Understanding the Radiological Risks of Using Hickory Aquifer Water at the Proposed FM 3509 Rock Crushing Plant

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Radiological Risks of Using Hickory Aquifer Water at the Proposed FM 3509 Rock Crushing Plant.

- Burnet County residents rely heavily on groundwater from the Hickory Aquifer and surface water from the Highland Lakes as our primary sources of drinking water. These water bodies are connected parts of a regional hydrologic system that supports more than **one million Central Texans**. Because of this, any industrial activity that interacts with groundwater or creates runoff toward the Highland Lakes needs to be examined with exceptional care.
- The proposed rock-crushing plant on FM 3509 would withdraw large volumes of water from the **Hickory Aquifer** for dust suppression and rock washing. Scientific, regulatory, and historical records show that this aquifer contains **naturally occurring radioactive materials (NORM)** — including **radium-226, radium-228, gross alpha emitters, and radon** — at levels that in many locations **exceed federal drinking-water standards**.
- This is not theoretical: multiple systems in Burnet, Llano, and San Saba Counties have documented exceedances.

What the Data Already Tells Us: The Hickory Aquifer Has Radiological Hotspots

- Local and regional agencies have been aware of these issues for years:
- **LCRA** has operated a specialized **radium-removal treatment system** for the Tow Village Water System because the raw Hickory Aquifer water contained **radium levels 8× above federal limits** and **gross alpha near 140 pCi/L**.
- **Region K Water Planning Group** (supported by LCRA) published a section titled *"Radionuclides in the Hickory and Marble Falls Aquifers,"* identifying multiple water systems — including some in **Burnet County** — with **radium and gross alpha levels above the EPA Maximum Contaminant Levels (MCLs)**.
- **CTGCD** documents that the Hickory aquifer locally contains **alpha and radium concentrations above standards**, and flow within the aquifer is **"restricted by block faulting,"** meaning water movement is complex and can shift with pumping demands, seismic activity or explosions.
- These findings make one thing clear: the Hickory Aquifer is **not uniformly safe**, and its chemistry can vary dramatically by depth, location, or pumping conditions.

Can Contaminated Water from the Tow/Lake Buchanan Area Migrate Toward FM 3509?

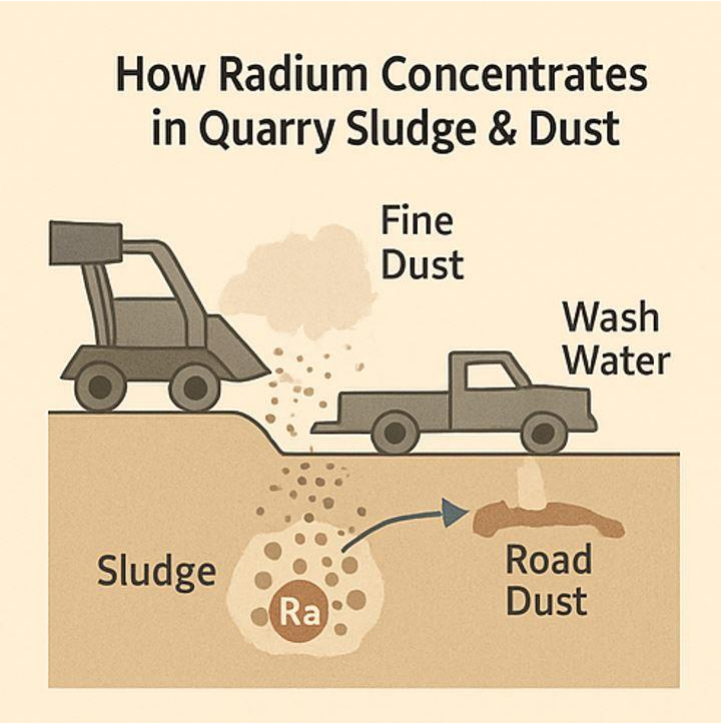
- Even if wells near the proposed quarry test “clean” today, that **does not guarantee long-term safety**.
- The Hickory Aquifer is part of a regional sandstone system encircling the Llano Uplift. Water can and does move long distances underground — and its pathways can change when new, high-volume wells begin pumping. Because block faulting creates partially isolated compartments, a new pumping center can begin to pull water from **deeper zones** or from **adjacent blocks** that previously contributed little flow.

In simple terms:

- **“Clean today” does not mean “clean tomorrow.”**
- Pumping for the FM 3509 quarry could gradually pull in water with a **different, more radiologically elevated signature**, similar to the Tow/Lake Buchanan area.
- This risk alone justifies a detail geological study prior to the CTGCD permit being issued. SaveBurnet.com would also request time to have it's own independent 3rd party engineering firm confirm the findings before the CTGCD permit gets approved. If the Rock Quarry is allowed to build and operate, then CTGCD shall demand a **baseline testing** AND **ongoing annual radiological monitoring** for any production wells feeding the quarry.

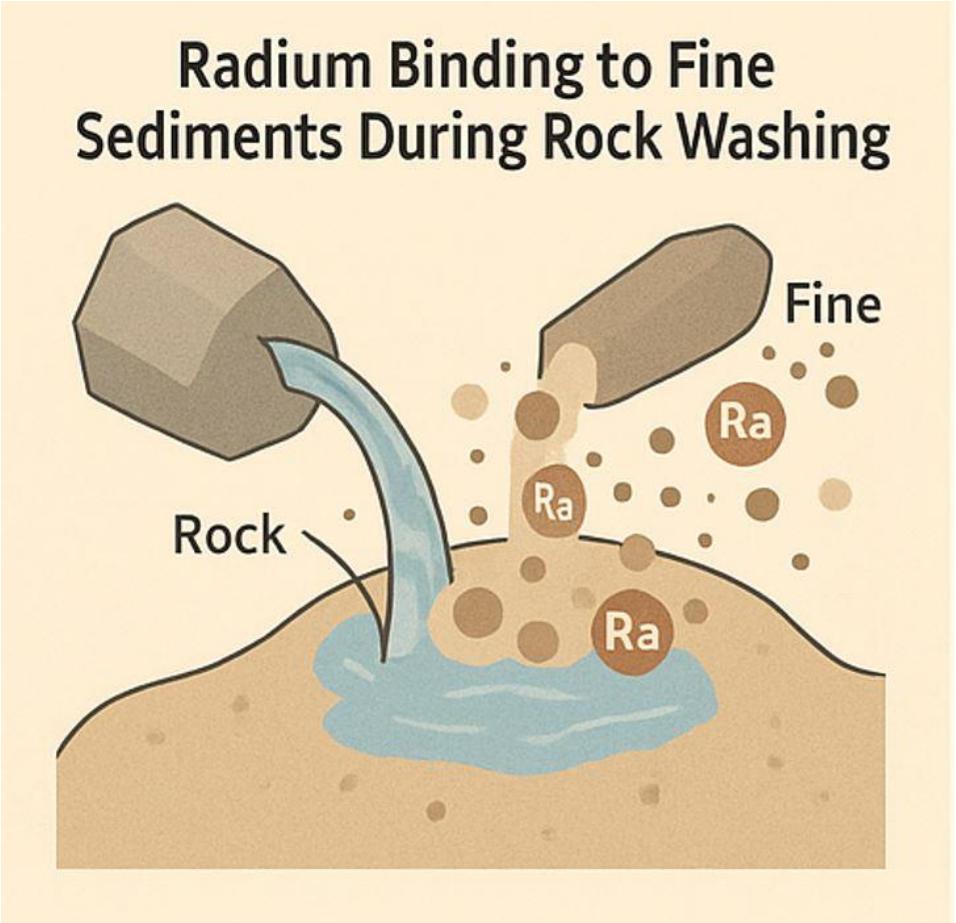
Safety Concerns at the Plant: NORM Concentration in Dust, Sludge & Aerosols

- Using raw Hickory water at a rock-crushing facility creates additional risks beyond drinking exposure.
- When radium-bearing water is sprayed into the open air, washed across rock, or allowed to evaporate in settling ponds, the water disappears but the **radioactive minerals remain**. Over time, they **concentrate** in:
- wash-plant sediment
- settling-pond sludge
- haul-road dust
- fine particulate matter (PM10 / PM2.5)
- rock coatings and tailings



Safety Concerns at the Plant: NORM Concentration in Dust, Sludge & Aerosols

- EPA research shows that radium strongly binds to fine sediments, creating **TENORM (Technically Enhanced Naturally Occurring Radioactive Material)** — the same issue that drinking-water plants face when filtering radionuclide-rich groundwater.



Safety Concerns at the Plant: NORM Concentration in Dust, Sludge & Aerosols

These particles can be:

- **Inhaled by workers**,
- **Blown onto neighboring properties**, or
- **Washed into waterways during storms**. Please reference the presentation provided to LCRA warning of a potential flood at the proposed Rock Quarry site which would wash all sludge from the Rock Quarry location into the highland Lakes water supply. this information was provided to LCRA 1 month prior to the July 3rd devastating floods. Also reference updated presentation on the SaveBurnet.com website that shows pictures of the floods at the proposed rock quarry site. Both presentations ("Irresponsible & Incompetent that LCRA & TCEQ issued permits to Asphalt Inc." & "Water concerns related to the proposed Rock Crushing plant on FM 3509") can be found by Clicking Here, then scroll down to LCRA related information.

The information above is not hypothetical — it is a predictable chemical behavior of radium and uranium in sediment systems.

Downstream Risk: Sludge and Contaminated Sediment Entering the Highland Lakes

The FM 3509 site drains toward waters that eventually feed the **Highland Lakes**, including **Inks Lake, and Lake LBJ**. These lakes are:

- Managed and protected by **LCRA's Highland Lakes Watershed Ordinance**
- **Texas' primary drinking-water reservoirs**
- Used by **over 1–1.4 million residents**

If radionuclide-bearing quarry sludge or fine sediments enter these waters, even intermittently, several long-term risks emerge:

A. Sediment Contamination
Radium adheres to fine particles and settles at the bottom of lakes, creating "hot spots" in coves and shallow areas. Over time, this can impact lake ecology and accumulate in biologically active zones.

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B. Increased TENORM burden at water-treatment plants
Even if lake water looks clean and dilute, radium can concentrate inside municipal treatment facilities, increasing operational costs and sludge-disposal challenges.
C. Risk to recreation and shoreline users
Families swim in shallow, silt-rich coves — exactly where contaminated sediment settles.

Please note - Water runoff from the Proposed Rock Crushing Plant will flow into two creeks:
- *Spring Creek to the North, flows into Inks Lake at Devil's Backbone Nature Trail.*
- *Peter's Creek to the West flows thru a youth camp pool and into Lake LBJ exactly at the fish hatchery!*

Preventing these exposures requires:

- **Lined, engineered ponds**
- **Zero-discharge designs**
- **Radionuclide testing of sludge**
- **Stormwater controls**
- **Routine radiological monitoring of downstream water bodies**

What Burnet County Should Require Before Any Quarry is Approved

Based on the scientific and regulatory record, the following steps are justified:

1. **Full radiological testing** of all on-site wells
2. **Annual radiological monitoring** (gross alpha, Ra-226/228, uranium, radon)
3. **Engineered, lined settling ponds** with storm-event capacity equal to that of the recent July 3rd 2025 flood.
4. **No discharge** of wash water or sludge toward Highland Lakes
5. **TENORM screening** of all sludge, fines, and sediment
6. **Third-party hydrogeologic review** of pumping impacts
7. **Coordination with LCRA**, given its long history of managing radium in Hickory water

Burnet County deserves full protection and transparency when our drinking water and environment are at stake — not assumptions, not promises, and not bare-minimum regulatory filings.