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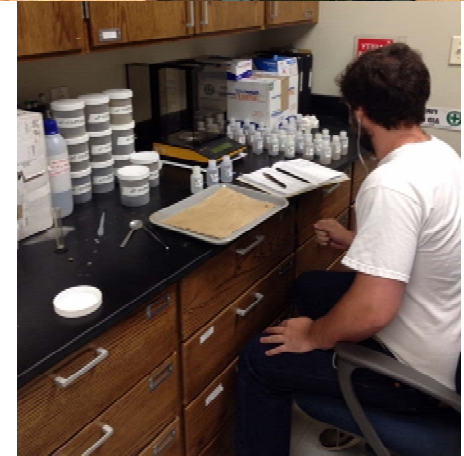
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UTK Water Quality Laboratory

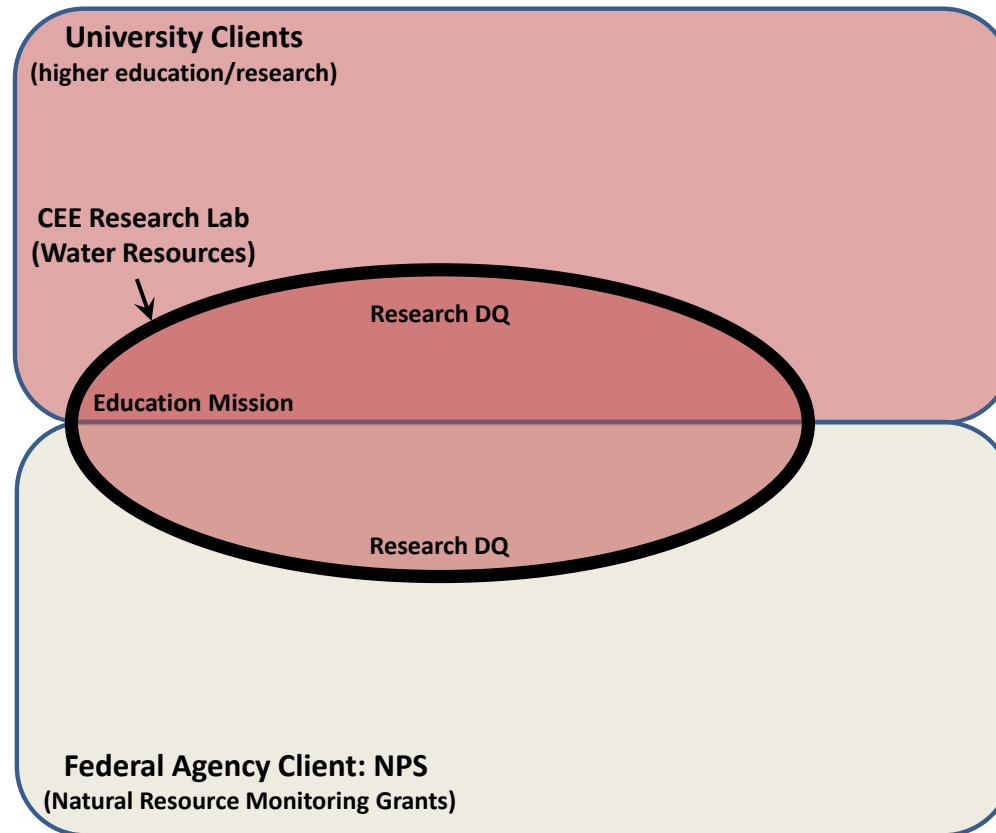
- Origin: Research laboratory (CivilEnvEng)
 - Capability: aqueous & soils chemistry analyses
 - Experimental liquids (extractions; reactors)
 - Field studies: natural water systems & stormwater



- Personnel
 - Student analysts: negligible lab/analytical experience
 - Training/SOPs: “casual” attitude; SOPs—unused and outdated; no criteria or post-training documentation; anecdotal training; procedural opinions/suggestions
 - Student turnover (graduation) = Continual deviations



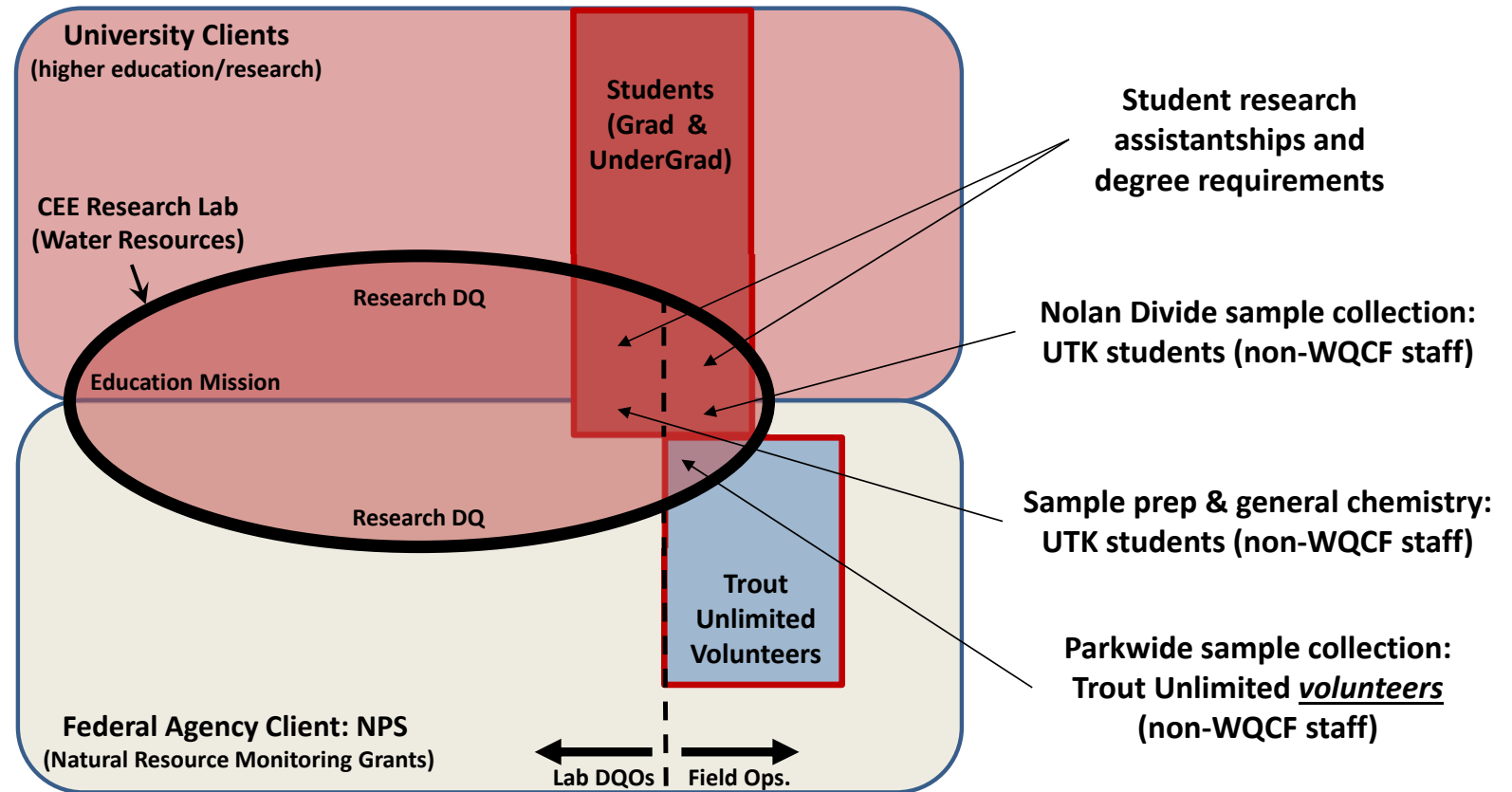
The Good Ol' Days: Congruent Missions



Costs:
Consumables and Instrument
Maintenance/Replacement
(Personnel: Student Stipends)

Revenue:
University budget line-items
& research grants (including
Federal agency natural resource
monitoring programs)

The Good Ol' Days: Multi-Purpose



New Paradigm: Data Quality Accountability



United States Department of the Interior
NATIONAL PARK SERVICE
Natural Resource Stewardship and Science
Inventory and Monitoring Division
1201 Oakridge Dr. Ste. 150
Fort Collins, CO 80525



11 January 2018

To: Inventory and Monitoring Network Program Managers

Water Quality Laboratory Accreditation Requirements

Requirement: All laboratory analyses that measure nutrients, chlorophyll, organic compounds, or metals must be performed by an accredited laboratory. The mandatory use of accredited labs applies in all cases where networks use IMD or WRD funds conduct analyses through a contract, cooperative agreement, purchase card, or other for-payment type of arrangement. If monitoring objectives in approved protocols do not require laboratory analysis (e.g., when conducting rapid assessments), this policy does not require networks to change methods from non-lab- to lab-based methods.

Accredited Lab Selection: When choosing an accredited laboratory, please refer to the [Irwin \(2004\) "Part B" guidance](#) for considerations when determining accreditation standards or developing quality assurance plans (see pages 86-90). Options in selecting laboratories in order of decreasing preference:

- National Environmental Laboratory Accreditation Program (NELAP)-accredited laboratories. Labs that have passed round-robin or inter-laboratory comparison proficiency tests are preferred.

Publicly-funded monitoring data must be generated by accredited laboratories...
NELAP labs are preferred

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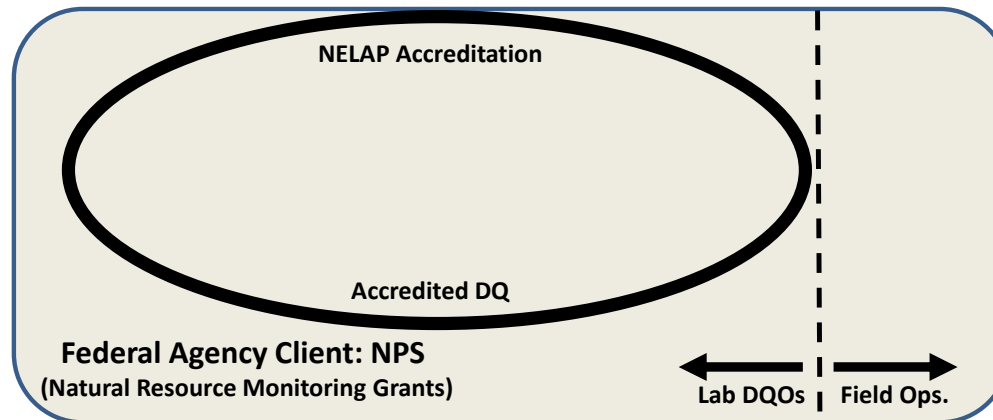
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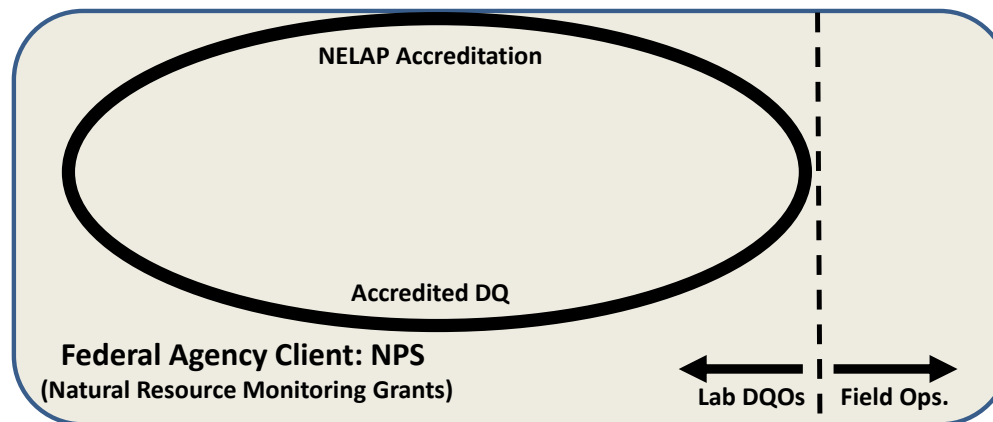
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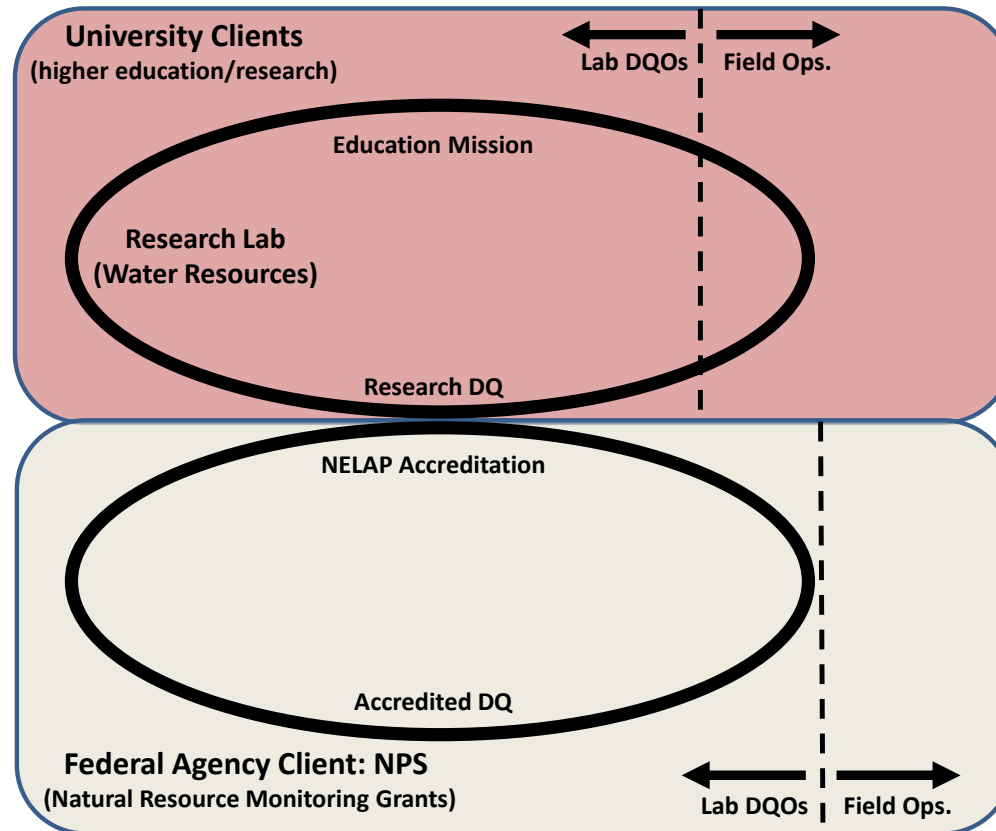
Publicly-funded monitoring data must be generated by accredited laboratories... NELAP labs are preferred

UTK Takes the Challenge ...

**Objective:
Create fully-accredited
TNI-compliant, self-
funded laboratory...**



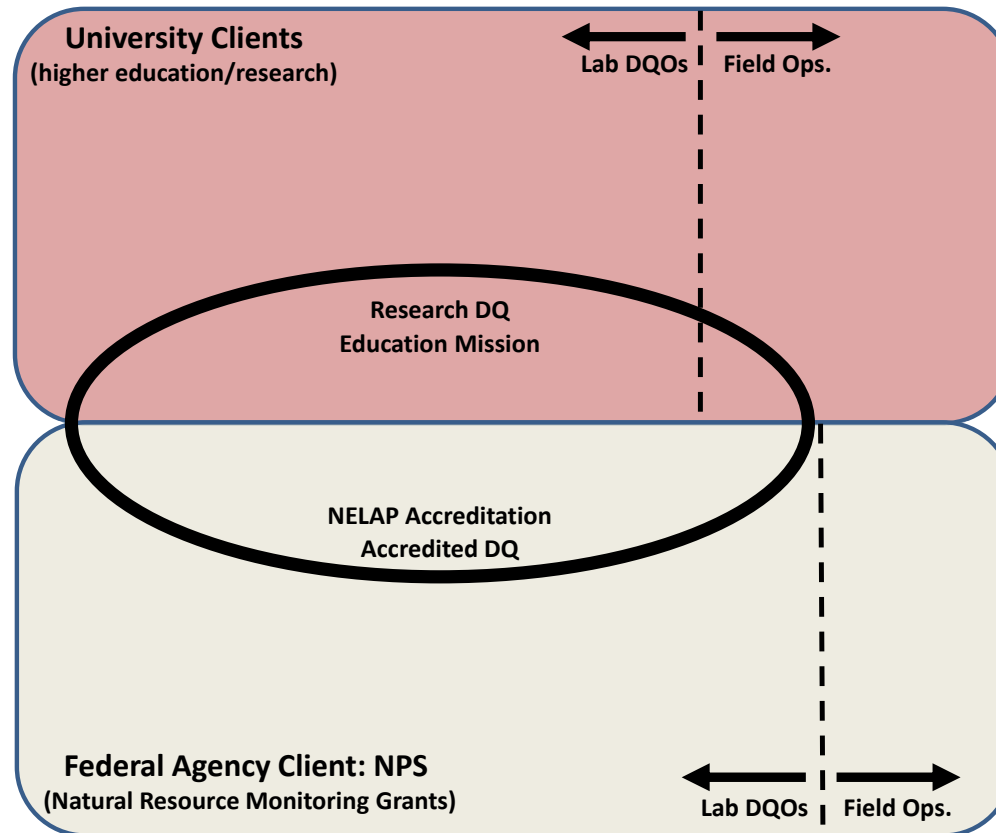
UTK Takes the Challenge ...



**Ideal Scenario:
No “conversion” but
two distinct labs
w/separate and
individual objectives**

**... university budgets
& politics intervened**

UTK Takes the Challenge ...

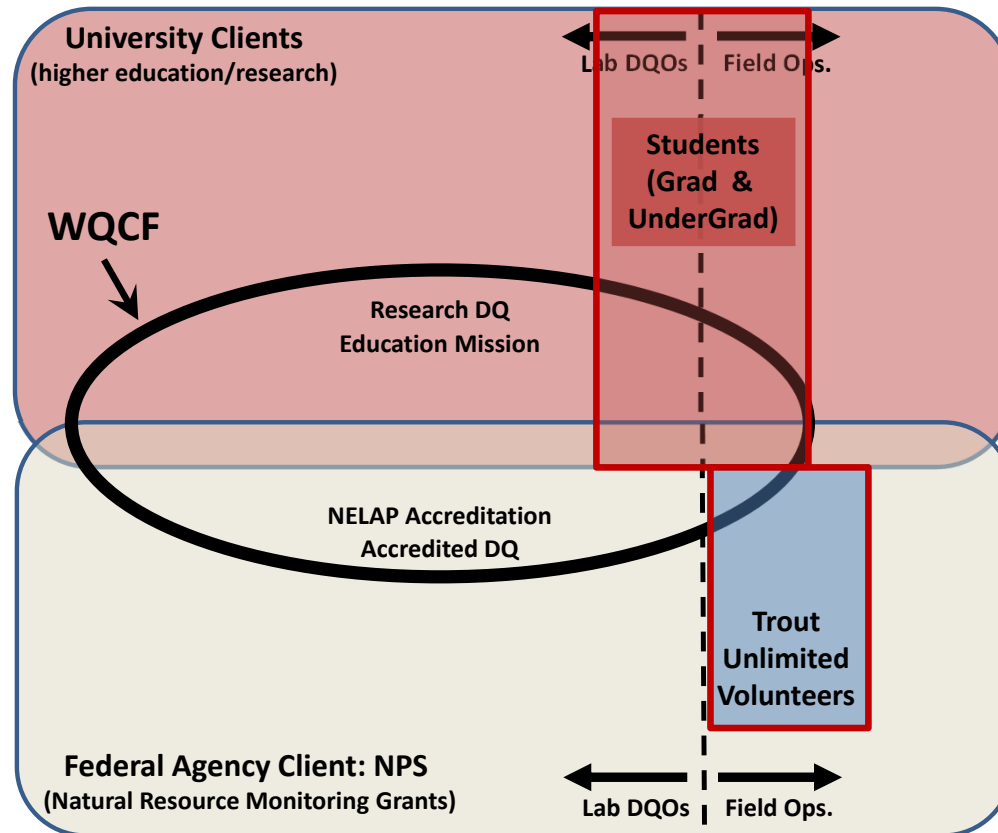


**Less Ideal Scenario:
Single Lab
w/ clear functional
separation**

**... personalities and
turf-wars intervened**

UTK Takes the Challenge ...

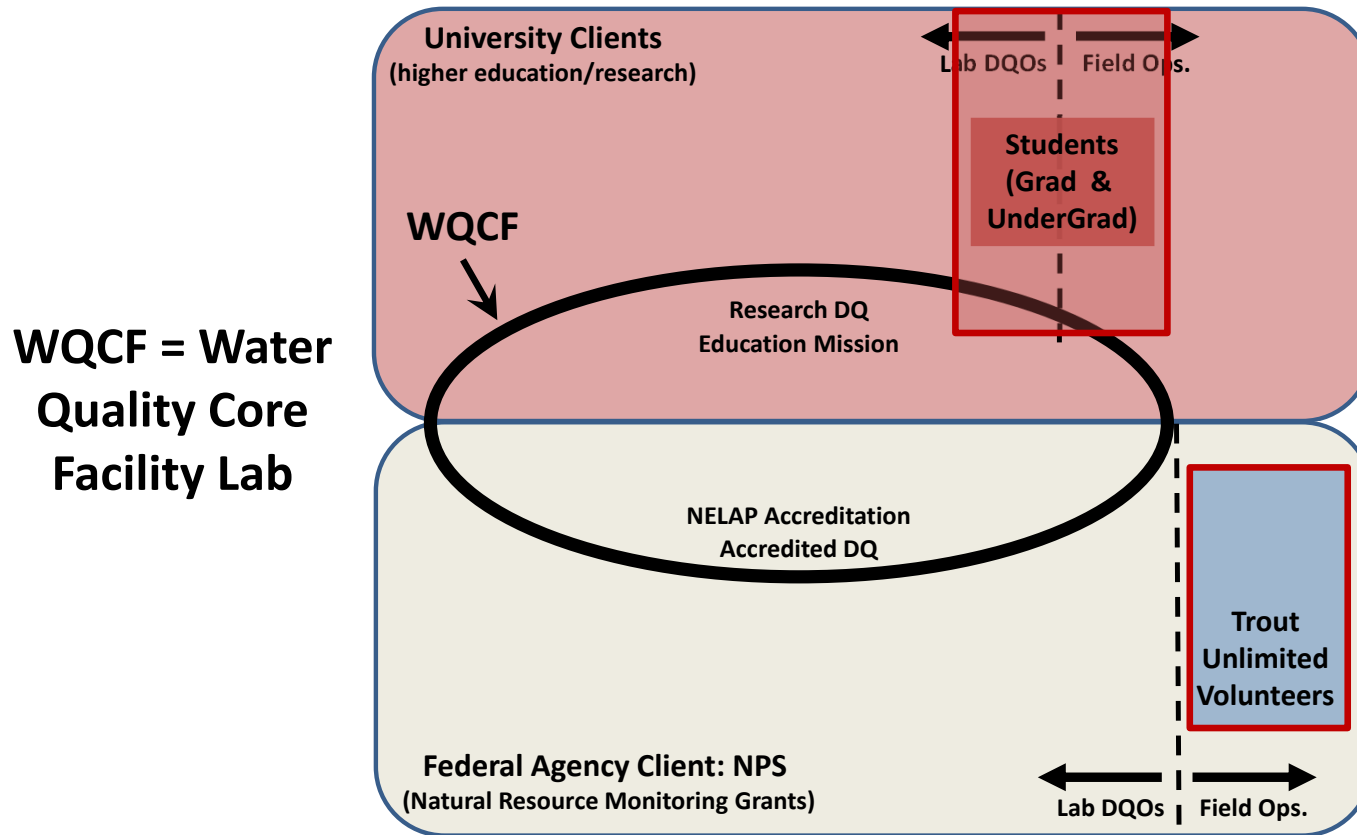
WQCF = Water
Quality Core
Facility Lab



**Actual Organizational
Structure (initial):
Single Lab with
*Overlapping functions***

**... onus on lab manager
to make this succeed!**

UTK Takes the Challenge ...

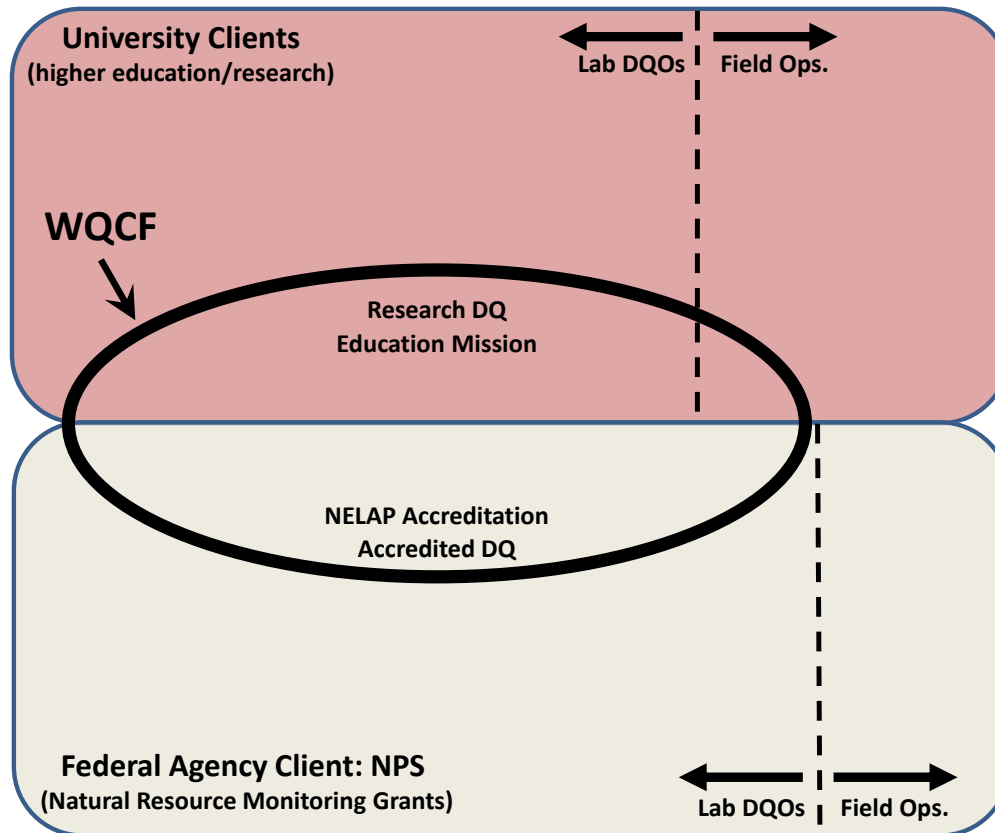


Current Scenario:
Incremental push-back
has led to separation
of lab functions and
responsibilities from
direct client influence--

Lab Solo

UTK Takes the Challenge ...

WQCF = Water
Quality Core
Facility Lab



We're on the right
trajectory now—

Current Status of Water Quality Core Facility Lab Solo:

- Officially Accredited – October 2020
- Staff size: 1 PhD (no change)
- TM+QM combined (no change)
- Technical support: colleagues and vendors (no change)
- Hands-off Lab Director (no change)
- Fee structure includes QC (no change)

- **Improvement:** Student turnover and training is non-issue (client handles all sample collection/preparation)
- **Improvement:** Revenue sources include university department funds—with conditions:
- **Added Responsibility:** Civil Engineering Department Instructor Fall 2021

Clientele vs. Scope of Services...

Evolution of the Larger Struggle:

- **Business model:**
- **Disappointment:**
- **Financial Imbalance:**
- **Agile Response:**
- **“Delicate” Balance:**

Clientele vs. Scope of Services...

Evolution of the Larger Struggle:

- **Business model:** Fiscal restrictions (not-for-profit) require cost-dilution with increasing numbers of clients needing NELAP-Lab data quality
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- **Agile Response:** Maintain TNI/NELAP requirements while seeking to increase revenue from larger pool of non-NELAP clients
- **“Delicate” Balance:** Expanding lab’s Scope of Services (non-accredited) is putting stress on time and resources needed to maintain our TNI accreditation for an increasingly marginal Federal client.

***The multi-mission conundrum
vs
UTK's Water Quality Core Facility***

***The battle continues...
Vigilance and Persistence
Shall Prevail***

Happily Ever After...

