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WHIDBEY WATER DATA DOCUMENTS

There is reason to be concerned — much of the foundational data used for *Peak Water* on Whidbey Island traces back to **mid-20th-century hydrogeologic surveys**, with only partial updates since. Based on the Island County and USGS archives, the **base documents** behind the Peak Water model include:

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📚 Core Source Dates for Whidbey Aquifer Data

Document	Author / Agency	Year	Notes
Soil Survey of Island County, Washington	A.O. Ness & C.G. Richins, USDA	**1958**	First systematic soil and groundwater mapping; still cited for aquifer boundaries.
Pleistocene Stratigraphy & Groundwater Resources of Island County	Easterbrook & Anderson, USGS	**1968**	Defines aquifer layers and recharge zones; predates modern climate data.
Preliminary Survey of Ground-Water Resources	Cline & Jones, USGS	**1982**	Used in Perry's early modeling; limited by 1980s rainfall records.
Occurrence of Ground Water & Potential for Seawater Intrusion	Jones, USGS	**1985**	Key reference for coastal intrusion risk; still used in county planning.
Ground-Water Resources & Simulation of Flow in Aquifers Containing Freshwater & Seawater	Sapik & Bortleson, USGS	**1988**	The main hydrologic simulation Perry adapted for Peak Water.
Island County Coordinated Water System Plan	Island County Planning Dept.	**1990**	Framework for water districts; last comprehensive system inventory.
Island County Groundwater Management Program	Groundwater Advisory Committee	**1992**	Establishes monitoring protocols; data now outdated.

Document	Author / Agency	Year	Notes
High Chloride Concentrations in Groundwater Withdrawals	DOE OFTR 93-07	**1993**	Early warning on saltwater intrusion; still referenced.
Island County Nitrate Study	DOE 12-03-220	**1997**	Last full nitrate baseline before modern agricultural shifts.
Estimating Ground-Water Recharge from Precipitation on Whidbey & Camano Islands	Sumioka & Bauer, USGS	**2003**	Most recent recharge model Perry used; based on 1998–1999 water years.
Island County Water Resource Management Plan	Island County	**2005**	Integrates previous studies; no full update since.
Focus on Water Availability, Island Watershed WRIA 6	WA Dept. of Ecology	**2016 (Revised)**	Latest state-level overview; not a full aquifer reassessment.

Island County Government Website

🧭 **Implications**

- The **core hydrogeologic models** Perry relied on are **20–60 years old**, built before current precipitation patterns, land-use changes, and climate variability.
- The **most recent recharge data** (USGS 2003) uses rainfall from the late 1990s — meaning the *Peak Water* thresholds may underestimate current extraction and overestimate recharge.
- The **only contemporary dataset** is the **Navy's PFAS groundwater sampling (2026)**, which is chemical-specific and not hydrologic. administrative-records.navfac.navy.mil

Here's a clear timeline of the main Whidbey/Island County groundwater and aquifer datasets from **1958–2016**, with a simple read on what's still "active enough to lean on" and what is **outdated for 2026 decision-making**.

Whidbey aquifer data timeline and status (1958–2016)

Year	Dataset / Report	Focus	Status for 2026 use
1958	*Soil Survey of Island County, Washington* (Ness & Richins, USDA) Island County Government Website	Soils, basic hydrogeologic context	**Outdated as primary data**; still useful for historical context. Superseded by 2008 soil survey.
1968	*Pleistocene Stratigraphy & Groundwater Resources of Island County* (Easterbrook & Anderson,	Stratigraphy, aquifer framework	**Structurally useful**, but pre-climate-change era; needs reinterpretation with newer data.

Year	Dataset / Report	Focus	Status for 2026 use
	USGS) Island County Government Website		
1971	*Reconnaissance of Sea-Water Intrusion Along Coastal Washington, 1966–68* (Walters) Island County Government Website	Regional seawater intrusion	**Background only**; not adequate for current intrusion risk.
1982	*Preliminary Survey of Ground-Water Resources for Island County* (Cline & Jones, USGS OFR 82-561) Island County Government Website	Early groundwater inventory	**Outdated**; useful historically, not for present thresholds.
1984	*Seawater Intrusion into Coastal Aquifers in Washington, 1978* (Dion & Sumioka) Island County Government Website	Statewide intrusion patterns	**Context only**; not Whidbey-specific enough for decisions.
1985	*Occurrence of Ground Water and Potential for Seawater Intrusion, Island County* (Jones, USGS WRIR 85-4046) Island County Government Website	Groundwater occurrence, intrusion risk	**Conceptually important**, but monitoring network and heads are 40 years old. Needs updating.
1988	*Ground-Water Resources and Simulation of Flow in Aquifers Containing Freshwater and Seawater, Island County* (Sapik, Bortleson et al., USGS WRIR 87-4182) USGS Publications Warehouse	Main groundwater flow model, fresh/salt interface	**Core but outdated model**. Good structure; parameters and boundary conditions need full re-calibration with post-2000 data.
1990	*Island County Coordinated Water System Plan* Island County Government Website	Water systems, service areas	**Institutionally relevant**, but infrastructure and demand patterns have changed significantly. Needs revision.
1992	*Island County Groundwater Management Program* Island County Government Website	Management framework, monitoring concepts	**Policy skeleton still useful**, but monitoring design and assumptions are dated.
1992	*Seawater Intrusion Control in Coastal Washington* (Tibbott, EPA 171-R-92-027) Island County Government Website	Control strategies	**General guidance only**; not Whidbey-specific enough for 2026.

Year	Dataset / Report	Focus	Status for 2026 use
1993	*High Chloride Concentrations in Groundwater Withdrawals from Above Sea Level Aquifers, Whidbey Island* (DOE OFTR 93-07) Island County Government Website	Chloride, early intrusion warning	**Important historical signal**, but chloride patterns must be re-measured now.
1997	*Island County Nitrate Study* (DOE 12-03-220) Island County Government Website	Nitrate in groundwater	**Baseline only**; agricultural practices and septic loading have shifted since. Needs new sampling.
1998	*Ground Water and Surface Water – A Single Resource* (USGS Circular 1139) Island County Government Website	Conceptual hydrology	**Evergreen conceptual reference**, not a data source.
2003	*Estimating Ground-Water Recharge from Precipitation on Whidbey and Camano Islands, Water Years 1998–1999* (Sumioka & Bauer, USGS WRIR 03-4101) USGS Publications Warehouse	Recharge estimates, water-budget model	**Most recent formal recharge study**, but based on 1998–1999 climate. For 2026, this is **outdated as a live recharge estimate**; still valuable as a methodological template.
2005	*Island County Water Resource Management Plan* (topic papers: recharge, seawater intrusion, etc.) Island County Government Website	Integrated planning, synthesis of older work	**Planning framework only**; underlying data are pre-2003. Needs full update.
2008	*Soil Survey of Island County, Washington* (NRCS) Island County Government Website	Updated soils, infiltration characteristics	**Still active and useful** for recharge and land-use modeling, especially when paired with new climate data.
2011–2016	*Focus on Water Availability, Island Watershed WRIA 6* (DOE Publication 11-11-011, revised 2016) Island County Government Website	Water availability, instream flows, allocation	**Most recent state-level overview**, but not a new aquifer model. Good policy context; hydrologic data still largely pre-2003.

Note: 2020s **PFAS and contaminant sampling** around NAS Whidbey and other sites are *chemistry-focused* datasets, not full aquifer volume/recharge studies. They're crucial for water quality, but don't replace recharge or flow modeling.

What's "active" vs. what clearly needs updating

Still reasonably "active" as structural/context tools (but not as live numbers):

- **Aquifer framework & flow structure:** Sapik & Bortleson 1988 model USGS Publications Warehouse

- **Recharge methodology & spatial patterns:** Sumioka & Bauer 2003 (methods, not the 1998–1999 values) USGS Publications Warehouse
- **Soil and infiltration characteristics:** NRCS 2008 soil survey Island County Government Website
- **Policy & allocation framing:** WRIA 6 "Focus on Water Availability" 2016 Island County Government Website

Clearly outdated for 2026 decision-making (need new data or re-runs):

- All **pre-2000 groundwater level, chloride, and nitrate baselines** (1958–1997). Island County Government Website
- **Recharge estimates** based on 1998–1999 water years (Sumioka & Bauer 2003) if used as current values. USGS Publications Warehouse
- **Seawater intrusion risk maps** from the 1980s–1990s (Jones 1985, DOE 1993) as operational tools. Island County Government Website USGS Publications Warehouse
- **Demand and system capacity assumptions** in the 1990 Coordinated Water System Plan and 2005 Water Resource Management Plan. Island County Government Website

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Where the real data gaps are (for a 2026 "Peak Water")

You're basically standing on a **solid but old skeleton**:

- The **shape of the aquifer system** is well described.
- The **methods to estimate recharge** are known and tested.
- The **policy scaffolding** (WRIA 6, groundwater management program) exists.

But what's missing for a trustworthy 2026 Peak Water assessment is:

1. **Updated recharge estimates**
    - Use 2000–2025 precipitation, temperature, and land-cover data in a new water-budget model (e.g., re-run the Deep Percolation Model used by Sumioka & Bauer). USGS.gov USGS Publications Warehouse
2. **Current groundwater levels and trends**
    - A refreshed monitoring network (coastal + interior wells) to see how heads have changed since the 1980s–1990s.
3. **Contemporary seawater intrusion mapping**
    - New chloride (and conductivity) sampling along vulnerable coasts to update the 1985–1993 picture. Island County Government Website USGS Publications Warehouse
4. **Updated nitrate and contaminant baselines**

- Integrate PFAS, nitrate, and other contaminants into a **health + quantity** view of the aquifer.

How this serves your Peak Water narrative

"Our current Peak Water framing for Whidbey rests on hydrogeologic work that is structurally sound but **20–60 years old** in its data. The last formal recharge study uses **1998–1999** water years. To act responsibly in 2026, we must treat these as **foundations to be updated**, not as live numbers to govern by."