

DOCKETED

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Project Title:	Darden Clean Energy Project
TN #:	261491
Document Title:	Stormwater Management Responses
Description:	This document provides additional information on stormwater management in responses to questions received from the CEC.
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Submitter Role:	Applicant
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Stormwater Management

The preliminary stormwater analysis completed for the Darden Project in April 2023 used a conceptual design and thus produced preliminary, conceptual results. Stormwater management across the Project site will be based on the final hydrology study and stormwater management analysis, which will be modeled using the Project's final design and layout. Stormwater management will ensure there is no increase in runoff peak rate post-construction as compared to pre-construction conditions for the 100-year 48-hour storm event.

From CEC Biology Team:

Question 1: *Provide a description of the predicted frequency that standing water would occur, and the length of time to percolate. For example, is standing water expected on site most years during the rainy season? Or only during a 100-year storm? What about standing water during a 5-year storm, an event more likely to occur during the project's lifetime than the modeled 100-year storm.*

Response 1: Project design will mimic the existing conditions with sheet flow and at-grade roads. The site generally has positive drainage that will convey, infiltrate, and evaporate after storms. The soils across the Project site are classified as low infiltration clays (hydrologic soil groups C and D) and heavy or continuous rains could take longer to drain. Revegetation of the site post-construction is anticipated to aid in soil health and the ability for water to infiltrate and evaporate during storm events.

Modeling has not been conducted for a 5-year storm event and that data is not available. The preliminary flood model indicates there will be temporary standing water in the Project area during the 100-year/24-hour and 500-year/24-hour storms that were analyzed, but the results do not have information on how long it would take the water to dissipate. The detention basins will be designed to drain the 100-year stormwater within 48 hours. Smaller storm events would drain more quickly.

From CEC Hydrology Team:

The irregular shapes of the detention basins shown in Sheet 5 of the Preliminary Stormwater Plan and the lack of details in the Project Description and the Water Resources sections of the application result in questions concerning stormwater control:

Question 2: *Will the detention basins be constructed solely of soil berms that will eventually be vegetated? Will any riprap or culverts be used?*

Response 2: Detentions basins may be constructed using a variety of design options to meet stormwater volume requirements and net zero floodplain criteria including flat areas with soil and/or riprap berms and excavated bottom basins with or without soil and/or riprap berms. Options for outflow control include but are not limited to riprap weir outlets, perforated riser pipes with riprap, culverts with floating skimmers, culverts with riprap rings.

Question 3: *Based on Preliminary Stormwater Plan Sheet 5, detention basins would be located in the northeast corners of each solar facility drainage area based on the general slope of the topography. Will the detention basins be open, or unbermed to the southwest?*

Response 3: The basins would be open to the south and west to allow stormwater flows to enter unrestricted.

Question 4: *Will berms only be constructed along the northern and eastern margins of the drainage area northeast corner?*

Response 4: Berms will generally be constructed along the north and east sides of Project sections to divert water toward the basin areas. Placement of berms or other BMPs in other areas, such as within project sections or between solar panel rows may be considered to address areas of high velocity or erosion potential, or to aid in decreasing basin sizing and will be determined based on final modeling results.

Question 5: *What will be the length of the berms?*

Response 5: The detention basin berms will be of sufficient length and height to contain the storage volume and to divert flow into the basin. The final size of the detention basins and berms will be determined based on the final stormwater management study that is not yet complete.

Question 6: *If the berms are not long enough, will drainage area stormwater flow be adequately captured without escape to adjacent areas?*

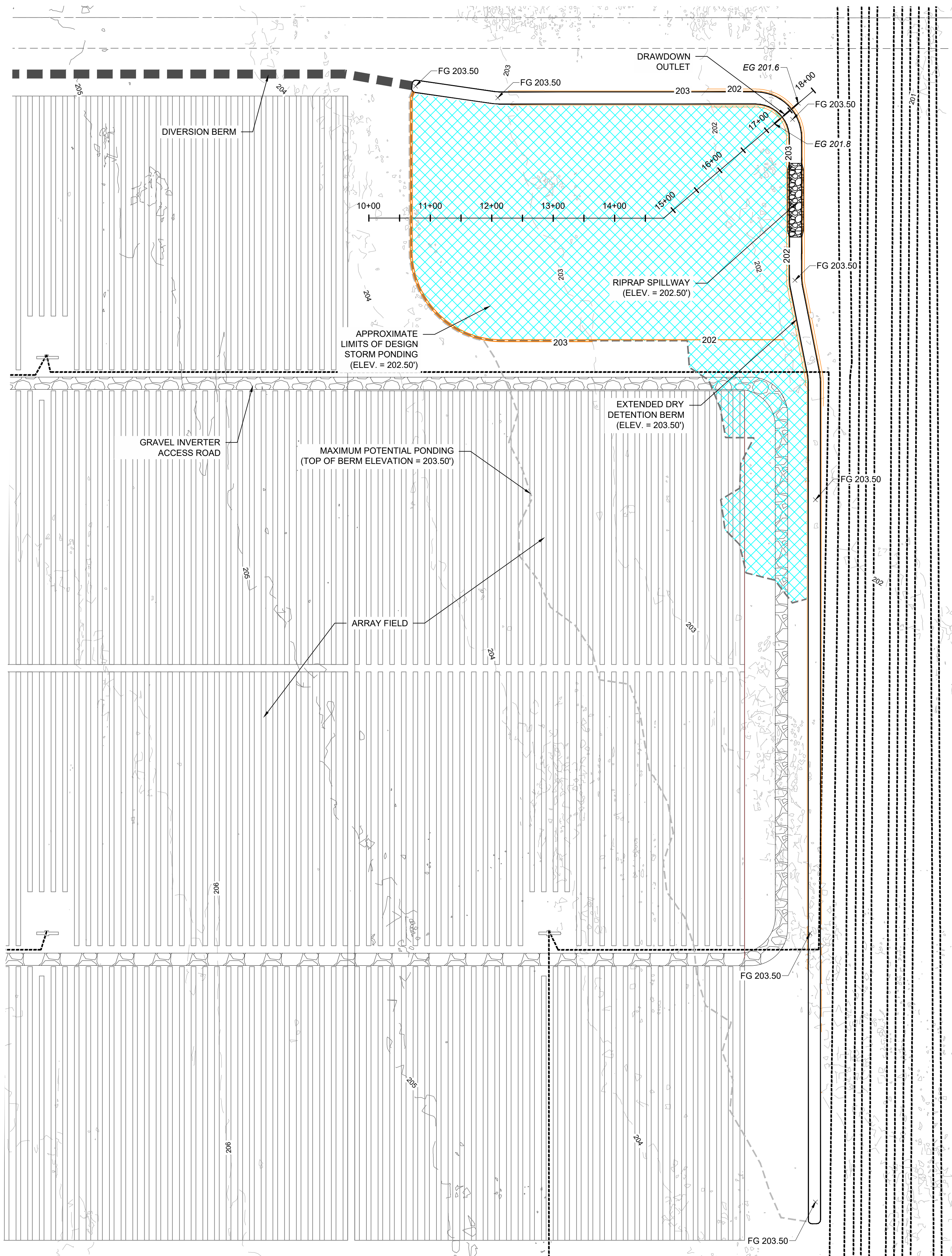
Response 6: The Project will have detentions basins and berms located and adequately sized to ensure there is no increase in runoff from the Project site post-construction as compared to pre-construction conditions for the 100-year storm event. If final modeling indicates that stormwater flows will not increase post-construction along some boundaries of the Project area and would not result in significant scour or erosion, detention basins and berms would not be needed to control stormwater quantity and water would be allowed to naturally flow across the Project area and off site.

Question 7: *Both the Water Resources section of the application and the Preliminary Stormwater Plan state that detention basins will capture and treat stormwater. How will the detention basins treat stormwater?*

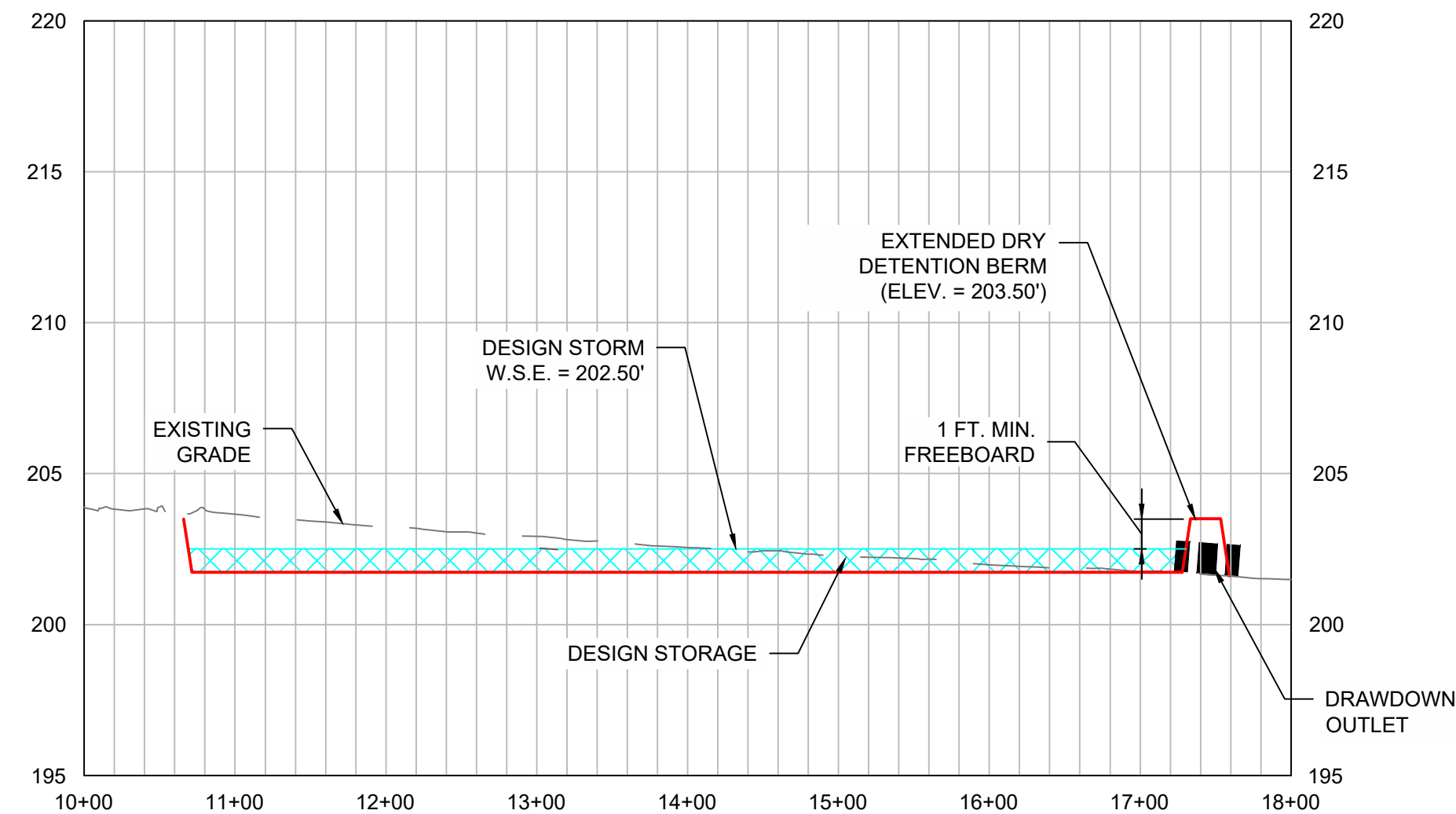
Response 7: Extended detention basins such as those that will be used for the Project are designed to temporarily detain stormwater runoff for some minimum time (typically 48 hours) to allow particles, trash, and associated pollutants to settle while the water is slowly released. Extended detention basins have been shown to be effective at reducing many of the pollutants regulated by the State and Regional Water Boards.

Question 8: *The Preliminary Stormwater Plan, Stormwater Management Practices section states that the detention basins will be designed with a minimum 1 foot of freeboard from the top of the berm. What design element will ensure this freeboard? Would it be possible to get a schematic design drawing of the typical detention basin?*

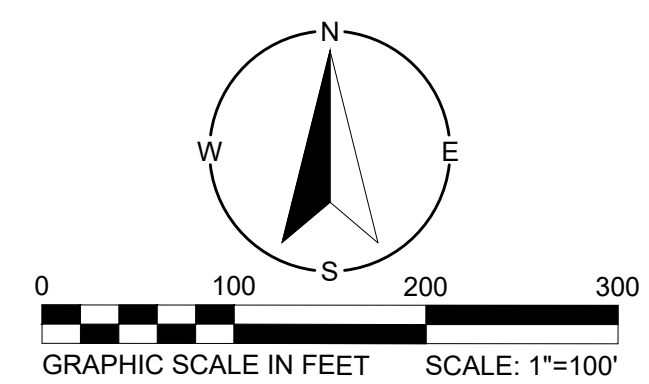
Response 8: The 1-foot freeboard will be met by adjusting the basin size, berm elevation, and outflow control. These will be modeled using modeling software such as HydroCAD or equivalent. Attached is a schematic showing a concept that could be used which includes a detention basin with a berm, outflow culvert, and berm spillway. Other basin designs and controls could be used in the design, and this concept is subject to change based on final Project layout and stormwater modeling.



SCHEMATIC EXTENDED DRY DETENTION BASIN - PLAN VIEW
SCALE: 1" = 100'



SCHEMATIC EXTENDED DRY DETENTION BASIN - PROFILE VIEW
SCALE: 1" = 100' (H), 1" = 5' (V)



LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING FENCE LINE
- ADJOINER LINE
- ROW
- EXISTING EASEMENT
- EXISTING ROAD
- EXISTING GAS/PETROLEUM LINE
- EXISTING UNDERGROUND TELEPHONE
- EXISTING OVERHEAD ELECTRIC
- DRILL PADS AND ACCESS EASEMENTS
- PROPOSED DIVERSION BERM

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PROJECT NAME
DARDEN 1 PV + BESS

SITE LOCATION
FRESNO COUNTY, CA
36.476° , -120.216°

DATE	CB	ML
01/17/25	DB	BT
DRAWING ISSUE	#	
PRELIMINARY	0	
PROJECT NO.: 24103-01		

DRAWING TITLE
SCHEMATIC
DETENTION
BASIN DESIGN

DRAWING NUMBER
EXH-1