

NADP Atmospheric Mercury Network (AMNet)

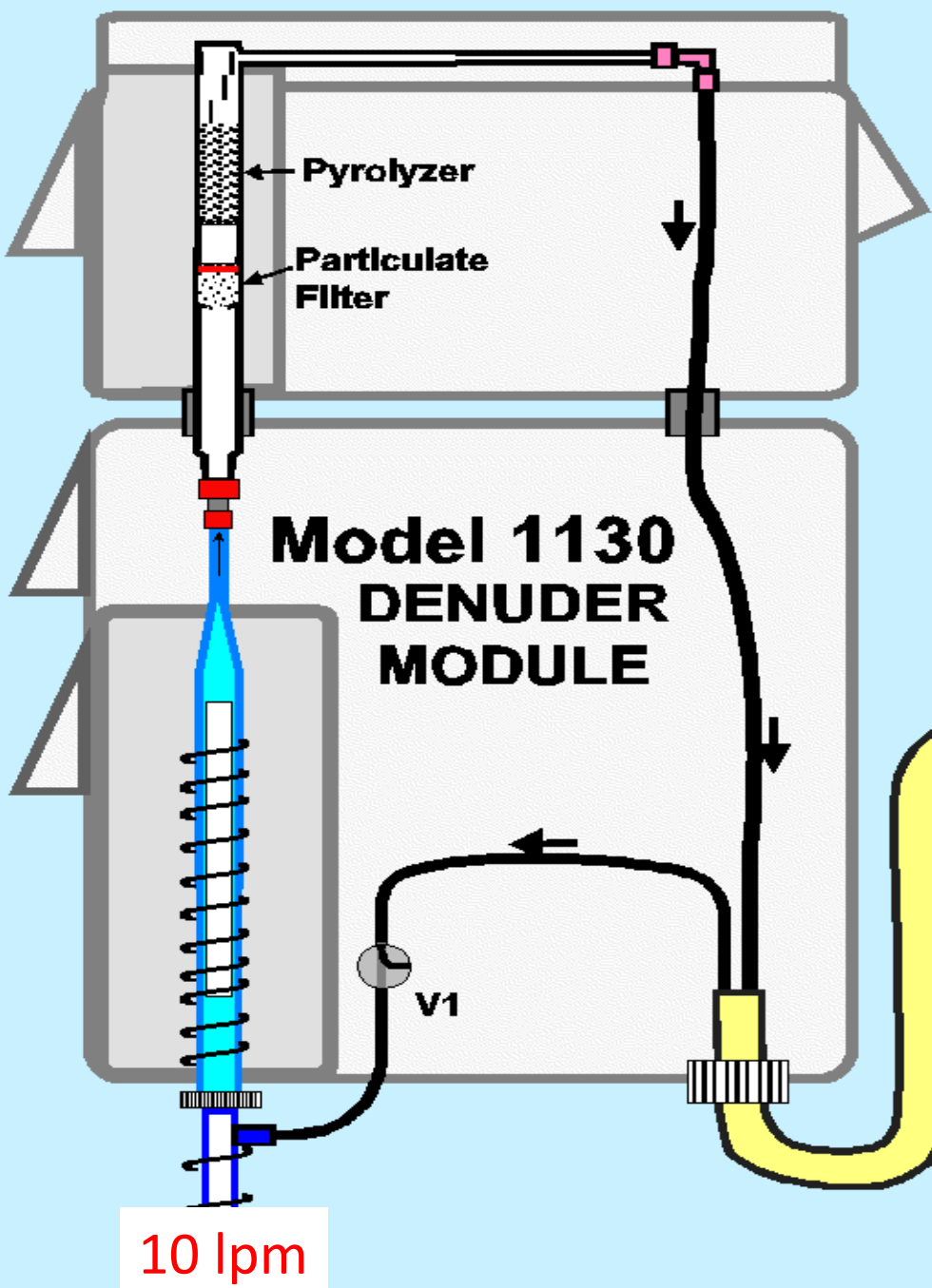
Tim Sharac

USEPA

Sharac.tim@epa.gov

Tekran Speciation System

- Semi continuous analysis of GEM, GOM and PBM
- High volume (10 lpm) to pre-concentrate GOM and PBM as concentrations are in pg/m^3
- GEM is sampled at 1 lpm as concentrations are in ng/m^3
- GEM is reported in 5 minute intervals while GOM and PBM is reported as 60 or 120 minute averages



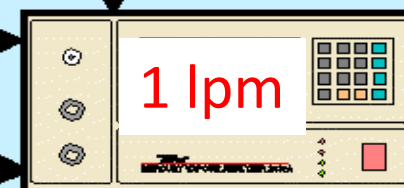
**Model 1135
PARTICULATE
MODULE**

**Model 1130
PUMP MODULE**

Heated Line



Inside Shelter



Model 2537A

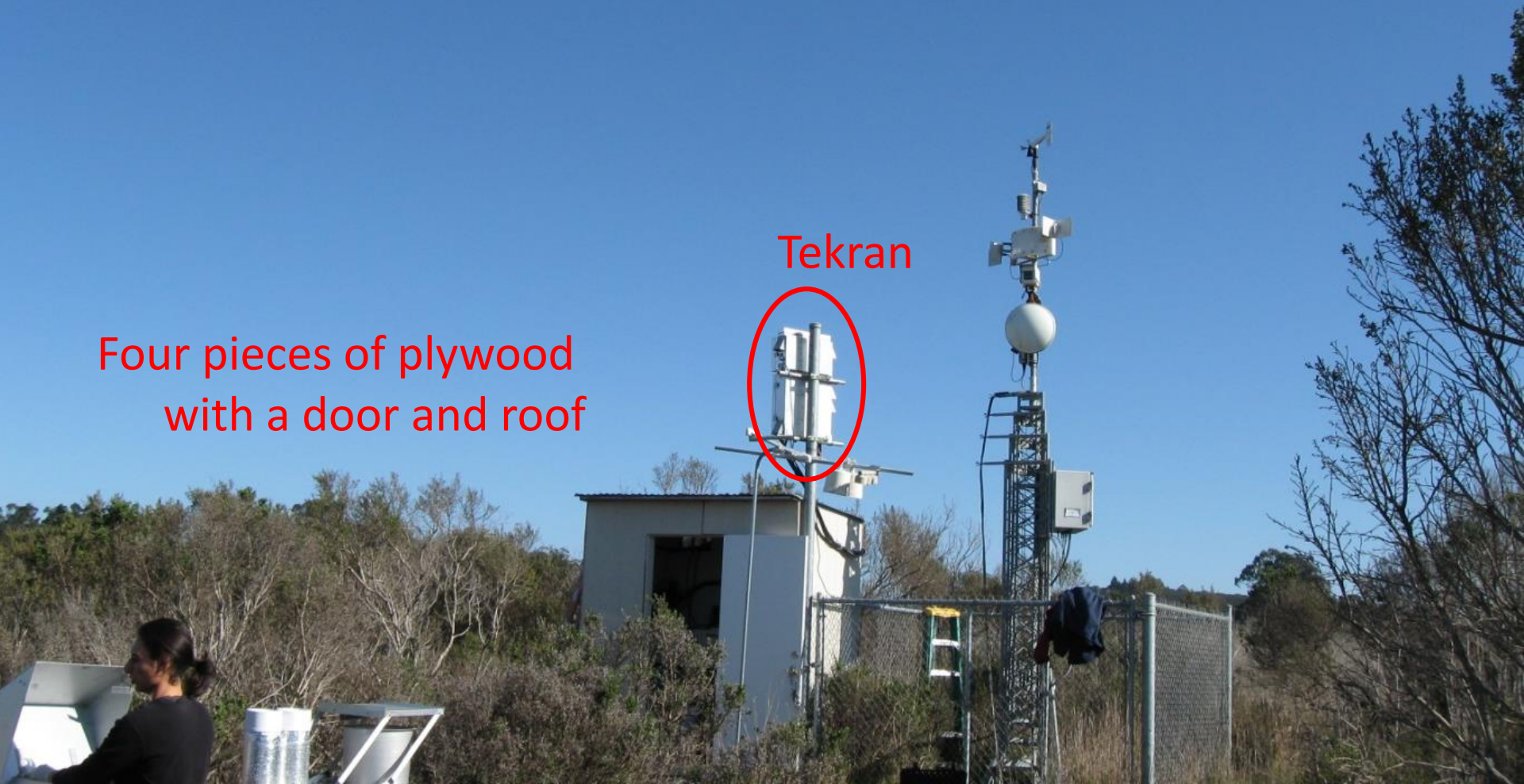
Siting Basics

- Tekran System
- Shelter
 - Weather and temperature controlled
- Mounting tower
- Open fetch (20° rule)
- Electricity
 - 110 or 220 volts
- Argon

Simple shelter design

Tekran

Four pieces of plywood
with a door and roof



Shipping Container



**Platform
for service**



Air conditioner



Old trailer with
Scaffolding



**10 meter tower
with dual Tekrans**





Interior
Rack Mount

1130 Pump
Two 2537's

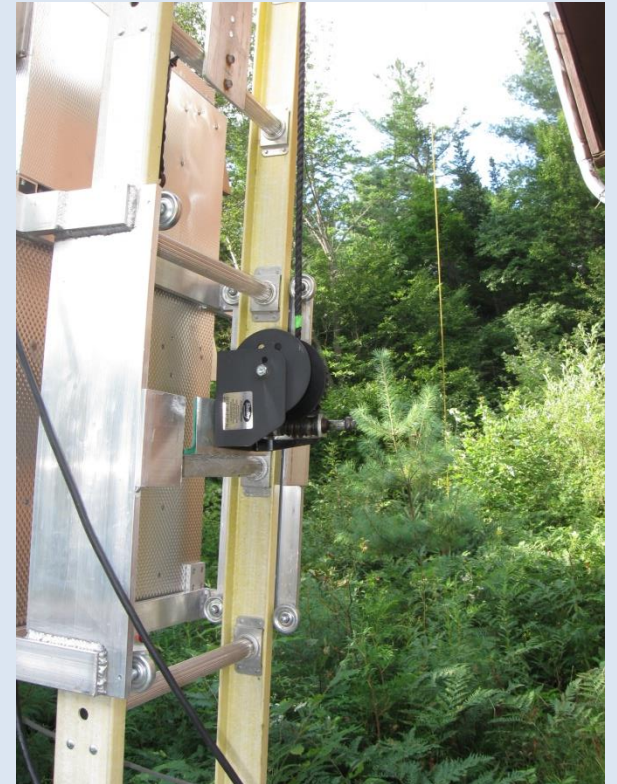




Mounts



Ladder Hoist

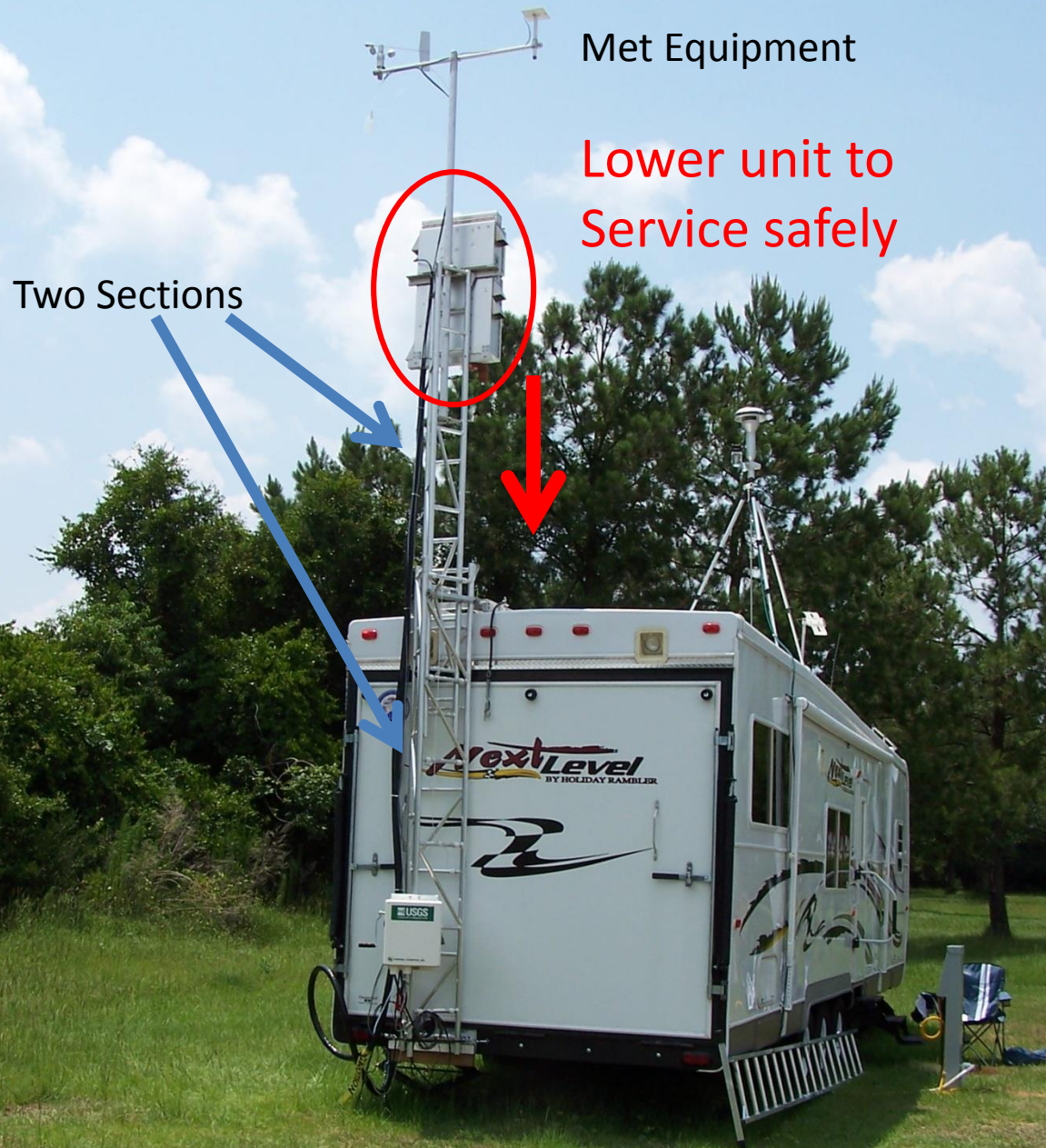




em
nd



Telescoping Tower



Siting Criteria

- Open fetch
 - 20 degree rule
- Away from potential sources
- Guidelines and rules

Specifics available at

https://nadp.isws.illinois.edu/lib/manuals/NADP_Site_Selection_and_Installation_Manual.pdf

NADP AMNet Siting Criteria

≥ 50m from instrument inlet:

parking lots (≤ 6 vehicles/day)
maintenance areas (≤ 6 vehicles/day)
fertilizer use
densely forested land

≥ 20m from instrument inlet:

herbicide use
pastures
cultivated fields

≥ 10m from instrument inlet:

access roads (≤ 10 mph, ≤ 10 vehicles/day,)
shelter instrument exhaust

≥ 5m from instrument inlet:

HVAC unit

< 5m from instrument inlet:

vegetation height ≤ 0.6m
groundcover typical of area

inside instrument shelter:

instrument shelter air: *< 10 ng/m³, < 15 ng/m³*
 handling of Hg⁰ (e.g., Tekran 2505 reservoir): **none**
 Hg sources (e.g., Hg thermometer, Hg barometer, Hg-type thermostats, stored Hg compounds): **none**
 fluorescent lighting: *none in use, none in storage*

≥ 100m from instrument inlet:

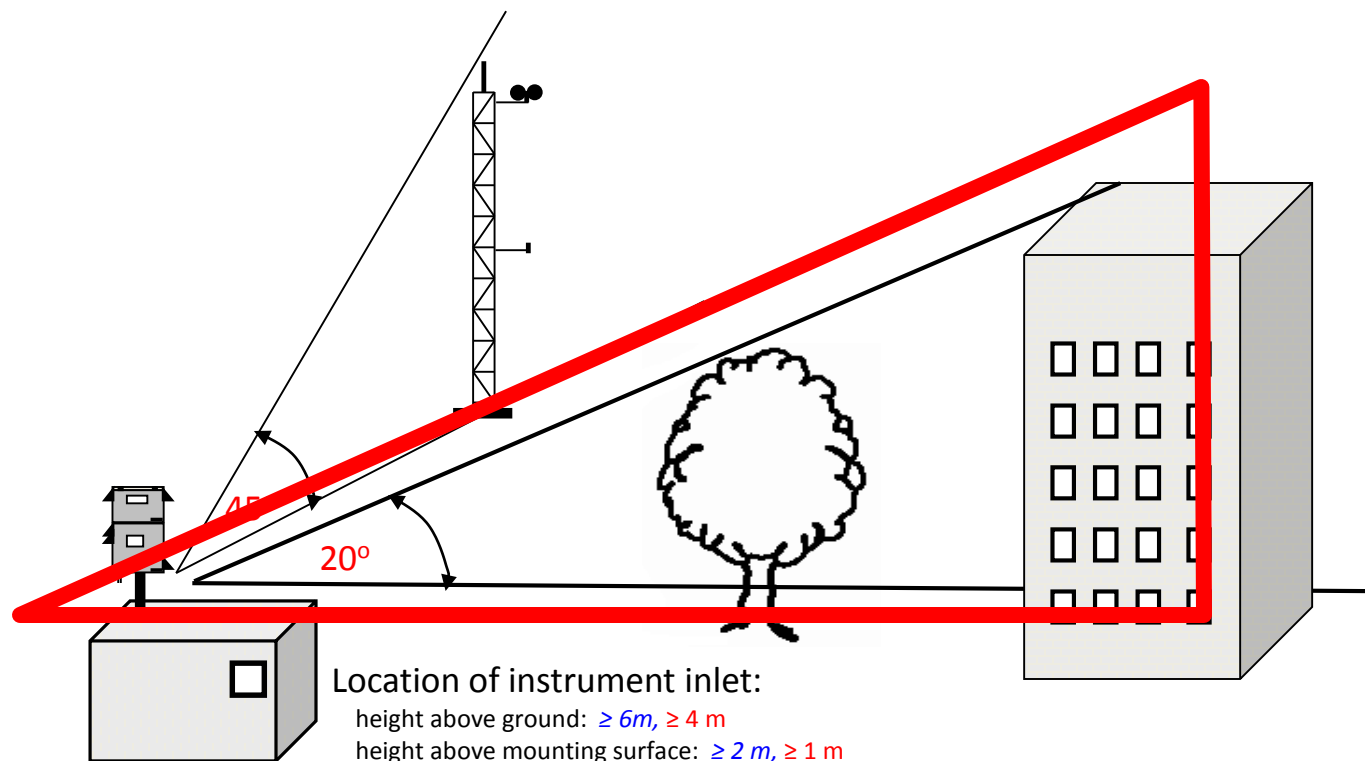
known small sources of Hg (e.g., municipal waste containers)
Hg sources (e.g., fluorescent light storage, Hg thermometer, Hg barometer, Hg-type thermostats, stored Hg compounds)

≥ 1km from instrument inlet:

known Hg area sources (e.g., contaminated soil, water or mining waste)
handling of Hg⁰ (including Tekran 2505)
known Hg sources from list to the right

< 10 km from instrument inlet:

document the relative location of **ALL** Hg sources
-incinerators (hazardous, waste, other)
-energy utilities (coal, oil, gas, refuse, other)
-energy boilers (coal, oil, gas, wood, refuse, other)
-cement plants
-crematories
-landfills
-CFL recycler/manufacturer
-chlor-alkali plants
-metal works
-metal refineries
-oil/gas refineries
-other known sources



Location of instrument inlet:

height above ground: *≥ 6m, ≥ 4 m*
 height above mounting surface: *≥ 2 m, ≥ 1 m*
 elevation within 2km: **maximize**
 inlet airflow: **unrestricted (i.e. maximize fetch)**
 shelter corner: *nominally upwind for site*

Rule
Guideline

Urban location
Obstruction to NE at 35°



Rural location

Obstruction to W at 40°



Site differences can affect results

- Urban
 - sources present
- High altitude
 - boundary layer influence
- Obstructions
 - trees or buildings
- All must be considered when choosing a site and analyzing data.

AMNet Manuals and Standard Operating Procedures

Mark L. Olson

AMNet Site Liaison

molson@illinois.edu

Manual and Standard Operating Procedures Development

- Over 30 scientists invited to contribute
- 18 scientists contributed
- Merged comments into one document
- October 2008 document sent to 65 scientists for additional comments
 - 9 Countries
 - 5 US Agencies
 - 13 States
 - 13 Universities
 - 5 Private



Manuals and Standard Operating Procedures Development

- Adopted by GMOS and other networks
- **GOAL** – everyone operates in a similar manner to ensure data comparability

Available to public

<https://nadp.isws.illinois.edu/amn/docs.aspx>

*Living Document – open to suggestions and changes

Manuals

- Operations
 - Equipment
 - Operation
 - Supplies
- Data Management
 - Raw data submission
 - Calculations
 - Flags assigned by QA program
 - Validation process

Standard Operating Procedures (SOP's)

- Site Report A - Each Visit
- Site Report B - Glassware changes
 - Laboratory and Field
- Site Report C - Quarterly
 - Laboratory and Field
- Site Report D - As Needed

SOP GOALS

- Checklist to ensure proper operation
- Laboratory and Field guide for maintenance
- Consistency!
 - Operation
 - Quality Assurance
 - Field Activities Reporting
 - Identify field activities
 - Routine Maintenance
 - Quality assurance activities

Site Reports A - D

- Each entry field is explained in SOP
- All forms require basic header information
 - Site name, Site ID, Date, Operator initials
- Designed for electronic data entry
- Forms cover all related activities
 - Checks, routine maintenance, quality assurance, non-routine maintenance

Site Report A, Each Visit

- Check box provided for each day of the month
- Place operator initials above day check box
- Several checks can be performed remotely
- Check indicates positive response
- Designed to follow Tekran data string

Tekran Data String

A	B	C	D	E	F	G	H	I	J	K	L	M
<i>Date</i>	<i>Time</i>	Typ	C	<i>Stat</i>		<i>AdTim</i>	<i>Vol</i>	<i>Bl</i>	<i>BlDev</i>	MaxV	Area	ng/m3
8/15/2009	10:55:01	CONT	A	OK	0	300	5	0.158	0.07	0.167	31578	1.176
8/15/2009	11:00:01	CONT	B	OK	0	300	5.01	0.158	0.068	0.169	36015	1.247

The parameters in red should be checked each visit

Site Report A

- Checks
 - Data output, Calibration, Argon, temperatures, warning lights... Everything we could think of.
- If all the parameters meet specifications.
 - *The operator has confirmed the instrument is running properly*

[illegible]

Site Report B, Bi-weekly

- Routine maintenance
 - Glassware changes etc.
- Operator informs Site Liaison which data to invalidate due to maintenance
- Each Site Report B covers two visits
(one month)



Atmospheric Mercury Network (AMNet)

Site Report B

		1. Site				2. Operator				3. Date (YYYY/MM/DD)	
		Name:		ID:		Name:		Initials:			
		4. Glassware Change-out Checklist									
		Task	Done	Period Impacted (local standard time, 24 hr)				Comments, Actions			
			X	MM/DD	13:50	MM/DD	15:15				
First Change-out	B01	Soda lime changed	X	09/12	11:30	09/12	13:15				
	B02	Soda lime changed (second)									
	B03	Denuder changed	X	09/12	11:30	09/12	13:15				
	B04	Elutriator glassware changed	X	09/12	11:30	09/12	13:15				
	B05	1130 sample filter changed	X	09/12	11:30	09/12	13:15				
	B06	Leak check $\leq 0.3 \text{ ng/m}^3$	X	09/12	11:30	09/12	13:15				
	B07	Instrument meets specifications	X	09/12	11:30	09/12	13:15				
Second Change-out	B08	Soda lime changed									
	B09	Soda lime changed (second)									
	B10	Denuder changed									
	B11	Elutriator glassware changed									
	B12	1130 sample filter changed									
	B13	Leak check $\leq 0.3 \text{ ng/m}^3$									
	B14	Instrument meets specifications									
		5. End-of-month Checklist				6. Operator				7. Date (YYYY/MM/DD)	
						Name:		Initials:			
		Task	Done	Period Impacted (local standard time, 24 hr)				Comments, Actions			
			X	MM/DD	13:50	MM/DD	15:15				
Monthly	B15	RPF changed									
	B16	GL 14-18 union cleaned									
	B17	1130 zero air filter changed									
		8. Remarks									

Site Report C, Quarterly

- Quality assurance
 - Flow rates, calibration verification...
- Maintenance
 - Heaters, zero air, pump...
- Designed for each annual quarter
 - 1 and 3 (three month intervals)
 - 2 (six month interval)
 - 4 (annual interval)

		National Atmospheric Deposition Program				For office use only			
		Atmospheric Mercury Network (AMNet)							
		Site Report C							
		1. Site				2. Operator			3. Date (YYYY/MM/DD)
		Name:		ID:	Name:		Initials:		
		4. First and Third Quarter Checklist							
		Task	Value	Period Impacted (local time, 24 hr)				Comments, Actions	
				MM/DD	13:50	MM/DD	15:15		
Each Quarter	C01	2537 flow rate, instrument (lpm)							
	C02	2537 flow rate, measured (lpm)							
	C03	2537 flow rate, percent difference (%)						Form Calculates Differences	
	C04	1130 flow rate, instrument (lpm)							
	C05	1130 flow rate, measured (lpm)							
	C06	1130 flow rate, percent difference (%)							
	C07	Elutriator flow rate (lpm)							
	C08	Measured flow rate (lpm)							
	C09	Percent difference flow rate (%)							
	C10	2537 scale factor							
	C11	Cartridge A, mass injected (pg)							
	C12	Cartridge A, 2537 concentration (pg/m ³)							
	C13	Cartridge A, manual injection % difference (%)							
	C14	Cartridge B, mass injected (pg)							
	C15	Cartridge B, 2537 concentration (pg/m ³)							
	C16	Cartridge B, manual injection % difference (%)							
		Task	Done	Period Impacted (local time, 24 hr)				Comments, Actions	
	X		MM/DD	13:50	MM/DD	15:15			
Each Quarter	C17	Nichrome heaters bright orange							
	C18	Instrument shelter air ≤ 10 ng/m ³							
	C19	2537 sample filter changed							
	C20	Soda lime to 2537 sample line rinsed							
	C21	1130 flow within 3% of set point							
Quarter	C22	1130 zero air canisters changed							

As Needed, Site Report D

- Non-routine maintenance



Atmospheric Mercury Network (AMNet)

Site Report D

1. Site				2. Operator				3. Date (YYYY/MM/DD)	
Name:		ID:		Name:		Initials:			

4. Service Options Checklist						
Task	Done	Period Impacted (local time, 24 hr)				Comments, Actions
	X	MM/DD	13:50	MM/DD	15:15	
D01	2537 lamp changed					
D02	Gold cartridges changed -- New serial number					
D03	2537 teflon valves cleaned					
D04	2537 teflon valves replaced					
D05	2537 cuvette cleaned					
D06	2537 cuvette replaced					
D07	2537 pump serviced					
D08	1130 Heated boot replaced					
D09	1130 case heater replaced					
D10	1135 case heater replaced					
D11	Heated sample line rinsed					
D12	Independent survey performed					
Task	Value	Period Impacted (local time, 24 hr)				Comments, Actions
		MM/DD	13:50	MM/DD	15:15	
D13	Swap 2537A -- New Serial Number					
D14	Swap 2537A -- New Cal Hg amount (pg)					
D15	Swap 1130 Pump Module - New Serial Number					
D16	Swap 1130 Sampling Head - New Serial Number					
D17	Swap 1135 Sampling Head - New Serial Number					

5. Remarks						

AMNet Quality Assurance and Validation

Mark L. Olson

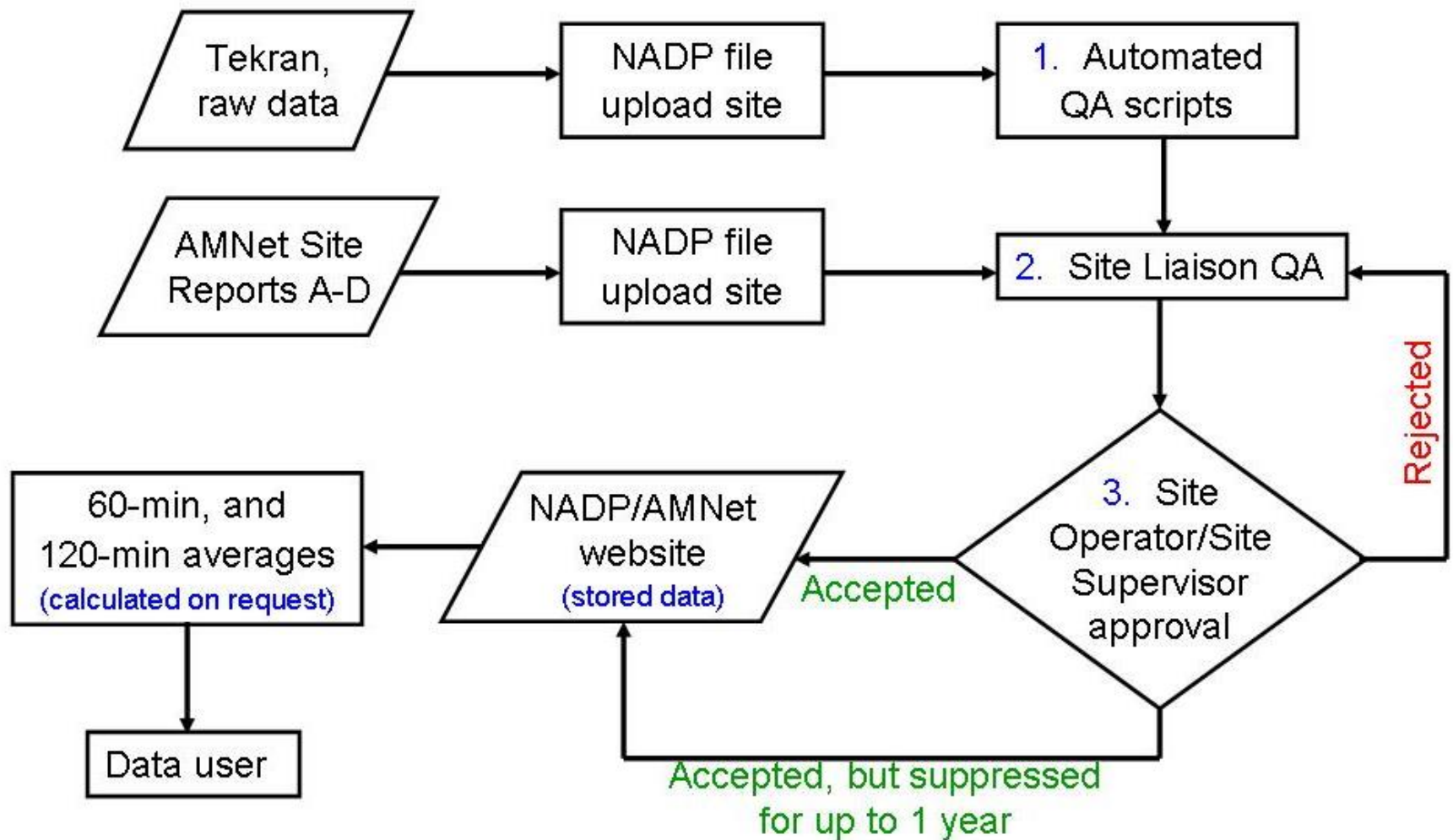
AMNet Site Liaison

mlolson@illinois.edu

Quality Assurance

- Automated QA program
 - Imports and stores raw Tekran data
 - Calculates GOM and PBM averages
 - Assigns flags to revised dataset
 - 37 flags of which 16 will invalidate the data
- Incorporate maintenance records (field forms)
- Site Liaison evaluates flags and data
- Site operators have final approval of data

Data and Report Flow



Operator/Supervisor Data Approval

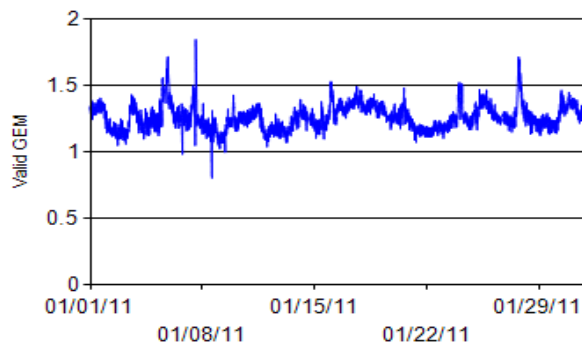
- After Site Liaison has incorporated Field Forms and reviewed flags the SL sends the Operator
 - Spreadsheet with flags assigned and anomalies in the data (potential events)
 - Plots of monthly data comparing Valid data to all the data
 - Bar graphs of flags assigned

Monthly Site Reports

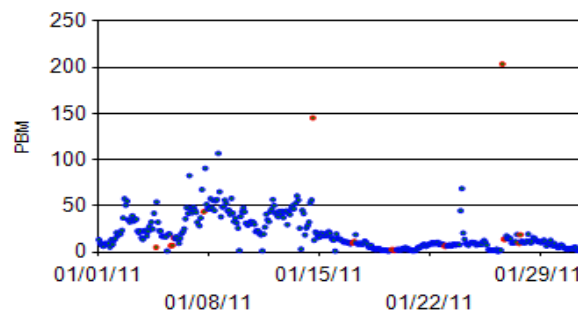
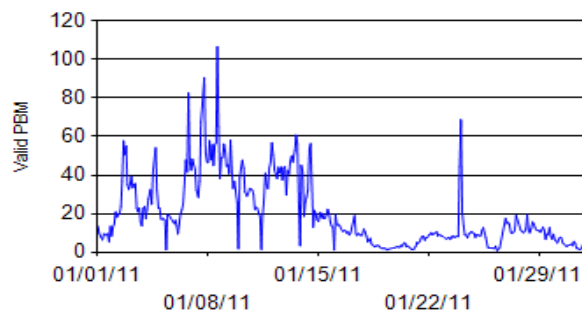
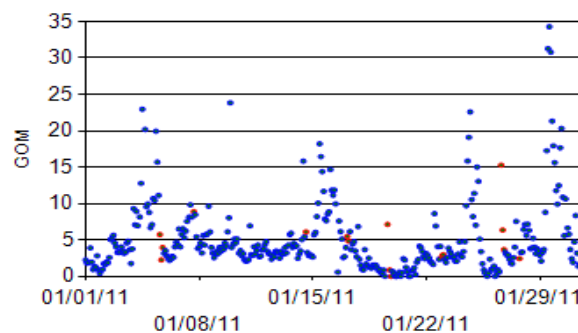
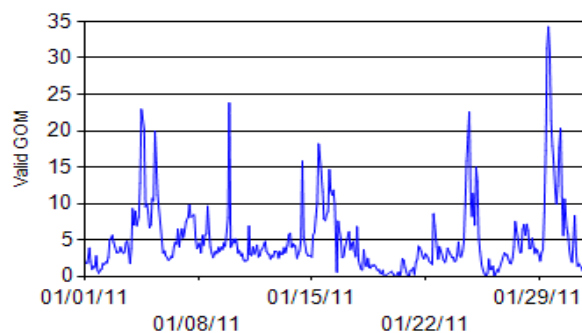
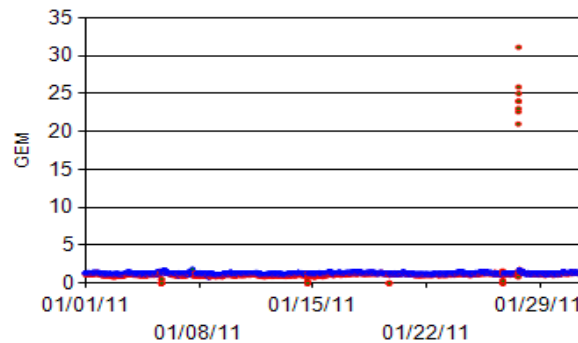
(Data)

GA40 Mercury Concentrations January 2011

Valid Data Only



All Data

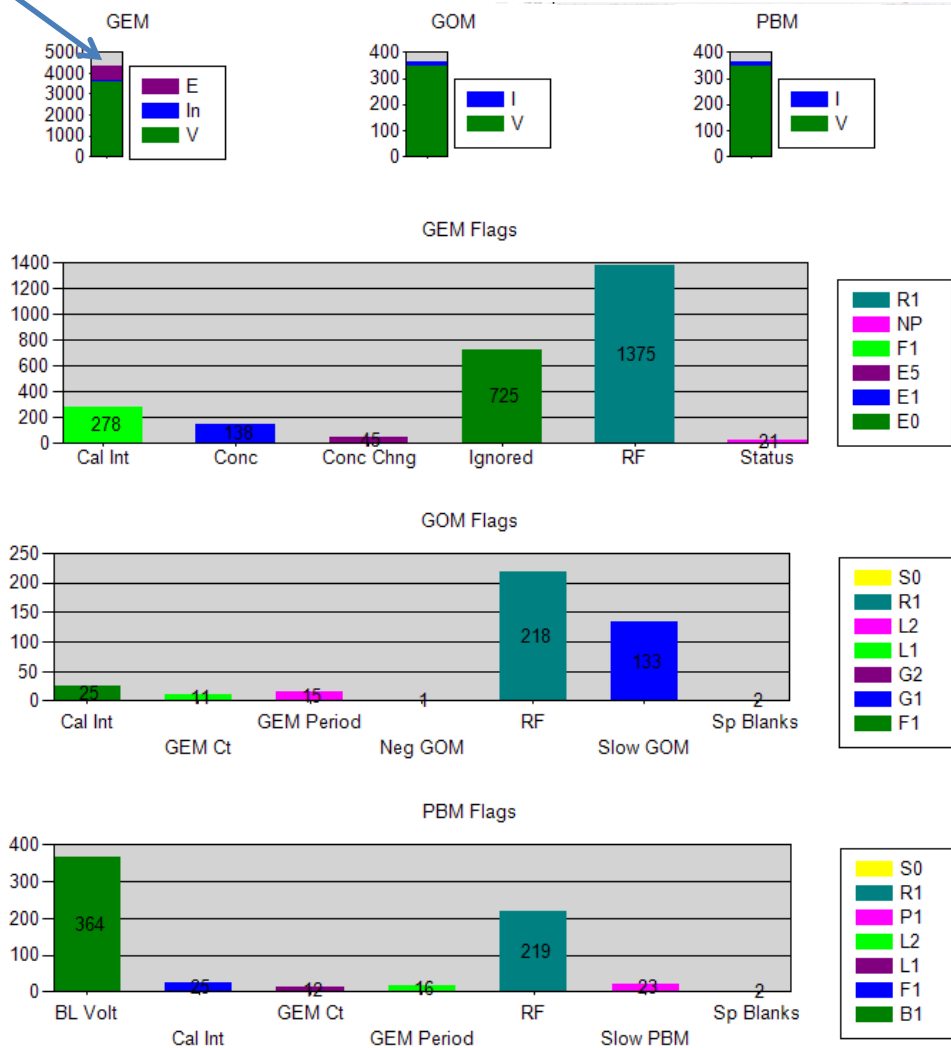


Monthly Site Reports

(Flags)

Excluded data
1st two GEM

GA40 Mercury Concentrations January 2011



On-line Data

- Available to the public
 - password protected...
- Access to all data from all sites
- Three types of reports available
 - Plot
 - Table by collection period
 - Table by clock hour

On-line data selection

https://nadp.isws.illinois.edu/amn/data/default.aspx Atmospheric Mercury Netw...

File Edit View Favorites Tools Help

Olson Analytical Google

National Atmospheric Deposition Program

Atmospheric Mercury Concentrations

Site ID:

Available Data Range at GA40:
1/1/2009 12:10:00 AM - 12/31/2011 11:36:00 PM

Sample Start

Dec	January 2011						Feb
Sun	Mon	Tue	Wed	Thu	Fri	Sat	
26	27	28	29	30	31	1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	
30	31	1	2	3	4	5	

Sample End

Dec	January 2011						Feb
Sun	Mon	Tue	Wed	Thu	Fri	Sat	
26	27	28	29	30	31	1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	
30	31	1	2	3	4	5	

View Data in Plot

View Data in Table by Collection Period

View Data in Table by Clock Hour (Old Style)

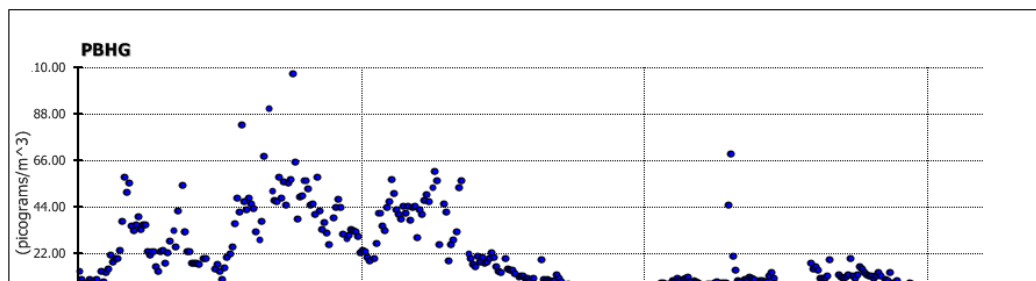
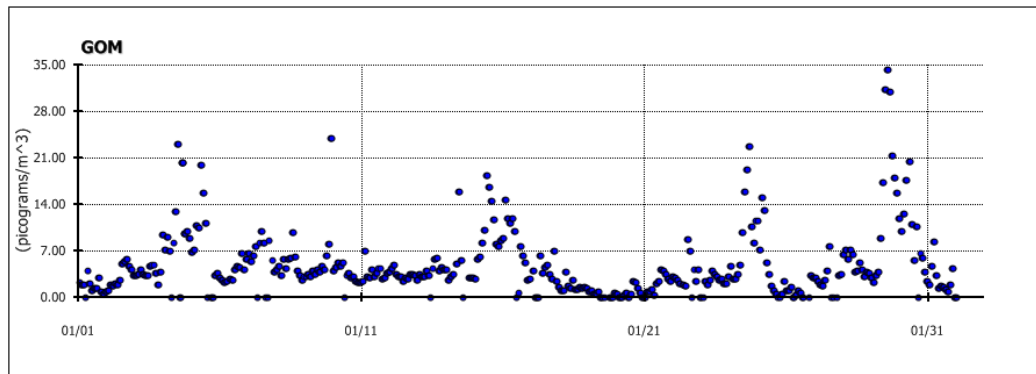
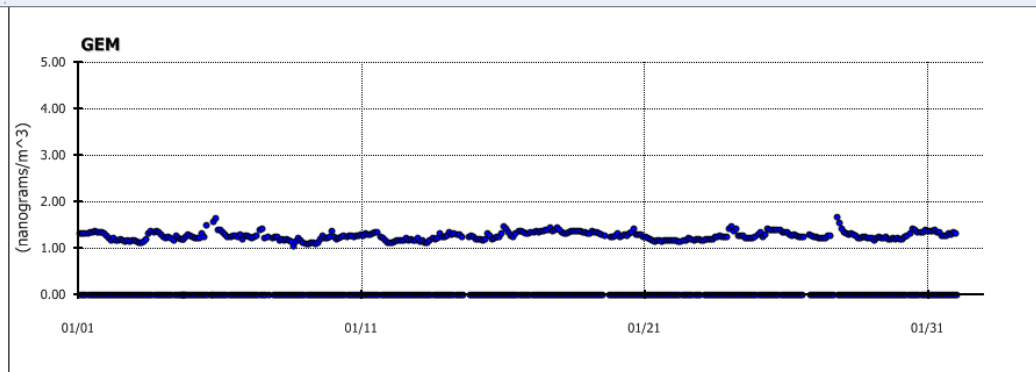
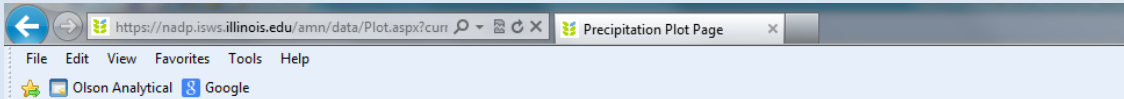
Select site

Select Start and End dates

Select output type

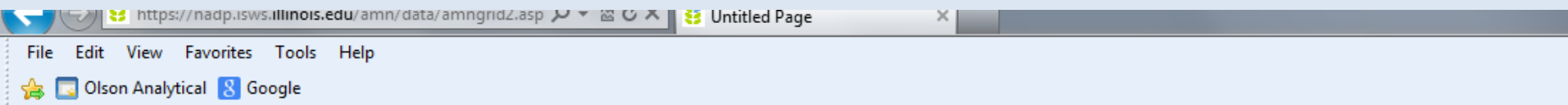
Data available for site

Data in plot form



GA40
January 1, 2011 to
February 1, 2011

Data in table form



Preliminary Data: Do Not Cite

Only hourly averages are presented

SiteID	Start Date/Time	End Date/Time	collTime	PBM	PBMVal	GOM	GOMVal	GEM	Valid_GEM	Possible_GEM	Excluded_GEM	All_GEM
GA40	01/01/2011 00:00	01/01/2011 01:00	60	13.494	V	2.254	V	1.321	10	12	2	12
GA40	01/01/2011 02:00	01/01/2011 03:00	60	9.834	V	1.819	V	1.297	10	12	2	12
GA40	01/01/2011 04:00	01/01/2011 05:00	60	8.076	V	1.856	V	1.312	10	12	2	12
GA40	01/01/2011 07:00	01/01/2011 08:00	60	6.359	V	3.910	V	1.309	10	12	2	12
GA40	01/01/2011 09:00	01/01/2011 10:00	60	9.500	V	1.969	V	1.333	10	12	2	12
GA40	01/01/2011 11:00	01/01/2011 12:00	60	8.730	V	0.947	V	1.344	10	12	2	12
GA40	01/01/2011 13:00	01/01/2011 14:00	60	9.253	V	1.354	V	1.348	10	12	2	12
GA40	01/01/2011 15:00	01/01/2011 16:00	60	9.506	V	1.278	V	1.337	10	12	2	12
GA40	01/01/2011 17:00	01/01/2011 18:00	60	5.334	V	2.824	V	1.348	10	12	2	12
GA40	01/01/2011 19:00	01/01/2011 20:00	60	13.463	V	0.869	V	1.343	10	12	2	12
GA40	01/01/2011 21:00	01/01/2011 22:00	60	8.292	V	0.432	V	1.301	10	12	2	12
GA40	01/01/2011 23:00	01/02/2011 00:00	60	12.972	V	0.862	V	1.268	10	12	2	12
GA40	01/02/2011 01:00	01/02/2011 02:00	60	14.775	V	0.963	V	1.203	10	12	2	12
GA40	01/02/2011 03:00	01/02/2011 04:00	60	20.947	V	1.751	V	1.176	10	12	2	12
GA40	01/02/2011 05:00	01/02/2011 06:00	60	18.028	V	1.623	V	1.196	10	12	2	12
GA40	01/02/2011 07:00	01/02/2011 08:00	60	19.638	V	1.974	V	1.156	10	12	2	12
GA40	01/02/2011 09:00	01/02/2011 10:00	60	19.654	V	1.873	V	1.149	10	12	2	12
GA40	01/02/2011 11:00	01/02/2011 12:00	60	23.518	V	2.597	V	1.187	10	12	2	12
GA40	01/02/2011 13:00	01/02/2011 14:00	60	36.930	V	5.039	V	1.167	10	12	2	12
GA40	01/02/2011 15:00	01/02/2011 16:00	60	57.809	V	5.286	V	1.127	10	12	2	12
GA40	01/02/2011 17:00	01/02/2011 18:00	60	50.608	V	5.650	V	1.154	10	12	2	12

Site Audits

- Flow and calibration checks with certified equipment
- Siting criteria evaluation
- Repairs
- Upgrades
- Safety
- On-site Training
- Recommendations made...

Training Courses Conducted

- Environment Canada – 3 day
- Midwest USA – 2 day
- AMNet Operators – 1 day
- Halifax – Short course
- GMOS – 3 day
- Future GMOS site audit training

All .pdf courses available upon request

AMNet Site Liaison

- My job is to help people run Tekran instruments, I get paid to do that.
- Contact information
 - Email: mlolson@illinois.edu
 - Skype: [mlolson27](#)
 - Cellular phone: [+01-608-335-4232](#)

AMNet Quality Assurance Program

Mark L. Olson

AMNet Site Liaison

mlolson@illinois.edu

Reports

Retrieve Data

Site
TW01Start Date/Time
07/01/11 00:00End Date/Time
07/27/11 00:00

Retrieve

Include

☒ GEM ☒ Clean☒ GOM ☒ Zero☒ PBM ☒ Span☒ Scale Factor

Filter Data

Trap Valid

☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | Scale Factor

siteid	First	Last	GEM_Ct	Valid_GEM
	08 12:05 ...	8/8/2008 10:05 ...	33939	
	07 3:10 PM	8/12/2007 10:05...	8677	7054
	09	12/31/2011 11:5...	150078	63625
	005 4:45 ...	1/1/2012	60096	36698
	00 1:15 AM	12/31/2011 11:5...	121934	95491
CAAL	1/1/2006	12/31/2006 11:4...	57206	47360
CASA	1/1/2005 1:05 AM	12/6/2005 7:25 ...	45041	32097
FL96	1/1/2009	12/31/2011 11:3...	151901	116700
GA40	1/1/2009 12:10 ...	12/31/2011 11:3...	149384	115141
HI00	12 11:05 ...		65642	51441
MD08	11/7/2006 12:00 ...	11/30/2012 3:00 PM	257960	228773
MD96	11/7/2006 3:30 ...	5/8/2012	196563	128453
MD97	1/26/2007 4:10 ...	5/7/2012 11:05 ...	232769	156831
MS12	9/29/2006 9:45 ...	5/8/2012	254089	162979
MS99	10/18/2007 12:1...	5/8/2012	200689	158292
NH06	1/1/2009 12:02 ...	11/29/2011 4:32...	194414	174180
NILU	5/1/2011	5/31/2011 11:55...	8716	8541
NJ05	6/1/2009 12:10 ...	4/30/2010 11:05...	48886	34236
NJ30	7/4/2002 1:45 AM	11/1/2009	345067	55945
NJ32	3/9/2005 1:33 PM	10/31/2009 11:0...	207198	72775
NJ54	1/29/2004 1:25 ...	9/27/2009 11:05...	276816	25037
NJCM	9/24/2002 10:55...	4/25/2005	105906	57813
NS01	1/22/2009 11:10...	7/1/2012 11:05 ...	216972	194398
NY06	8/27/2008	3/31/2012 11:55...	240339	183837
NY20	11/21/2007 1:00...	5/1/2012 10:55 ...	280500	221633
NY43	11/21/2007 1:00...	11/13/2009 10:2...	129113	81370
NY95	9/26/2008 12:30...	3/31/2012 11:55...	230513	196252
OH02	1/1/2007 1:00 AM	2/15/2012 12:05...	301073	226049
OK99	10/20/2008 12:5...	3/31/2012 11:55...	231616	181801
SCTT	5/23/2006 4:50 ...	5/23/2007 7:50 ...	42142	34935
TW01	1/1/2010	7/26/2011 11:12...	39765	35203
UT96	6/18/2009 9:55 ...	6/30/2011 11:55...	134128	103878
UT97	11/23/2008 12:1...	8/13/2012 11:05...	121931	88747
VT99	1/1/2008 12:10 ...	12/31/2011 11:5...	265401	238160

Select Site

Start date

End date

Press Retrieve

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Data Available **Table GEM** Table GOM Table PBM Chart-Hg Conc. Flags Chart Flags/Valid Table Clean Table Zero Table Span Chart-Calibration

	siteid	datetime	hg_conc	rectype	channel	notes	Liaison_Notes	QaStatus	validation	status
▶	TW01	07/01/2011 00:16	1.058	CONT	B	E0R1 ...		2	E	OK
	TW01	07/01/2011 00:21	0.981	CONT	A	E0E1R1...		2	E	OK
	TW01	07/01/2011 00:26	0.983	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 00:31	1.024	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 00:36	1.009	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 00:41	1.051	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 00:46	0.925	CONT	B	E1R1		2	V	OK
	TW01							2	V	OK
	TW01							2	V	OK
	TW01							2	V	OK
	TW01	07/01/2011 01:06	1.037	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:11	1.056	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 01:16	1.036	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:21	1.060	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 01:26	1.078	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:31	0.957	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:36	0.980	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:41	0.906	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:46	1.030	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:51	0.986	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:56	0.949	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 02:01	1.030	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 02:06	1.120	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 02:11	0.884	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 03:16	0.995	CONT	B	E0E1R1...		2	E	OK
	TW01	07/01/2011 03:21	1.023	CONT	A	E0R1 ...		2	E	OK
	TW01	07/01/2011 03:26	1.064	CONT	B	R1		2	V	OK

Incorporate field forms to invalidate data for maintenance performed

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow |

Previous											
	siteid	datetime	CollStart	CollEnd	CollTime	hg_conc	rectype	channel	notes	Liaison_Notes	validation
▶	TW01	07/05/201...	07/04/2011 21:05	07/04/2011 23:05	120	0.613	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 00:05	07/05/2011 02:05	120	9.162	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 03:05	07/05/2011 05:05	120	11.655	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 07:05	07/05/2011 09:05	120	31.186	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 10:05	07/05/2011 12:05	120	8.475	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 13:05	07/05/2011 15:05	120	0.000	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 16:05	07/05/2011 18:05	120	0.000	CONT	A	R1 ...		V
	TW01	07/05/201...	07/05/2011 19:05	07/05/2011 19:25	20	5.842	CONT	A	G1R1L2...		I
*											

Automated flag (L2) for
shortened collection period

Basically identical screen for PBM

Reports

Retrieve Data

Site
TW01Start Date/Time
07/01/11 00:00End Date/Time
07/27/11 00:00

Retrieve

Include

☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

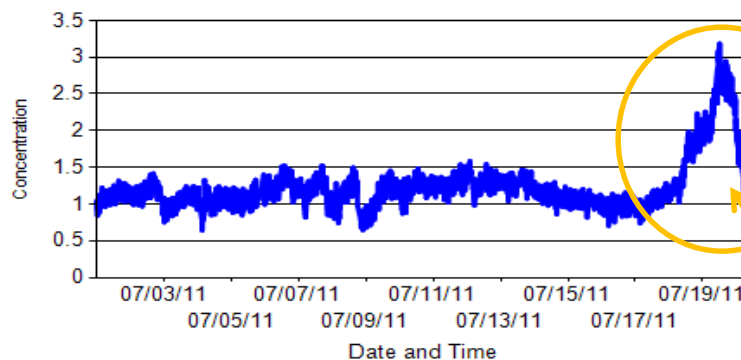
Level 5 (Sequestered)

Save Changes

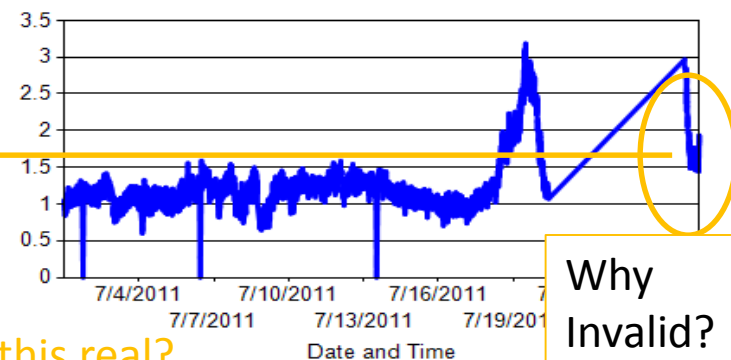
Data Available | Table GEM | Table GOM | Table PBM | **Chart-Hg Conc.** | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | So

1 of 1 100% Find | Next

GEM Hg Concentration-Valid Data Only



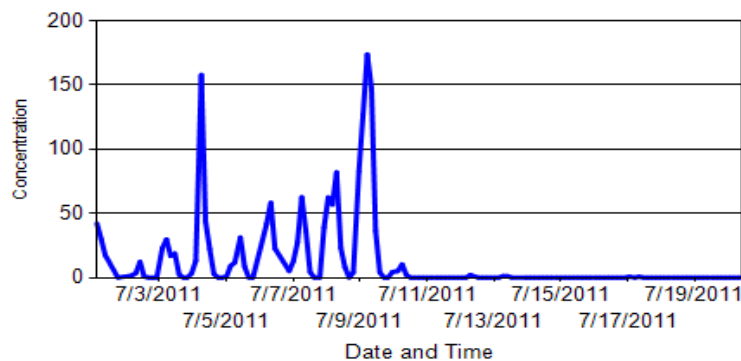
ALL GEM Hg Concentration



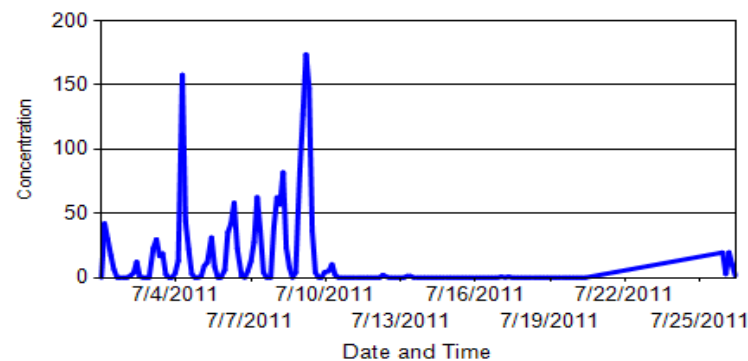
Is this real?

Why Invalid?

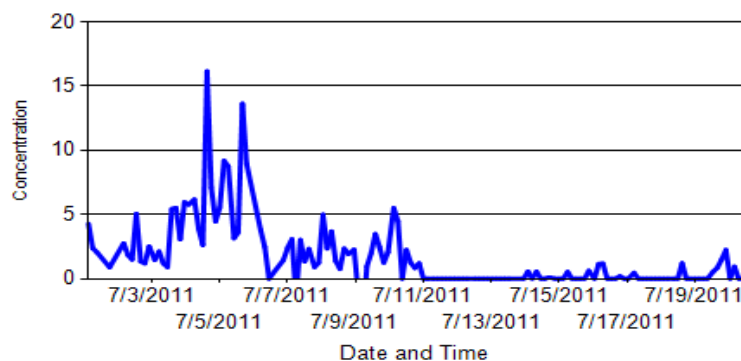
GOM Hg Concentration-Valid Data Only



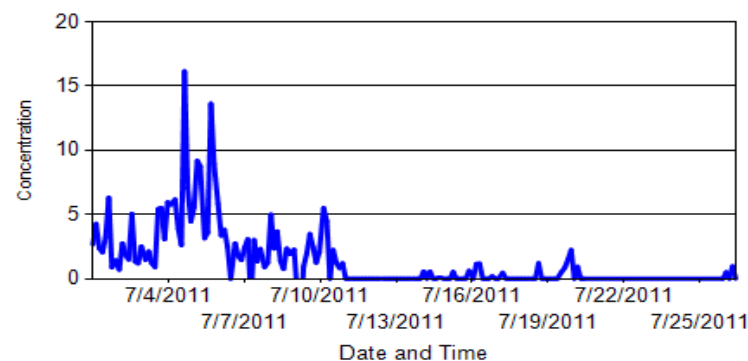
GOM Hg Concentration



PBM Hg Concentration-Valid Data Only



PBM Hg Concentration



Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | **Flags** | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | S

GEM

	Column1	Flag	ct
▶	BV Change	BV chng > .01	2
	Cal Int	F2->144	110
	Conc	Hg < 1.0	600
	Conc Chng	Hg chng > 50%	6
	Ignored	GEM Post Desorb	310
	RF	R1-<6M or >12M	3664
	Status	M2	1
	Status	NP	3
	Trap Bias	A1-10 pct	329
*			

All flags, warning and
control for all species

GOM

	Column1	Flag	ct
▶	Cal Int	F2->144	5
	GEM Cl	Inc-GEM	3
	GEM Period	GEM <> Hist	12
	GOM Zero	No GOM 24 Hours	44
	RF	R1-<6M or >12M	155
	Slow GOM	Slow GOM	6
	Sp Blanks	Blk > 1.67	4
*			

PBM

	Column1	Flag	ct
▶	Cal Int	F2->144	5
	GEM Cl	Inc-GEM	3
	GEM Period	GEM <> Hist	12
	Neg PBM	PBM < 0	3
	PBM Zero	No PBM 24 Hours	19
	RF	R1-<6M or >12M	155
	Slow PBM	Slow PBM	1
	Sp Blanks	Blk > 1.67	4
*			

Reports

Retrieve Data

Site
TW01Start Date/Time
07/01/11 00:00End Date/Time
07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

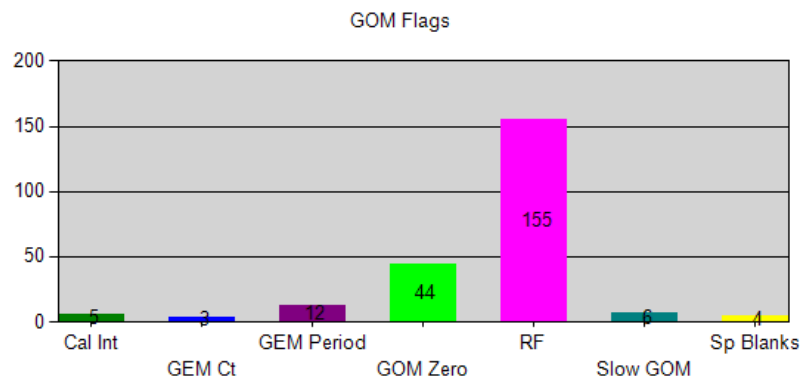
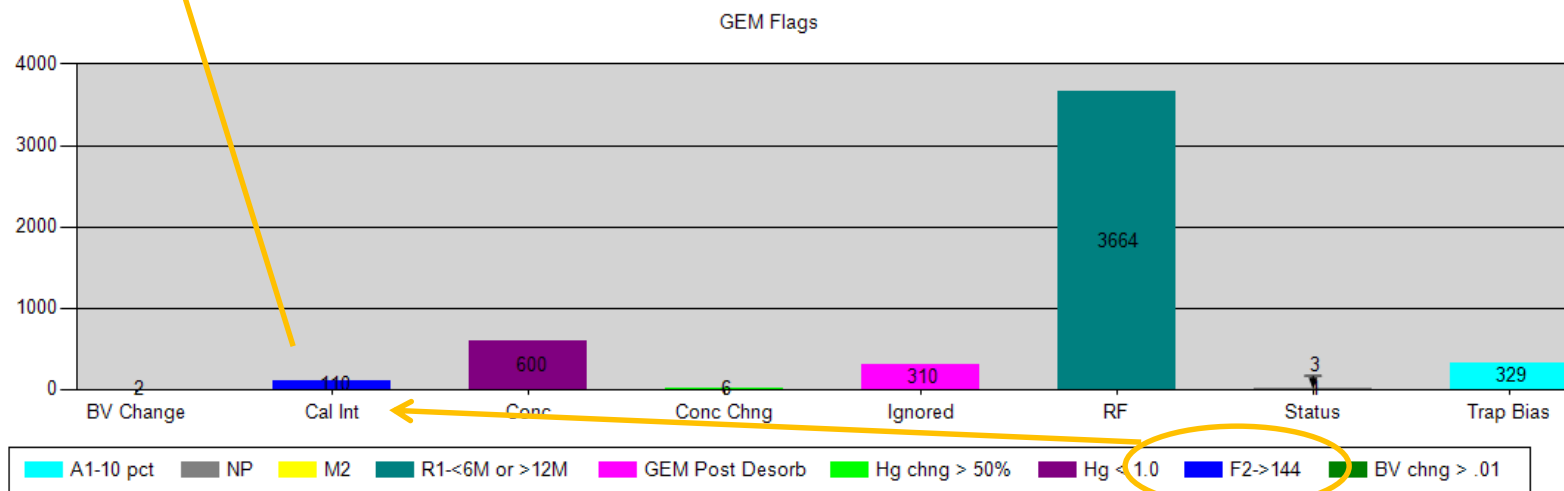
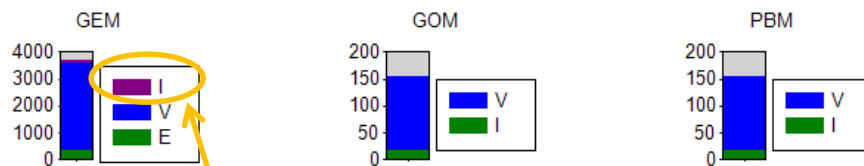
Level 4 (Liaison QA)

Level 5 (Sequestered)

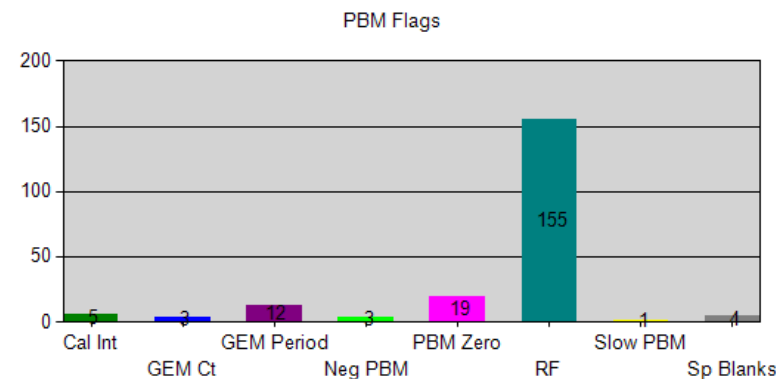
Save Changes

 Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | **Flags** | **Chart Flags/Valid** | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | Scale Factor

1 of 1 100% Find Next



Blk > 1.67, R1-<6M or >12M, GEM <> Hist, F2->144, Slow GOM, No GOM 24 Hours, Inc GEM



Blk > 1.67, R1-<6M or >12M, PBM < 0, Inc GEM, Slow PBM, No PBM 24 Hours, GEM <> Hist, F2->144

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

☒ GEM ☒ Clean☒ GOM ☒ Zero☒ PBM ☒ Span☒ Scale Factor

Filter Data

Trap ☐ Valid ☐☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available	Table GEM	Table GOM	Table PBM	Chart-Hg Conc.	Flags	Chart Flags/Valid	Table Clean	Table Zero	Table Span	Chart-Calibration	Chart-Voltage	Chart-Flow	Scale Factor
	siteid	datetime	hg_conc	rectype	channel	status	flag	sample_time	sample_volume	baseline_voltage	baseline_deviation	maximum_voltage	integrated_area
▶	TW01	07/01/201...	0.000	CLN	A	OK	0	0	0.00	0.124	0.062	0.126	12758
	TW01	07/01/201...	0.000	CLN	B	NP	1	213	2.52	0.122	0.088	0.000	0
	TW01	07/01/201...	0.000	CLN	A	NP	0	0	0.00	0.120	0.073	0.000	0
	TW01	07/01/201...	0.000	CLN	B	NP	1	213	2.52	0.119	0.096	0.000	0
	TW01	07/01/201...	0.000	CLN	A	NP	0	0	0.00	0.123	0.071	0.000	0
	TW01	07/01/201...	0.000	CLN	B	NP	1	213	2.52	0.122	0.064	0.000	0
	TW01	07/02/201...	0.000	CLN	A	NP	0	0	0.00	0.129	0.078	0.000	0
	TW01	07/02/201...	0.000	CLN	B	NP	1	213	2.52	0.128	0.079	0.000	0
	TW01	07/02/201...	0.000	CLN	A	NP	0	0	0.00	0.133	0.056	0.000	0
	TW01	07/02/201...	0.000	CLN	B	NP	1	214	2.52	0.132	0.075	0.000	0
	TW01	07/04/201...	0.000	CLN	A	NP	0	0	0.00	0.131	0.085	0.000	0
	TW01	07/04/201...	0.000	CLN	B	NP	1	213	2.52	0.131	0.060	0.000	0
	TW01	07/04/201...	0.000	CLN	A	NP	0	0	0.00	0.135	0.059	0.000	0
	TW01	07/04/201...	0.000	CLN	B	NP	1	213	2.52	0.134	0.058	0.000	0
	TW01	07/05/201...	0.000	CLN	A	NP	0	0	0.00	0.131	0.057	0.000	0
	TW01	07/05/201...	0.000	CLN	B	NP	1	213	2.53	0.131	0.076	0.000	0
	TW01	07/05/201...	0.000	CLN	A	NP	0	0	0.00	0.135	0.063	0.000	0
	TW01	07/05/201...	0.000	CLN	B	NP	1	213	2.52	0.133	0.090	0.000	0
	TW01	07/05/201...	0.000	CLN	A	OK	0	0	0.00	0.114	0.169	0.115	13326
	TW01	07/05/201...	0.000	CLN	B	OK	1	213	2.52	0.106	0.058	0.111	25377
	TW01	07/06/201...	0.000	CLN	A	NP	0	0	0.00	0.117	0.072	0.000	0
	TW01	07/06/201...	0.000	CLN	B	NP	1	213	2.52	0.117	0.084	0.000	0
	TW01	07/06/201...	0.000	CLN	A	NP	0	0	0.00	0.120	0.064	0.000	0
	TW01	07/06/201...	0.000	CLN	B	NP	1	214	2.52	0.118	0.060	0.000	0
	TW01	07/07/201...	0.000	CLN	A	NP	0	0	0.00	0.111	0.062	0.000	0
	TW01	07/07/201...	0.000	CLN	B	NP	1	213	2.52	0.110	0.060	0.000	0
	TW01	07/07/201...	0.000	CLN	A	NP	0	0	0.00	0.114	0.057	0.000	0
	TW01	07/07/201...	0.000	CLN	B	NP	1	213	2.52	0.112	0.058	0.000	0
	TW01	07/08/201...	0.000	CLN	A	NP	0	0	0.00	0.112	0.070	0.000	0
	TW01	07/08/201...	0.000	CLN	B	NP	1	214	2.52	0.110	0.086	0.000	0
	TW01	07/08/201...	0.000	CLN	A	NP	0	0	0.00	0.115	0.054	0.000	0
	TW01	07/08/201...	0.000	CLN	B	NP	1	214	2.52	0.113	0.047	0.000	0

Reports

- Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

- Include -

☒ GEM ☒ Clean☒ GOM☒ Zero☒ PBM ☒ Span☒ Scale Factor

- Filter Data

Trap

Valid

Fla

A1

Apply Filter

Remove Filter

- Global Flag

GEM

GOM

PBM

- Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

[illegible]

Reports

Retrieve Data

 Site
 TW01

 Start Date/Time
 07/01/11 00:00

 End Date/Time
 07/27/11 00:00

Retrieve

Include

☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

 Trap Valid
☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | Scale Factor

	siteid	datetime	hg_conc	RF	rectype	channel	status	sample_time	sample_volume	baseline_voltage	baseline_deviation	maximum_voltage	integrated_area
▶	TW01	07/01/201...	41.704	4992...	SPAN	A	OK	300	3.45	0.121	0.065	0.293	718356
	TW01	07/01/201...	41.704	4858...	SPAN	B	OK	300	3.45	0.121	0.080	0.297	699001
	TW01	07/02/201...	41.704	5116...	SPAN	A	OK	300	3.45	0.129	0.075	0.303	736209
	TW01	07/02/201...	41.704	4951...	SPAN	B	OK	300	3.45	0.129	0.071	0.311	712363
	TW01	07/04/201...	41.704	5171...	SPAN	A	OK	300	3.45	0.131	0.082	0.303	744074
	TW01	07/04/201...	41.704	4987...	SPAN	B	OK	300	3.45	0.131	0.078	0.311	717544
	TW01	07/05/201...	41.704	5187...	SPAN	A	OK	300	3.45	0.132	0.071	0.300	746400
	TW01	07/05/201...	41.704	4958...	SPAN	B	OK	300	3.45	0.132	0.059	0.309	713371
	TW01	07/06/201...	41.704	5039...	SPAN	A	OK	300	3.45	0.117	0.073	0.287	725120
	TW01	07/06/201...	41.704	4859...	SPAN	B	OK	300	3.45	0.117	0.064	0.298	699227
	TW01	07/07/201...	41.704	4937...	SPAN	A	OK	300	3.45	0.111	0.071	0.281	710428
	TW01	07/07/201...	41.704	4759...	SPAN	B	OK	300	3.45	0.111	0.054	0.284	684804
	TW01	07/08/201...	41.704	4967...	SPAN	A	OK	300	3.45	0.111	0.085	0.279	714746
	TW01	07/08/201...	41.704	4768...	SPAN	B	OK	300	3.45	0.111	0.071	0.284	686017
	TW01	07/09/201...	41.704	5034...	SPAN	A	OK	300	3.45	0.116	0.061	0.283	724342
	TW01	07/09/201...	41.704	4864...	SPAN	B	OK	300	3.45	0.116	0.056	0.286	699950
	TW01	07/11/201...	41.704	5043...	SPAN	A	OK	300	3.45	0.116	0.056	0.282	725604
	TW01	07/11/201...	41.704	4855...	SPAN	B	OK	300	3.45	0.116	0.054	0.284	698551
	TW01	07/12/201...	41.704	5086...	SPAN	A	OK	300	3.45	0.118	0.062	0.285	731808
	TW01	07/12/201...	41.704	4888...	SPAN	B	OK	300	3.45	0.118	0.070	0.290	703319
	TW01	07/13/201...	41.704	5006...	SPAN	A	OK	300	3.45	0.118	0.064	0.292	720259
	TW01	07/13/201...	41.704	4824...	SPAN	B	OK	300	3.45	0.118	0.056	0.300	694115
	TW01	07/14/201...	41.704	4932...	SPAN	A	OK	300	3.45	0.114	0.069	0.288	709662
	TW01	07/14/201...	41.704	4743...	SPAN	B	OK	300	3.45	0.115	0.086	0.289	682440
	TW01	07/15/201...	41.704	5072...	SPAN	A	OK	300	3.45	0.121	0.066	0.291	729874
	TW01	07/15/201...	41.704	4872...	SPAN	B	OK	300	3.45	0.122	0.073	0.295	701012
	TW01	07/17/201...	41.704	5061...	SPAN	A	OK	300	3.45	0.122	0.085	0.287	728261
	TW01	07/17/201...	41.704	4871...	SPAN	B	OK	300	3.45	0.122	0.051	0.293	700930
	TW01	07/18/201...	41.704	5014...	SPAN	A	OK	300	3.45	0.123	0.079	0.287	721523
	TW01	07/18/201...	41.704	4852...	SPAN	B	OK	300	3.45	0.124	0.078	0.293	698100
	TW01	07/19/201...	41.704	5035...	SPAN	A	OK	300	3.45	0.123	0.070	0.285	724518
	TW01	07/19/201...	41.704	4858...	SPAN	B	OK	300	3.45	0.123	0.083	0.292	699085
*													

F2 flag invalidates all data 6 days after the last calibration

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid

☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

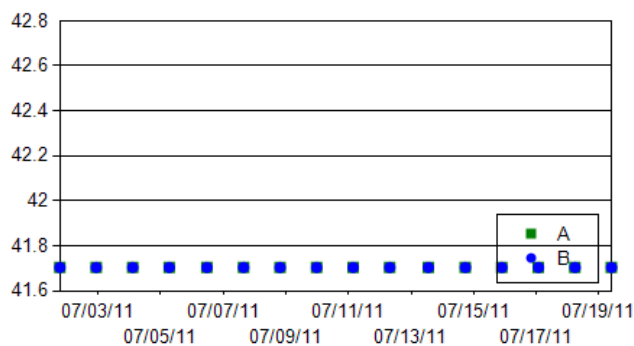
Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart-Flags/Valid | Table Clean | Table Zero | Table Span | **Chart-Calibration** | Chart-Voltage | Chart-Flow | Scale Factor

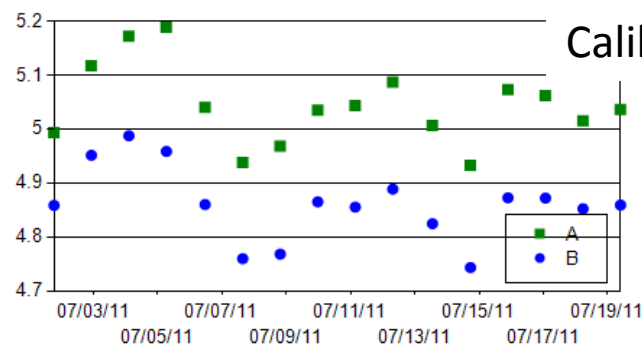
1 of 1 100%

Find | Next

SPAN Hg Concentration

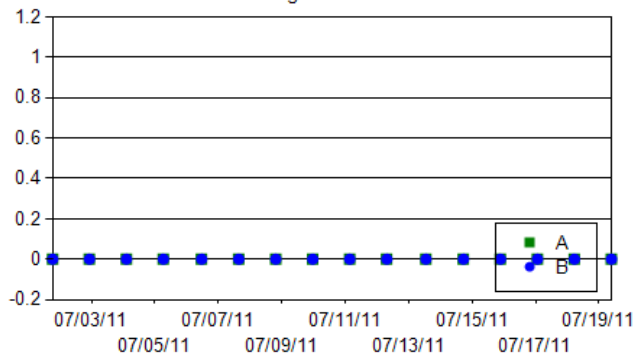


SPAN Response Factor

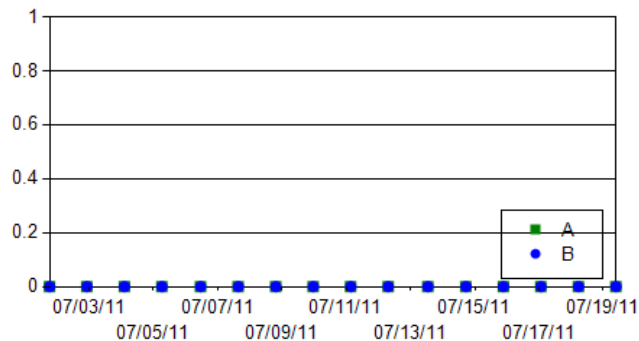


Cartridge diff and Calibration change

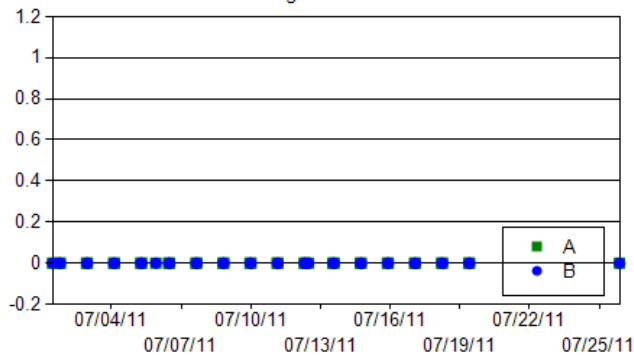
ZERO Hg Concentration



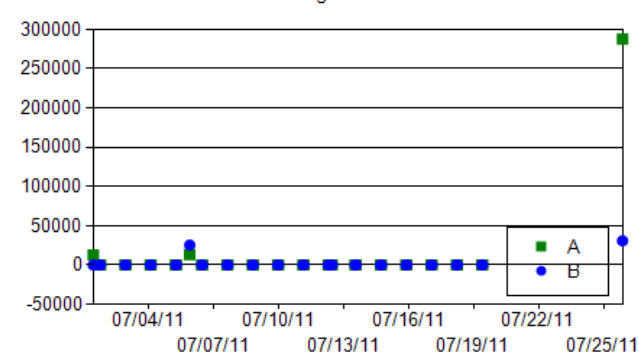
ZERO Integrated Area



Clean Hg Concentration



Clean Integrated Area



Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid

☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

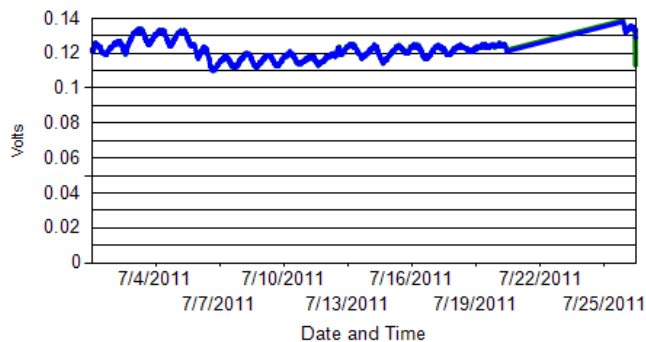
Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | Scale Factor

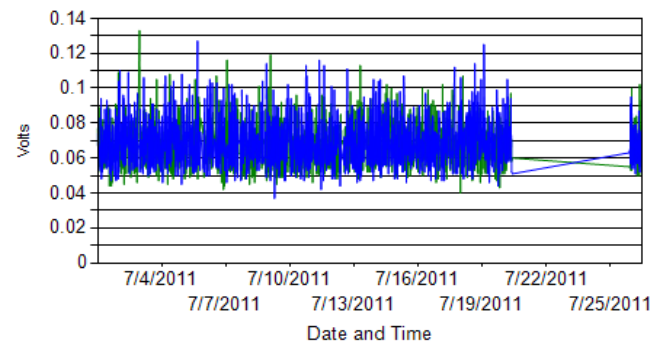
1 of 1 100%

Find | Next

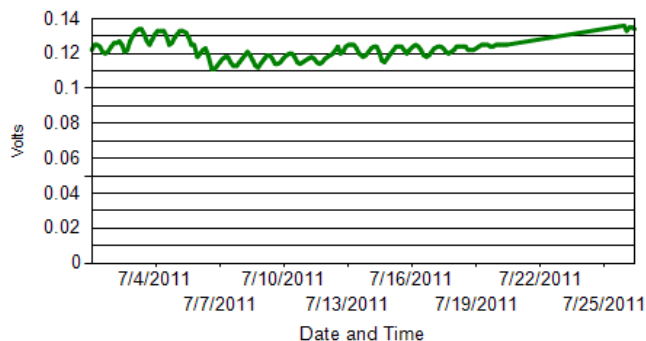
GEM Baseline Voltage



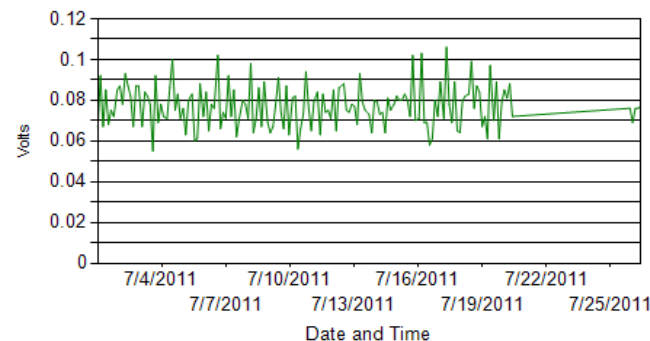
GEM Baseline Deviation



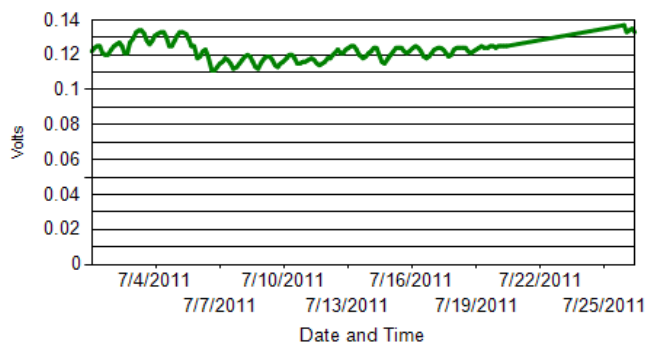
GOM Baseline Voltage



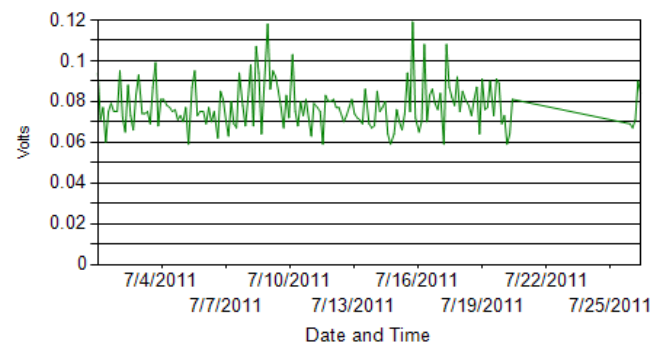
GOM Baseline Deviation



PBM Baseline Voltage



PBM Baseline Deviation



Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

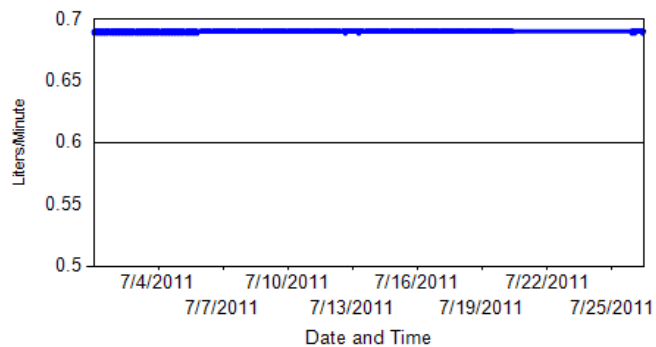
Level 5 (Sequestered)

Save Changes

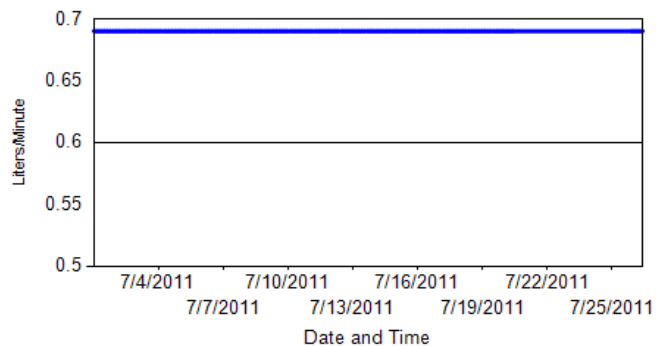
Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | Scale Factor

1 of 1 100% Find Next

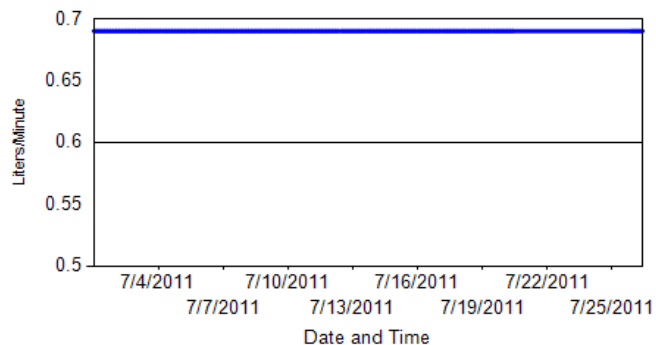
GEM Flow Rate



GOM Flow Rate



PBM Flow Rate



Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid

☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

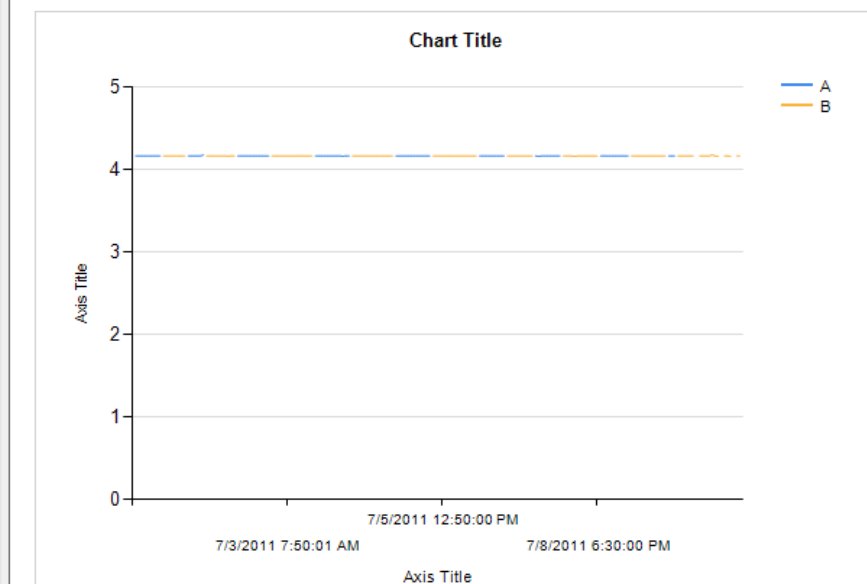
Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow | **Scale Factor**

1 of 1 100% Find | Next



	siteid	channel	datetime	Scale_Factor
▶	TW01	A	7/1/2011 2:50 AM	4.169687
	TW01	A	7/1/2011 5:50 AM	4.168385
	TW01	A	7/1/2011 6:00 AM	4.169986
	TW01	A	7/1/2011 8:50 AM	4.169765
	TW01	A	7/1/2011 9:00 AM	4.168569
	TW01	A	7/1/2011 11:35 ...	4.169058
	TW01	A	7/1/2011 11:55 ...	4.170125
	TW01	A	7/1/2011 2:35 PM	4.170042
	TW01	A	7/1/2011 5:35 PM	4.171298
	TW01	B	7/1/2011 2:35 AM	4.169330
	TW01	B	7/1/2011 2:55 AM	4.168339
	TW01	B	7/1/2011 5:35 AM	4.169274
	TW01	B	7/1/2011 5:55 AM	4.168963
	TW01	B	7/1/2011 8:35 AM	4.169562
	TW01	B	7/1/2011 8:55 AM	4.168190
	TW01	B	7/1/2011 11:50 ...	4.168584
	TW01	B	7/1/2011 12:00 ...	4.167925
	TW01	A	7/2/2011 3:45 AM	4.168939
	TW01	A	7/2/2011 6:45 AM	4.169275
	TW01	A	7/2/2011 9:45 AM	4.169247

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid

☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow

siteid	First	Last	GEM_Ct	Valid_GEM
96MD	01/01/2008 00:05	08/08/2008 10:05	33939	
97MD	06/07/2007 15:10	08/12/2007 22:05	8677	7054
AL19	01/01/2009 00:00	12/31/2011 23:55	150078	63625
ALTT	04/13/2005 16:45	01/01/2012 00:00	60096	36698
CA48	01/01/2000 01:15	12/31/2011 23:55	121934	95491
CAAI	01/01/2006 00:00	12/31/2006 23:45	57206	47360
MS12	09/29/2006 09:45	05/08/2012 00:00	254089	162979
MS99	10/18/2007 12:10	05/08/2012 00:00	200689	158292
NH06	01/01/2009 00:02	11/29/2011 16:32	194414	174180
NILU	05/01/2011 00:00	05/31/2011 23:55	8716	8541
NJ05	06/01/2009 00:10	04/30/2010 23:05	48886	34236
NJ30	07/04/2002 01:45	11/01/2009 00:00	345067	55945
NJ32	03/09/2005 13:33	10/31/2009 23:05	207198	72775
NJ54	01/29/2004 13:25	09/27/2009 23:05	276816	25037
NJCM	09/24/2002 22:55	04/25/2005 00:00	105906	57813
NS01	01/22/2009 11:10	07/01/2012 23:05	216972	194398
NY06	08/27/2008 00:00	03/31/2012 23:55	240339	183837
NY20	11/21/2007 01:00	05/01/2012 22:55	280500	221633
NY43	11/21/2007 01:00	11/13/2009 10:20	129113	81370
NY95	09/26/2008 00:30	03/31/2012 23:55	230513	196252
OH02	01/01/2007 01:00	02/15/2012 00:05	301073	226049
OK99	10/20/2008 12:55	03/31/2012 23:55	231616	181801
SCTT	05/23/2006 16:50	05/23/2007 07:50	42142	34935
TW01	01/01/2010 00:00	07/26/2011 11:12	39765	35203
UT96	06/18/2009 09:55	06/30/2011 23:55	134128	103878
UT97	11/23/2008 00:10	08/13/2012 23:05	121931	88747

Additional tools for Site Liaison
Include or Exclude parameters
to focus on problem areas

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

☒ GEM ☒ Clean☒ GOM ☒ Zero☒ PBM ☒ Span☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow

	siteid	First	Last	GEM_Ct	Valid_GEM
▶	96MD	01/01/2008 00:05	08/08/2008 10:05	33939	
	97MD	06/07/2007 15:10	08/12/2007 22:05	8677	7054
	AL19	01/01/2009 00:00	12/31/2011 23:55	150078	63625
	ALTT	04/13/2005 16:45	01/01/2012 00:00	60096	36698
	CA48	01/01/2000 01:15	12/31/2011 23:55	121934	95491
	CAAL	01/01/2006 00:00	12/31/2006 23:45	57206	47360
	CASA	01/01/2005 01:05	12/06/2005 07:25	45041	32097
	FL96	01/01/2009 00:00	12/31/2011 23:36	151901	116700
	GA40	01/01/2009 00:10	12/31/2011 23:36	149384	115141
	HI00	12/30/2010 00:10	05/07/2012 23:05	65642	51441
	MD08	01/01/2008 00:05	01/03/2012 15:00	257960	228773

Additional tools for Site Liaison
Filter data by trap, flag or valid/invalid

NILU	05/01/2011 00:00	05/31/2011 23:55	8716	8541
NJ05	06/01/2009 00:10	04/30/2010 23:05	48886	34236
NJ30	07/04/2002 01:45	11/01/2009 00:00	345067	55945
NJ32	03/09/2005 13:33	10/31/2009 23:05	207198	72775
NJ54	01/29/2004 13:25	09/27/2009 23:05	276816	25037
NJCM	09/24/2002 22:55	04/25/2005 00:00	105906	57813
NS01	01/22/2009 11:10	07/01/2012 23:05	216972	194398
NY06	08/27/2008 00:00	03/31/2012 23:55	240339	183837
NY20	11/21/2007 01:00	05/01/2012 22:55	280500	221633
NY43	11/21/2007 01:00	11/13/2009 10:20	129113	81370
NY95	09/26/2008 00:30	03/31/2012 23:55	230513	196252
OH02	01/01/2007 01:00	02/15/2012 00:05	301073	226049
OK99	10/20/2008 12:55	03/31/2012 23:55	231616	181801
SCTT	05/23/2006 16:50	05/23/2007 07:50	42142	34935
TW01	01/01/2010 00:00	07/26/2011 11:12	39765	35203
UT96	06/18/2009 09:55	06/30/2011 23:55	134128	103878
UT97	11/23/2008 00:10	08/13/2012 23:05	121931	88747

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid

Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available | Table GEM | Table GOM | Table PBM | Chart-Hg Conc. | Flags | Chart Flags/Valid | Table Clean | Table Zero | Table Span | Chart-Calibration | Chart-Voltage | Chart-Flow

	siteid	First	Last	GEM_Ct	Valid_GEM
▶	96MD	01/01/2008 00:05	08/08/2008 10:05	33939	
	97MD	06/07/2007 15:10	08/12/2007 22:05	8677	7054
	AL19	01/01/2009 00:00	12/31/2011 23:55	150078	63625
	ALTT	04/13/2005 16:45	01/01/2012 00:00	60096	36698
	CA48	01/01/2000 01:15	12/31/2011 23:55	121934	95491
	CAAL	01/01/2006 00:00	12/31/2006 23:45	57206	47360
	CASA	01/01/2005 01:05	12/06/2005 07:25	45041	32097
	FL96	01/01/2009 00:00	12/31/2011 23:36	151901	116700
	GA40	01/01/2009 00:10	12/31/2011 23:36	149384	115141
	HI00	12/30/2010 00:10	05/07/2012 23:05	65642	51441
	MD08	01/01/2008 00:05	01/03/2012 15:00	257960	228773
	MD96	11/07/2006 15:30	05/08/2012 00:00	196563	128453
	MD97	01/26/2007 16:10	05/07/2012 23:05	232769	156831
	MS12	09/29/2006 09:45	05/08/2012 00:00	254089	162979
	MS99	10/18/2007 12:10	05/08/2012 00:00	200689	158292
	NH06	01/01/2009 00:02	11/29/2011 16:32	194414	174180

Additional tools for Site Liaison
Assign global flags to validate invalid data

NJCM	09/24/2002 22:55	04/25/2005 00:00	105906	57813
NS01	01/22/2009 11:10	07/01/2012 23:05	216972	194398
NY06	08/27/2008 00:00	03/31/2012 23:55	240339	183837
NY20	11/21/2007 01:00	05/01/2012 22:55	280500	221633
NY43	11/21/2007 01:00	11/13/2009 10:20	129113	81370
NY95	09/26/2008 00:30	03/31/2012 23:55	230513	196252
OH02	01/01/2007 01:00	02/15/2012 00:05	301073	226049
OK99	10/20/2008 12:55	03/31/2012 23:55	231616	181801
SCTT	05/23/2006 16:50	05/23/2007 07:50	42142	34935
TW01	01/01/2010 00:00	07/26/2011 11:12	39765	35203
UT96	06/18/2009 09:55	06/30/2011 23:55	134128	103878
UT97	11/23/2008 00:10	08/13/2012 23:05	121931	88747

Reports

Retrieve Data

Site
TW01

Start Date/Time
07/01/11 00:00

End Date/Time
07/27/11 00:00

Retrieve

Include

☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid
☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Save Changes

Data Available Table GEM Table GOM Table PBM Chart-Hg Conc. Flags Chart Flags/Valid Table Clean Table Zero Table Span Chart-Calibration Chart-Voltage Chart-Flow

	siteid	First	Last	GEM_Ct	Valid_GEM
▶	96MD	01/01/2008 00:05	08/08/2008 10:05	33939	
	97MD	06/07/2007 15:10	08/12/2007 22:05	8677	7054
	AL19	01/01/2009 00:00	12/31/2011 23:55	150078	63625
	ALTT	04/13/2005 16:45	01/01/2012 00:00	60096	36698
	CA48	01/01/2000 01:15	12/31/2011 23:55	121934	95491
	CAAL	01/01/2006 00:00	12/31/2006 23:45	57206	47360
	CASA	01/01/2005 01:05	12/06/2005 07:25	45041	32097
	FL96	01/01/2009 00:00	12/31/2011 23:36	151901	116700
	GA40	01/01/2009 00:10	12/31/2011 23:36	149384	115141
	HI00	12/30/2010 00:10	05/07/2012 23:05	65642	51441
	MD08	01/01/2008 00:05	01/03/2012 15:00	257960	228773
	MD96	11/07/2006 15:30	05/08/2012 00:00	196563	128453
	MD97	01/26/2007 16:10	05/07/2012 23:05	232769	156831
	MS12	09/29/2006 09:45	05/08/2012 00:00	254089	162979
	MS99	10/18/2007 12:10	05/08/2012 00:00	200689	158292
	NH06	01/01/2009 00:02	11/29/2011 16:32	194414	174180
	NILU	05/01/2011 00:00	05/31/2011 23:55	8716	8541
	NJ05	06/01/2009 00:10	04/30/2010 23:05	48886	34236
	NJ30	07/04/2002 01:45	11/01/2009 00:00	345067	55945

QA Levels

Level 2 = Automated Program

Level 3 = Site liaison checked (forms incorporated)

Level 4 = Operator/PI approved

Level 5 = Approved but sequestered for up to 1 year

TW01	01/01/2010 00:00	07/26/2011 11:12	39765	35203
UT96	06/18/2009 09:55	06/30/2011 23:55	134128	103878
UT97	11/23/2008 00:10	08/13/2012 23:05	121931	88747

Reports

Retrieve Data

Site

TW01

Start Date/Time

07/01/11 00:00

End Date/Time

07/27/11 00:00

Retrieve

Include

- ☒ GEM ☒ Clean
☒ GOM ☒ Zero
☒ PBM ☒ Span
☒ Scale Factor

Filter Data

Trap Valid ☐ Flag A1

Apply Filter

Remove Filter

Global Flag

GEM

GOM

PBM

Change QA Status Level

Level 2 (Auto QA)

Level 3 (Site QA)

Level 4 (Liaison QA)

Level 5 (Sequestered)

Data Available Table GEM Table GOM Table PBM Chart-Hg Conc. Flags Chart Flags/Valid Table Clean Table Zero Table Span Chart-Calibration

	siteid	datetime	hg_conc	rectype	channel	notes	Liaison_Notes	QaStatus	validation	status
▶	TW01	07/01/2011 00:16	1.058	CONT	B	E0R1 ...		2	E	OK
	TW01	07/01/2011 00:21	0.981	CONT	A	E0E1R1...		2	E	OK
	TW01	07/01/2011 00:26	0.983	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 00:31	1.024	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 00:36	1.009	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 00:41	1.051	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 00:46	0.925	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 00:51	0.840	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 00:56	0.970	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:01	0.914	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:06	1.037	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:11	1.056	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 01:16	1.036	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:21	1.060	CONT	A	R1 ...		2	V	OK
	TW01	07/01/2011 01:26	1.078	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:31	0.957	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:36	0.980	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:41	0.986	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:46	1.030	CONT	B	R1 ...		2	V	OK
	TW01	07/01/2011 01:51	0.986	CONT	A	E1R1 ...		2	V	OK
	TW01	07/01/2011 01:56	0.949	CONT	B	E1R1 ...		2	V	OK
	TW01	07/01/2011 02:01	1.030	CONT	A	R1 ...		2	V	OK
						R1 ...		2	V	OK
						E1R1 ...		2	V	OK
	TW01	07/01/2011 03:16	0.995	CONT	B	E0E1R1...		2	E	OK
	TW01	07/01/2011 03:21	1.023	CONT	A	E0R1 ...		2	E	OK
	TW01	07/01/2011 03:26	1.064	CONT	B	R1 ...		2	V	OK

Button changes level 2 to level 3

And you thought your job was boring!

- 35 sites
- 65 years of data
- Over 5.5 million GEM observations
 - Not to mention the GOM and PBM
- 40 Site audits – but that's the fun part