AQS / Data Issues for Toxics Workshop

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AQS TEAM

Topics

- Reporting QA data to AQS
  - What you do
- AQS data reduction
  - What we do
- MDLs
  - What's going to change
- Methods
  - Parameters and methods
- "Site combined" values
  - Potential & what AQS does now
- Data in AQS: high level view
  - Some stats and maps

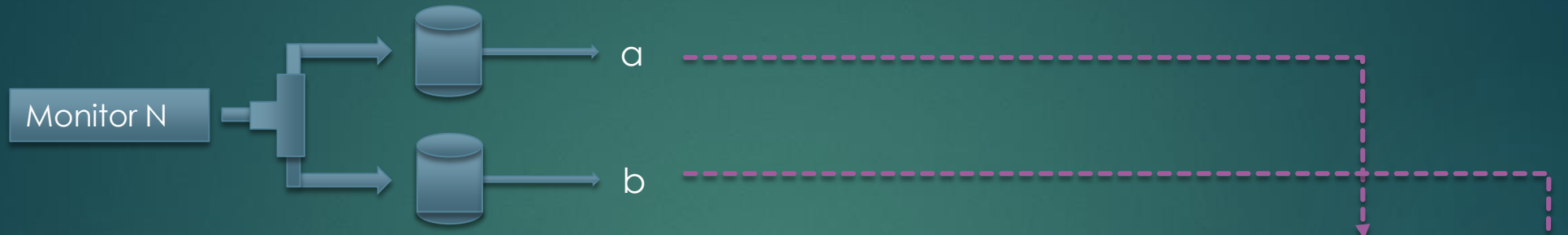
Reporting QA Data to AQS

- We introduced the QA Transactions to AQS for use this year
  - RA & RP transactions are no more
- Three primary transactions / assessments
  - Collocated
  - Duplicates
  - Replicates
- Two special cases
  - "Duplicate replicate" & "Collocated replicate"
- Instructions – everything that follows is **provisional** ("draft")
  - Comments welcome
- Formats
  - http://www2.epa.gov/aqs > Manuals and Guides > QA New Transaction…

Collocated Samples

- Collocated samples are samples collected simultaneously at the same location using two completely separate sampling systems. The samples are analyzed separately and the results reported as separate sample values.
- **Both** monitors involved in the collocated sampling **must** be defined in AQS
  - One must be designated as the QA primary via the Monitor Collocation Period (MJ) transaction or the "QA Collocation" tab on the Maintain Monitor form; the other will be indicated as the non-primary
- Report the raw data from each monitor (samples a & b)

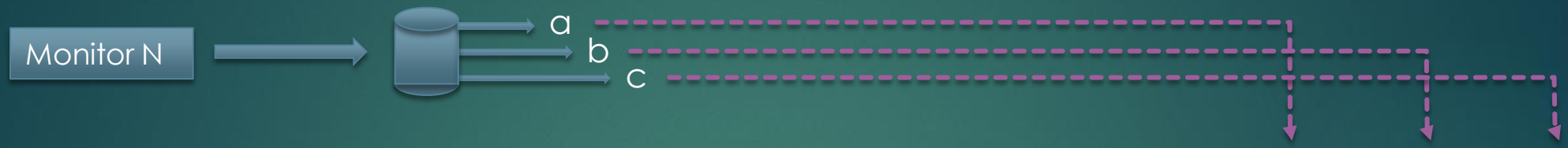
Duplicate Samples



QA|I|Duplicate|999|11|222|3333|44444|5|20210101|1|454|888|54.956|51.443||||

- Duplicate samples are samples collected simultaneously using one collection system and the same inlet. The samples are analyzed separately and reported together.
- Report QA – Duplicate transaction to AQS for monitor
  - "Normal" sample reported separately as raw data
- Transaction has room for 5 duplicates
- If multiple duplicate assessments on same day, use different assessment number

Replicate Samples

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QA|I|Replicate|999|11|222|333|44444|5|20210101|1|454|888|0.844|0.843|0.792|||
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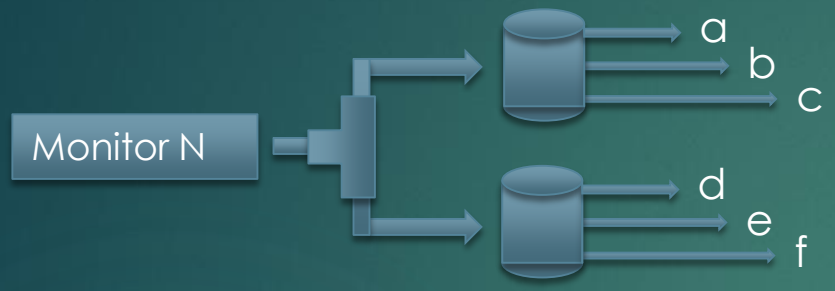
- Replicate assessments are the analysis of one discrete sample multiple times to yield multiple measurements from the same sample. These are also known as "split samples"
- Report QA – Replicate transaction to AQS for monitor
  - Report average { (a + b + c) / 3 } separately as raw data
  - TAD has rules for math
- Transaction has room for 5 replicates
- If multiple assessments on same day, use different assessment number

“Duplicate Replicate” Samples



- It is allowed (but not preferred) to conduct replicates of duplicate samples
- Report both transactions to AQS for monitor
- Duplicate: average the replicate samples { (a+b+c)/3 and (d+e+f)/3 }
- Replicate: two assessments { a,b,c and d,e,f }
  - One result through “normal” hardware reported separately as raw data
  - (a + b + c) / 3 or (d + e + f) / 3

“Collocated Replicate” Samples

- It is possible (but not required) to conduct replicates of collocated samples
- Treat monitors separately
- Report QA – Replicate transaction to AQS for each monitor (POC)
  - One result per monitor reported separately as raw data
  - For N: (a + b + c) / 3
  - For C: (d + e + f) / 3

AQS Data Reduction (What it Does to Raw Data)

- AQS performs several data reduction steps before storing it in the main part of the database
  - Everything that is submitted is kept
  - "Reduction" is to make data consistent (with policies and other data)
  - Everything must be in standard units for summaries and comparisons
- If ALT MDL is provided (ALT MDL = MDL reported by submitter)
  - If it is a "substitution parameter", then substitute ½ ALT MDL
  - Convert value to standard units, if needed
  - Round to summary scale appropriate to ***method***
- If ALT MDL not provided: same steps w/federal MDL
- Monitor summaries: daily, quarterly, annual

Pinch Points for Toxics

PARAMETER_CODE	METHODOLOGY_CODE	RECORDING_MODE	SAMPLE_COLL_DESC	SAMPLE_ANAL_DESC	FED_MDL	SUMMARY_SCALE
43824	176	INTERMITTENT	6L SUBATM SS CANISTER	ENTECH PRECONCENTRATOR GC/MS	0.08	2

- Standard units
  - Parameter specific
  - µg/m^3 vs. ppbC vs. ng/m^3 vs. ppb
  - AQS can accommodate any changes to current decisions
- MDL
  - Please report ALT MDL; federal only a default
  - We are in the process of removing **all** toxics ½ MDL substitution
    - Should finish in next 6 months
- Will still do rounding (can control with changing method info in AQS)

Did You Say Something About Methods?

- What method does and does not affect in AQS
  - The rounding conventions are method specific
  - The only method information AQS has are the collection and analysis descriptions
  - EPA must enter these descriptions and approve methods for use with a parameter
  - Do the descriptions have enough detail to tell methods apart?
    - **Vacuum vs. positive pressure**
- Parameter vs. method
  - AQS is parameter (substance) oriented, method is "metadata"
  - All other data handling (ex. rounding) is parameter specific
  - Some analysis considers only same-method data, some uses all data for parameter (regardless of method)

For the Future

- Site combined values
  - By rule for some parameters, AQS must combine multiple monitors at a site to a single "site combined value"
  - We have the software to do this, so possible for toxics
  - A primary is designated by the operator
  - Data is taken from the primary when available
  - Average of non-primaries when primary not available
    - Method not considered
  - Daily summary or same-duration sample
- Changing AQS to make it more like the Archive
  - Not everything will be possible, but we have a "punch list"
- Request list for changes / improvements to AQS
  - To noah.greg@epa.gov

Toxics Data from the AQS POV

- Parameter Classifications (groups of parameters)

Class	Parameters	2014 Monitors*	2014 Samples	2014 Scheduled Samples
HAPS	408	15,345	2,635,025	4,286,964
CORE HAPS	42	6,654	634,483	954,039
NATTS REQUIRED	30	3,002	414,516	716,314
PAMS	77	16,483	51,348,291	62,692,556
NOMDLSUB	287	20,381	64,746,241	73,370,563

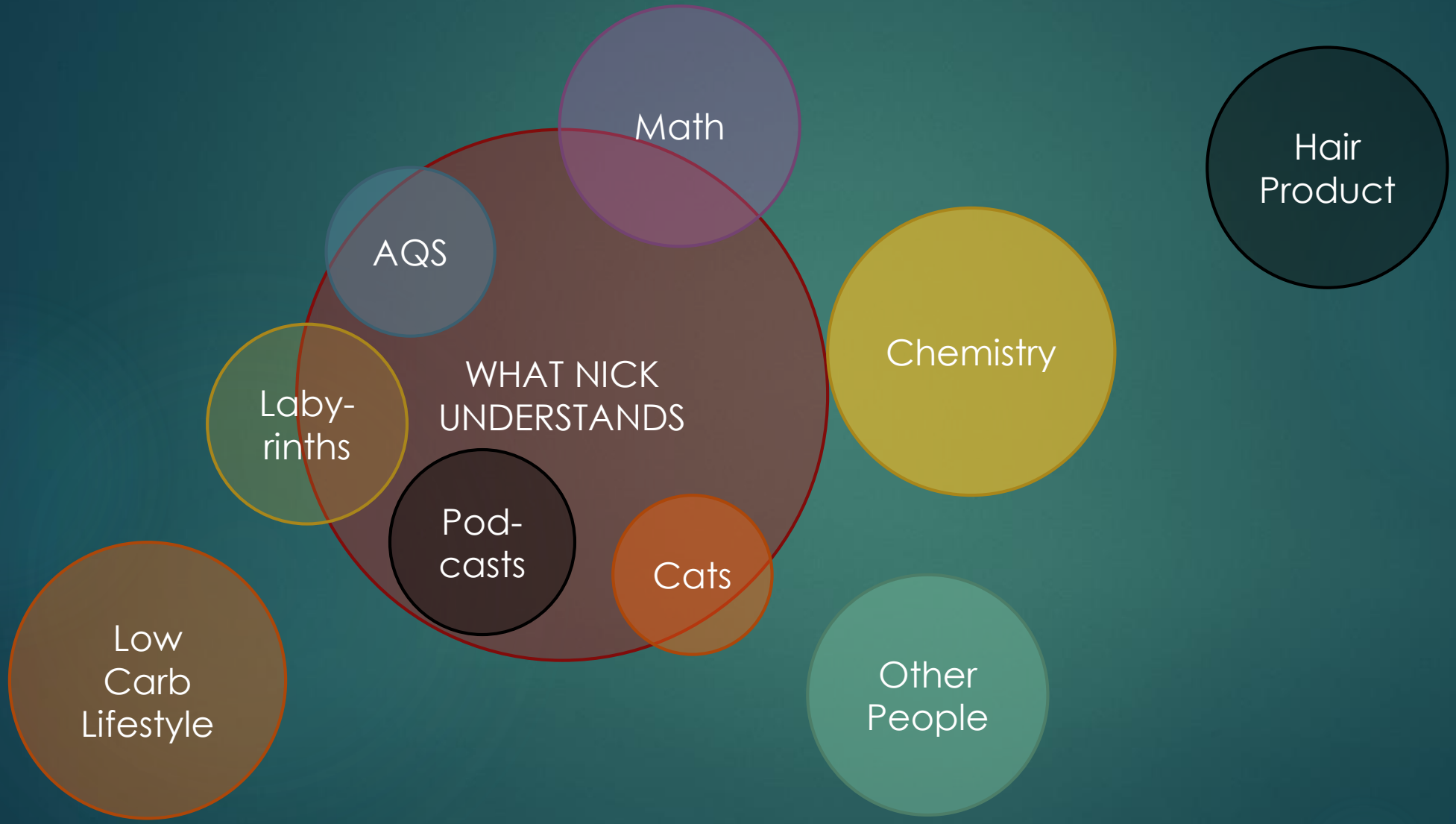
*Recall, in AQS a monitor is not a sampler; it is a pollutant at a site

This and following slides are for monitors reporting 2014 data, as of 10/15/2015

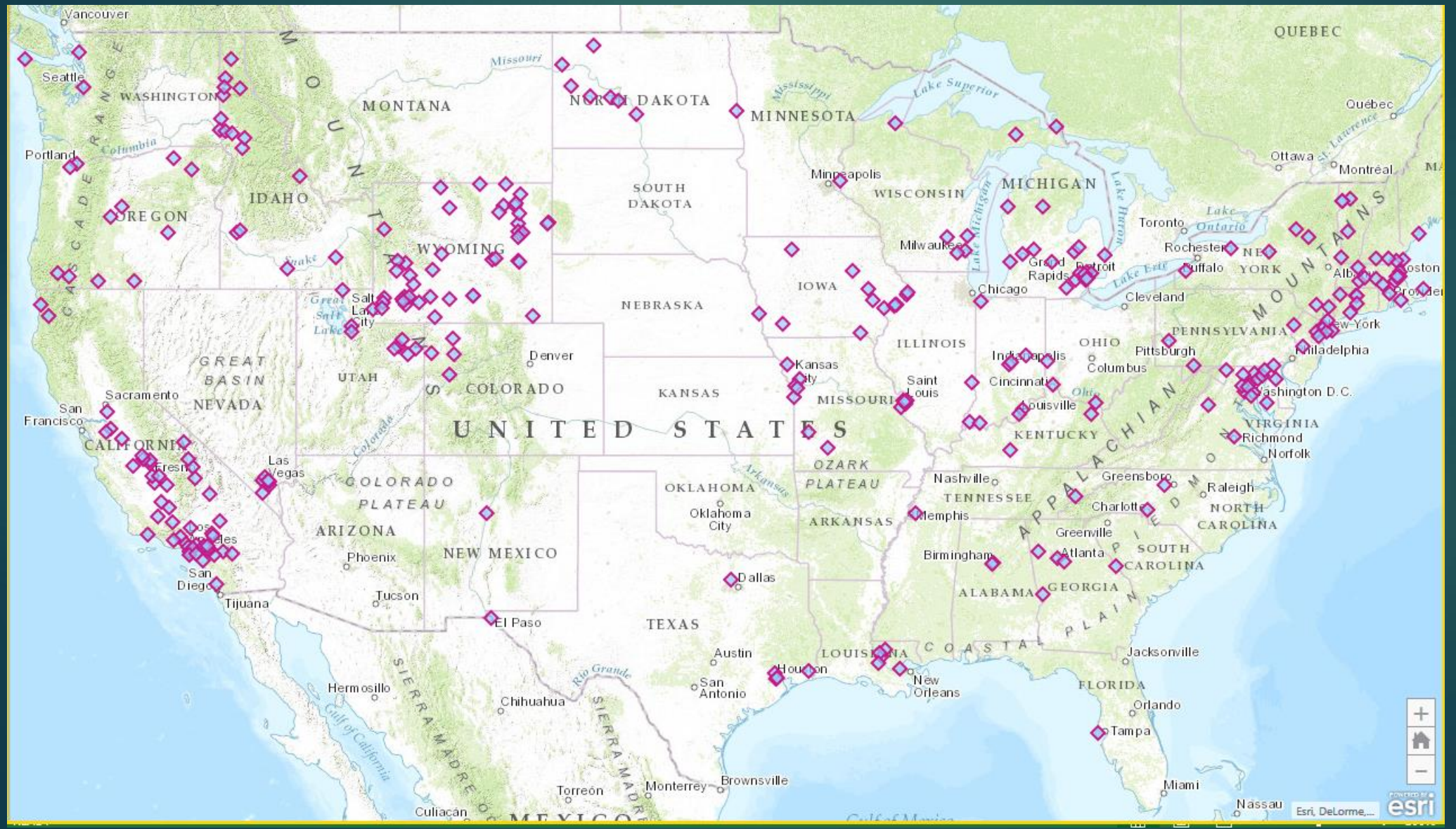
NATTS Sites

31 sites

About Me, Venn Diagram Edition

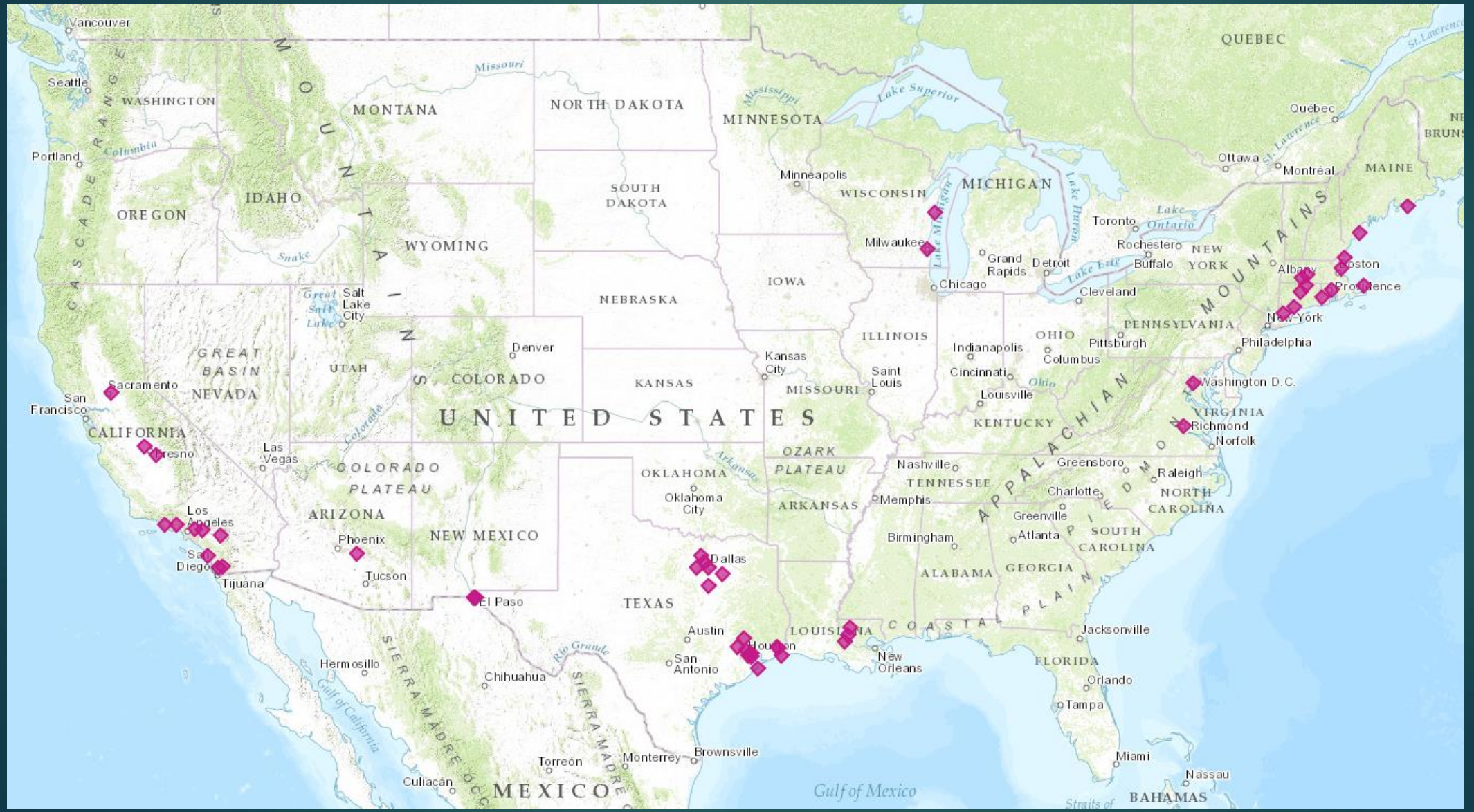


T and P Measured Sites



307 sites

PAMS Sites

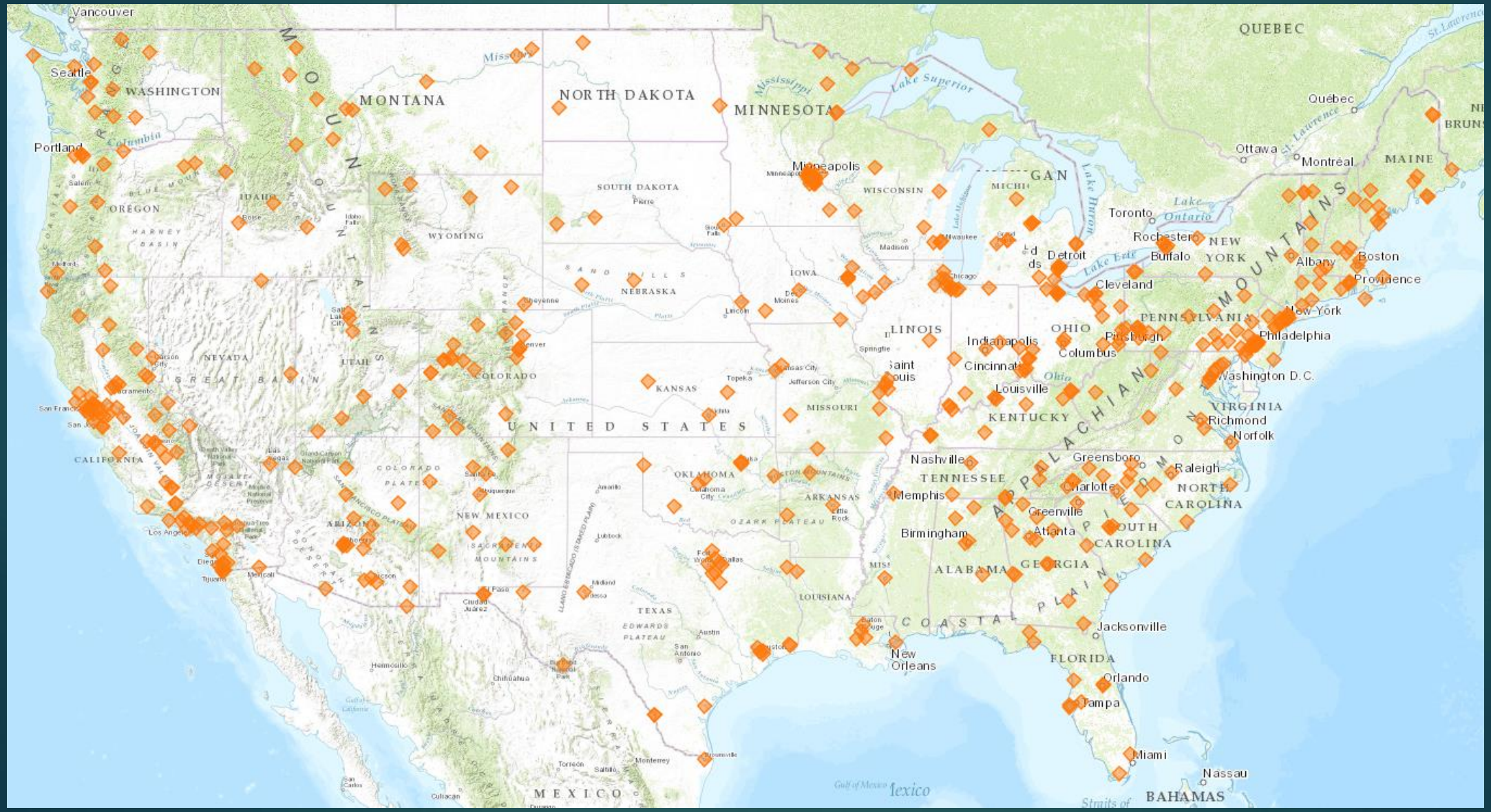


52 sites

PAMS Unofficial Sites

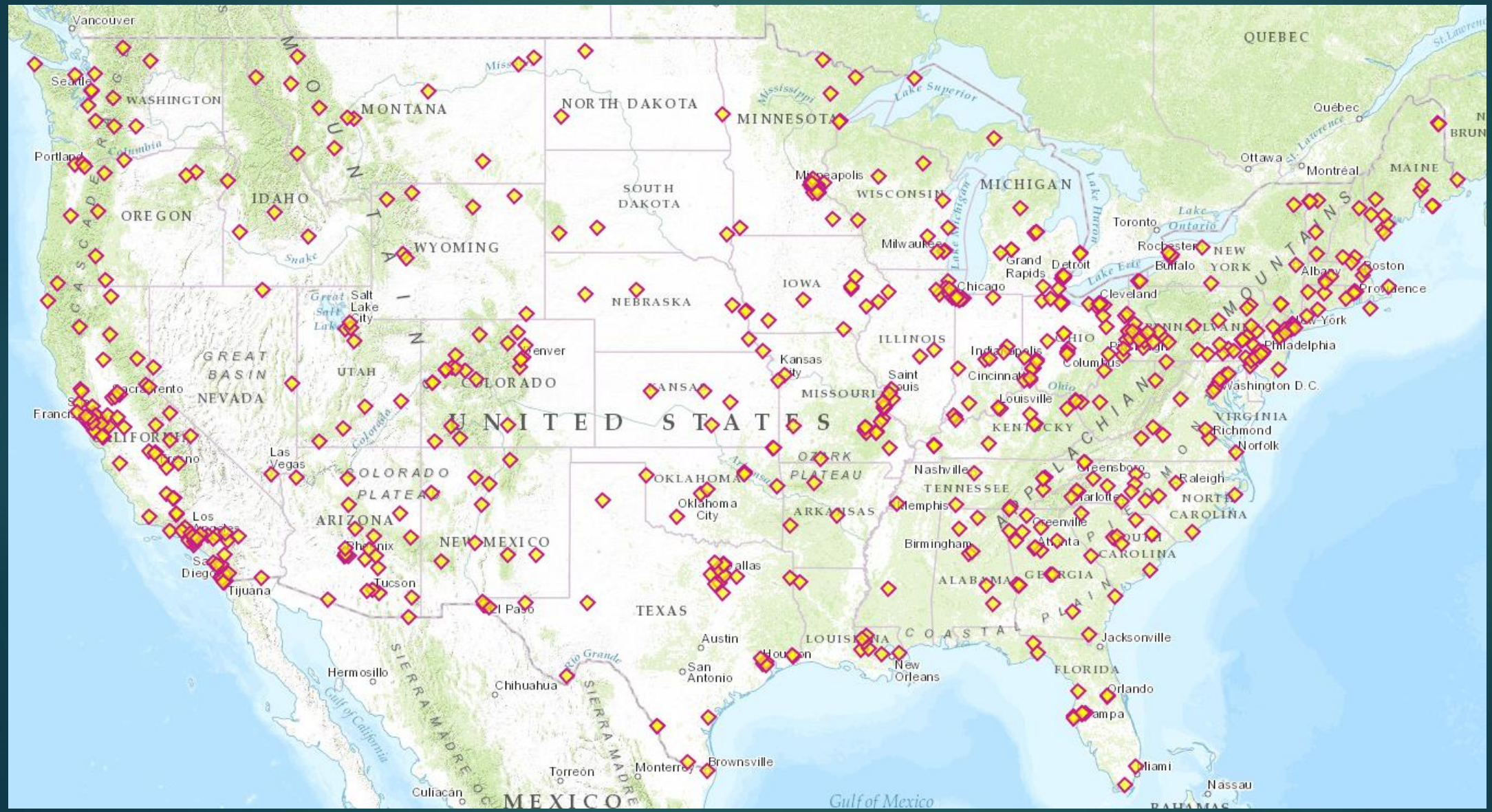
71 sites

Any CORE HAP at Sites



551 sites

Any HAP at Sites



688 sites