**Financial and Engineering Feasibility Report**

***Renewable Energy Solution for Water & Environmental Restoration***

**WERC Environmental Design Contest – 2025**

**1. Project Summary**

This project provides a sustainable method for restoring post-wildfire soil and water quality, using:

* A wind-powered filtration system
* Natural soil remediation media
* Real-time sensor monitoring
* Low-cost, off-grid infrastructure

**Goal:** Reduce recovery time from 20–25 years to **3–5 years**, even in rural or low-resource communities.

2. **Prototype Total Cost**

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Excludes reusable lab tools (e.g., laptop, power meter)

3. **System Performance Highlights**

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4. **Lifespan Estimates (by Component)**

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**5. Scalability & Cost Projections**

**Prototype Scale: 0.2 m³ soil / 5 gal water per cycle**

Community-Scale Model (~10× size)

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Estimated to treat approximately 2,000–3,000 m² of degraded soil.

6. **Cost Efficiency & Value**

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7. **Stakeholders & Use Cases**

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**8. Conclusion: Feasibility and Impact**

This system is **technically feasible**, **cost-effective**, and **scalable**.

* Leverages **natural, low-cost materials** to deliver real environmental impact
* Modular design allows for replication, upgrades, and low-barrier maintenance
* Testing confirms measurable improvements in water clarity, pH balance, and conductivity
* Ideal for **community-led restoration**, classroom implementation, or governmental recovery programs

This project demonstrates a real opportunity to deliver low-cost, high-impact environmental engineering to fire-prone regions.