Chemical Soil Background Study for the Santa Susana Field Laboratory

Background Study Update

Department of Toxic Substances Control
SSFL Project Team

April 2012
Chatsworth

“Ground Rules”

Please:

- **Maintain mutual respect and decorum**
- **Be recognized before asking questions**
- **Remain focused on the discussion’s objectives**

Technical Roundtable Meeting Objectives

- Update Study's Status
- Review Sampling & Rationale
- Summarize Key Points
- Summarize Analytical Data for Example Constituents
- Summarize Statistical Process
- Conclusion
- Q & A

Technical Roundtable Meeting
Key Points

- **Purpose: obtain data that represent background threshold values (BTVs)**
- **Data appear good and valid, with few outliers**
- **Look-up tables are a separate process**
- **Post data by April 16**

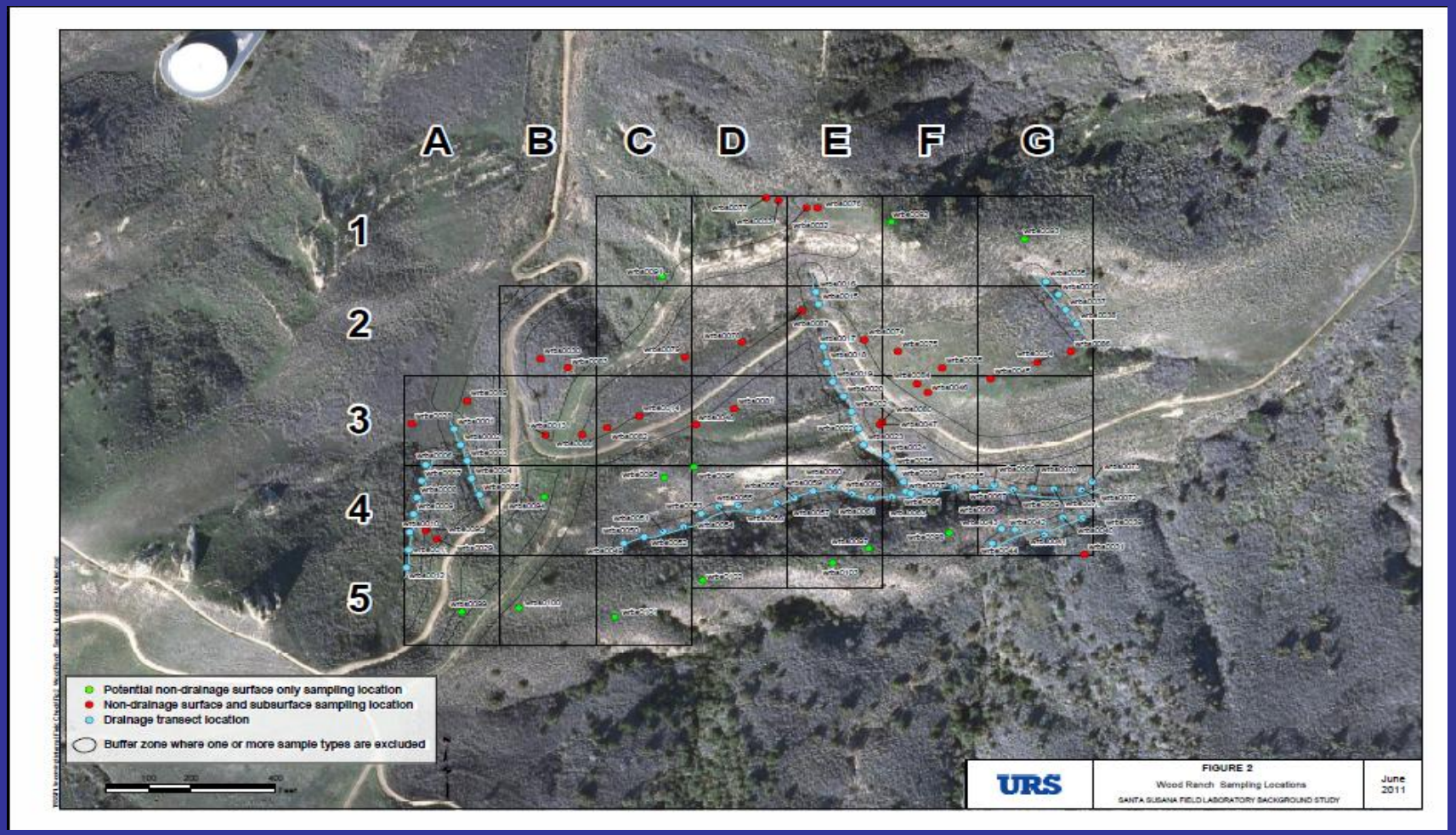
Chemical Soil Background Study
Project Status

Completed Since Our Last Meeting (June 2011):

- ✓ **Finalizing and publishing (Web) the Study's planning documents**
- ✓ **Contracting laboratories and data validator, including audits**
- ✓ **Locations, sampling, laboratory analyses, and data validations**
- ✓ **Final lab audits**
- ✓ **Preliminary statistics – we are working through full dataset**

Chemical Soil Background Study
Wood Ranch Final Locations

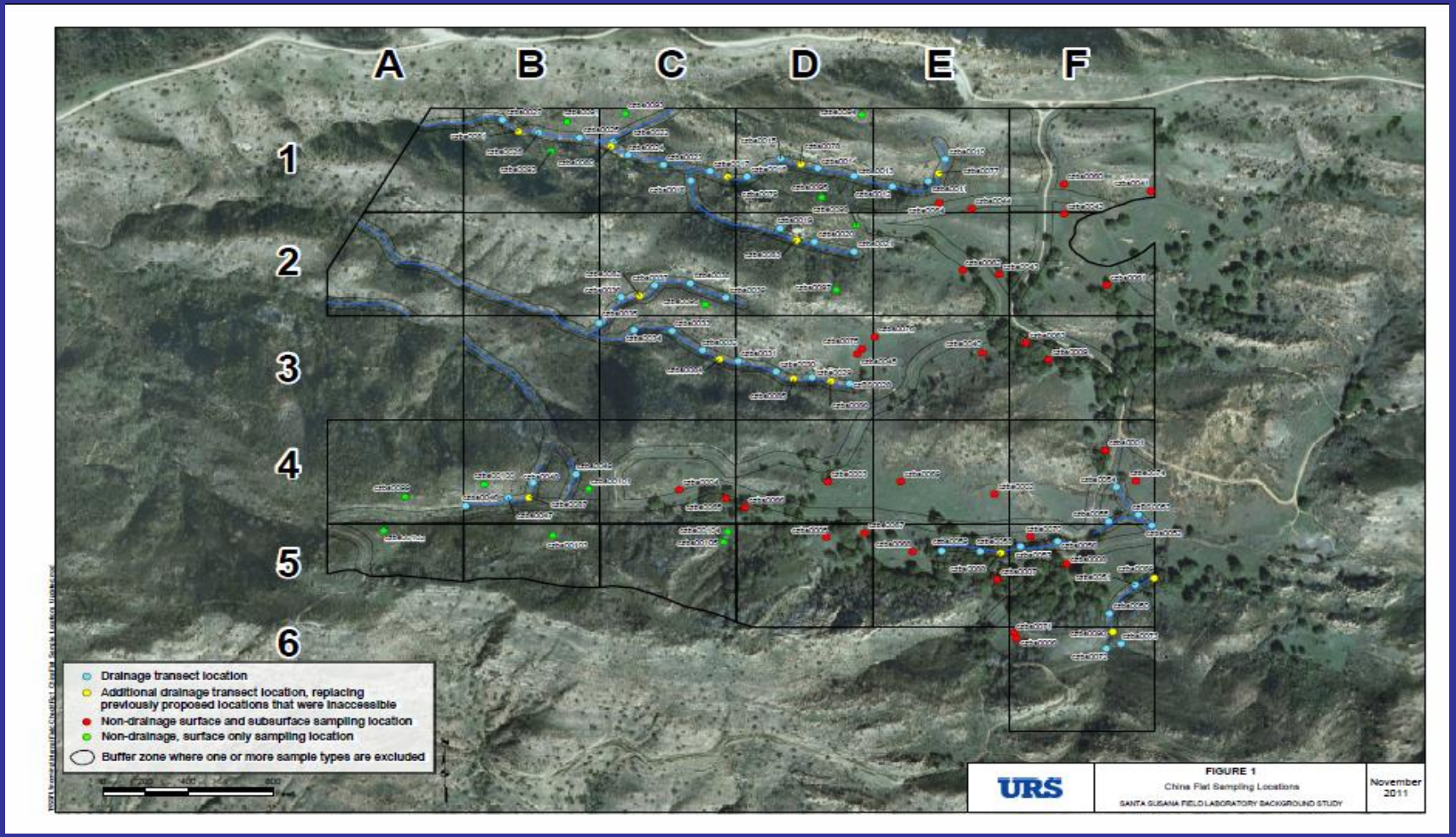
Total Sampling Locations = 103 (Santa Susana Fm.)



Chemical Soil Background Study

China Flat Final Sample Locations

Total Sampling Locations = 105 (Chatsworth Fm.)

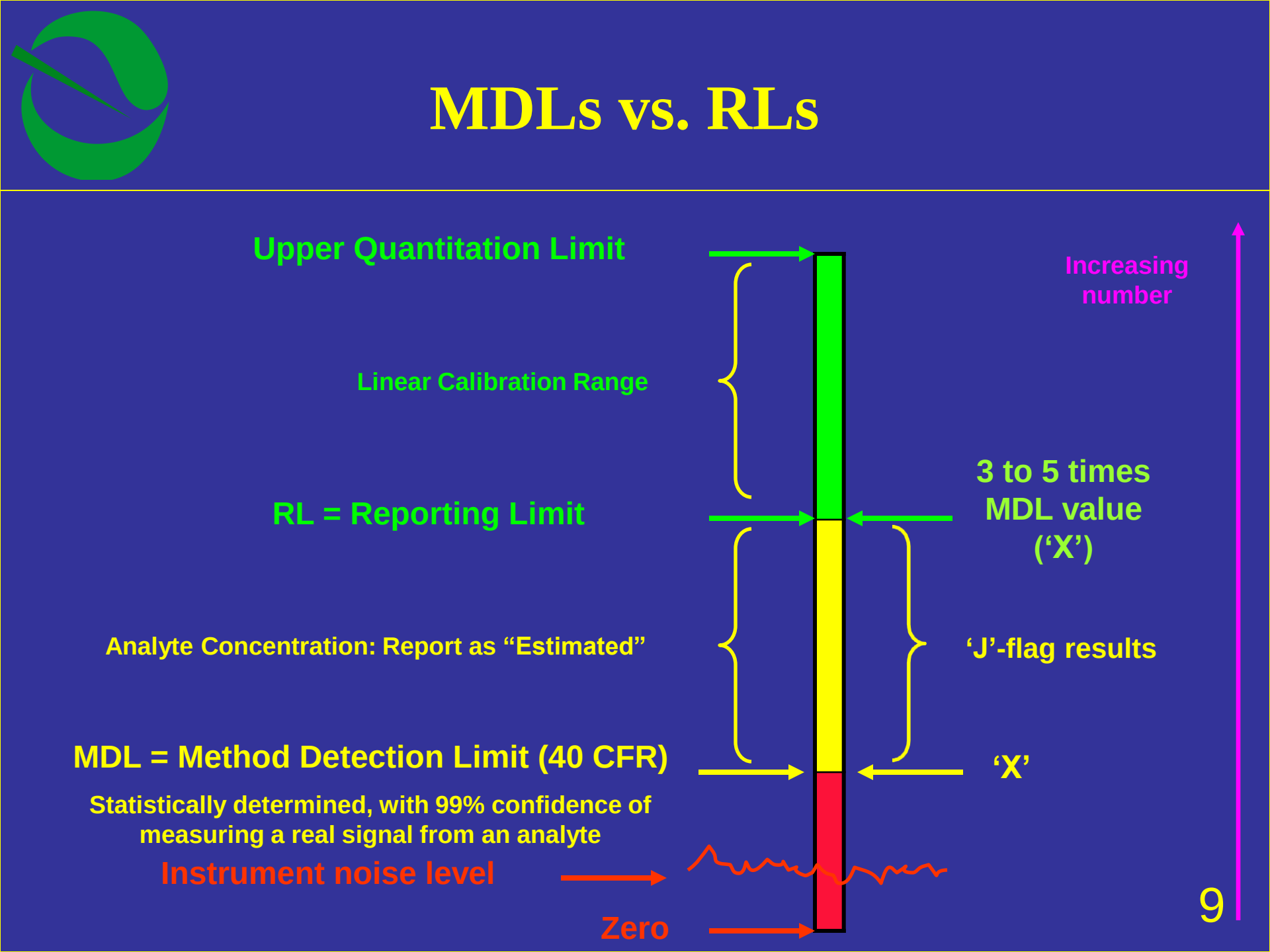


Technical Roundtable Meeting
Discussion

Summary of Analytical Results

Example Constituents

MDLs vs. RLs


Upper Quantitation Limit
Linear Calibration Range
RL = Reporting Limit
Analyte Concentration: Report as "Estimated"
MDL = Method Detection Limit (40 CFR)
Statistically determined, with 99% confidence of measuring a real signal from an analyte
Instrument noise level
Zero
Increasing number
3 to 5 times MDL value ('X')
'J'-flag results
'X'

Technical Roundtable Meeting
Results Summary – Example Inorganics

Analyte	Detected Range*	RL Range	QAPP RL
Aluminum (mg/kg)	8910 - 55700	16.3 – 22.2	20
Arsenic (mg/kg)	2.48 - 183	0.384 - 0.446	0.4
Copper (mg/kg)	5.85 - 102	0.384 - 0.446	0.4
Lead (mg/kg)	2.67 - 44.6	0.192 – 0.223	0.2
Mercury (mg/kg)	0.00708 - 0.0678	0.0956 - 0.111	0.1
Sodium (mg/kg)	36.8 - 4600	81.7 - 111	100
Thallium (mg/kg)	0.0832 - 0.874	0.0961 - 0.112	0.1

Notes: QAPP = Quality Assurance Project Plan / RL= Reporting Limit
* Primary plus duplicate samples & drainage plus non-drainage & 'J'-flagged values
mg/kg = milligrams per kilogram

Technical Roundtable Meeting
Results Summary – Example Inorganics +

Analyte	Detected Range*	RL Range	QAPP RL
Perchlorate (ug/kg)	0.33 - 2.4	0.41 - 0.46	0.5
Cyanide (mg/kg)	0.202 – 4.98	0.508 - 0.559	0.5
Formaldehyde (ug/kg)	760 - 1300	1500 - 1600	3000

Notes: QAPP = Quality Assurance Project Plan / RL= Reporting Limit
* Primary plus duplicate samples & drainage plus non-drainage & 'J'-flagged values
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

Technical Roundtable Meeting
Results Summary – Example Organics

Analyte	Detected Range*	RL Range	QAPP RL
1,2,3,7,8-PeCDD (pg/g)	0.0151 - 0.329	0.1	0.2
1,2,3,7,8-TCDD (pg/g)	0.0164 - 0.143	0.02	0.04
Anthracene (ug/kg)	0.56 - 1.2	1.7 - 1.8	1.67
Benzo(a)pyrene (ug/kg)	0.69 - 46	1.7 - 170	1.67
Phenanthrene (ug/kg)	0.69 - 4.1	1.7 - 1.8	1.67
Bis(2-ethylhexyl)phthalate (ug/kg)	6.3 - 240	18 - 360	330

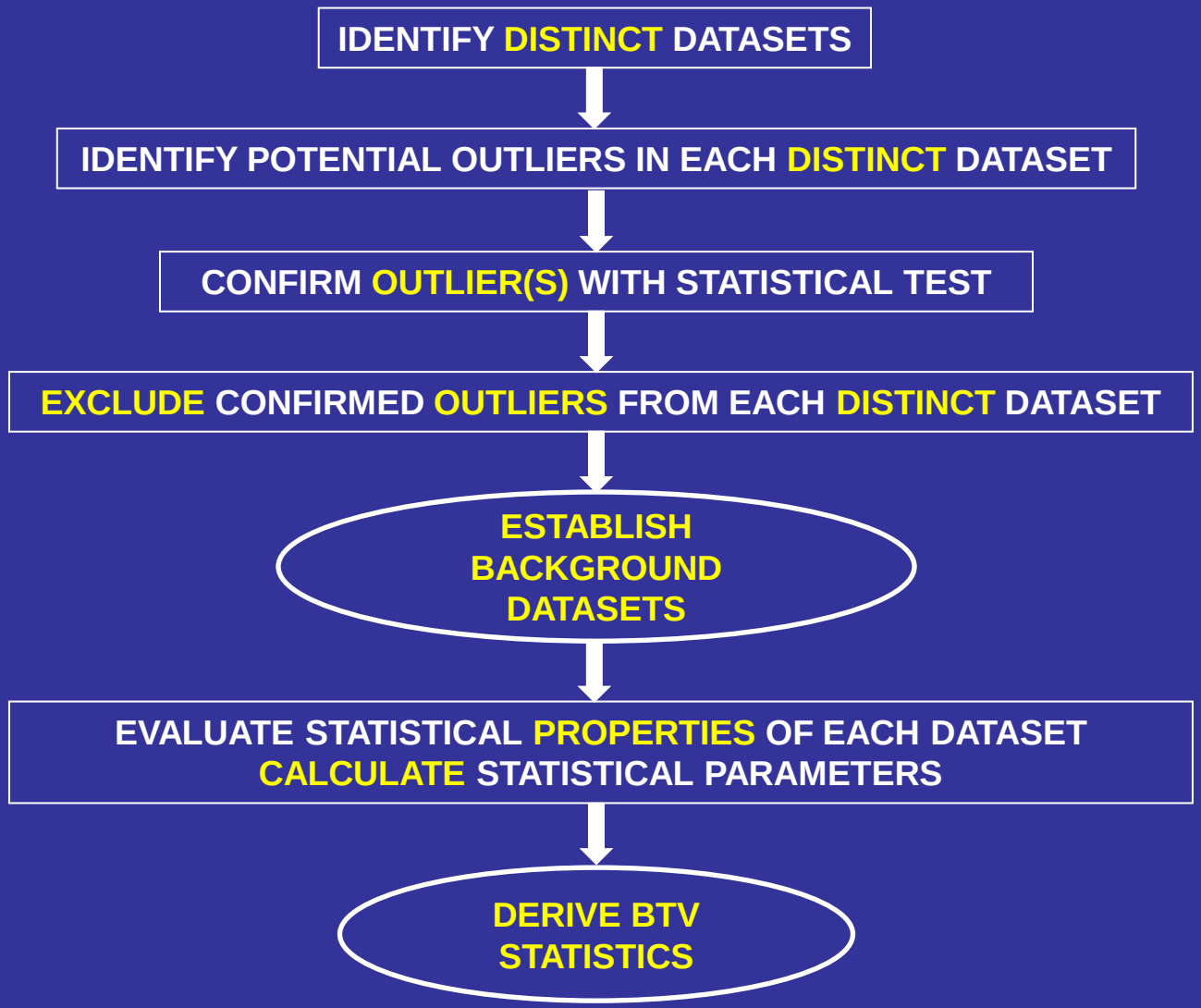
Notes: QAPP = Quality Assurance Project Plan / RL= Reporting Limit
* Primary plus duplicate samples & drainage plus non-drainage & 'J'-flagged values
ug/kg = micrograms per kilogram
pg/g = picograms per gram
PeCDD = pentachlorodibenzo-p-dioxin
TCDD = tetrachloro-p-dibenzodioxin

Technical Roundtable Meeting
Discussion

Statistical Evaluation Process

Statistical Evaluation Process

Derive BTVs



Statistical Evaluation Process
Selection of a BTV Statistic

DTSC will consider adopting a statistical approach similar to the EPA's as used in their radiological background study

Technical Roundtable Meeting
Conclusions

Extensive chemical background data were acquired, involving a large number of individual analytes.

The analytical data appear to be very consistent.

There appear to be very few outliers in the data.

Data are good and valid.

Data represent background.

Chemical Soil Background Study
Wrap-Up

For Our Next Meeting – June:

- **Discuss final statistics - completed evaluations for all the background Study's chemical data**
- **Summarize BTVs**
- **Issue Study's Draft Results Report - public review and comment period: June - July**

Technical Roundtable Meeting
Wrap-Up

DTSC will post data by April 16.

Full statistics will be completed in June.

Issue draft report in June for public review and comments.

Look-up table development is a separate process.

Technical Roundtable Meeting
Wrap-Up

Q&A