

## .0 SUNLIGHT

As shown in **Appendix 33-A**, the distance from Building 1 to the residences on Perkins Road to the north is approximately 300+ feet. Projecting the shadow from the northern edge of Building 1 yields a maximum shadow throw of approximately 57 feet into the abutting property to the north (see attached diagram). This is based on the following:

1. Building height is 45 feet: This is the maximum allowable by city code, however, proposed building height at the northern edge is 33 feet.
2. A “flat site” topography: The extent of shadow shown will actually be less due to rising grades from the building northward.
3. Vegetation: Approximately half to 2/3 of Building 1 will be hidden behind existing vegetation, which will also intercept building shadow, and create its own. Please refer to Section 6 Visual Impact.
4. Season: Modeling was performed for the lowest sun angle (longest potential shadow) occurring on the winter solstice at mid- morning and afternoon.

No structures currently exist in the shadow area, and the minimum local setback for structures from the property line is 40 feet, thus operation and construction of the project will not block access to direct sunlight to structures utilizing solar energy through active or passive systems as identified in 06-096 CMR 375.13 “Access to Direct Sunlight”.

**APPENDIX 24-A**

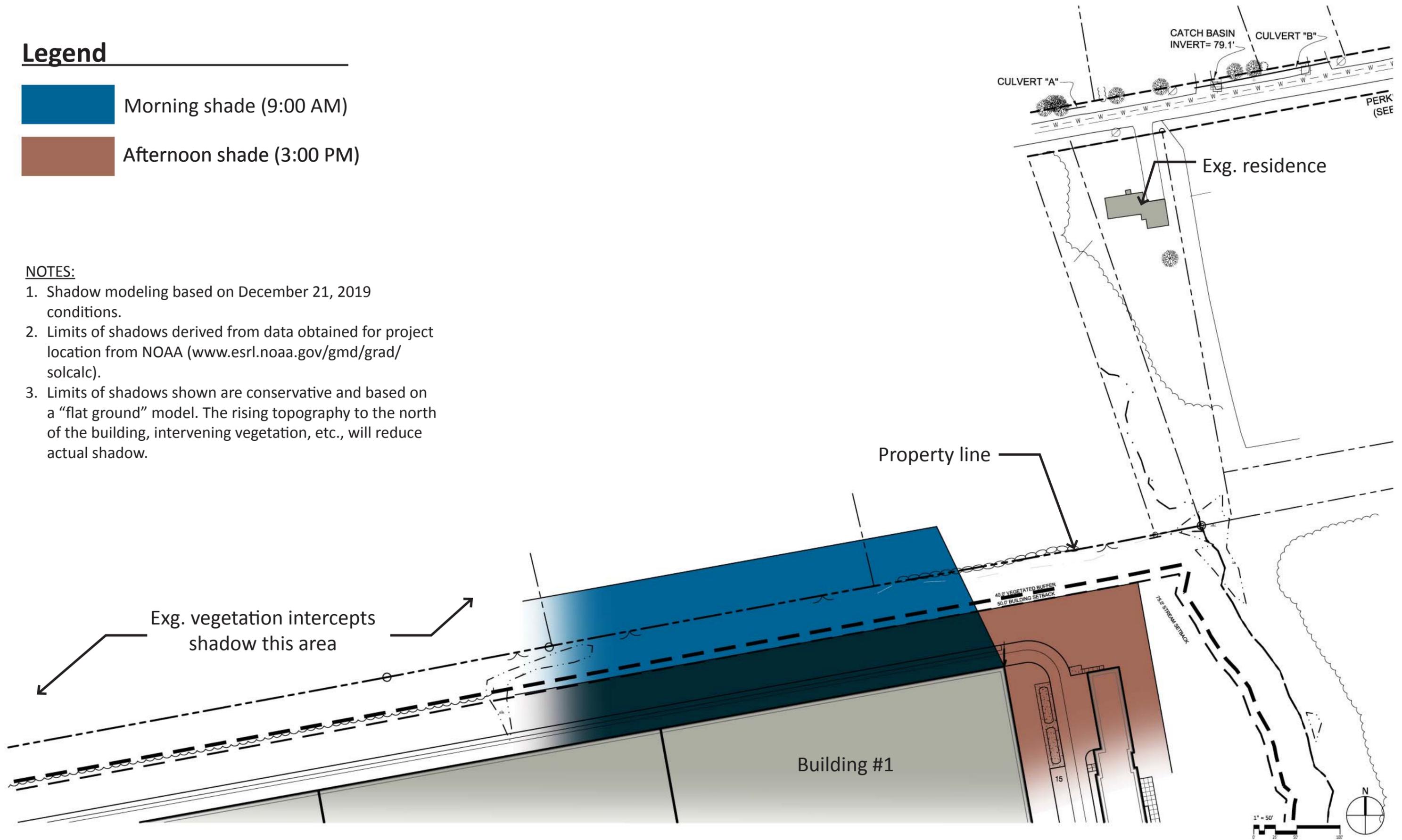
Shadow Study Diagram

# Legend

-  Morning shade (9:00 AM)
-  Afternoon shade (3:00 PM)

### NOTES:

1. Shadow modeling based on December 21, 2019 conditions.
2. Limits of shadows derived from data obtained for project location from NOAA ([www.esrl.noaa.gov/gmd/grad/solcalc](http://www.esrl.noaa.gov/gmd/grad/solcalc)).
3. Limits of shadows shown are conservative and based on a "flat ground" model. The rising topography to the north of the building, intervening vegetation, etc., will reduce actual shadow.



## Shadow Study Diagram