

Vulnerabilities Downstream of Dams

A web-based dashboard for mapping who and what is at risk in dam inundation zones

Courtney Flint, Michael Englert, & Nicolas Holden
with I-GUIDE UIUC & Purdue CyberInfrastructure Teams
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UtahState
University

Utah Water Research Laboratory •
Department of Environment & Society

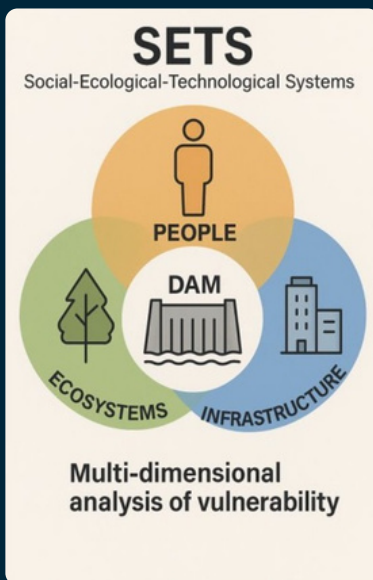
The Problem

Dams serve vital purposes, but most are aging past their anticipated lifespan and extreme precipitation is increasing the risk of overtopping. An urgent question for dam managers and emergency planners: *who and what is vulnerable downstream?*



High-hazard classification captures risk to human life, but says little about the populations, ecosystems, and infrastructure in harm's way. We built a tool to close that gap using data from 189 Utah high-hazard, state-regulated dams.

A SETS APPROACH TO VULNERABILITY



Using the Social-Ecological-Technological Systems (SETS) framework, we created a dashboard to visualize and map the populations, protected areas, and critical infrastructure that fall within a dam's potential inundation zone – broadening the lens for a more complex downstream picture.

**Explore the
Dashboard!**



<https://dams.i-guide.io>



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courtney.flint@usu.edu

What the Dashboard Shows

SOCIAL

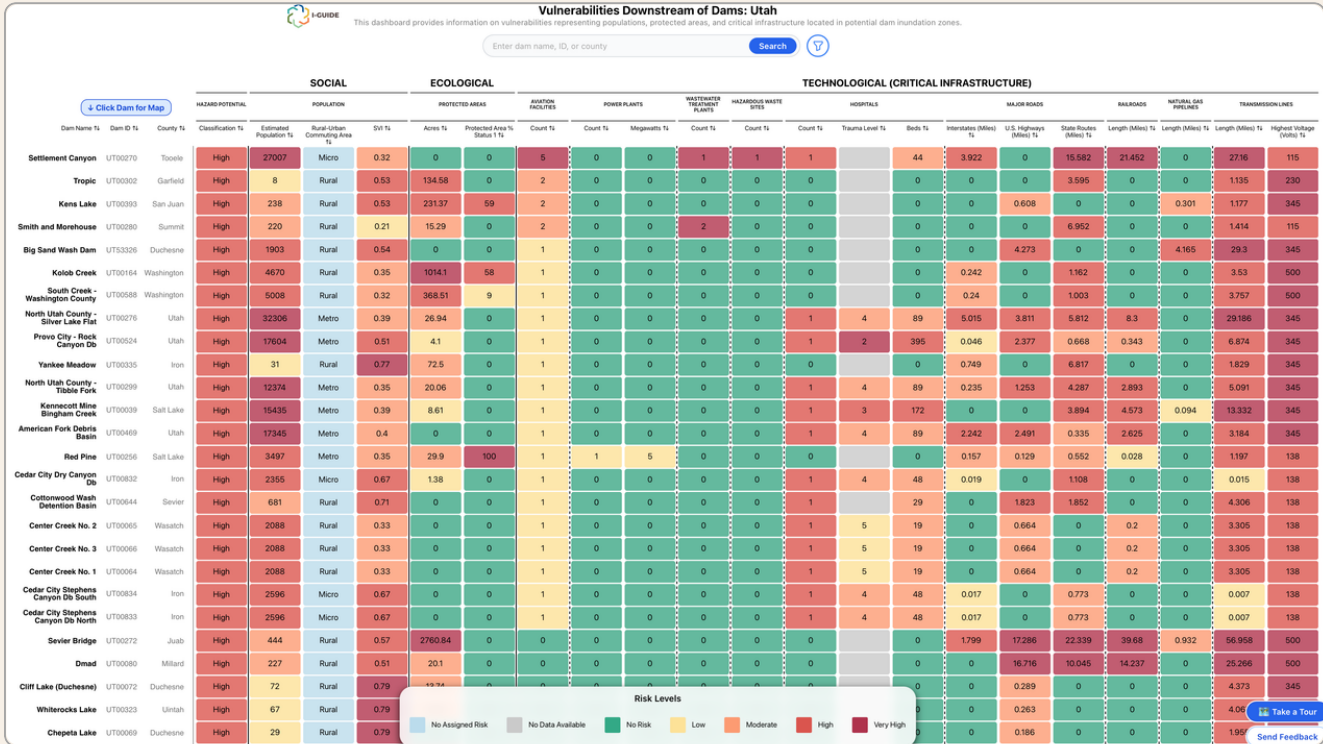
Estimated population in the inundation zone, rural-urban setting, and a population-weighted Social Vulnerability Index (SVI) score.

ECOLOGICAL

*Acres of Status 1 and Status 2
protected areas for biodiversity
overlapping the potential
inundation zone*

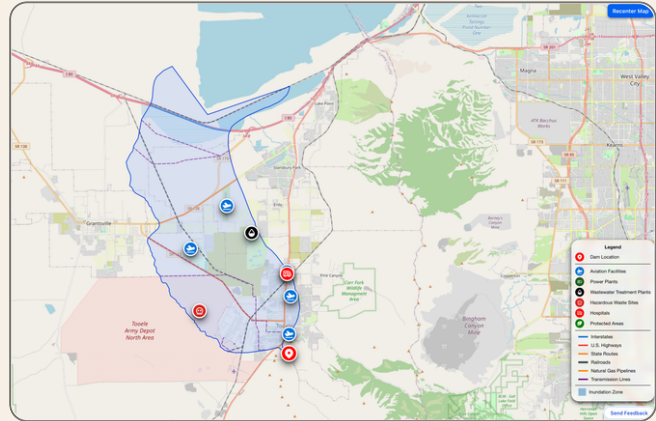
TECHNOLOGICAL

Critical infrastructure - aviation facilities, hospitals, power plants, hazardous waste sites, wastewater treatment facilities, roads, rails, natural gas pipelines, and transmission lines.



How it works

Search any dam by name or ID or browse the full list. Click a dam to open its inundation map for a place-specific view of downstream risk. Take a tour through the dashboard.



BUILT TO REPRODUCE ACROSS THE US

Prototyped with Utah dam inundation maps, the dashboard's underlying data and method are national and reproducible. We can extend this visualization tool for any state, federal agency, or entity with mapped inundation zones. A secure, non-public version is available for sensitive data.