2**, which show the approximate locations of the Temporary Sediment Trap Outlets. These Temporary Sediment Trap Outlets will be in place during construction, and once the construction is complete, they will be converted into the infiltration trenches mentioned above.

Additionally, construction phasing and sequencing will be strategically planned and implemented to minimize soil disruption and avoid soil compaction. Such practices will help maintain the site's infiltrative capacity and groundwater recharge.

Attachment CSC-1-69-1

NOTES:

1. PROPERTY SURVEY, NORTH BRANFORD ROAD - ROUTE 80, KILLINGWORTH, CONNECTICUT, PREPARED FOR STANDARD SOLAR, SCALE 1"=100', DATED DEC. 4, 2018 BY LOUREIRO ENGINEERING ASSOCIATES, INC., WILLIAM J. NAGLE, JR. LS #70269.
2. HORIZONTAL DATUM: CONNECTICUT STATE PLANE NAD 1983.
3. THE ENTIRE SITE IS FORESTED.
4. WETLANDS WERE FLAGGED ON 8/22/2018 BY JMM WETLAND CONSULTING SERVICES, LLC AND FIELD LOCATED BY LOUREIRO ENGINEERING DURING THE MONTHS OF AUG. TO OCT. 2018.
5. CONTOURS OBTAINED FROM GIS SOURCES, Capitol Region Council of Governments. (2016). *2016 LiDAR DEM*. Retrieved from http://cteco.uconn.edu/data/flight2016/index.htm.

SOILS MAP UNITS

UNIT No.	DESCRIPTION
3	Ridgebury, Leicester, and Whitman soils, extremely stony
17	Timakwa and Natchaug soils
46B	Woodbridge fine sandy Loam, 2 to 8 percent slopes, very stony
47C	Woodbridge fine sandy Loam, 2 to 15 percent slopes, extremely stony
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	EDGE OF ROADWAY	
	CONTOUR (1' INTERVAL)	
VL#XXX VL#XXX	WETLAND FLAGGING	
	SOILS	
	FENCE LINE	X
	CLEARING LIMITS	
	SILT FENCING	
	PHASE LIMITS	

EXISTING ROADWAY
NORTH BRANFORD ROAD - ROUTE 80
Guiderail
Edge of Pavement
NEW 12' WIDE GRAVEL ACCESS DRIVE AND ANTI- TRACKING PAD
NEW SOIL EROSION CONTROL FENCING
PROPOSED CLEARING LIMIT
Existing Utility Pole (Approx: Location)
NEW UTILITY POLES (4) WITH RECLOSER EQUIPMENT
PROPOSED FENCING (TYPICAL)
CHD MON (HELD)
MON (HELD)
N 691941.774
E 1040424.938
N 63°59'41" E 201.86'
S 63°59'41" W 218.14'
60' Building Setback
40' Building Setback
50' Solar Setback
NEW GROUNDING TRANSFORMER TOP OF PAD=291.5'
NEW SERVICE 2 WITH DISCONNECT AND METERS TOP OF PAD=288.5'
NEW SERVICE 1 WITH DISCONNECT AND METERS TOP OF PAD=287.5'
TOP OF PAD=287'
N 63°59'41" E 205.00'
CHD MON
S 26°00'19" E 20.00'
N 63°59'41" E 366.46'
IPIPE (HELD)
S 10°36'15" E 456.10'
S 25°10'15" E 239.73'
S 10°36'15" E 146.60'
STONE PILE (FIELD)
TEMPORARY SEDIMENT TRAP OUTLET WEIR CREST=265 BOTTOM=263
3' GRAVEL ENERGY DISSIPATOR
TEMPORARY SEDIMENT TRAP OUTLET WEIR CREST=282 BOTTOM=280
3' GRAVEL ENERGY DISSIPATOR
TEMPORARY SEDIMENT TRAP OUTLET WEIR CREST=298 BOTTOM=296
3' GRAVEL ENERGY DISSIPATOR
PHASE 1 175,364.43 SF
PHASE 2 211,706.26 SF
PARCEL 26-34B
AREA
1,050,025 S.F.
24.10 AC.
NEW INVERTERS #21-23 AND ACCUMULATION PANEL NO 2
NEW SOLAR ARRAY MODULES (TYPICAL)
EXISTING WETLANDS AND FLAGS (TYPICAL)
POTENTIAL VERNAL POOL PVP#1
N/F SHERIDAN W. & CONSTANCE A. PERKINS
N 10°08'37" W 443.43'
N/F ARTHUR & JANINE STONER
MATCH LINE
MATCH LINE
47C
17
85C
SCALE IN FEET
20 0 20 40 60

SCALE: 1" = 40'	COMM. NO. 80SS8.01.007	DATE 12/28/2018	DATE
		DRAWN BY WJN/GFB	APPROVED BY GFA

PROPOSED CONDITONS PLAN

SITING COUNCIL SUBMISSION-CHATFIELD SOLAR FARM
NORTH BRANFORD ROAD, KILLINGWORTH, CONNECTICUT
PREPARED FOR
STANDARD SOLAR

DRAWING **1A**

SHEET NO. 1 NO. OF SHEETS 1

Loureiro Engineering Associates, Inc.
100 Northfield Drive, Windsor, CT 06095-1562
Phone: 860-747-6181 • Fax: 860-747-8822
An Employee Owned Company • www.LoureiroEng.com

REV.	DESCRIPTION OF REVISION	DATE	APPR.

STAMP

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Attachment CSC-1-69-2

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	EDGE OF ROADWAY	
	CONTOUR (1' INTERVAL)	
VL-BXXX VL-BXXX	WETLAND FLAGGING	
	SOILS	
	FENCE LINE	
	CLEARING LIMITS	
	SILT FENCING	
	PHASE LIMITS	

SCALE IN FEET

MATCH LINE

40' Building Setback

50' Solar Setback

Stonewall (Typ.)

TEMPORARY SEDIMENT TRAP OUTLET WEIR CREST=298 BOTTOM=296

3' GRAVEL ENERGY DISSIPATOR

CHATFIELD CONDUIT & WETLAND CROSSING (SEE DETAIL SHEET 2)

GRAVEL ROAD & WETLAND CROSSING 12' WIDE'

PROPOSED CLEARING LIMIT

POTENTIAL VERNAL POOL PVP-#2

NEW SOIL EROSION CONTROL FENCING

PHASE 2 211,706.26 SF

PHASE 3 213,849.19 SF

NEW SOLAR ARRAY MODULES (TYPICAL)

RIPRAP STILLING BASIN BOTTOM APPROX. 274.0' (SEE DETAIL SHEET 2)

INV=278.0'

INV=277.0'

25 LF 15" HDPE @ S=0.04 W/ FLARED ENDS

EXISTING WETLANDS AND FLAGS (TYPICAL)

TEMPORARY SEDIMENT TRAP OUTLET WEIR CREST=271 BOTTOM=269

3' GRAVEL ENERGY DISSIPATOR

IPIPE (HEAD)

IPIPE

35' Solar Setback

40' Building Setback

APPROX PROP COR STK

N/F SHERIDAN W. & CONSTANCE A. PERKINS

N 08°02'05" W 68.47'

N 19°35'01" W 79.71'

111.18'

S 79°24'14" W

N 10°13'49" W 311.16'

S 75°14'36" W 68.87'

S 13°01'57" W 53.84'

S 75°39'49" W 126.64'

S 77°11'43" W 59.10'

S 75°14'15" W 74.93'

S 73°59'14" W 160.75'

S 74°21'30" W 84.02'

S 76°02'21" W 155.98'

S 74°03'19" W 50.91'

S 70°56'31" W 45.12'

S 70°53'51" W 160.03'

S 19°33'15" E 174.69'

S 21°08'15" E 67.83'

N 691359.135 E 1041703.196

7C 47C 85C 46B 3 17 86C

SOILS MAP UNITS

UNIT No.	DESCRIPTION
3	Ridgebury, Leicester, and Whitman soils, extremely stony
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APPR. | DATE | DESCRIPTION OF REVISION | REV.

STAMP

Loureiro Engineering Associates, Inc.
Civil • Land Development • Water • Energy
Waste • Facility Services • Laboratory
100 Quaker Lane, Suite 104, Warwick, RI 02886-0762
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An Employee-Owned Company • www.LoureiroEng.com

SCALE: 1" = 40'
COMM. NO.: 80SSB.01.007
DATE: 12/28/2018
DRAWN BY: WJN/GFB
APPROVED BY: GFA

APROPOSED CONDITONS PLAN

SITING COUNCIL SUBMISSION-CHATFIELD SOLAR FARM
NORTH BRANFORD ROAD, KILLINGWORTH, CONNECTICUT
STANDARD SOLAR

DRAWING 1B

SHEET NO. 1 NO. OF SHEETS 1

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Interrogatory CSC-1-70

Chatfield Solar Fund, LLC
Petition No. 1354

Witness: George Andrews

Q-CSC-1-70: Petition p. 21 states the conversion of forest to grass will increase the peak discharge and the planting of grass will mitigate such an increase. How can the grass function as peak flow mitigation if it is the cause of the increase of the peak flow?

A-CSC-1-70: The grass is not the cause of the increase of the peak discharge. The conversion from forest cover to grass cover will increase peak discharge. However, the grass cover, which will be planted and maintained by Chatfield Solar Fund, LLC, will still be effective at reducing peak discharge and help promote infiltration at the site.

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December 27, 2018

Standard Solar
1355 Piccard Drive, Suite 300
Rockville, Maryland 20850

Attn: Charles Geppi, Project Manager

RE: Addendum to Environmental Assessment
Chatfield Solar Farm
North Branford Road
Killingworth, Connecticut
Commission Number: 80SS5.01

Dear Mr. Geppi:

Standard Solar is proposing to install a 2.33 megawatt DC (MW) solar-based electric generating facility in the town of Killingworth, Connecticut, (hereinafter referred to as "Project") on property located on North Branford Road (Route 80), Killingworth, Connecticut (hereinafter referred to as "the Site"). As part of the Project, an A-2 boundary survey was performed and, as a result, the boundary was found to shift in an easterly direction, resulting in changes to the layout of the Project. This addendum has been prepared to detail the proposed changes to the original layout.

Revised Site Layout

The Project area is approximately 13.43-acres on a 24.13-acre parcel of land located on North Branford Road in Killingworth as shown on the Site Location Plan (Figure 1) and on the Existing Conditions Plan (Figure 2). The proposed project consists of clearing trees within a specific area of the Site, grubbing stumps where required within the areas of the proposed solar array and sediment trap locations, installing solar panels mounted on a driven rack system and all related cabling and electrical systems associated with a complete solar array. It is noteworthy that the majority of the stumps within the solar array area will be flush-cut and only those stumps located within a designated rack-post location will be removed and the area restored to minimize the related disruption. Grubbing will also occur within the sediment trap locations, as well as the driveway, equipment pad and wetlands crossing locations.

The proposed solar arrays will be located in the uplands portions of the Site as shown on Figure 3, Proposed Condition Plan. As currently proposed, approximately 13.43-acres of forest would be cleared, of which 7.0 acres would be for the array itself, and an additional 6.43-acres would be

cleared to eliminate shading around the array. The proposed solar array would be comprised of a total of 6,552 Adani Solar 355 Watt modules, made up of 364 strings with 18 modules per string, 32 Chint Power System SCA60KTL inverters and a Locus Gate 360 monitoring system. The facility would use a post-driven mounting system. The individual panels would be placed at a 20 degree tilt to the south.

Clearing for the array will be accomplished by flush-cutting trees except where the stumps align with the location of the foundation posts and within the area of the sediment trap. Care will be taken to adjust post locations where possible to minimize any grubbing operations. Grubbing is estimated to be less than 10 percent of the array area as well as that necessary for the water quality volume and the necessary sediment trap.

All solar panels would be installed within the upland forested areas, converting approximately 13 acres of upland forest into an herbaceous habitat.

One wetlands crossing is proposed in the southern portion of the Site to gain access to the uplands area in the southern and western portions for installation of modules. The crossing consists of a 12-foot gravel road and a 15-inch pipe. The calculations for the pipe are included as Appendix A. Two wetland conduit crossings are proposed. These crossings are shown in Figure 3 and the cable-tray system would be installed above grade to minimize soil disturbance.

Site Stormwater

Drainage characteristics of existing conditions follow land use characteristics of woodlands, and drainage characteristics for proposed conditions follow the land use of 2-7% sloping lawns. These two land uses have identical drainage characteristics, therefore no appreciable change in drainage volume is anticipated between existing and proposed conditions. Modeling studies have shown that solar panels do not have a significant effect on the runoff volumes, peaks, or times to peak. (Cook, Lauren M., and Richard H. McCuen. "Hydrologic response of solar farms." *Journal of Hydrologic Engineering* 18.5 (2011): 536-541.)

The drainage patterns across the watershed will remain the same as no land grading is proposed. There will, however be changes in flow path of the runoff. In order to mitigate any potential soil erosion, best management practices will be installed to promote groundwater recharge through infiltration. In order to retain the water quality volume (the first inch of runoff), infiltration trenches will be used. Each trench will be sized according to the Connecticut Stormwater Quality Manual. The trenches will be placed at the downstream end of the arrays to capture the runoff before overflowing into the wetlands. In addition, another trench will be placed at the mid-point

of the large solar array to intercept the runoff and slow down the velocity. A gravel apron will be installed along the downstream edge of the water quality basin to serve as a level spreader/energy dissipater during overflow events.

In addition, the kinetic energy of the flow that drains from the panels can cause erosion at the base of the panels. Thus, the grass beneath the panels will be well maintained to minimize any potential soil erosion.

Prior to and throughout the duration of construction, sedimentation and erosion controls will be installed and maintained in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. Silt fences or hay bales will be installed along the entire upstream edge of wetlands near any clearing operation, downstream of any grubbing operations and along the downslope edge of the proposed access drive and maintenance pads. Stone construction entrances will be installed at the same location as the access drive and will prevent any sediment transport to North Branford Road during construction activities.

To reduce any potential transportation of sediments into the wetlands prior to site stabilization, temporary sediment traps will be installed at the locations of the water quality basins. These traps will consist of a gravel embankment designed in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. These basins will also serve to avoid the concentration of stormwater and allow for the natural pre-development hydrology to be maintained. Construction phasing and sequencing will be strategically planned and implemented to minimize soil disruption as well as avoiding soil compaction. A Stormwater Pollution Control Plan will be submitted to the CT DEEP as part of the application for a General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities.

Soil Erosion and Sediment Controls will be submitted as Drawings 1A&1B and 2, Site Plan and Details and Notes.

Vegetation and Wildlife

There is a NDDB area located across North Branford Road. A Request for Natural Diversity Database State Listed Species Review was submitted to DEEP. Based on their initial review, a more detailed site evaluation review was performed to evaluate the likelihood of certain species of concern. At the conclusion of that evaluation, a second NDDB Review request was submitted to DEEP on November 9, 2018. It is our understanding that a response is in draft currently and should be received soon.

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All other aspects of the Project remain the same as per the original Environmental Assessment dated October. 2018.

If you have any questions or need any additional information, please contact me.
Sincerely,

LOUREIRO ENGINEERING ASSOCIATES, INC.

George F. Andrews Jr., P.E., L.E.P.
Vice President

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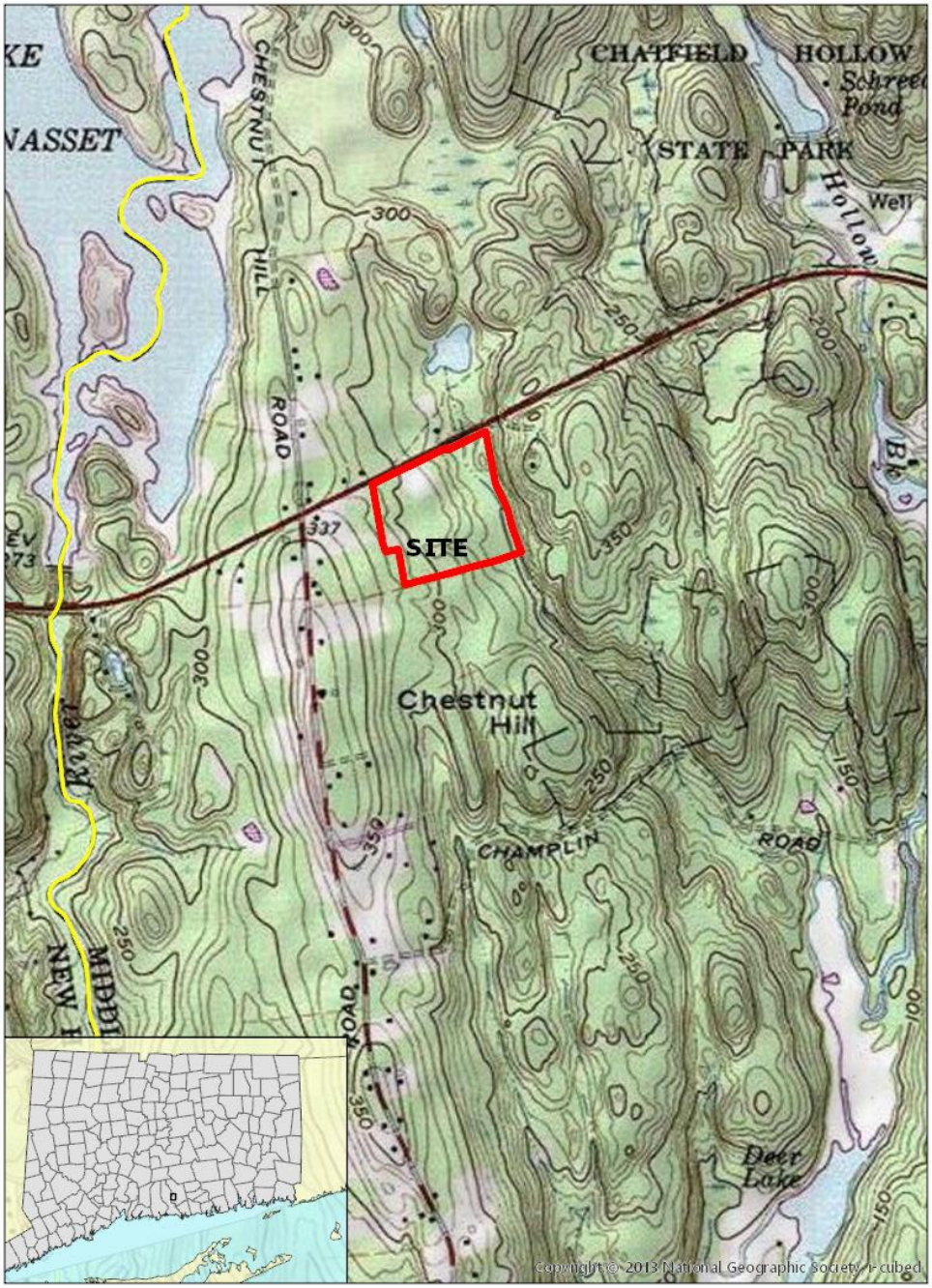

Figure 1
Site Location Plan

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Legend
- Wetlands Flags
- Natural Diversity Database Area
- Critical Habitat
  - Acidic Atlantic White Cedar Swamp
  - VernalPools
  - Wetlands
  - Parcel Boundary

0 250 500 1,000
FEET

Figure 2
Existing Conditions Plan

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- VernalPools
- WetlandsPoly
- Cable Tray
- Modules
- Fence Line
- Clearing Line
- Driveway
- Equipment Pads and Driveway
- Cliearied Area in Wetlands

0 250 500 Feet

Area of Parcel - 24.1 Acres
Area of Proposed Clearing - 13.4 Acres
Wetland Area within Clearing Limit - 0.13 Acres
Upland Area within Clearing Limit - 13.27 Acres

Proposed wetlands crossing to be located adjacent

N
W E
S

Figure 3
Proposed Conditions Plan

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Appendix A
Calculations for Wetlands Crossing

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Project:	Chatfield Solar Farm		
Sheet No.:	1	Of:	1
Calculated by:	ACM	Date:	12/14/18
Checked by:	ACM	Date:	12/14/18

Drainage area – 15.12 ac.
Current conditions – wooded (light underbrush)
Proposed conditions – wooded (light underbrush)
Rational "C" value – 0.05 – 0.25 – light underbrush, select 0.20

Time of Concentration - T(c) – Refer to attached worksheet = 142 minutes

Rainfall Intensity – I (25) = 1.2 I/hr. (25-year storm event)

Rational Formula Analysis:

Q=CIA

Q – Peak rate of runoff in cubic feet per second
C – unitless coefficient
I – Average intensity of rainfall in inches/hour
A – area in acres

Q= 0.20 x 1.2 x 15.12 = 3.62 cfs

Based upon the ADS hydraulics curves a 15" HDPE at 1% has plenty of capacity at 6 cfs minus entrance losses (Attached)

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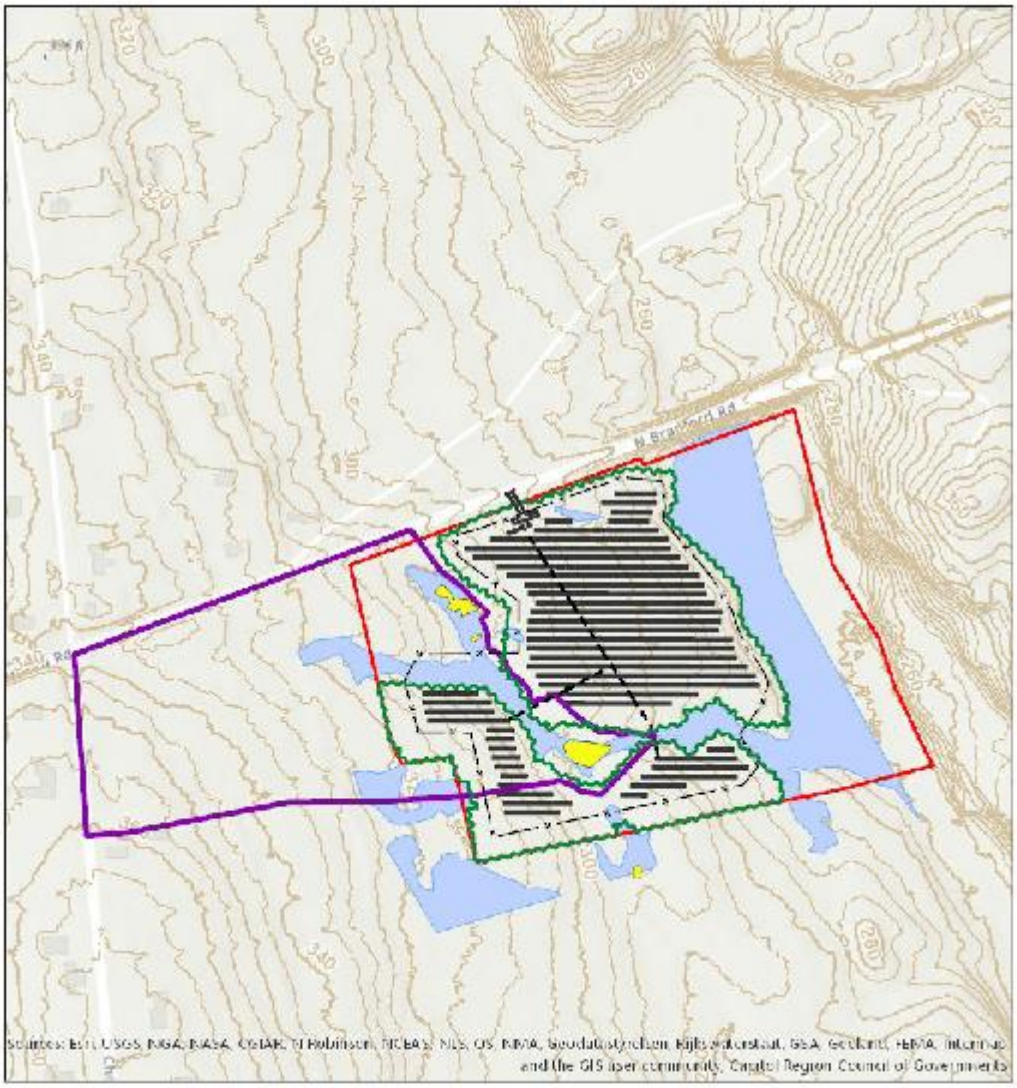

VernalPools
WetlandsPoly
Cable Tray
Modules
Fence Line
Clearing Line
DrainageArea Crossing

Wetlands Crossing Drainage Area

0 250 500 1,000
Feet

N
W E
S

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Project:	Chatfield Farm Wetlands Crossion		
Calculated By:	ACM	**Date:**	12/14/18
Checked By:		**Date:**	

Time of Concentration Path Worksheet

Watershed:	Chatfield Solar Farm		**Units:**	English
Condition:	Proposed			

Sheet Flow					**TOTALS (min)**
Surface Description:	Light underbrush				
Manning's Roughness Coefficient, n:	*0.400*				
Flow Length, L (ft):	150				
Slope of Hydraulic Grade Line, S (ft/ft):	0.040				
2-yr, 24-hr Rainfall Depth, P2 (in):	3.30				
Sheet Flow Travel Time (min):	**22.2**	+	**0.0**		**22.2**
Surface Description:					
Manning's Roughness Coefficient, n:					
Flow Length, L (ft):					
Slope of Hydraulic Grade Line, S (ft/ft):					
2-yr, 24-hr Rainfall Depth, P2 (in):					
Sheet Flow Travel Time (min):	**0.0**	+	**0.0**		**0.0**
Shallow Concentrated					
Surface Description:	Unpaved		Unpaved		
Flow Length, L (ft):	340		255		
Slope of Hydraulic Grade Line, S (ft/ft):	0.040		0.067		
Average Velocity, V (ft/s):	*3.23*		*4.18*		
Sheet Flow Travel Time (min):	**1.8**	+	**1.0**		**2.8**
Surface Description:					
Flow Length, L (ft):					
Slope of Hydraulic Grade Line, S (ft/ft):					
Average Velocity, V (ft/s):					
Sheet Flow Travel Time (min):	**0.0**	+	**0.0**		**0.0**
Open Channel Flow					
Manning's Roughness Coefficient, n:	0.035				
Flow Length, L (ft):	900				
Slope of Hydraulic Grade Line, S (ft/ft):	0.047				
Cross Sectional Flow Area, a (ft*ft):	2				
Wetted Perimeter, pw (ft):	8				
Hydraulic Radius, r = a/pw (ft):	*0.25*				
Average Velocity, V (ft/s):	*0.13*				
Sheet Flow Travel Time (min):	**117.0**	+	**0.0**		**117.0**

Total Time of Concentration Path, Tt (min): **142.0**

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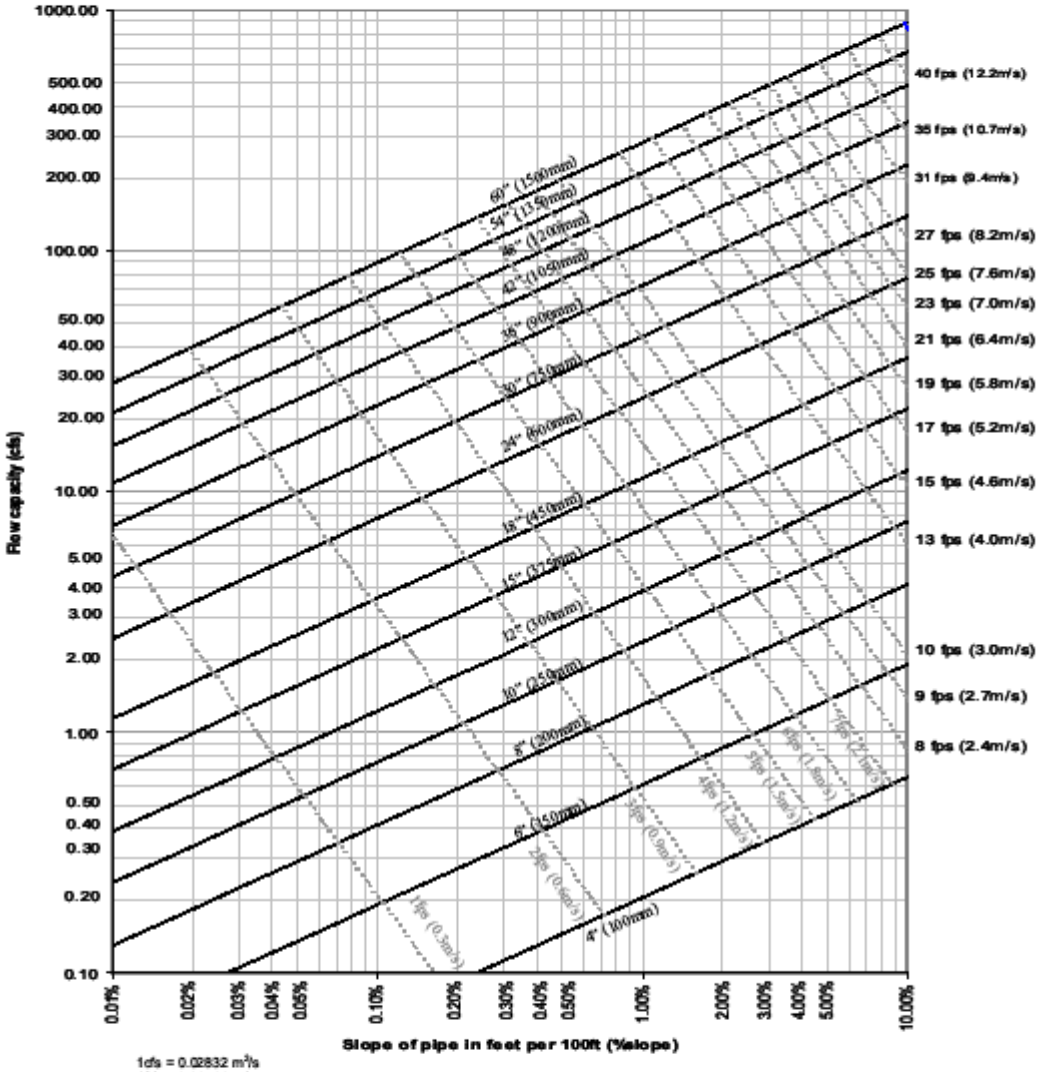
Figure 3-1
Discharge Rates for ADS Corrugated Pipe with Smooth Interior Liner[1]



1cfs = 0.02832 m^3/s
1ft/s = 0.30480 m/s
1% = 0.01 ft/ft

1. Applicable products: N-12®, MEGA GREEN®, N-12 STIB, N-12 WTIB, HP STORM, SaniTite®, SaniTite HP, N-12 Low Head

Note: Based on a design Manning's "n" of 0.012.
Solid lines indicate pipe diameters. Dashed lines indicate approximate flow velocity.
Redeveloped from FHWA HDS 3 – Design Charts for Open-Channel Flow[2]