



Individual Permit for Storm Water

Public Information Meeting

Tuesday, April 28, 2015

Agenda

Time	Topic	Speaker
5:30	Welcome and agenda	Terrill Lemke
5:35	Project overview and progress	Steve Veenis
5:50	Corrective actions update	Bill Foley
6:10	Urban sampling and airborne deposition	Armand Groffman Courtney Perkins Don Carlson
6:40	New IP Permit	Terrill Lemke
7:00	Communities for Clean Water	Rachel Conn

Urban Storm Water Runoff Collaborative Study



Courtney Perkins, NMED DOE Oversight Bureau
Don Carlson, NMED DOE Oversight Bureau
Armand Groffman, LANL-ER



Urban Runoff Collaborative Study

- Goal: To evaluate Metals and Total PCB concentrations in urban storm runoff from areas in Los Alamos with no known history of industrial activity
- Collaborative study began in 2014:
 - Los Alamos National Laboratory (LANL) and
 - New Mexico Environment Department's Department of Energy Oversight Bureau (NMED DOE OB)



Urban Runoff Study

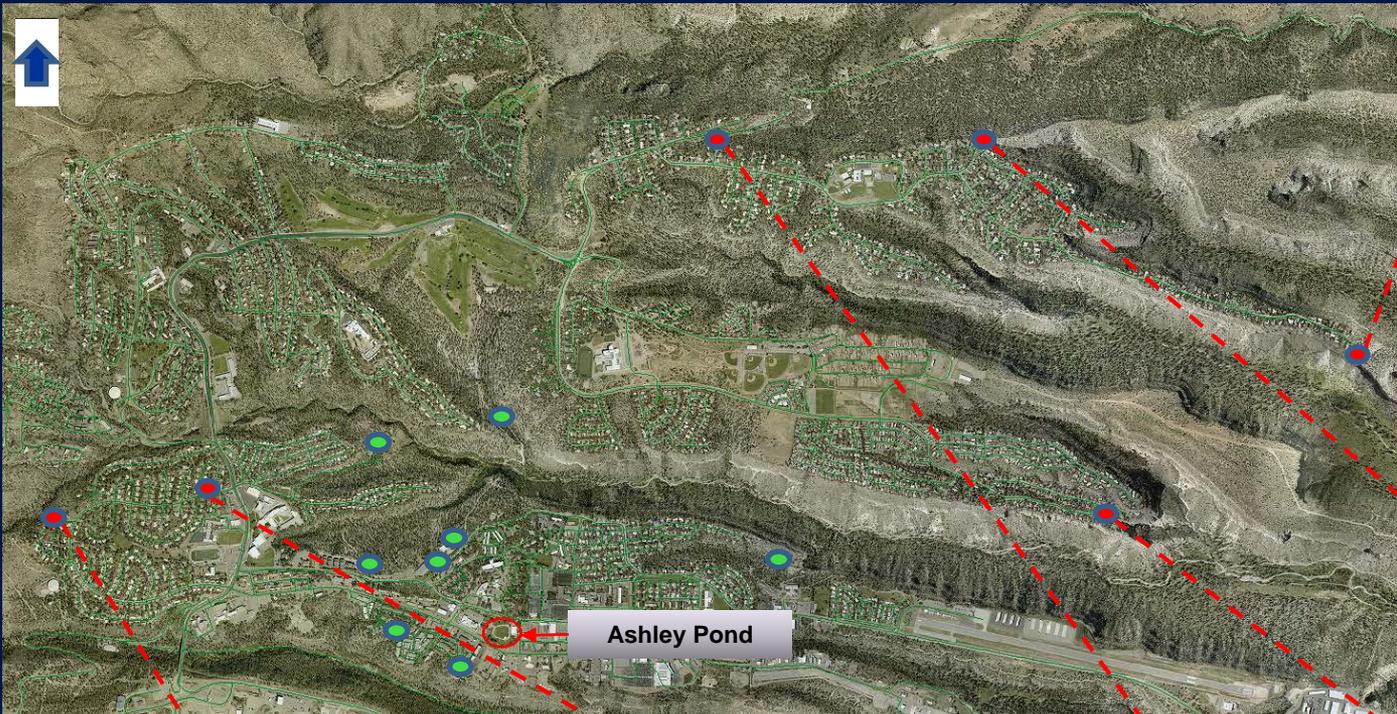
- Storm water runoff from Los Alamos County town site urban residential areas was monitored from August through November 2014.

- Storm Water collected with Global Water automated water sampler

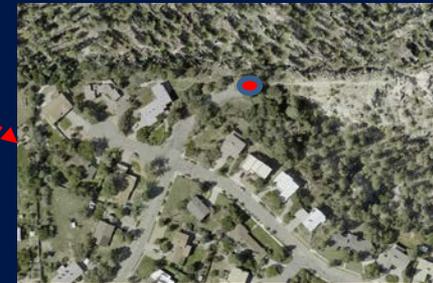


Los Alamos County Urban Storm Water Monitoring Locations

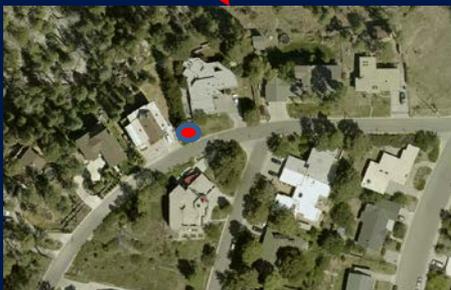
2014 Locations **Red**; 2009 – 2012 Monitoring Locations **Green**



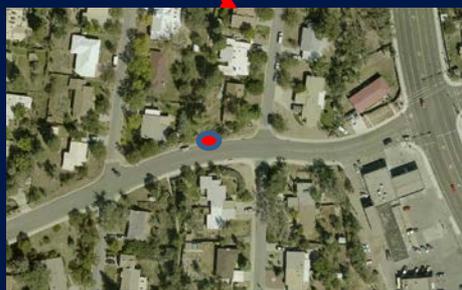
Barranca Mesa 6, Los Pueblos Rd



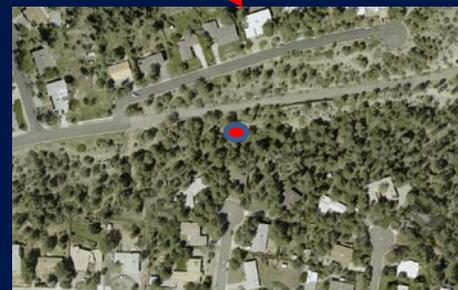
Barranca Mesa 4, Barranca Rd.



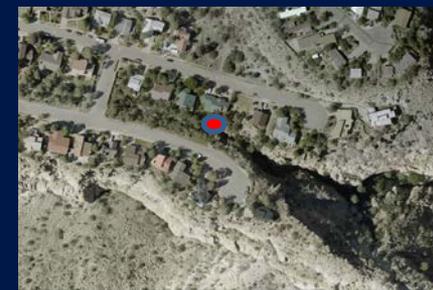
Western Area 3, Sandia Dr.



Western Area 5, Sandia Dr.



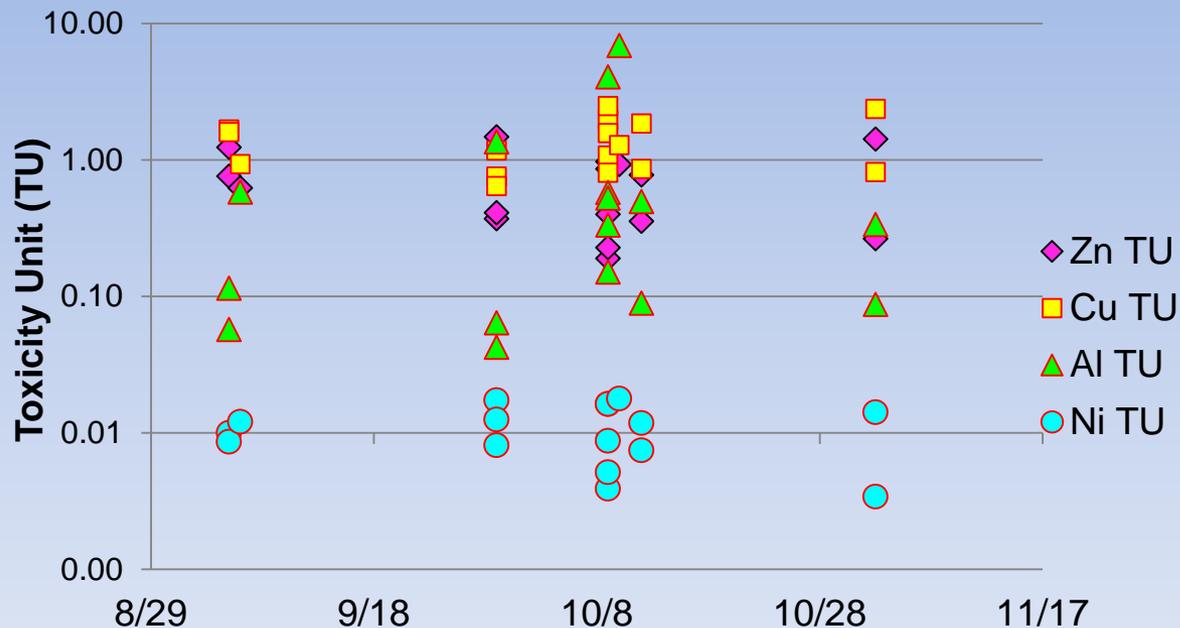
Barranca Mesa 2, Rendija Canyon



North Mesa 9, San Ildefonso Rd.

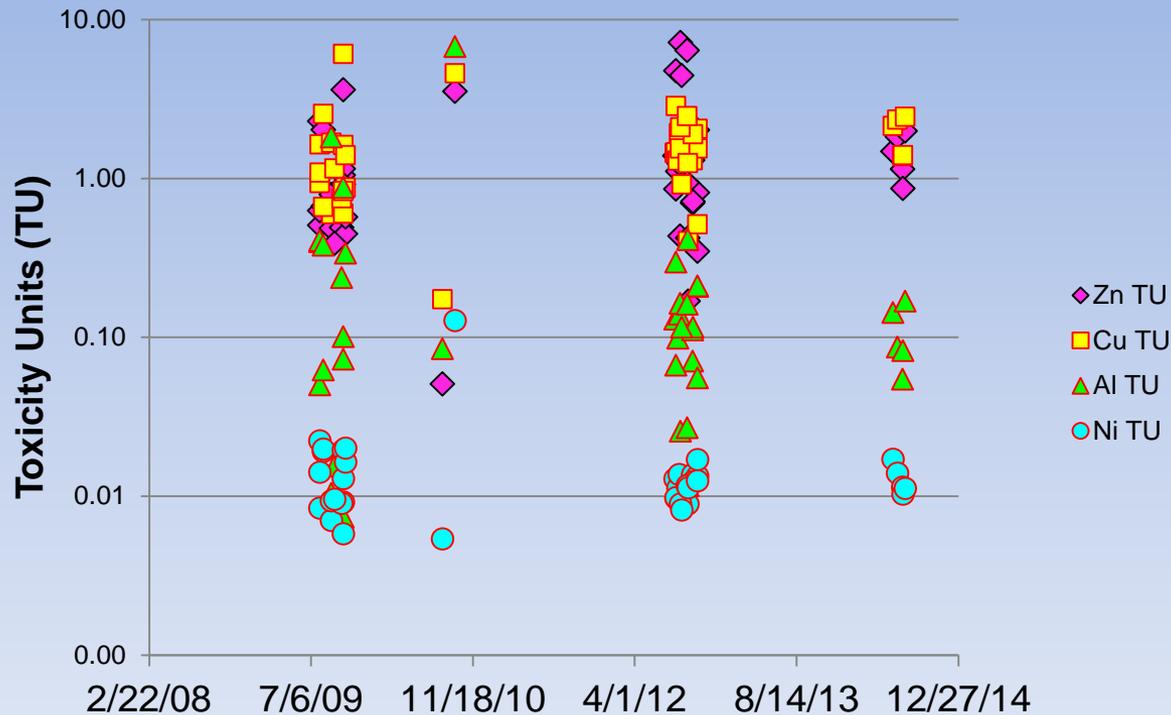
2014 Los Alamos County Urban Neighborhood Results (n=16)

Toxicity Unit (TU) is defined as the
Analytical Result/Acute Aquatic Life Criteria (20.6.4.1 NMAC)



$$\text{Metal-specific aquatic life criterion} = \exp(m_A[\ln(\text{hardness})] + b_A)(CF)$$

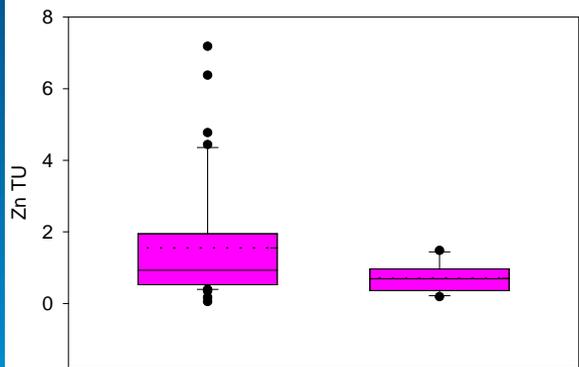
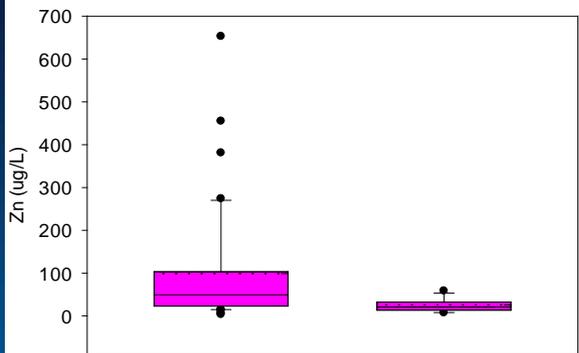
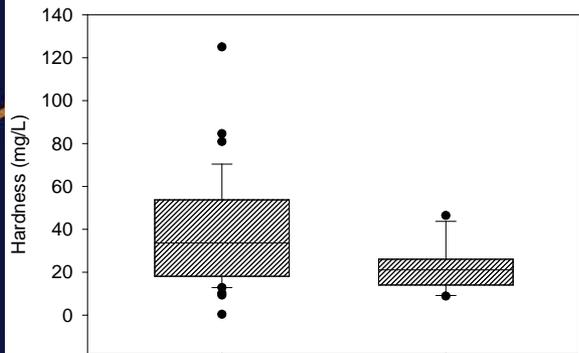
2009 - 2012 Los Alamos County Town Site (n=40) Toxicity Unit (TU) is defined as the Analytical Result/Acute Aquatic Life Criteria (20.6.4.1 NMAC)



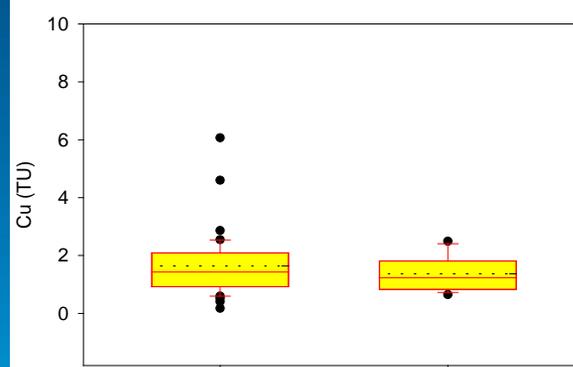
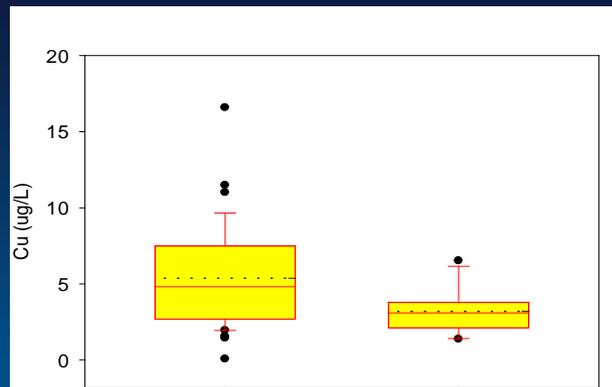
Metal-specific aquatic life criterion = $\exp(m_A[\ln(\text{hardness})] + b_A)(CF)$

Comparison of LAC Town Site and Neighborhoods

ER = Exceedance Rate



LAC Town Site n=40; ER=48%
LAC Neighborhoods n=16; ER=19%



LAC Town Site n=40; ER=73%
LAC Neighborhoods n=16; ER=63%





Common Sources of Zinc and Copper in Storm Water Runoff from Urban Landscapes and Industrial Facilities

- Roofs--galvanized HVAC, ducts, ventilation fans, turbines, galvanized downspouts and flashing, guard rails, cooling water systems, copper pipes.
- Parking Areas—automobiles, trucks, forklifts, motor oil, tire particles, hydraulic fluid, truck/trailer or bus parking, vehicle break pads, culverts.
- Material storage, galvanized metals, chain link fences, printed circuit boards, and vehicles (as above).



Total PCBs in Urban Runoff

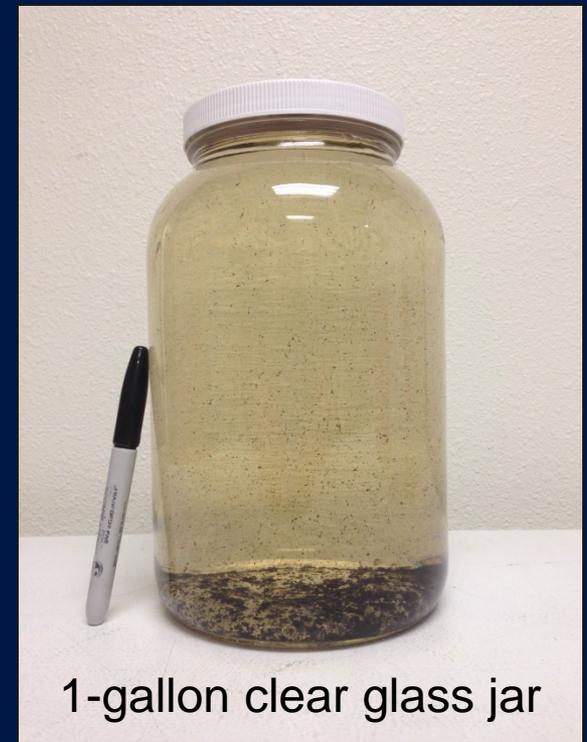
Collected a total of 15 samples from 5 of 6 locations, analytical results for 13 samples*

Number of Sample results
from 2014

Location	# PCB Results
BM-REF-2	1
BM-REF-4	3
BM-REF-6	3
NM-REF-9	4
WA-REF-3	0
WA-REF-5	2
Total	13

Analyses:

- PCB Congeners (USEPA Method 1668A)
- Suspended Sediment Concentration (SSC; ASTM: D3977-97)



1-gallon clear glass jar

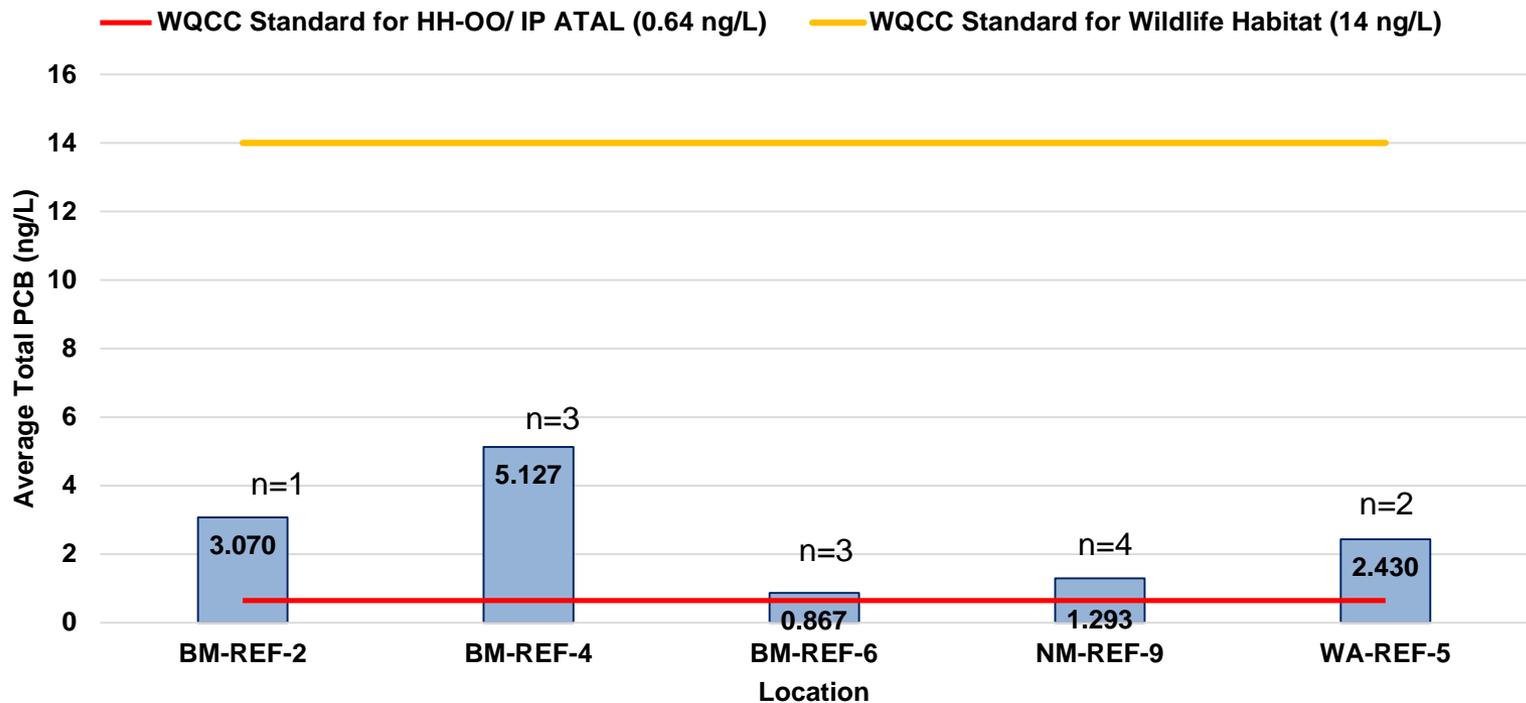
*1 sample broke in shipment and results are pending for 1 other sample

Total PCBs in Urban Runoff

Summary of Total PCB Sample Results from 2014 Study

Total PCB Concentration (ng/L)	N	Min	Max	Mean	SD	Median
2014 Study - Urban Stations (no known historical industrial)	13	0.67	9.31	2.39	2.44	1.38

Average PCB Concentrations (Blank-corrected, Total) by Location - Urban Study



Historical PCB Baseline Study Data

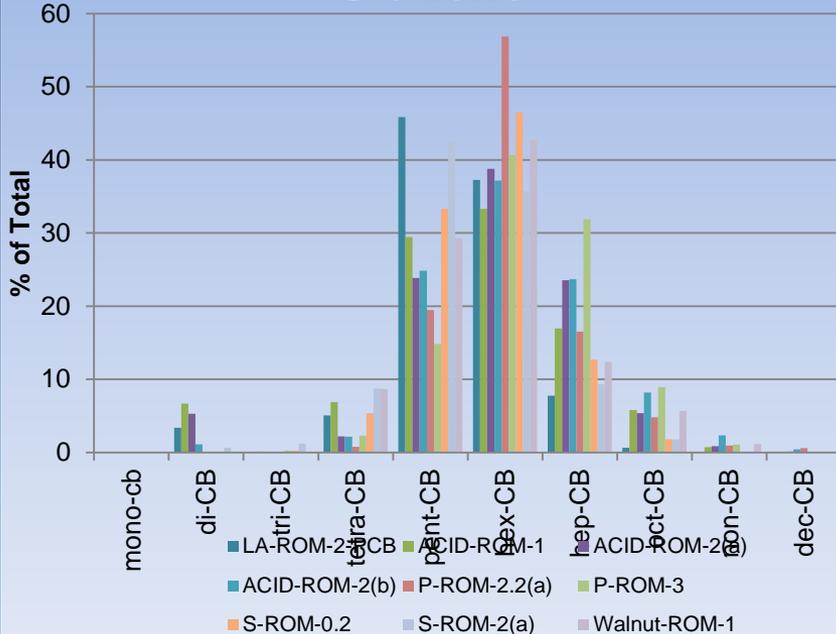
Summary table of Urban Runoff PCB Concentrations in Los Alamos from the 2012 PCB study and the 2014 study

Total PCB Concentration (ng/L)	N	Min	Max	Mean	SD	Median
2012 LANL/NMED Report -Urban Stations (including historical industrial)	41	0.01	144	27.7	37.7	12
2014 Study - Urban Stations (no known historical industrial)	13	0.67	9.31	2.39	2.44	1.38

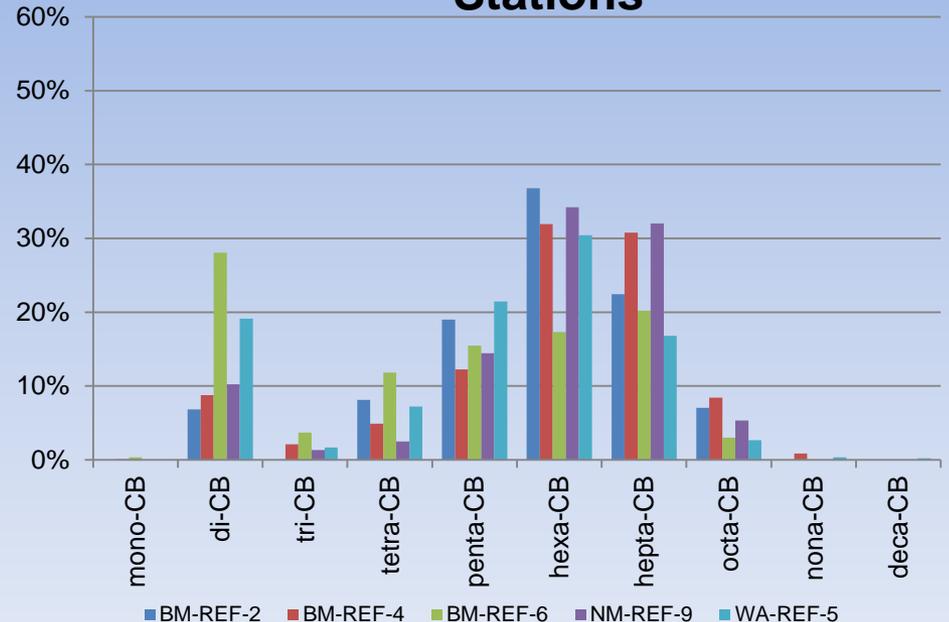
Comparison of Homolog Distributions

Average homolog distributions

2012 Study LAC Urban Runoff Stations



2014 LAC Neighborhood Runoff Stations



Planned future work

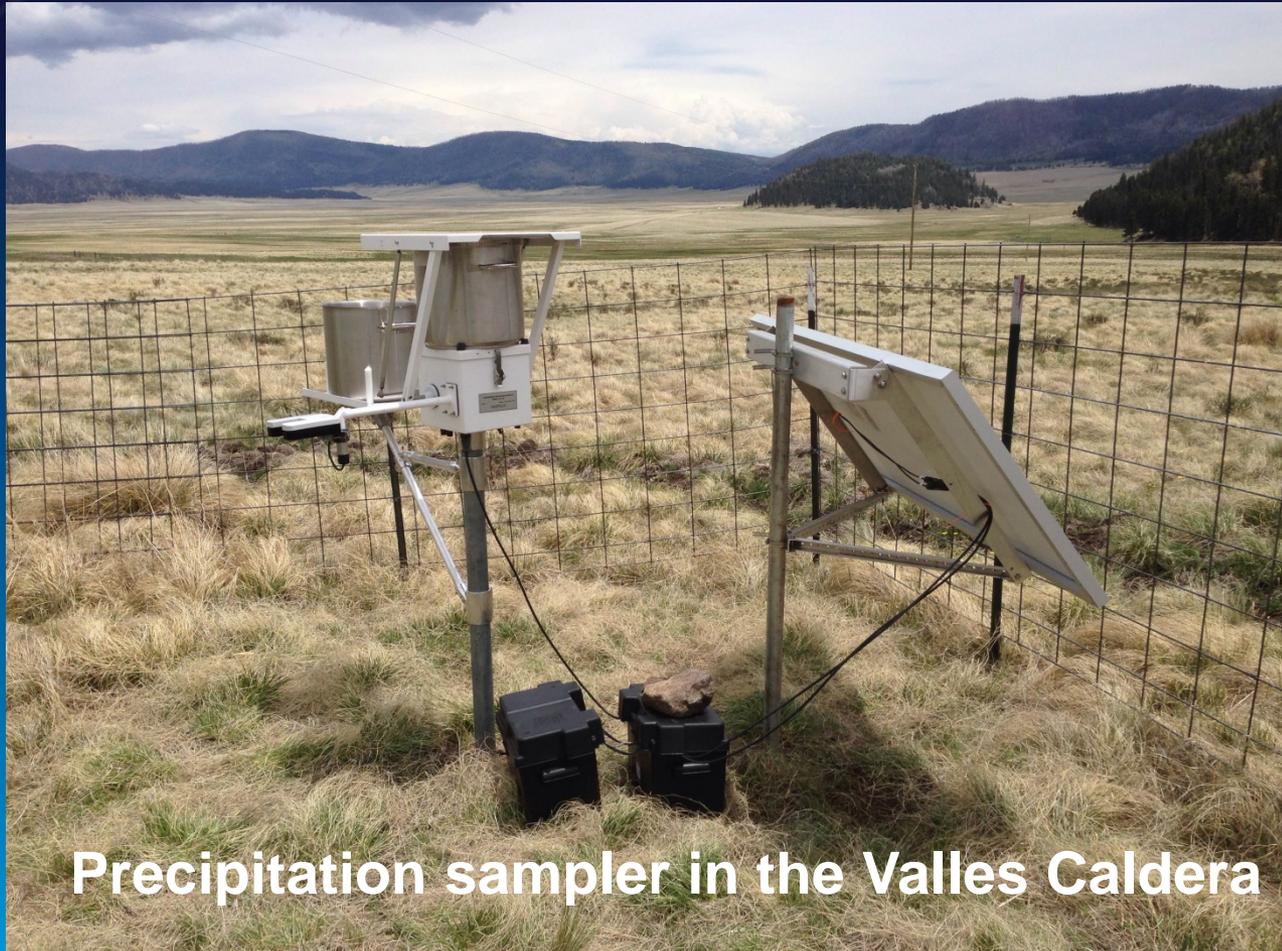
- Additional urban monitoring
- Data will be used to evaluate compliance related to NPDES permits
- All data are available online through Intellus New Mexico (intellusnmdata.com)

DOE OB Precipitation Monitoring

- Goal: To evaluate Metals and Total PCB concentrations in wet (precipitation) and dry atmospheric deposition around Los Alamos/Pajarito Plateau in order to quantify atmospheric deposition
- Collect & analyze precipitation (rain, snow, sleet, etc) and dry atmospheric deposition (dust, particulates) for metals and PCBs



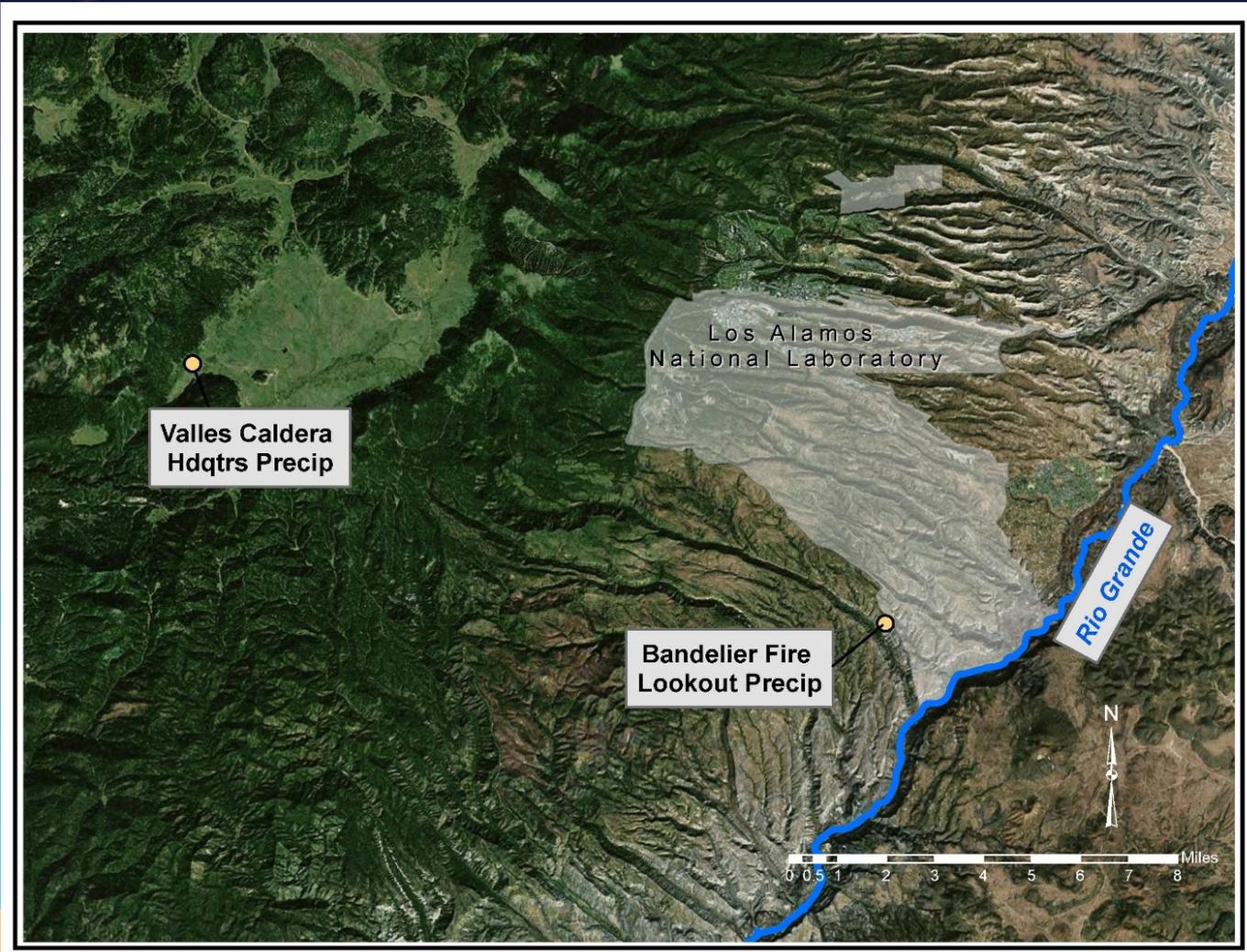
DOE OB Precipitation Monitoring



Precipitation sampler in the Valles Caldera



DOE OB Precipitation Sampling Locations



DOE OB Precipitation Monitoring

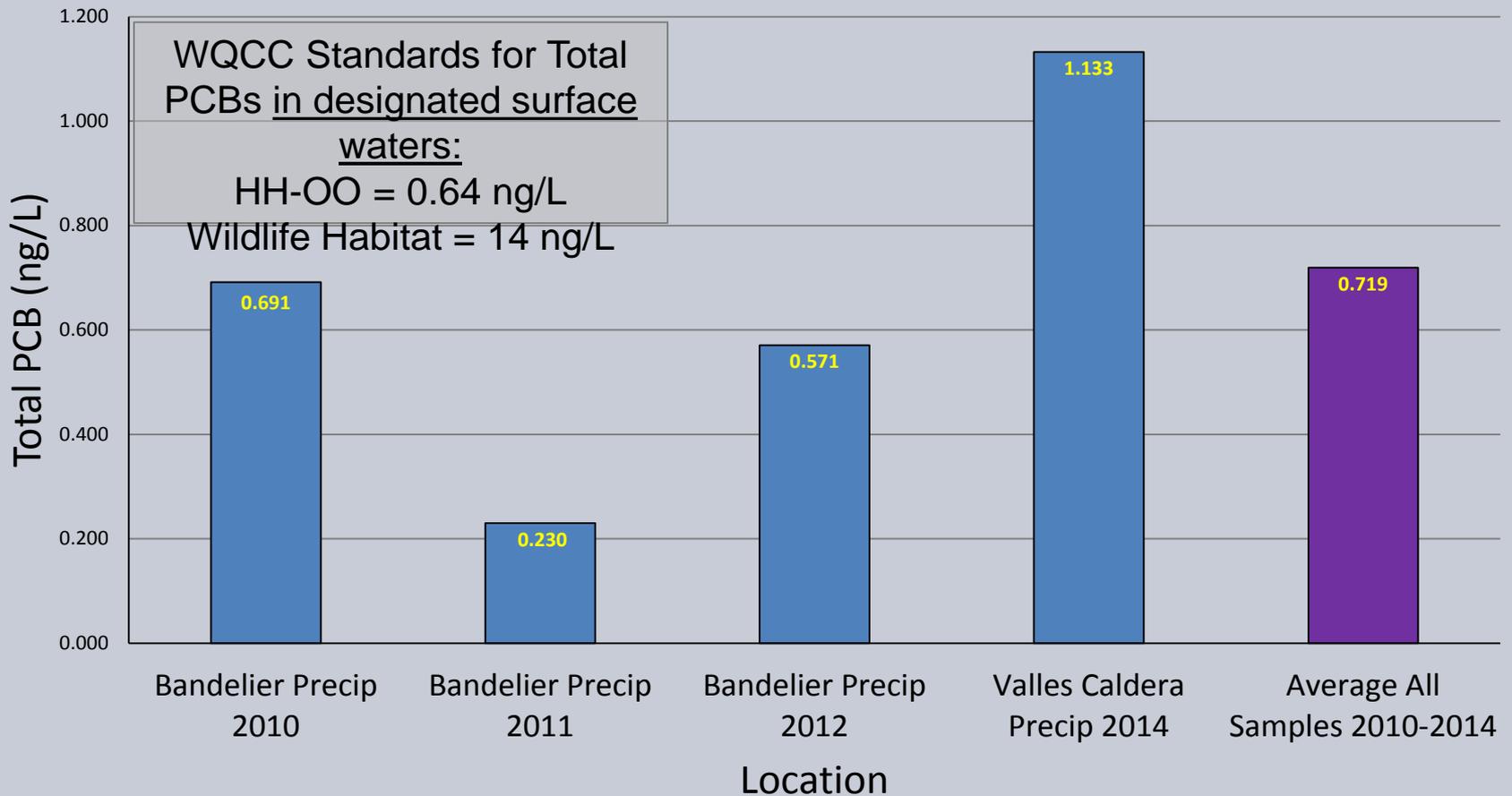


Precipitation sampler at Bandelier National Monument
in dry and wet conditions

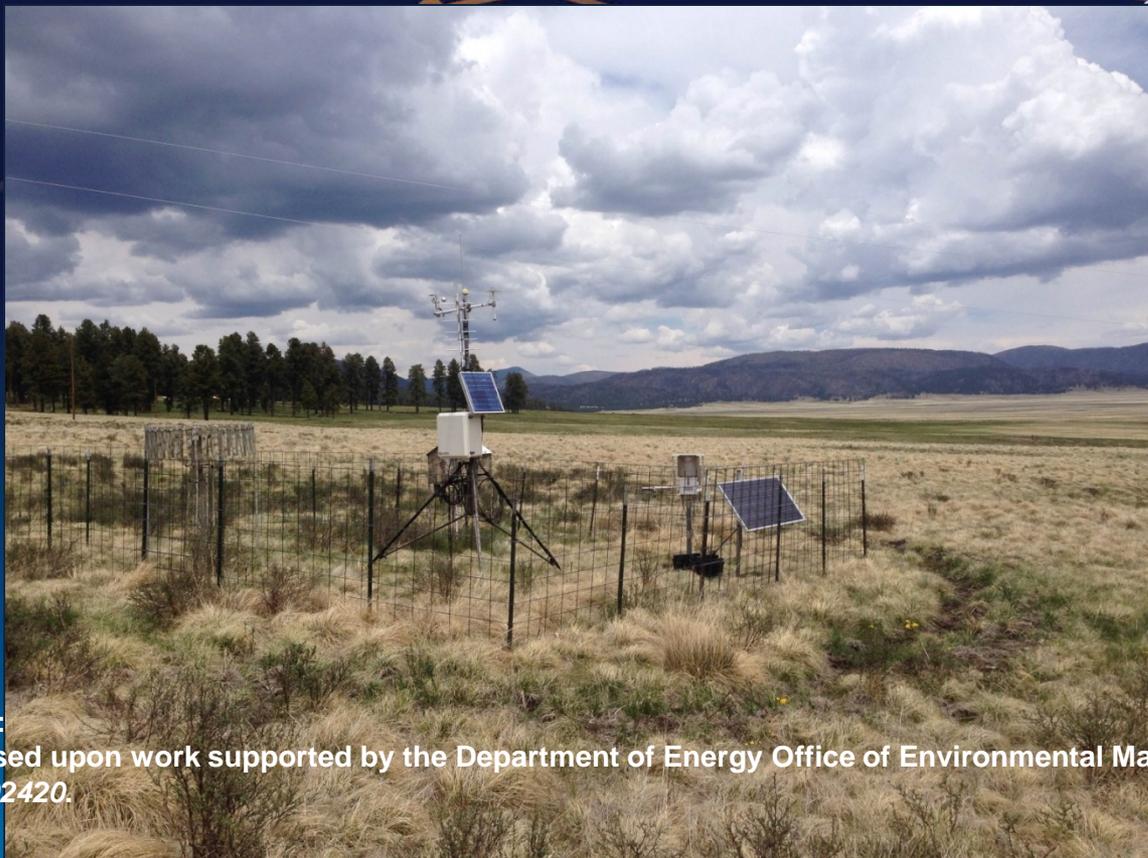


DOE OB Precipitation Monitoring

Average PCB Concentrations (Blank-corrected, Total) by Location Precipitation Study



Questions?



Acknowledgement:

This material is based upon work supported by the Department of Energy Office of Environmental Management under Award Number *DE-EM0002420*.

Disclaimer:

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.