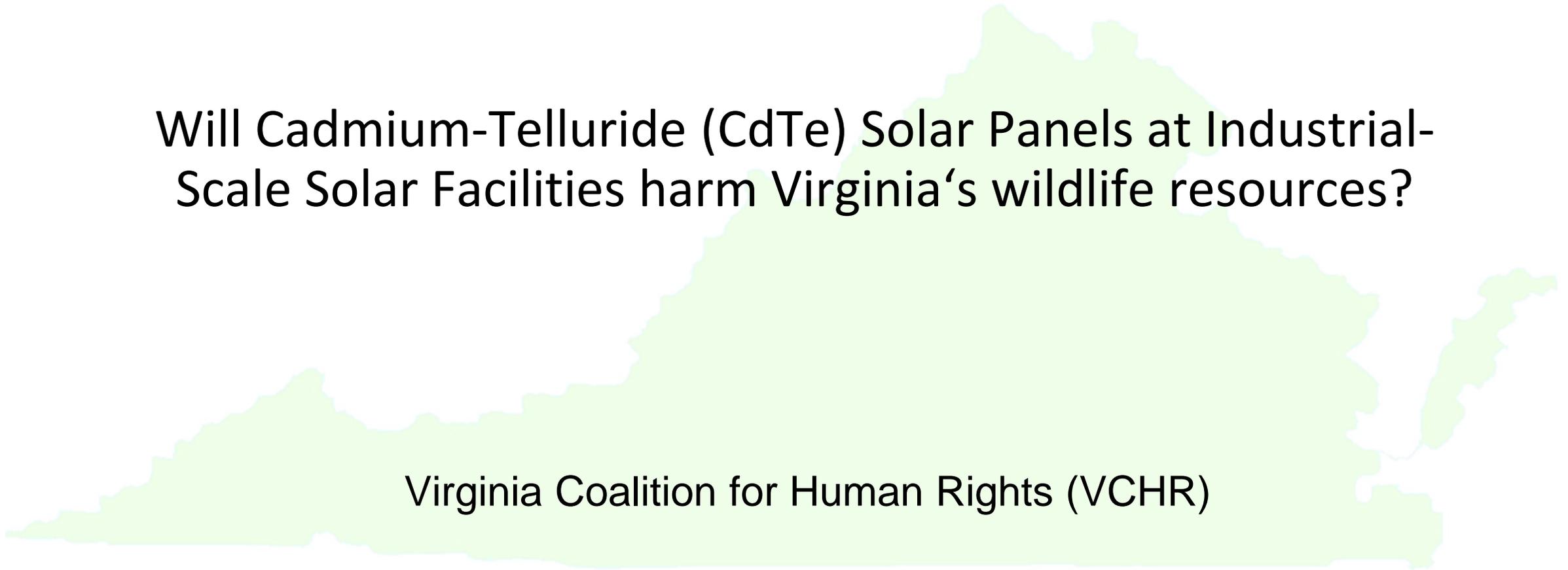


# VCHR Concerns about CdTe Solar Panels and Wildlife Resources

Will Cadmium-Telluride (CdTe) Solar Panels at Industrial-Scale Solar Facilities harm Virginia's wildlife resources?



Virginia Coalition for Human Rights (VCHR)

January 19, 2023

# Federal Clean Water Act and Virginia's General Standard

- **Federal Clean Water Act:** Objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.
- **Virginia's General Standard:** "All state waters shall be free from substances...which are harmful to aquatic life."

# There are two major categories of solar panels

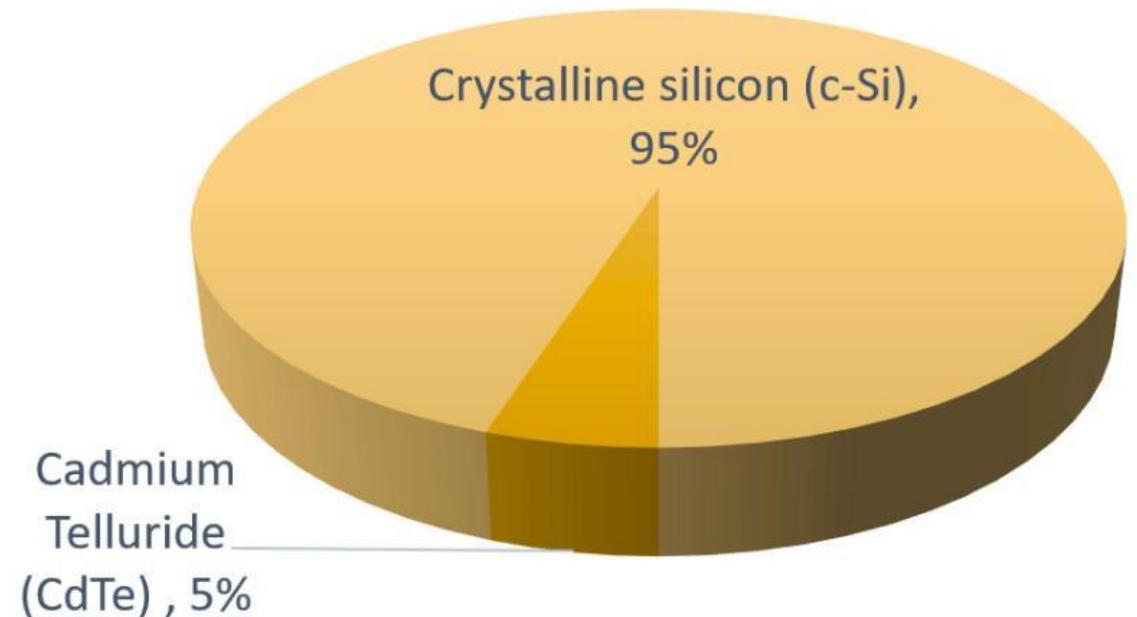
## 1. Silicon

- a. First material used in manufacturing of solar cells.
- b. High cost, lower efficiency.

## 2. Cadmium Telluride

- a. New, thin-film technology, higher efficiency, low-cost manufacturing.
- b. Cadmium abundant, Tellurium a rare earth element.
- c. CdTe is a toxic carcinogen and can potentially leach into water and soil during operational and disposal phase.

2020 World Solar Panel Production Share



Source: [Photovoltaics Report](#), Fraunhofer Institute for Solar Energy Systems, DOE.

# Scientific Research and CdTe Panels: Solar Developers vs. U.S. Government

## Developer Claims

- Solar developers cite **industry-funded studies** that tout the safety of solar panels that consist of Cadmium Telluride.

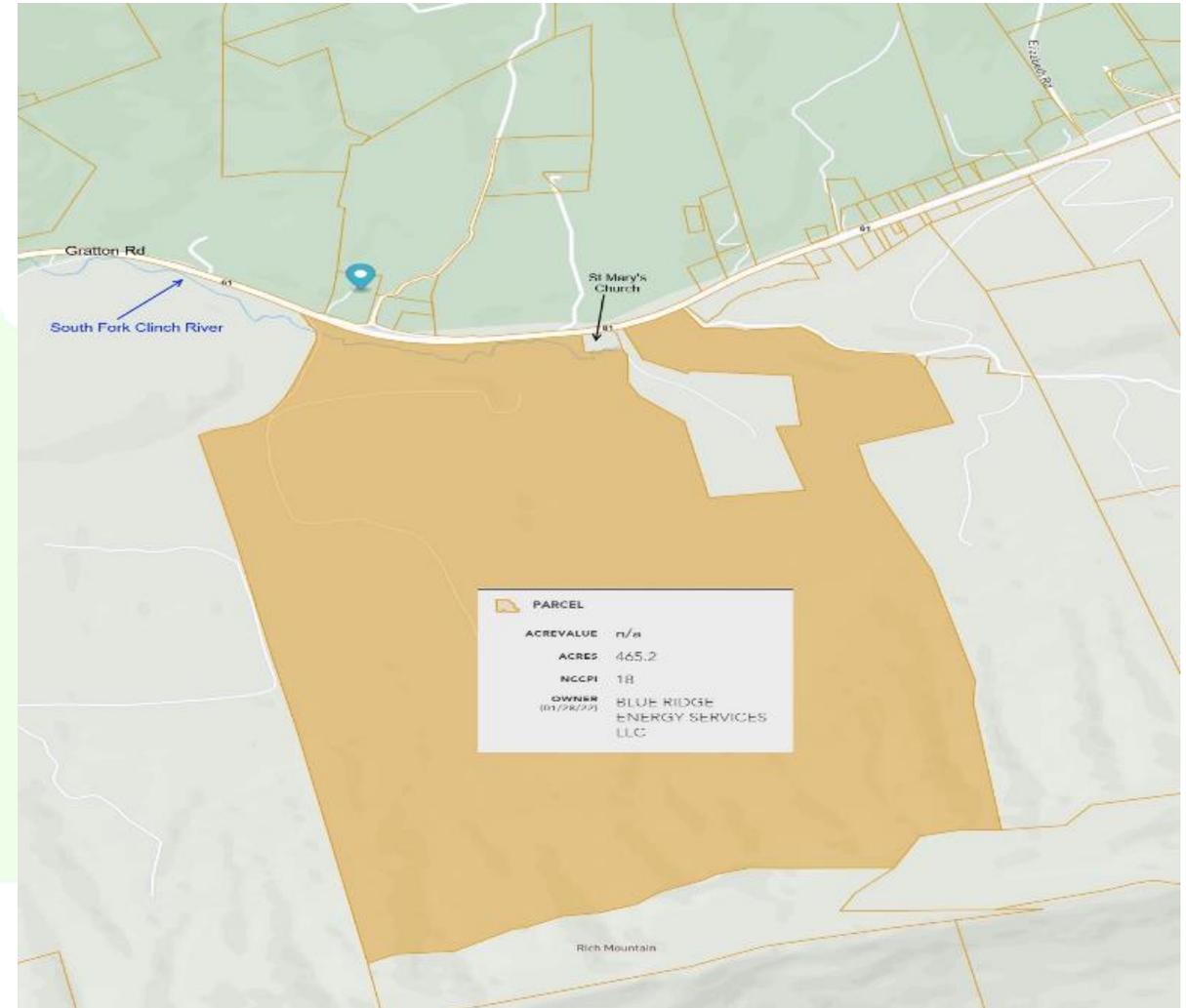
## U.S. Government Findings

- **EPA** lists CdTe in its **Toxic Substances Control Act**.
- **National Institutes of Health** Hazards Identification List warns that **CdTe is very toxic to aquatic life**. NIH reports that “Leaching also occurs when CdTe panels are sent to landfills, where one test found that “over the course of 30 days, 73 percent of the Cd and 21 percent of the Te were released.”  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5607867/>.
- **Occupational Safety and Health Administration** considers **CdTe hazardous**.



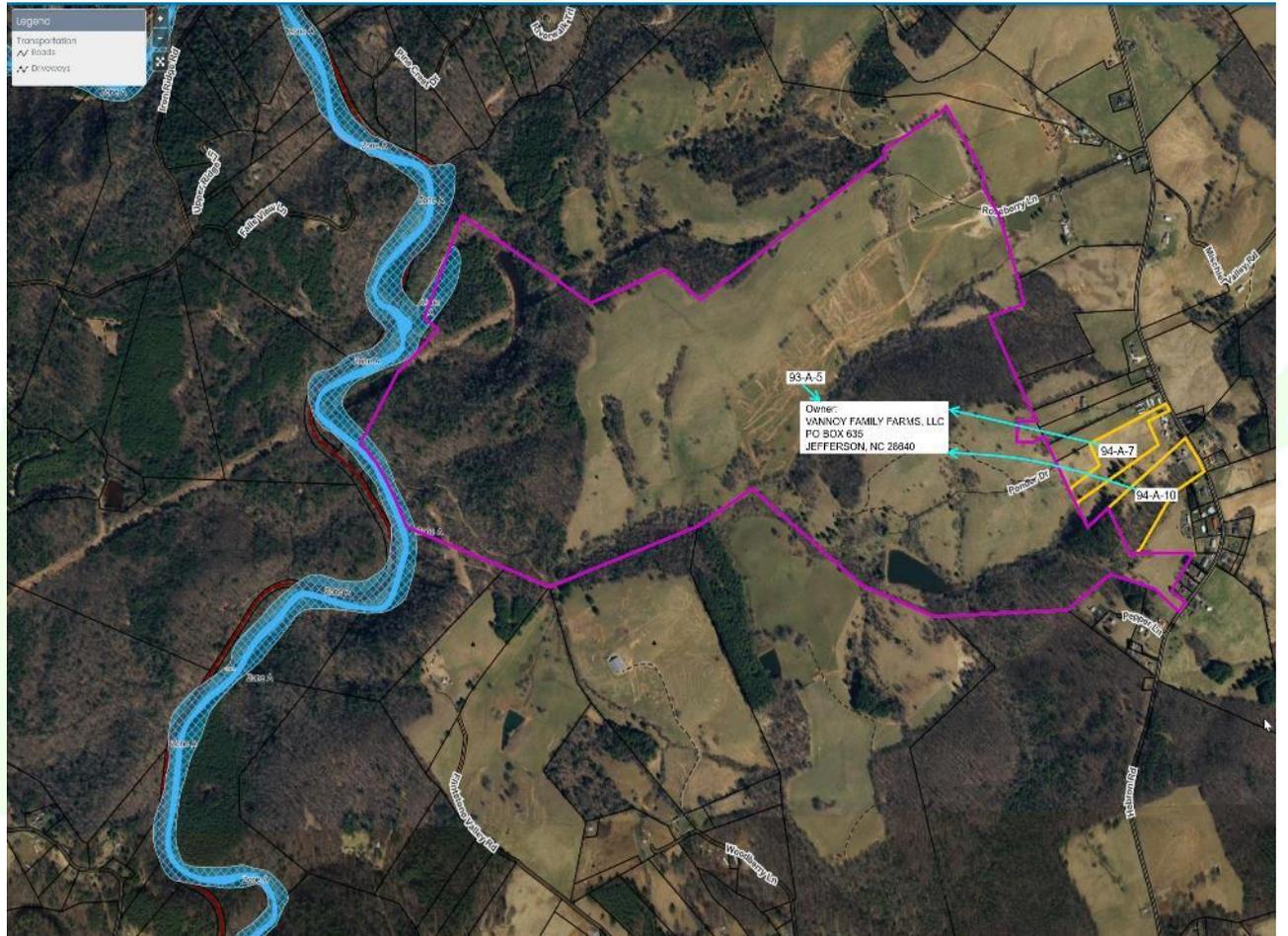
# Buckhorn Mountain Solar (Tazewell)

- There is a risk of contamination of soil, groundwater, spring water, shallow wells, and the Clinch River due to potential leaching of Cd.
- Will Cd from Buckhorn Mountain's 44,680 solar panels (potentially 400 lbs.) leach into the Clinch River, poison the fish, and contaminate water for downstream communities in Scott, Russell, Wise, and the State of Tennessee?



# River Trail Solar (Carroll)

- Will Cd from River Trail Solar's 56,500 solar panels (498 lbs.) contaminate county soil, groundwater, and shallow wells due to potential leaching?
- Will Cd from River Trail Solar contaminate the New River and downstream communities in Claytor Lake and the New River Gorge National Park in West Virginia?



# Helios Solar (Pulaski)

## Supps deny permit for solar farm

© Mon, 10/31/2022 - 10:18 By PATRICK FORD patrick@southwesttimes.com

Pulaski County Board of Supervisors unanimously denied a permit for Helios Solar to construct a solar farm on Lowman's Ferry Road, citing environmental concerns with the solar panel material and with landscaping that would be required.

Laura Walters, board chair, noted mixed research on the panels but ultimately voted to deny the permit due to environmental concerns.

"We were concerned because of the proximity to the lake; it was less than a mile," said Walters. "Although I understand that these panels are not fragile — that they are supposed to be very secure — we were not willing to take that chance."

Her concern stems from the fact that the panels used by Helios are made from a relatively new process that includes cadmium telluride.

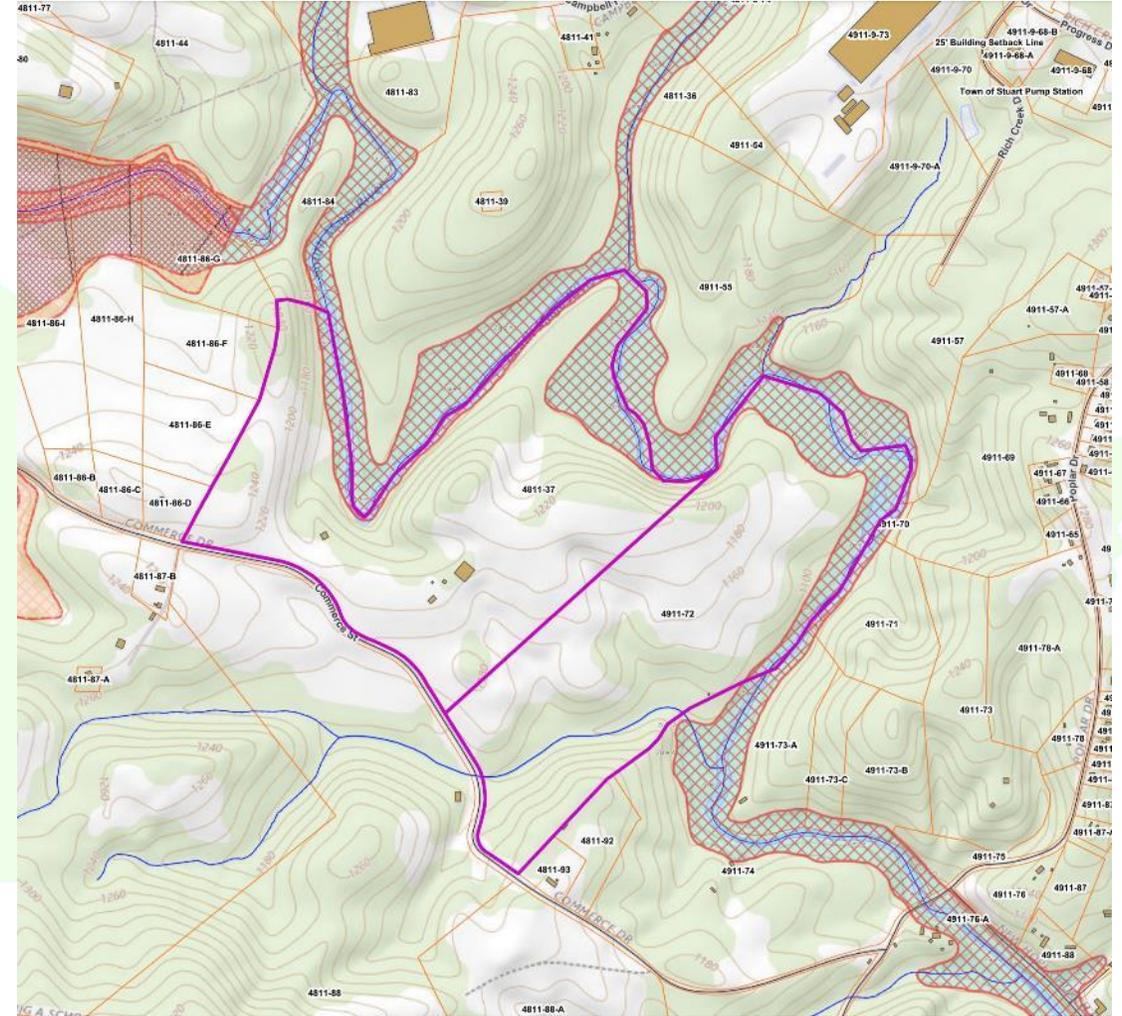


"The cadmium telluride, if it leaked or leached out of the panels and got into the water system, it would destroy the water system," she said. "Some of this is debatable, but we were not willing to chance it."

Source: <https://www.southwesttimes.com/news/sups-deny-permit-solar-farm>

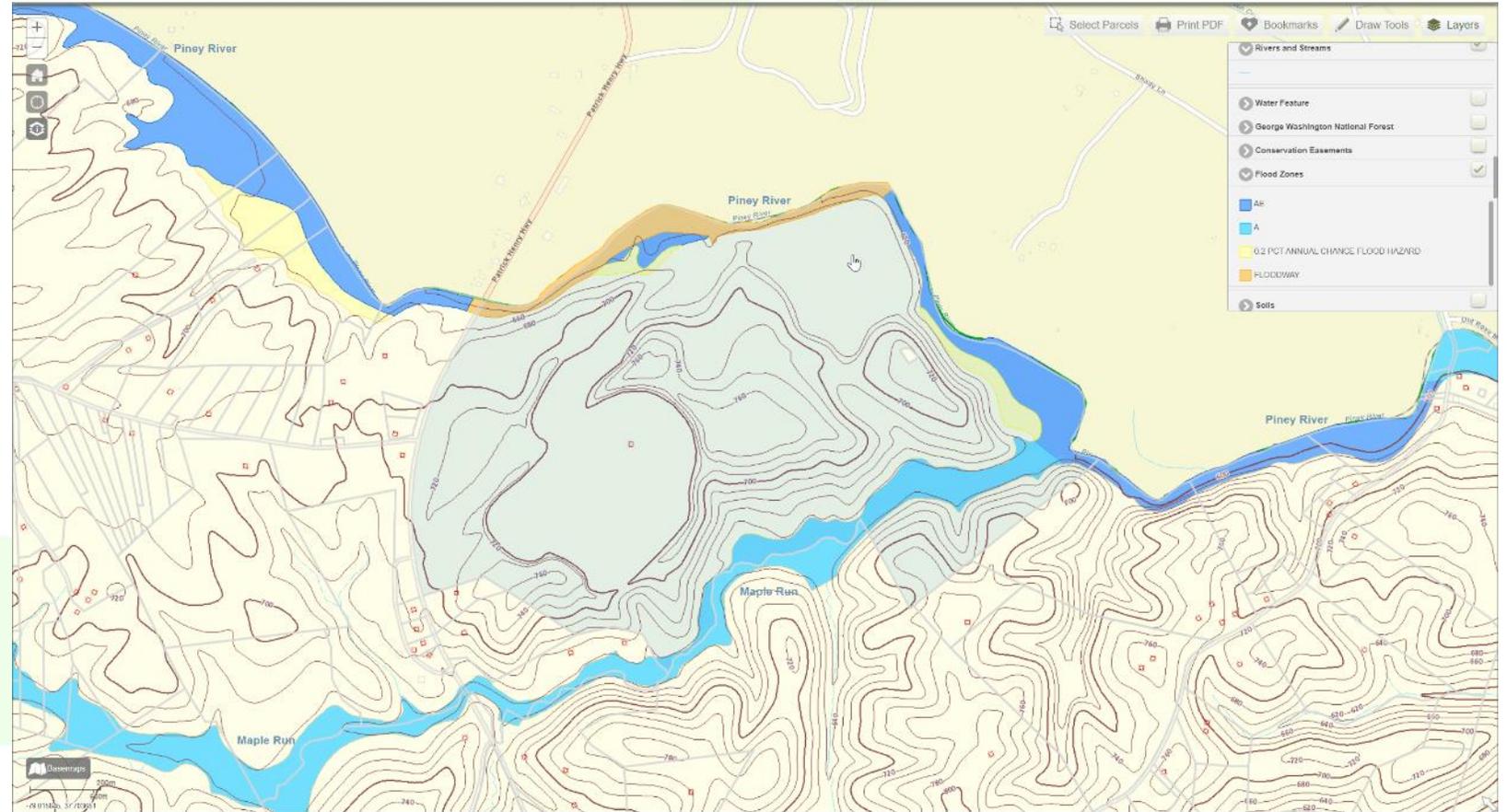
# Fairy Stone Solar (Patrick)

- Will Cd from Fairy Stone Solar 's 33,500 solar panels (308 lbs.) contaminate county soil, groundwater, and shallow wells due to potential leaching?
- Will Cd from Fairy Stone Solar contaminate county soil, groundwater, and the South Mayor River and jeopardize the future Mayo River State Park?



# Piney River Solar (Amherst)

- Will Cd from Piney River Solar's 150,000 solar panels (1,282 lbs.) contaminate county soil, groundwater, and shallow wells due to potential leaching?
- Will Cd from Piney River Solar contaminate the Piney River, the James River, and the Chesapeake Bay?



# CdTe Solar Panel Concerns in other parts of VA: Prince George County

Public, formal, written ban. 2020 Solar Energy Facility Siting Policy.

“All solar energy facility structures, racks and associated facilities shall have a non-reflective finish or appearance. Silicon based, or similar panels shall be used; cadmium-based panels are prohibited.”



*Source: Adopted Solar Energy Siting Policy, August 11, 2020*

## CdTe Solar Panel Concerns in other parts of VA: Madison County

Public, formal, written ban.  
2019 Zoning Ordinance #2019-12. The photovoltaic panels shall not contain harmful chemicals such as Cadmium.

The Applicant shall provide written panel specifications to include composition, toxicological information, and the physical and chemical properties of all panels used at the facility.



# CdTe Solar Panel Concerns in other parts of VA: Buckingham County

Public, formal ban written into one SUP permit:  
November 2021. Condition 28.

"The applicant will be restricted from utilizing photovoltaic panels with internal components containing cadmium telluride. Only silicon type panels or those other panels that have been established as optimal standard best practice shall be utilized by the applicant."



*Source: Nicci Edmondston, 11/8/2021 Buckingham County Board of Supervisors meeting, Significant changes - 29 new conditions for supplemental use permit 21sup290. Developer Apex Clean Energy/Landowner Weyerhaeuser. (<https://youtu.be/TZNfrFh6nFA?t=3405>)*

# CdTe Solar Panel Concerns in other parts of VA: Caroline County

Public, formal ban was included as Condition #29 in two Special Exception Permits: SPEX-07-2021 for Muskie Solar and SPEX-08-2021 for Shad Solar:

**SOLAR PANELS CONTAINING CADMIUM TELLURIDE SHALL BE PROHIBITED.**



*Source: July 22, 2022, SPEX-07-2021 and SPEX-08-2021 documents provided by Lisa L. Zech, Caroline County Planning & Community Development.*

# CdTe Solar Panel Concerns in other parts of VA: Chesterfield County

Public, unofficial, unwritten ban.

Bermuda District BoS Jim Ingle:

“We haven’t allowed Cadmium  
Telluride panels in Chesterfield nor do  
we plan to.”



*Source: Official response to VCHR FOIA inquiries, September 16, 2021*

## CdTe Solar Panel Concerns in other parts of VA: Louisa County



Nonpublic, annual CdTe monitoring.  
Residents and outside groups campaigned against Energix Aditya over potential and disproportionate environmental harm to lower-income communities.

Energix agreed to conduct annual soil and water tests for heavy metals.

# Will CdTe Solar Panels harm Virginia's wildlife resources?

- In 2015 a tornado shattered 200,000 CdTe panels at the southern California Desert Sunlight utility scale solar site. Shattered panels had to be treated at a hazardous waste facility. (Source: [Forbes](#))



# Will CdTe Solar Panels harm Virginia's wildlife resources?



Erosion from a solar facility into river

## VCHR Asks of DWR

- VCHR asks DWR to consider the risks to wildlife that drink from contaminated Virginia's streams and rivers.
- VCHR asks DWR to not approve solar projects that use CdTe panels.
- VCHR asks DWR to consider the potential contamination of the Clinch River and Basin (Tazewell), the James River (Amherst), the New River (Carroll), the Mayo River (Patrick).
- VCHR asks DWR to mandate soil and water testing for toxic heavy metals by an independent environmental test lab at sites where CdTe solar utilities have already been built.