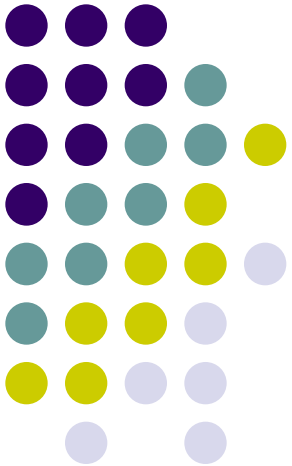
EFFECTIVELY MANAGING AND CHECKING YOUR DATA

BACWA Workshop

24 September 2010



Content

- Acceptable laboratory data
- Ethical decision making through DQO process
- Information management

Purpose of Laboratory Data

- Laboratory data describes the sample
- Data transformed to information
- Information used to answer questions
  - Health risk
  - Seasonal trends
  - How much it will cost to remedy

IF YOUR DECISION HAS CONSEQUENCES…

- Information supporting will be questioned
- If information is questioned your data will be questioned

Sampling -

- Laboratory staff know QA/QC and they are routinely tested, held accountable
- Assure sample is representative by extending laboratory quality system
  - Training, SOPs, bench top SOP
  - COCs, Documentation
  - Audit
  - Refresher training

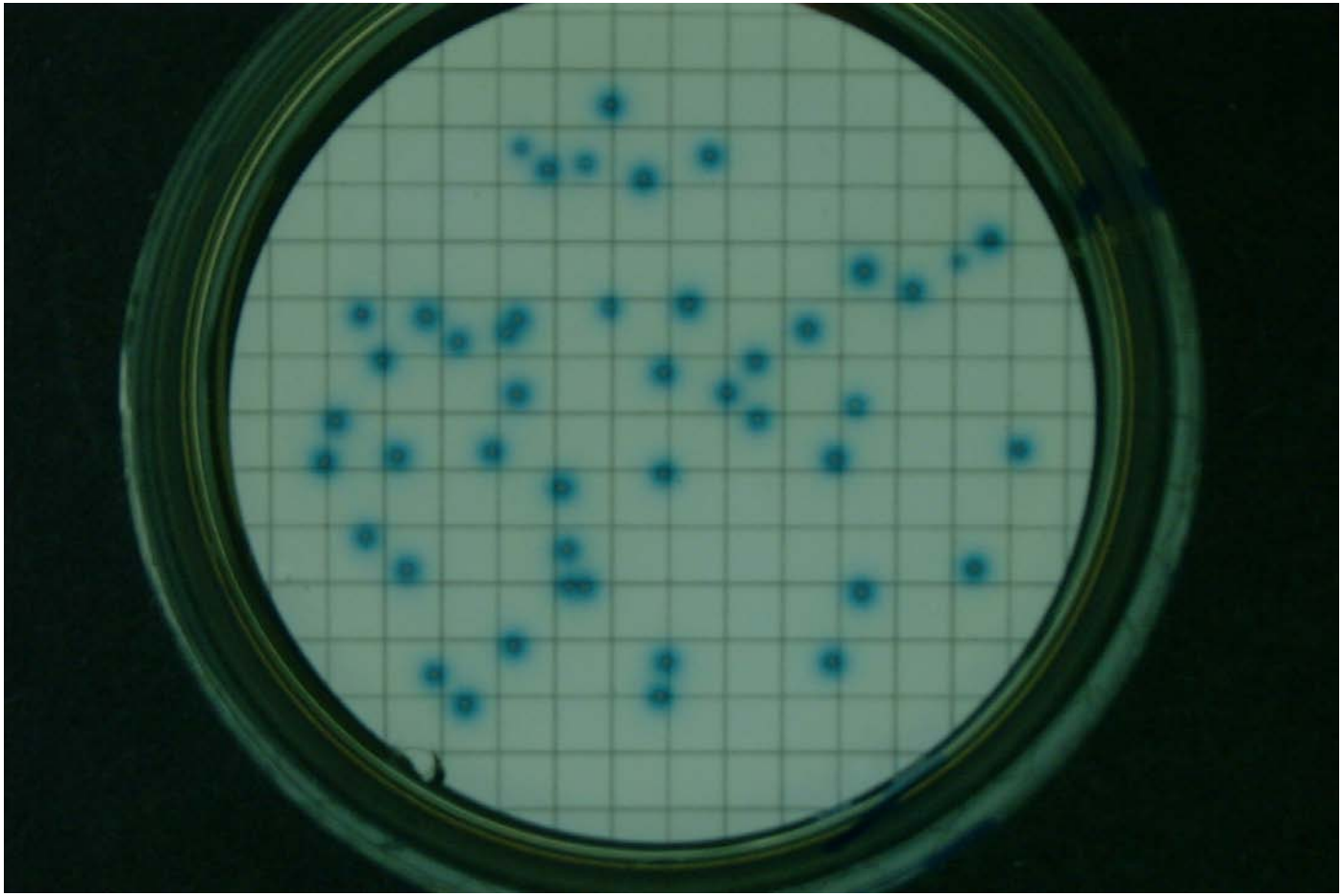
Defined Controls

- Follow permit requirement (method, ML, type of sample, frequency)
- Follow method requirements (batch QC, reporting requirements)

Undefined & Variables

- Not all approved methods are equal
- Methods are selected for:
  - Sensitivity
  - Turn around time
  - Ease of analysis
  - Cost
- Also consider suitability to your matrix
  - Example: MF vs. Enterolert

Membrane Filtration for enterococci on mEI Agar



Enterolert – theory and reality

Blank is not simply a blank

- Evaluating field blank, equipment blank
- Blank correction – DON’T
- Evaluating background/blank values in trace organics
- CLP protocol
- You may not always have guidance

DQO

- **Guidance on Systematic Planning Using the Data Quality Objectives Process** EPA QA/G-4
- Planning tool
- Collaborative process
- Focuses and defines the question
- Geared toward project planning but can be modified for your process

Elements of DQO process

1. State the problem
2. Identify the goal of the study
3. Identify information input
4. Define the boundaries of the study
5. Develop the analytical approach
6. Specify acceptance criteria
7. Develop the plan for obtaining the data

The Question

- If a sample is analyzed twice which number do I report

1. State the Problem

To establish a standardized procedure for the reanalysis and confirmation or invalidation of questionable results.

2. Identify the Goal

- To obtain valid data representative of the sample

3. Identify Information Input

- Description of: permit limit, the method, batch QC

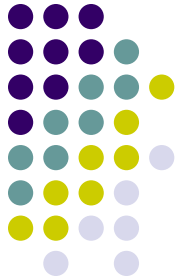
4. Define the Boundaries of the (Study) Decision Process

- Batch QC is acceptable
- No documented evidence of analytical error
- No documented evidence of sampling error
- Same sample or an archived duplicate be analyzed?
- What is the action if sample is out of holding time?
- Reanalysis in duplicate
- Alternate method for confirmation

5. Develop the Analytical Approach

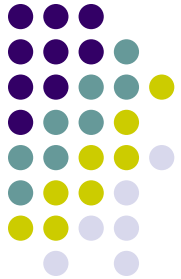
- Every time the reported result exceeds permit limit, request re-analysis
- Batch QC definition stringent than method requirement
- Low level spike with define limits to assess method performance at your sample concentration

6. Specify Acceptance Criteria



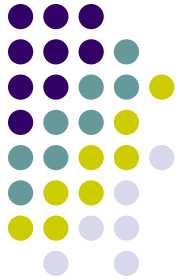
- Always report the average of the original and repeat analysis
- Always report the result of re-analysis
- Reject the original result if the following conditions are met:
  - (Assuming reanalysis was in duplicate) RPD for reanalysis within method control limit
  - The RPD for original result and reanalysis result is outside the method control limit
- If the above conditions are not met, the original result is retained

7. Develop the (Plan for Obtaining the Data) Process for Implementation



- Decide who will be involved in the decision making
- Decide who will be notified of the decision
- Document the evaluation process

Make it a team effort

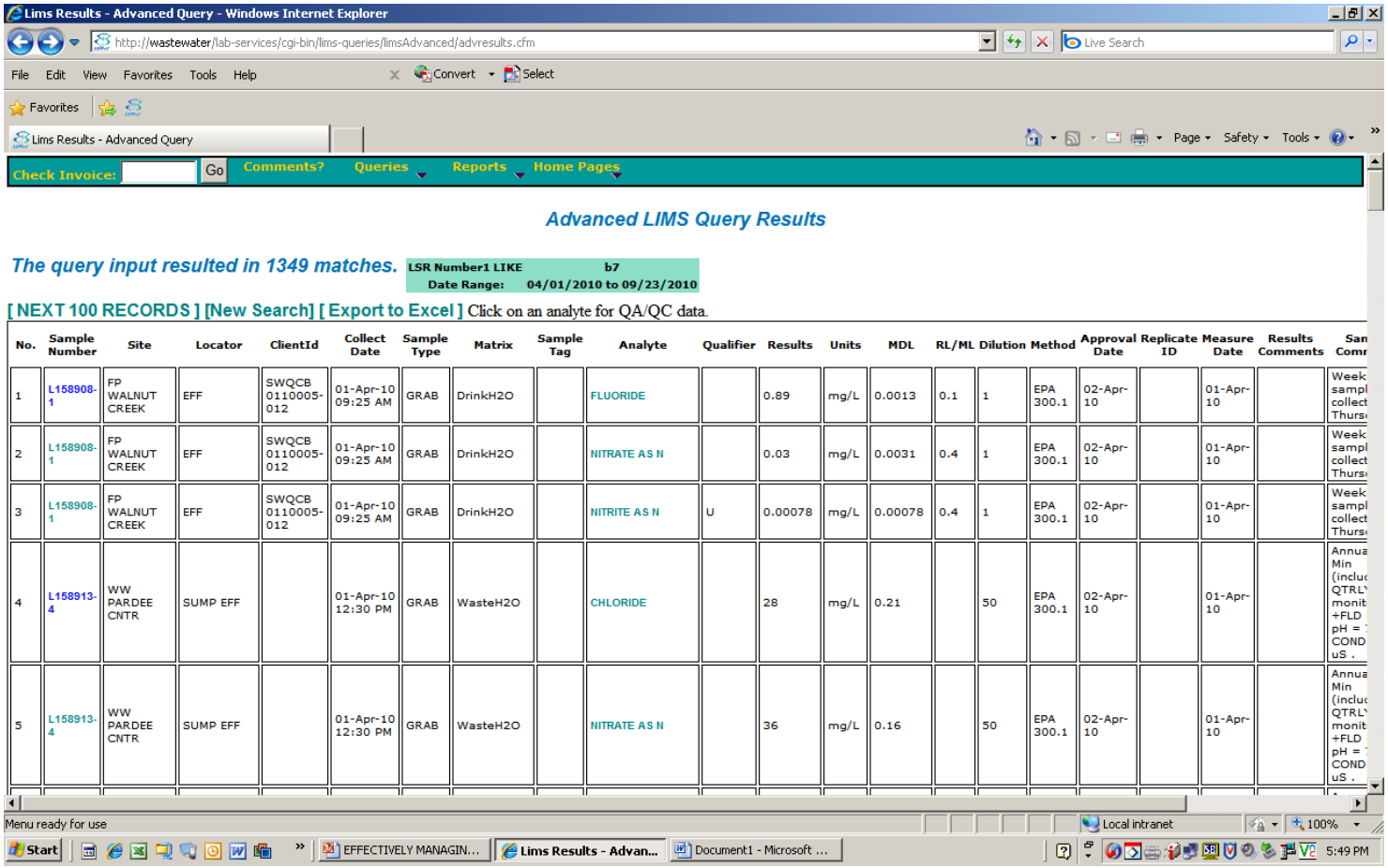


- Improves understanding for all
- Ethical decision making, transparency
- More and better ideas
- Make sure responsible person knows and understands the decision making process
- Documentation

Data → Information

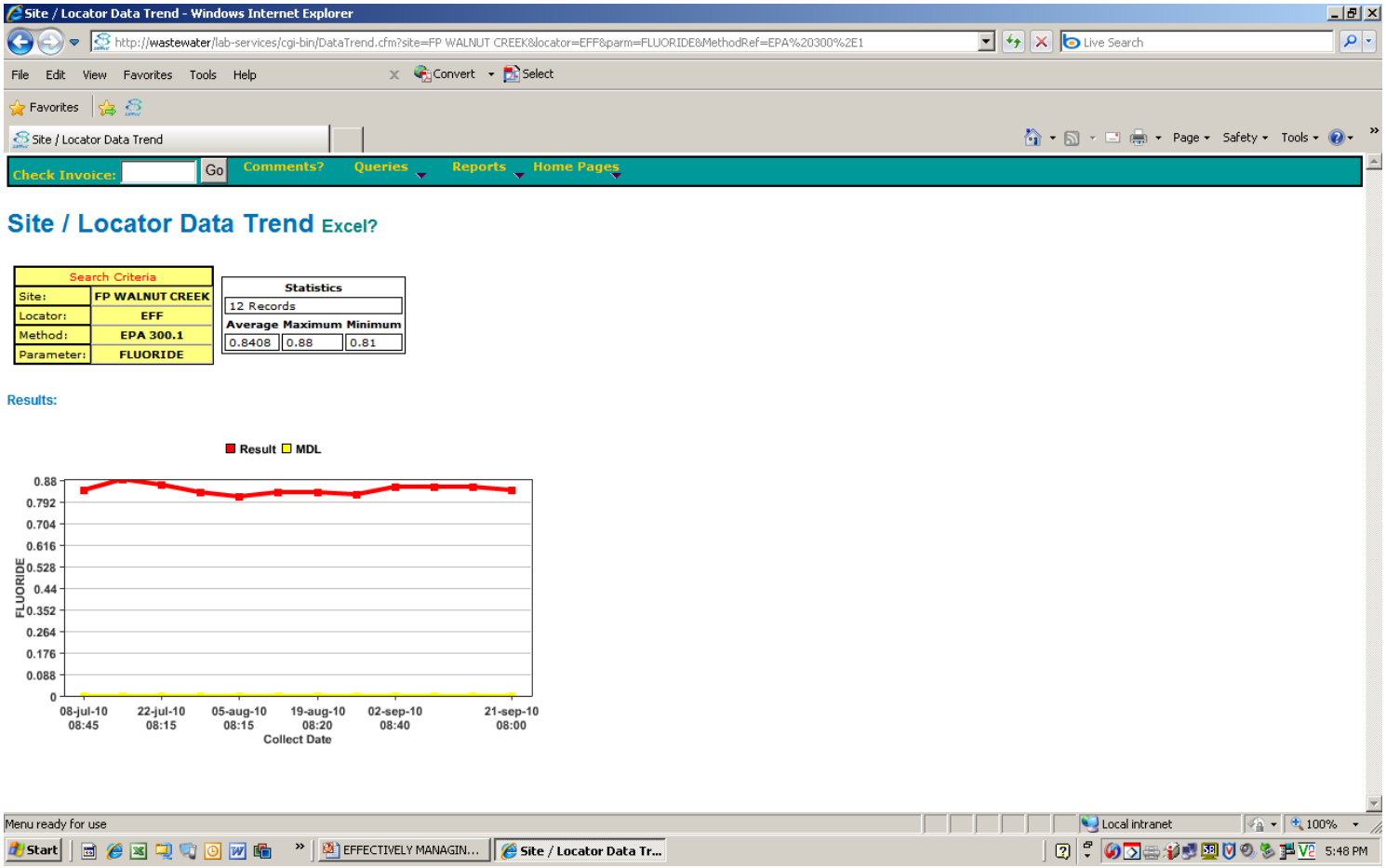
- Laboratory perspective – data
- Your perspective – information
  - Reasonableness check
  - Trending

LIMS Query



No.	Sample Number	Site	Locator	ClientId	Collect Date	Sample Type	Matrix	Sample Tag	Analyte	Qualifier	Results	Units	MDL	RL/ML	Dilution	Method	Approval Date	Replicate ID	Measure Date	Results Comments	San Comr
1	L158908-1	FP WALNUT CREEK	EFF	SWQCB 0110005-012	01-Apr-10 09:25 AM	GRAB	DrinkH2O		FLUORIDE		0.89	mg/L	0.0013	0.1	1	EPA 300.1	02-Apr-10		01-Apr-10		Week sampl collect Thurs
2	L158908-1	FP WALNUT CREEK	EFF	SWQCB 0110005-012	01-Apr-10 09:25 AM	GRAB	DrinkH2O		NITRATE AS N		0.03	mg/L	0.0031	0.4	1	EPA 300.1	02-Apr-10		01-Apr-10		Week sampl collect Thurs
3	L158908-1	FP WALNUT CREEK	EFF	SWQCB 0110005-012	01-Apr-10 09:25 AM	GRAB	DrinkH2O		NITRITE AS N	U	0.00078	mg/L	0.00078	0.4	1	EPA 300.1	02-Apr-10		01-Apr-10		Week sampl collect Thurs
4	L158913-4	WW PARDEE CNTR	SUMP EFF		01-Apr-10 12:30 PM	GRAB	WasteH2O		CHLORIDE		28	mg/L	0.21		50	EPA 300.1	02-Apr-10		01-Apr-10		Annua Min (inclu QTRLY monit +FLD pH = COND uS .
5	L158913-4	WW PARDEE CNTR	SUMP EFF		01-Apr-10 12:30 PM	GRAB	WasteH2O		NITRATE AS N		36	mg/L	0.16		50	EPA 300.1	02-Apr-10		01-Apr-10		Annua Min (inclu QTRLY monit +FLD pH = COND uS .

LIMS Approval Tool



Data Management

- Plan as if you will not be around to explain when the data is needed for a critical use
- Data storage
  - Qualifiers, comments (laboratory and decision makers)
- Reporting
  - Know what you reported

Acknowledgement

- BACWA laboratory committee members

Thank you for your vigorous discussions and camaraderie