

Visualizing Flooding to Support Watershed and Conservation Projects

Using the Tool

The Maryland Flood Explorer is a valuable tool for visualizing flooding on natural lands, particularly coastal ecosystems that are most impacted by sea level rise. Different land management groups such as wildlife management areas or land trusts, may use the flood visualizations in their decision-making about land restoration and conservation priorities. Awareness of potential future inundated areas can help ensure that the projects they support are feasible and effective in flood-prone areas.

Example Scenario

A land trust learns that a property owner is considering putting their property into a conservation easement. The land trust wants to review the sea level rise impacts as a way to anticipate how the land cover may change. This can help determine possible management strategies to help preserve different ecosystems on the property or determine if the property will provide other environmental benefits over the long term.

To begin, the land trust uses the Maryland Flood Explorer to visualize flooding on the parcel.

Tool in Action

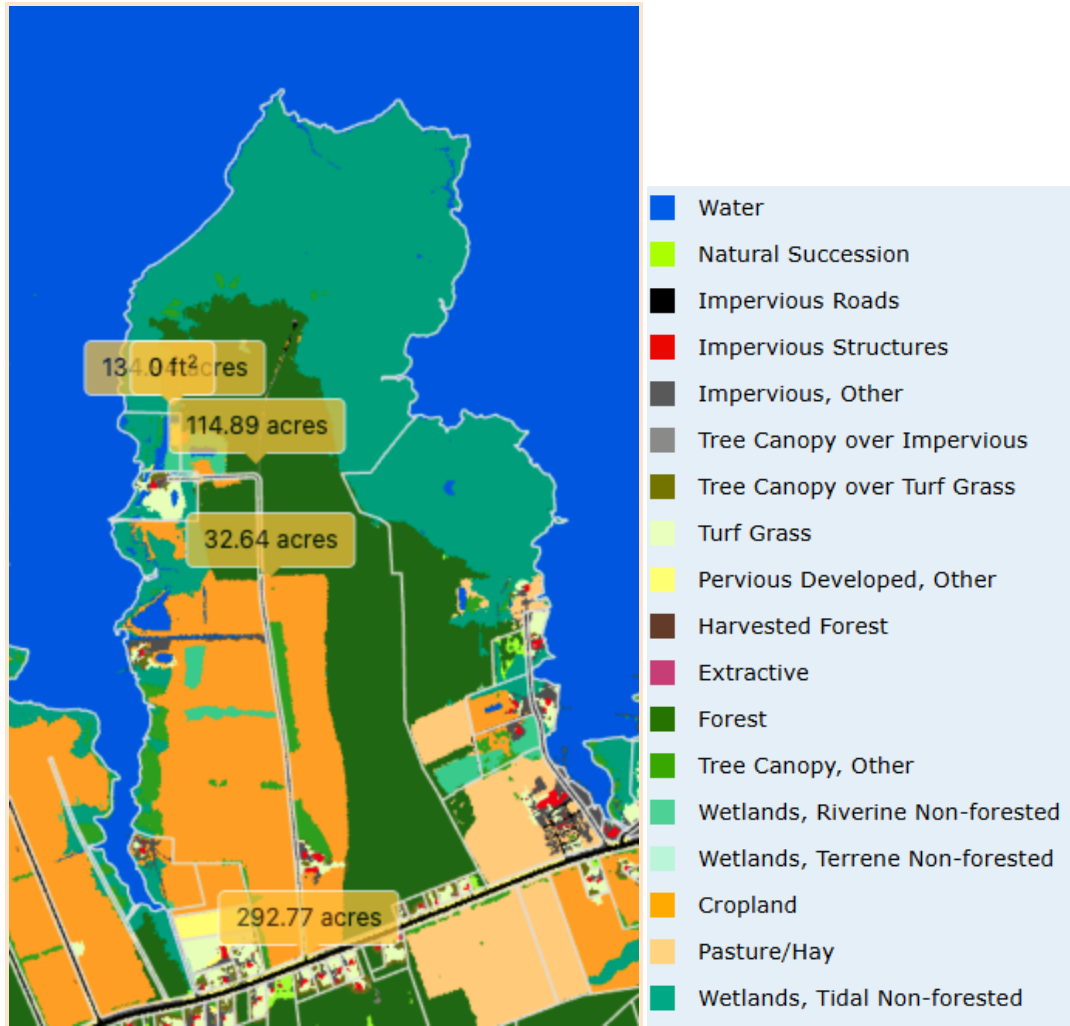
- Open the [Maryland Flood Explorer](#) and enter the address for the parcel.
- Click the **Basemaps & Layers** button and enable the following layers (which can be toggled on and off):
 - **Parcels** – (Located under Add Layers, Popular) This shows the boundary for the parcel of interest
 - **LULC (Land Use Land Cover)** – (Located under Add Layers, Natural) This shows current land use land cover, such as wetlands, forest, agriculture, development, etc.

Visualizing current land use/land cover

- Enable the **LULC** layer to display current land cover. This will show which parts of the property are in different land uses.
- Use the Measure Tool to help quantify different land covers. Click the polygon icon to roughly measure the total area and the different land types. Use the line icon to measure how far inland different land covers occur.

The land trust measures the total parcel acreage is approximately 293 acres. They observe that about 46% (135 acres) of the land is in wetlands, 39% (115 acres) of land is in forests, and 11% (33 acres) of land is agricultural. The wetlands generally extend 0.36 mi into the property, the forest occurs between 0.36 and 0.83 mi and the agricultural land starts about 0.83 mi inland.

The screenshot below could serve as a helpful educational resource to share among the land trust staff or share with the property owner. Additionally, this can be used to identify neighboring properties that the land trust may want to reach out as part of this effort.



LULC Layer at Hypothetical Parcel for a Conservation Easement

The legend for LULC is not currently included in the mapper but will be added in Fall 2026, until then please reference the legend provided.

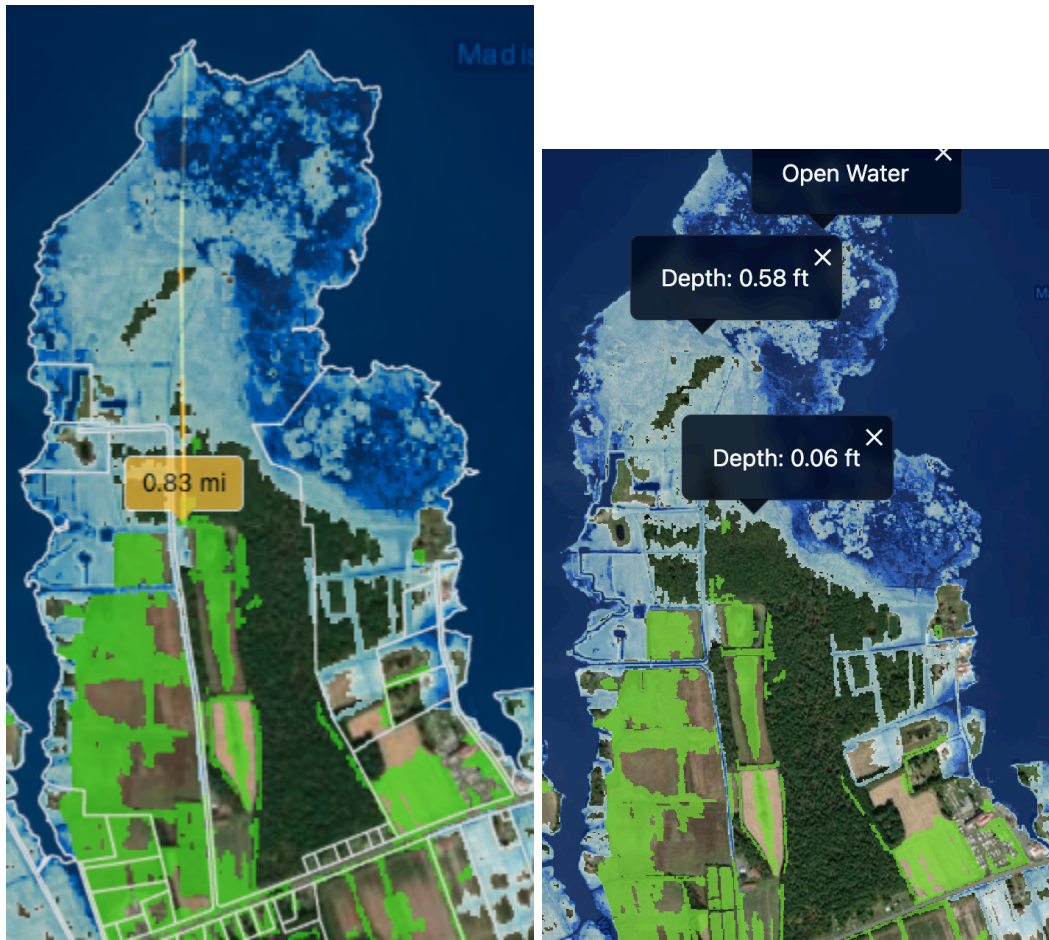
The land trust is now curious how much sea level rise will affect the property. Knowing how inundated the property is can help the land trust judge how the land use will change in the future. They are curious to know about flooding in 2030, 2050, and 2100.

Visualizing the sea level rise on the parcel

The screenshots below show the amount and extent of projected inundation. As sea level rises, low elevation coastal areas will likely see a transition of wetland plants moving further inward (i.e. marsh migration). Forests and agricultural crops will likely be unable to survive increased wetness and salinity. Understanding this can help inform management goals for the property.

- Toggle off the land use layer. Use the sea level rise slider bar on the left. Tick marks show in 2030 the sea level rise projection is 0.85 feet.
 - Click the **Measure Depth** button and select various points within the property to view the estimated water depths throughout the area.

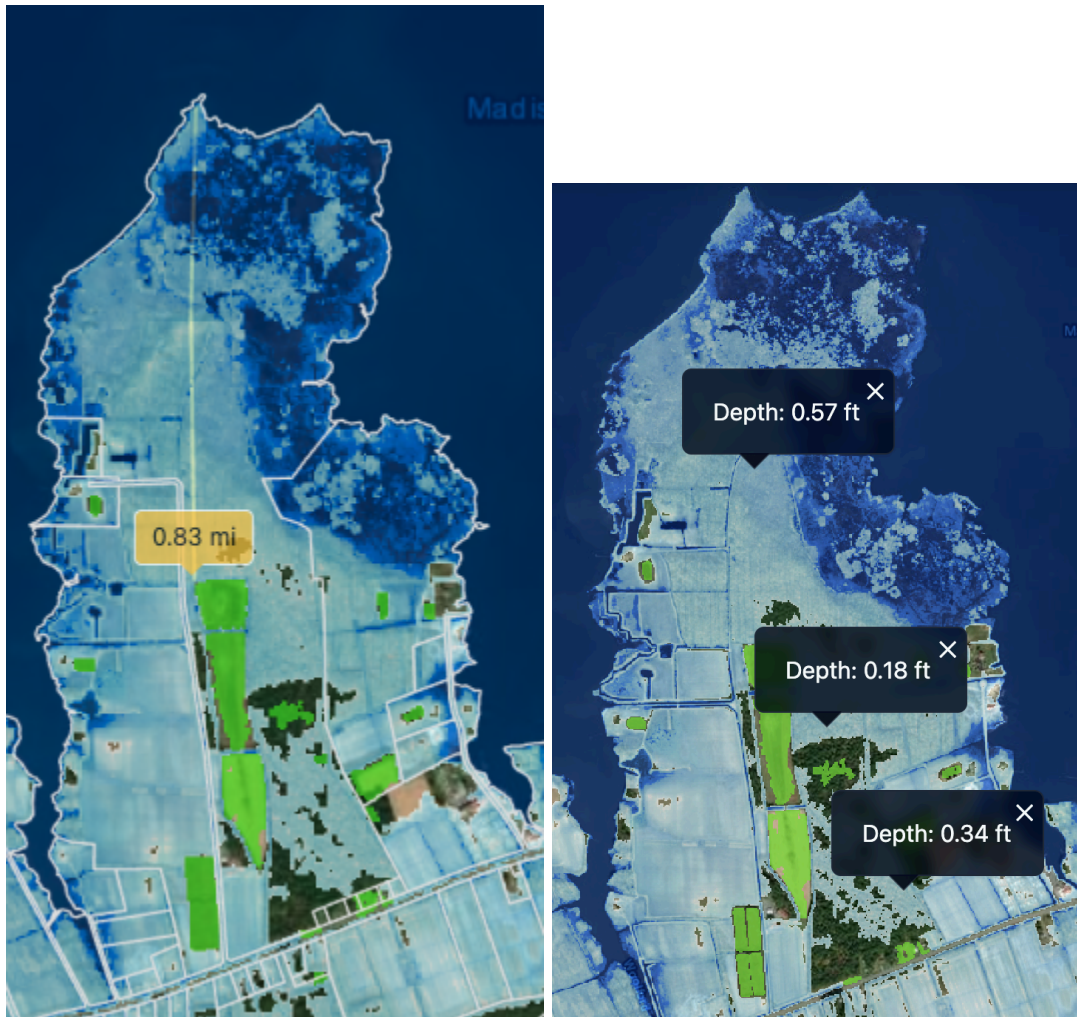
By clicking 2030, the slider bar rounds up to 1 ft. The land trust sees how far inland the flooding reaches. The wetland portion is flooded but the forest and agricultural land are not.



1 ft of sea level rise at the hypothetical parcel

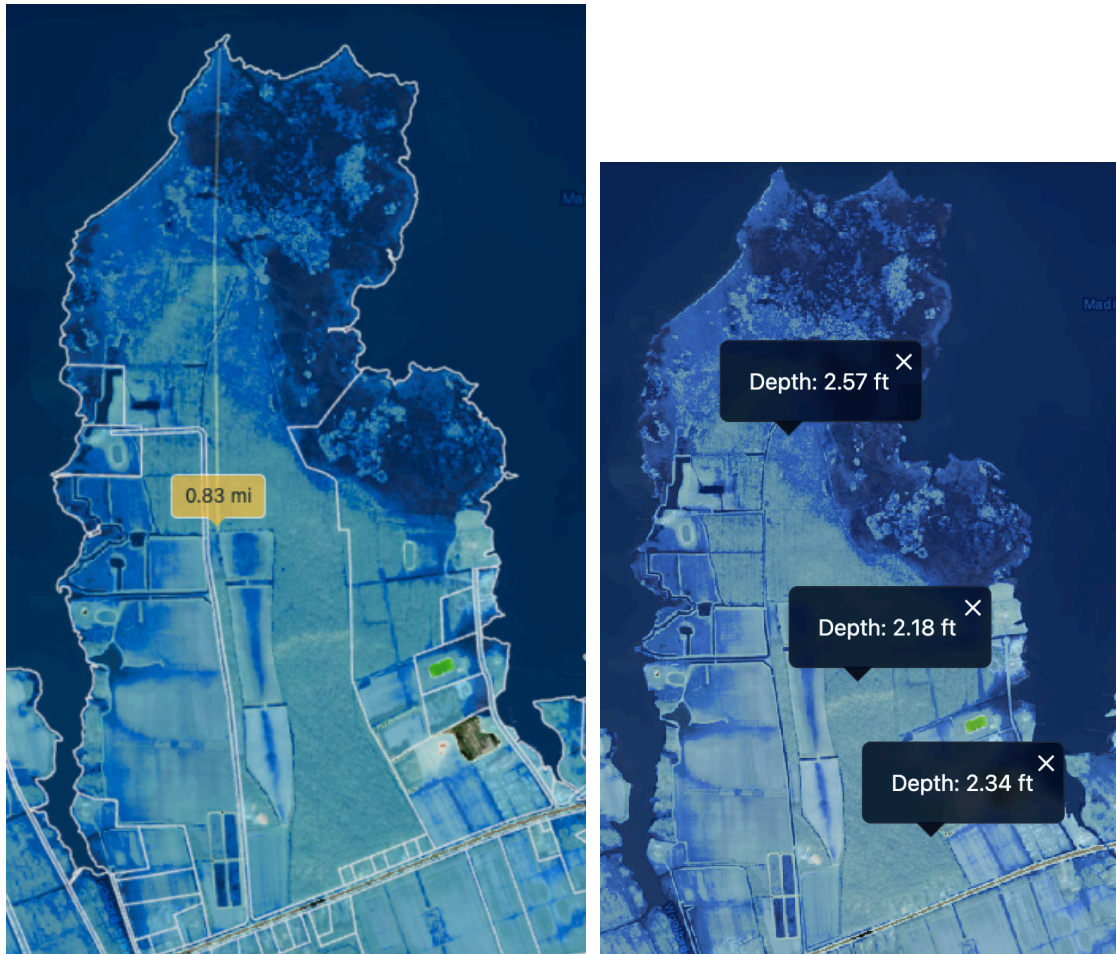
- Use the sea level rise slider bar on the left. Tick marks show in 2050 the sea level rise projection is 1.57 feet.
 - Click the **Measure Depth** button and select various points within the property to view the estimated water depths throughout the area. Note: as you drag the slider bar, the water depth points automatically adjust.

By clicking 2050, the slider bar rounds down to 1.5 ft. The land trust sees how far inland the flooding reaches. The wetland portion is fully flooded and most of the forest and agricultural land is as well.



- Use the sea level rise slider bar on the left. Tick marks show in 2100 the sea level rise projection is 3.65 feet.
 - Click the **Measure Depth** button and select various points within the property to view the estimated water depths throughout the area.

By clicking 2100, the slider bar rounds down to 3.5 ft. The land trust sees how far inland the flooding reaches. The entire parcel is underwater including much of the adjacent land and roadways.



Key Takeaways

- The screenshots above can be used in educational materials for the land trust to consider how best to manage this property if it became a conservation easement. They can also use the screenshots to help the property owner decide if and when the property should become a conservation easement.
- In the near term, tree canopy and croplands may be maintained, but will be unlikely to persist if flooded
- As inundation and flooding increases, the ability of the tidal wetlands to maintain itself is going to decrease over time. Prolonged, inundated areas will resemble the coastal fringe at the depths that are seen today (for example, submerged aquatic vegetation may inhabit the area)
- Adaptation strategies that increase elevation, such as thin layer placement, may reduce and/or relay sea level rise impacts