MCP Representativeness Evaluations & Data Usability Assessments

February 2008

MassDEP

Training Outline

9:00 – 9:35
Representativeness Evaluation Overview, REDUA Documentation
Liz Callahan, MassDEP

9:35 – 10:20
Data Usability Overview and CAM Refresher
Don Muldoon, MassDEP

10:20 –10:30 BREAK

10:30 – 11:15
Representativeness in Practice
Wes Stimpson, LSP, WES Associates

11:15 – 12:00
Data Usability in Practice
Jim Occhialini, Alpha Analytical

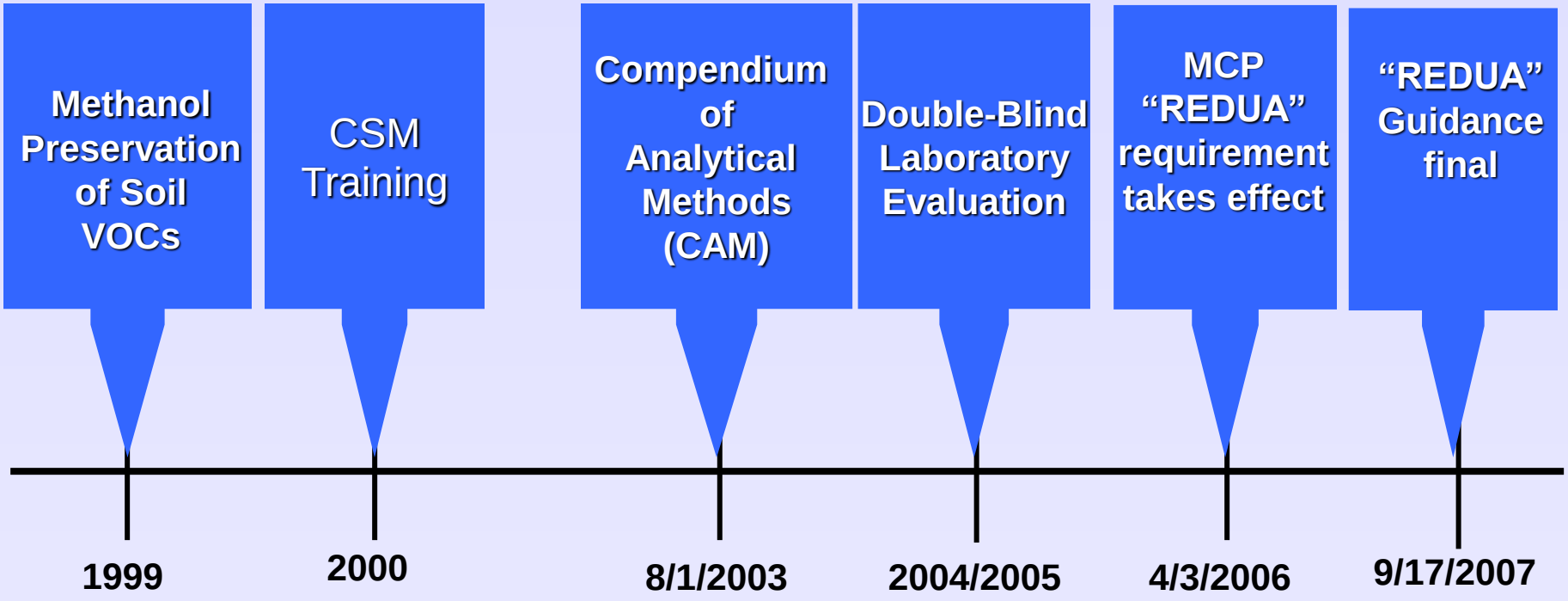
12:00 – 12:10 BREAK

12:10 – 1:00 Case Study

Background

- **R**epresentativeness **E**valuation and **D**ata **U**sability **A**ssessment (**REDUA**) MCP requirement (310 CMR 40.1056(2)(k))
  - part of MassDEP's ongoing efforts to ensure the appropriateness and quality of disposal site information and analytical data used to support response action decisions

Background *(continued)*



MCP REDUA Requirement
310 CMR 40.1056(2)(k)

Class A, B, or C Response Action Outcomes shall provide:

- a **REPRESENTATIVENESS EVALUATION**, documenting the **adequacy of the spatial and temporal data sets** used to support the RAO

AND

- a **DATA USABILITY ASSESSMENT**, documenting that the **data relied upon is scientifically valid and defensible, and of a sufficient level of precision, accuracy, and completeness** to support the RAO

Purpose of REDUA Requirement

To require the LSP to synthesize and consolidate information acquired throughout the response action process into a succinct summary that demonstrates the RAO is supported with information that is

- consistent with the CSM
- representative of disposal site conditions, and
- of quality acceptable to MassDEP

REDUA Documentation Applicability

- Applicable to all Class A, B or C RAOs, including partial RAOs

Prior to RAO…

Note:	*The specific requirement to provide a Representativeness Evaluation and Data Usability Assessment in an RAO submittal is not intended to preclude evaluation and discussion of data usability and representativeness as they relate to supporting conclusions in other MCP response action submittals*.

REDUA Policy (# WSC-07-350)

http://www.mass.gov/dep/cleanup/laws/policies.htm#07-350

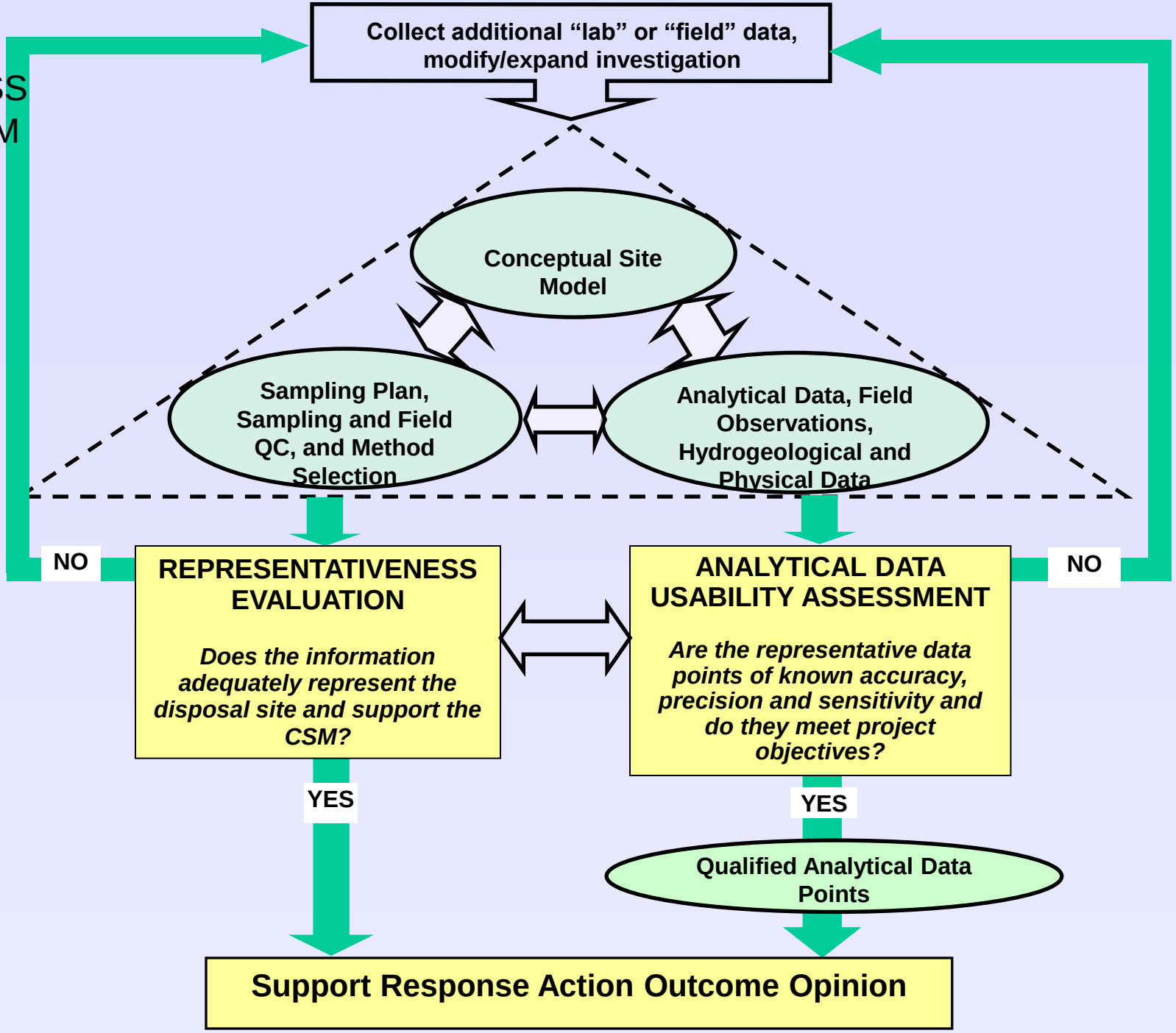
- Presents framework for REDUA evaluation
- Identifies Representativeness and Data Usability considerations to be addressed in supporting RAO
- Provides worksheets/formats that may be used in evaluating and/or presenting information in support of the RAO

REDUA Policy

MassDEP's Goals for its use

- RAO submittals will include a clear justifications as to why the information used to support the RAO is
  - representative of disposal site conditions
  - of sufficient quality to provide confidence in the decision
  - level of information/justification commensurate with disposal site complexity and REDUA issues
- Standardize the information provided to meet the REDUA requirement

REDUA PROCESS DIAGRAM



RAO Requirements- Guidance Table 1

Class A or B RAO	Class C RAO
Delineation of disposal site boundaries	**Delineation of disposal site boundaries**
Elimination/control of OHM source(s)	**Elimination/control of OHM source(s), to the extent feasible**
Characterization of Risk Identification of Exposure Pathways & Receptors Identification of Hot Spots Calculation of EPCs Identification of Background	**Characterization of Risk** Identification of Exposure Pathways & Receptors Identification of Hot Spots Calculation of EPCs Identification of Background
Achievement of background, to the extent feasible (Class A RAOs)	
Achievement of No Significant Risk (NSR)	**Achievement of No Substantial Hazard (NSH)**

Representativeness Evaluation

Does the information gathered in support of the RAO adequately represent the disposal site and fit the CSM?

Conceptual Site Model (CSM)

- A site-specific description of what and how contaminants entered the environment, were transported within the system and routes of exposure to human and environmental receptors
- Provides a framework for assessing and addressing sources of OHM and risk

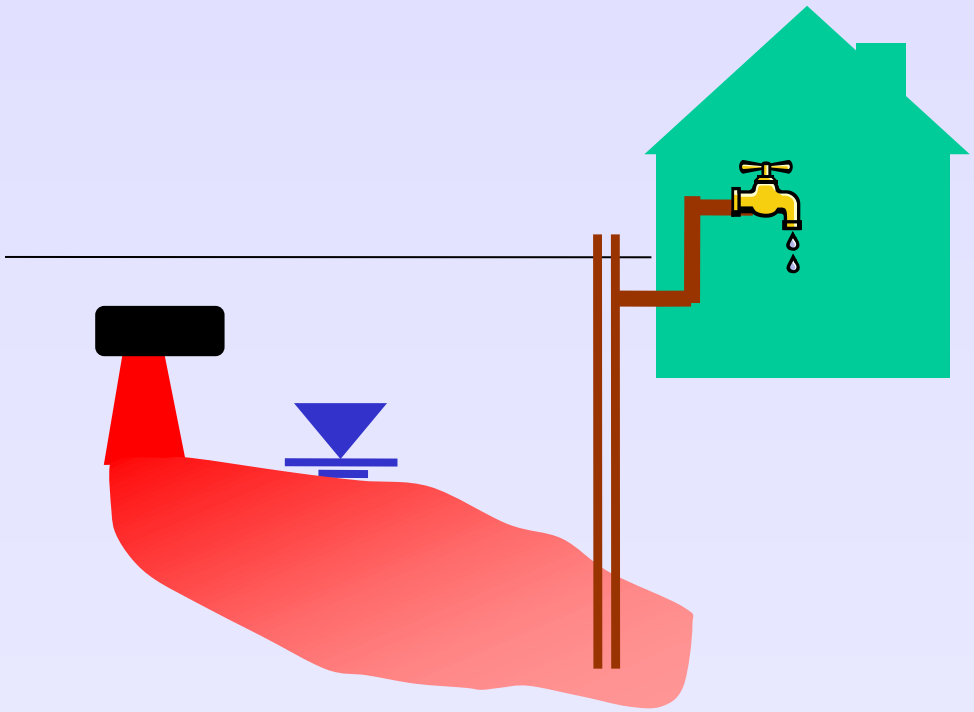
REDUA CSM

- Provide a succinct summary of the (most current) CSM
- CSM is the basis for the evaluating the rest of the Representativeness components
  - Is the information consistent with the CSM, sufficient to support it, can inconsistent information be explained?

REDUA CSM

- History of disposal site as it relates to potential presence of OHM
- Description of known/likely source
- Date/time period of release(s)
- Geologic/hydrogeologic setting
- Volume/mass of OHM
- Fate and transport, migration pathways, rates, density and hydrodynamic factors, degradation rates/products
- Mechanisms, pathways and points of exposure

CSM (UST Site)



Use of Field/Screening Data

- MassDEP promotes appropriate use of field screening and EPA's Triad approach
  - Can improve decision certainty, reduce costs, and accelerate and improve cleanup process
- REDUA evaluation should present how field screening was used
  - To make decisions about the field investigation and sampling plan
  - Comparability of field screening results to visual/olfactory information and laboratory results

Sampling Rationale/Plan

- Justify the media and locations (in terms of area and depth) sampled as appropriate and sufficient to support the RAO
- Discuss relationship and proximity of sampling locations to source and impacted media
  - which samples are from impacted area
  - which from outside (adjacent, above, below, background)
- Identify any Critical Samples

Why were samples taken at specific locations? What were the objectives?

Number, Spatial Distribution and Handling of Samples

- Justify the number and spatial distribution of samples within a given area targeted by the sampling plan
  - Density of sample
  - Collection and handling of samples (e.g., grab samples, compositing, filtering, split samples, co-located samples)
- If contamination is distributed in a random or unknown manner (e.g., Brownfields), justify how sampling density and distribution accounted for this uncertainty

Temporal Distribution of Samples

- Where disposal site conditions warrant multiple sampling rounds over time, justify that the monitoring period and intervals are sufficient/appropriate
- Demonstrate
    - no continuing source
    - stable/diminishing concentrations
    - Consistency over time

Inconsistency and Uncertainty

- Justify that the nature and magnitude of any inconsistency or uncertainty in disposal site information is insufficient to undermine support of the RAO
- Examples of inconsistency/uncertainty
  - Site history information inconsistent with contaminants found/not found
  - Field/Screening Data or other observations that indicate contamination different from those found by lab data or evaluated in the risk characterization (e.g., remediation waste data indicates OHM not evaluated as a Contaminant of Concern)

Information Considered Unrepresentative

- Where not otherwise discussed, explain why certain information/data was not used in the Representativeness Evaluation and support of the RAO
  - e.g., data related to material removed from the disposal site and not representative of final conditions

Remember Your Audience…

-MassDEP
-PRP/Property Owner
-Public

REDUA Documentation

- Documentation is part of RAO submittal
- Succinct Narrative and/or use Worksheets/Summary tables (formats provided in the guidance as tools)
- Documentation should address
  - Representativeness Evaluation
  - Data Usability Assessment
  - Conclusions

Representativeness and Data Usability Worksheet (Appendix V)

Part A Representativeness Evaluation

Part B Data Usability Assessment

Part C Evaluation and Conclusions

Use of this Form is Optional

A. Representativeness Evaluation Worksheet

APPENDIX V REPRESENTATIVENESS AND DATA USABILITY WORKSHEET

A. Representativeness Evaluation *(Specific to information/samples used to support the RAO. Refer to Section 6.0 through 6.8.)*	
A-1 Provide a succinct summary of the Conceptual Site Model (CSM) for the disposal site. Discussion should include: - Disposal site history - Source Identification - Date/time period of release(s), if known - Hydrogeological setting - Description of the volume/mass and types of contaminants released to the environment - Release location and affected media - Contaminant migration pathways - Mechanism/pathways and points of exposure by human and ecological receptors ***(Refer to Section 6.1)***	
A-2 Discuss use of field/screening data in response action decision making, including: - Contaminant of Concern screening/elimination - Selection of sampling locations - Comparison to laboratory results - Comparison to visual/olfactory observations ***(Refer to Section 6.2)***	( ) No field screening data were used to directly support this RAO. ( ) Field screening data were used, as follows:
A-3 Discuss and justify sampling locations and depths collected in support of RAO regarding: <u>For Class A or B RAOs</u> - Delineation of disposal site boundaries (horizontal and vertical) - Elimination/control of OHM source(s) - Characterization of Risk (Exposure Pathways/Receptors, Hot Spots, samples included in EPCs, Background) - Achievement of No Significant Risk (NSR) <u>For Class C RAOs</u> - Delineation of disposal site boundaries (horizontal and vertical) - Elimination/control of OHM source(s) - Characterization of Risk (Exposure Pathways/Receptors, Hot Spots, samples included in EPCs, Background) - Achievement of No Substantial Hazard (NSH) ***(Refer to Table1 and Section 6.3; A-3 and A-4 of the worksheet may be combined, as appropriate.)***	

Use of this Table is **Optional**. However, at a minimum, the information covered by this table must be addressed in support of the requirement at 310 CMR 40.1056(2)(k)

B. Data Usability Assessment Worksheet

B. Data Usability Assessment *(Specific to samples used to support the RAO. Refer to Table 1, Section 7.0 through 7.3, and Appendices I, II, III and IV.)*	
B-1 List all MCP activities that provided the analytical data reviewed in the course of conducting the Data Usability Assessment in support of the RAO. Include the media sampled and the month and year the data were acquired.	( ) Listed below. ( ) Attached separately (provide attachment reference).
B-2 Discuss appropriateness of selected analytical methods to quantitatively support the RAO.	( ) Used CAM and obtained Presumptive Certainty; therefore, analytical methods were appropriate (see MCP Analytical Method Report Certification Form). ( ) Used "Non-CAM" data; however, data is comparable to CAM data (explain below).
B-3 Discuss appropriateness of selected analytical methods' Reporting Limits (RL) to quantitatively support the RAO.	( ) All Reporting Limits were at or below applicable standards.
B-4 Discuss laboratory performance criteria and data quality indicators used to assess overall Analytical Accuracy (continuing calibration, laboratory control spikes, etc.) and Analytical Precision (laboratory duplicates, laboratory control spike duplicates, etc.) For CAM data, see MCP Analytical Method Report Certification Form and Laboratory Case Narrative.	( ) Met all CAM requirements and performance standards without qualification. ( ) If not, discuss data usability implications.
B-5 Discuss performance criteria and data quality indicators used to assess overall Field Data Usability (sample preservation compliance, sample sub sampling/compositing, etc.).	( ) Met all CAM requirements and performance standards without qualification. ( ) If not, discuss data usability implications.

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MassDEP

Data Summary Table (Appendix VI)

Sample ID or Series	Parameters	Date	Soil	Groundwater	Surface Water	Sediment	Air	Site Characterization	Background	EPCs	Hazard Elimination	CAM Compliant	Data Qualifications, if any (*brief explanation*)
												Yes ( ) NO ( )	
												Yes ( ) NO ( )	
												Yes ( ) NO ( )	
												Yes ( ) NO ( )	
												Yes ( ) NO ( )	
												Yes ( ) NO ( )	
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												Yes ( ) NO ( )	

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Data Summary Table (Appendix VI)

- **Sample ID**
- **Parameters Tested**
- **Date**
- **Matrix**
- **Data Use**
- **CAM Compliance**
- **Data Qualifications**

C. Conclusions

C. **Representativeness Evaluation and Data Usability Assessment Summary and Conclusions** *(Refer to Section 8.0)*	
Provide a summary declaration that the data set relied upon to support the RAO is: 1. Scientifically valid and defensible, and of sufficient accuracy, precision and completeness; and 2. Representative with regards to the spatial and temporal distribution of sampling points.	

- Narrative and/or Worksheet
  - Summarizes the Representativeness Evaluation and Data Usability Assessments as consistent with the CSM and supportive of the RAO

Data Usability Assessments Overview

MassDEP

RAO Submittals

310 CMR 40.1056(2)(k) requires

- Representativeness Evaluation
  - Data Set Uncertainty
- **Data Usability Assessment**
  - **Data Point Uncertainty**

for ALL Class A, B, or C RAOs

Data Usability Assessment

An MCP Data Usability Assessment Evaluates the

- **Accuracy**
- **Precision**
- **Suitability**

of analytical data used in support of MCP decisions.

Data Usability Assessment

An MCP Data Usability Assessment has both a

- Laboratory and
- Limited Field

Component.

Laboratory Component

Evaluation whether analytical ***data points*** are scientifically valid and defensible, and of a sufficient accuracy, precision and sensitivity to support the RAO.

The Data Usability Assessment answers the question

Does the analysis of sample "as delivered to the laboratory" yield a **suitable** analytical result?

It should be understood that …

The analysis could be perfect but if the sample is taken in the "wrong" place or at the wrong time it would be of little or no value in MCP decision making (Representativeness Component).

Data Usability Assessment

- Evaluates CAM* Compliant Data
- Evaluates Non-CAM Data
- Evaluates suitability of all submitted data to be used for its intended purpose
- Rejection of Analytical Data as a Result of Gross Failure

* MassDEP's Compendium of Analytical Methods

CAM-Compliant Analytical Results

(1) determined using an “MassDEP Analytical Method” detailed in the CAM;

(2) comply with method-specific QC requirements specified in CAM;

(3) reported with narration of method–specific performance standard deficiencies, as necessary; and

(4) reported with the required deliverables specified in the CAM for MCP analytical data. CAM Compliant data are data with “Presumptive Certainty”.

CAM Compliant Data Evaluation

The Analytical Data Usability Assessment should provide …..

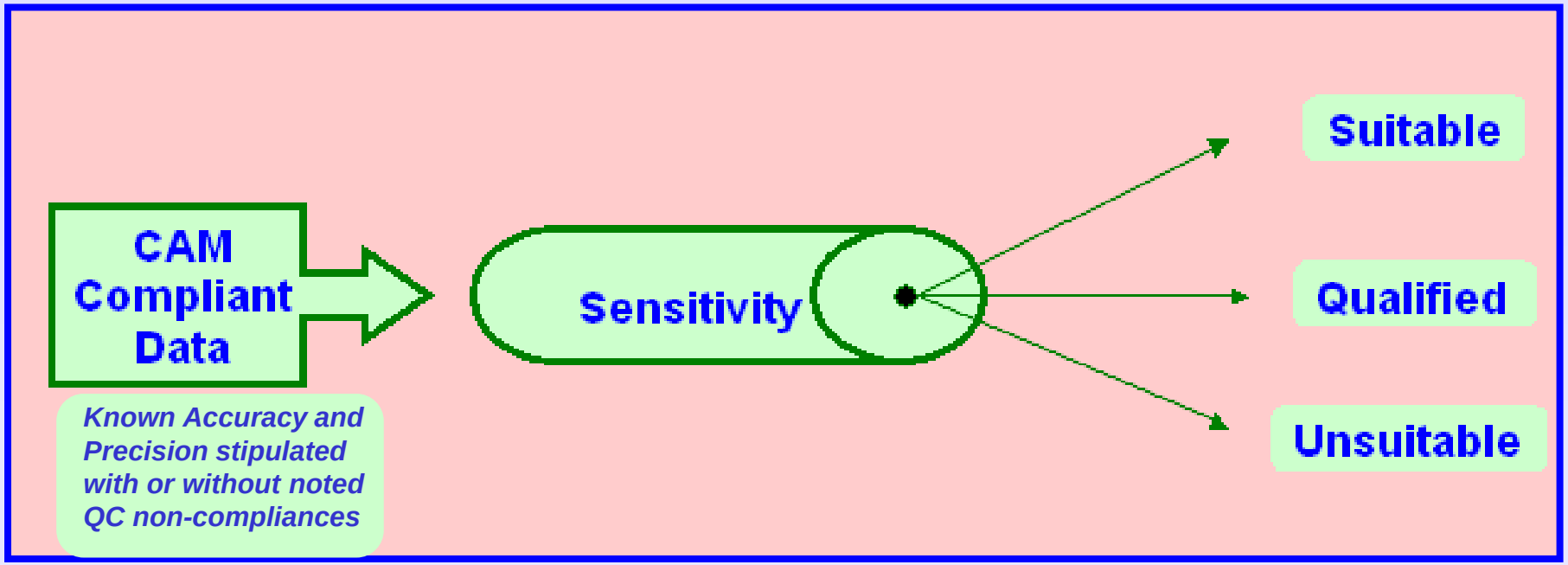
(1) an evaluation of the sensitivity (i.e., Reporting Limit) with respect to project-specific objectives, and

(2) a discussion of how identified analytical deficiencies, if any, may affect the overall ***usability*** of the analytical data with respect to achievement of project-specific objectives.

- as identified in Laboratory Case Narrative

(3) a justification as to why such (***compromised***) analytical data are still suitable to support RAO decision

CAM Compliant Data Evaluation



CAM-Compliant Data

- CAM-compliant analytical data meeting all method- and project-specific Data Quality Objectives may be used without reservation to support an RAO pursuant to 310 CMR 40.1056 (2)(k).
- The Analytical Data Usability Assessment should discuss how analytical deficiencies, identified in the Laboratory Case Narrative, might affect the overall ***accuracy***, ***precision, sensitivity and ultimate suitability*** of the analytical data to support MCP decisions.

Classes of Non-CAM Data

- Non-CAM Compliant
- Pre-Cam
- Non-CAM

Non-CAM Compliant Data

Analytical results determined using an "MassDEP Analytical Method" detailed in the CAM that:

(1) are not in compliance with method-specific QC requirements specified in the CAM;

(2) do not include a narration of method–specific performance standard deficiencies, as necessary; and/or

(3) do not include the required deliverables specified in the CAM for MCP analytical data.

Non-CAM Analytical Data

Analytical results determined using an analytical method that is not currently included in the CAM.

- Dioxin
- Perchlorate
- Others

Pre-CAM Data

Analytical results determined using any method ***conducted and reported*** before August 1, 2003 for methods included in the CAM.

Non-CAM Data Evaluation

- Analytical Accuracy
- Analytical Precision
- Analytical Suitability
  - Sensitivity (Reporting Limit)

Table II-I	Elements for Evaluating the Accuracy, Precision and Sensitivity of CAM Non-Compliant, Non-CAM and Pre-CAM Data Categories
Review Element	**Data Quality Indicator**
GC/MS Tunes (GC/MS methods only)	Laboratory Accuracy
Endrin/DDT Breakdown (Pesticides only)	Laboratory Accuracy
Initial Calibration (Reporting Limit)	Laboratory Accuracy/Sensitivity
Continuing Calibration	Laboratory Accuracy
Interference Checks (Metals only)	Laboratory Accuracy
Method Blanks	Laboratory Sensitivity and Laboratory Cross-Contamination Evaluation
Laboratory Control Spikes (LCS)	Laboratory Accuracy
Laboratory Control Spike Duplicate (LCSD)	Laboratory Accuracy and Precision
Matrix Spikes (MS)	Method Accuracy in Sample Matrix
Matrix Duplicate (MD) and Matrix Spike Duplicates (MSD)	Method Accuracy and Precision in Sample Matrix
Surrogate Spike Recovery (Organics only)	Accuracy in Sample Matrix
Internal Standards	Laboratory Accuracy and Method Accuracy in Sample Matrix
Fractionation Check Standard (EPH only)	Laboratory Accuracy
Laboratory Case Narrative and Data Report	Ensures Consistent Reporting and Compliance with CAM and/or Sufficient Information Available to Perform Analytical Data Usability Assessment

Appendix II
Table II-1

Evaluation Elements

Appendix II, Table II-2
Additional Elements for Consideration

Table II-II	Additional Elements to Consider for Analytical Data Usability Assessment of Non-CAM, Pre-CAM, and Field/Screening Data
Review Element	**Data Quality Objective**
Standard Operating Procedure (SOP)	Overall Method Consistency and Reproducibility
Initial Demonstration of Proficiency	Overall Analytical Performance
Additional Elements Which May be Required for Non-CAM, Pre-CAM and Field Screening methods Based on Review of SOP or Method Requirements	To Be Determined Based on SOP or Method Review

Appendix III PARCCS Parameters

APPENDIX III	USE OF PARCCS PARAMETERS FOR MCP DATA USABILITY ASSESSMENT[1]		
QC Element	**Laboratory Measures**	**Field Measures**	**Basis of Evaluation**
Precision	Laboratory Control Sample (LCS) LCS Duplicates (LCSD) Matrix Duplicates Historical Data Trends	Field Duplicates Matrix Spike Duplicates Matrix Duplicates Appropriate Sampling Procedure	Evaluation of Project **Precision** Data Quality Indicators by Media Type. Evaluation of Compliance with Project's Data Quality Objectives.
Accuracy	LCSs Matrix Spikes Internal Standards Surrogate Recovery Initial Calibration Continuing Calibration Standard Reference Material	Matrix Spikes/Matrix Spike Duplicates Inclusion of "Blind" Samples Appropriate Sampling Procedures Appropriate Sample Containers Appropriate Sample Preservation Holding Times Equipment Blank/Field Blank	Evaluation of Project **Accuracy** Data Quality Indicators by Media Type. Evaluation of Compliance with Project's Data Quality Objectives
Representativeness	Laboratory Homogenization Appropriate Sub-sampling Appropriate Dilutions "As Received" Sample Preservation Meeting Hold Times	Appropriate Sampling Procedures Appropriate Sample Containers Appropriate Sample Preservation Incorporation of Field Screening Data	Evaluation of consistency of data with Conceptual Site Model Evaluation of consistency of analytical data with field data and hydrogeological site data Evaluation of spatial and temporal variabilities
Comparability	GC/MS Tuning Calibration Analytical Method Followed	Comparison to Previous Data Points Comparison to Similar Data Points	Evaluation of inter-comparability of all site data and information by media type
Completeness	% Sample Per Batch Analyzed and Reported All Critical Samples Reported and Unqualified	% Planned Samples Collected All Critical Samples Collected	Analyte list consistent with site history Number of data points adequate to describe the magnitude and areal extent of release
Sensitivity	Method Blanks Instrument Blanks Reporting Limit (Lowest Calibration Standard) Appropriate Analytical Method	Equipment Blank/Field Blanks Appropriate Sample Volume or Weight	Evaluate whether reporting limits for data adequate to demonstrate compliance with applicable standards

[1] Note: Some of these PARCCS measures are not required deliverables for CAM data. CAM data require reporting of LCS/LCSD, Method blanks, and surrogates. MS/MSD/MD are performed upon project-specific/LSP request.

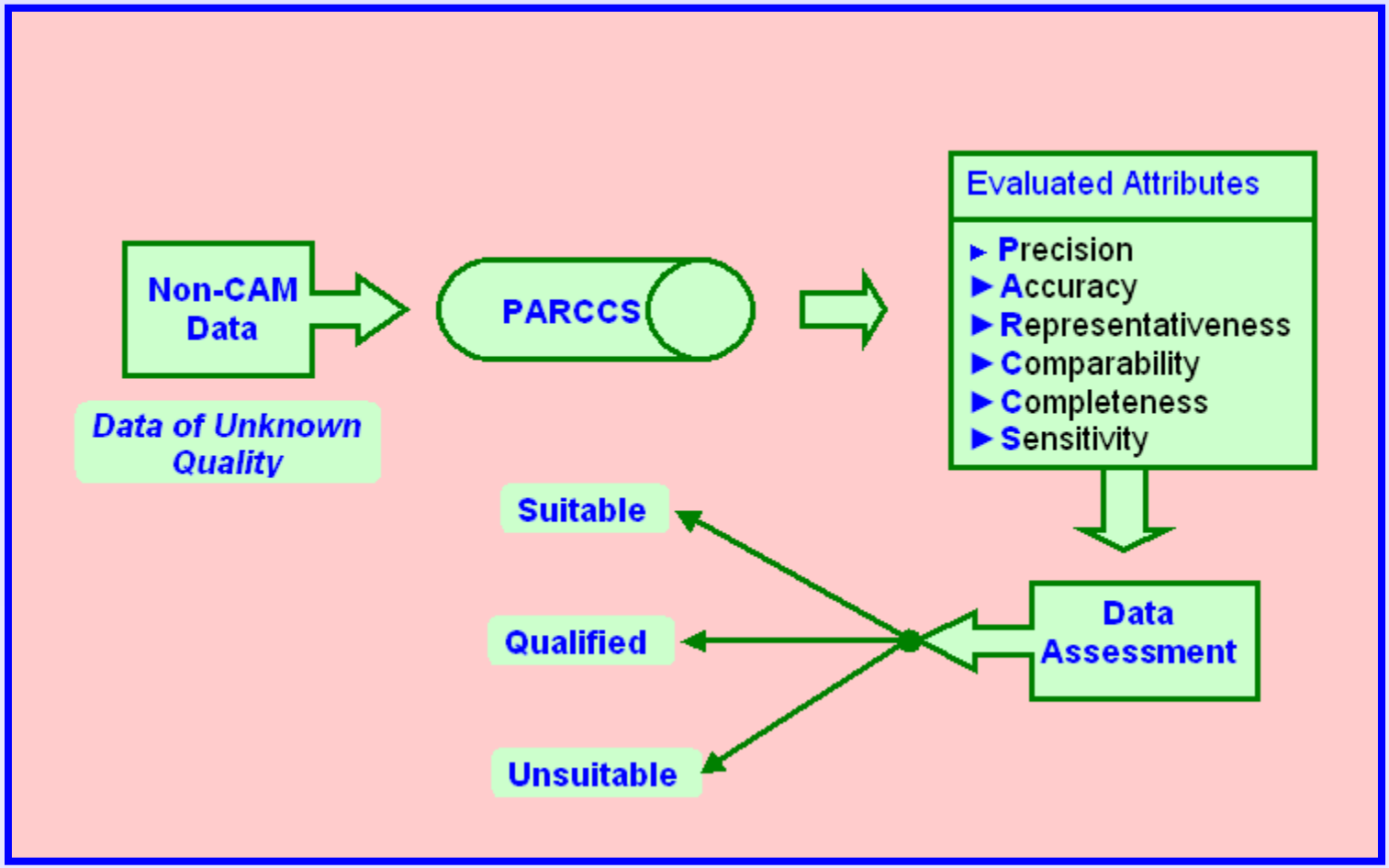
Rejection of Analytical Data

Data that are deemed unusable as the result of a "**gross failure**" of quality control in the process of sampling or analysis as described in **Appendix IV** can not be used to support an RAO.

- Organic Analyses Rejection Criteria
- Inorganic Analyses Rejection Criteria

It should be noted, that data even not eliminated for "gross failure" may still otherwise be found unusable or of limited use following a data quality assessment.

Non-CAM Data Assessment



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MassDEP

Use of "Non-CAM" Data

- Uncertainties associated with identified data deficiencies, with respect to the overall ***accuracy***, ***precision*** and ***suitability*** of the analytical data must be evaluated
- Non-CAM data may be used to *supplement* CAM-Compliant data points when
  - Consistency (i.e., consistent concentrations and trends) is demonstrated between Non-CAM with CAM-Compliant data for comparable samples, and/or
  - Where there is lack of risk associated with the use of the data, such that use of the Non-CAM data is unlikely to affect the risk characterization or RAO conclusions.

Field Component

Evaluates whether the sampling procedure **(method, preservation and holding times)** ensures that the sample collected in the field and delivered to the laboratory accurately represents the concentration of the contaminant at the sampling/data point.

Field Quality Control Elements*

Review Element	Field Quality Control Indicators
Sampling Procedure	Field Accuracy/Field Precision
Sample Containers and Sample Preservation	Field Accuracy
Holding Times	Field Accuracy
Field Duplicates	Field Precision
Matrix Spikes/Matrix Spikes Duplicates	Field Accuracy/Field Precision
Equipment Blank/Trip Blank	Field Accuracy/Sensitivity

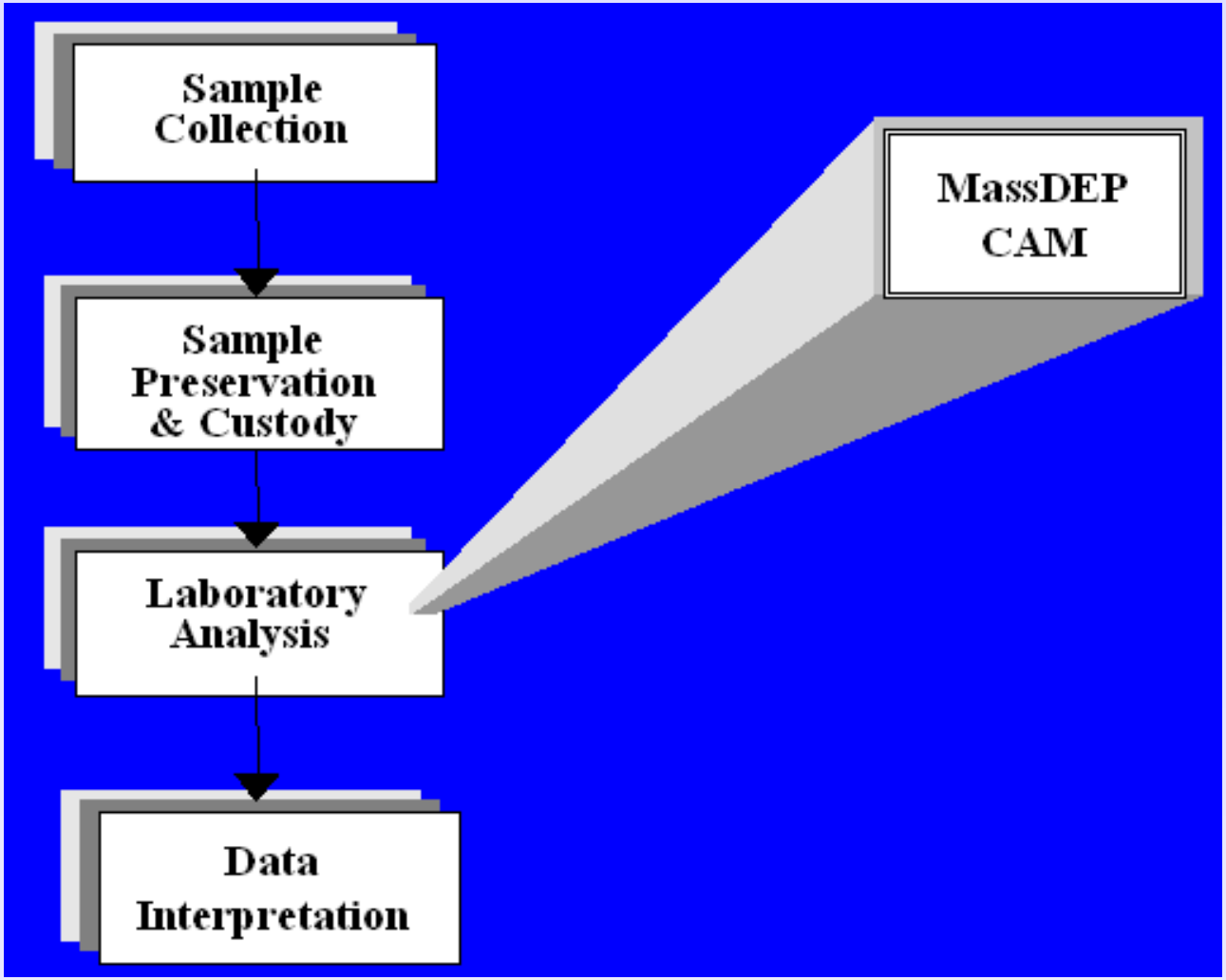
*** As described in WSC-CAM-VIIA, Section 2.0**

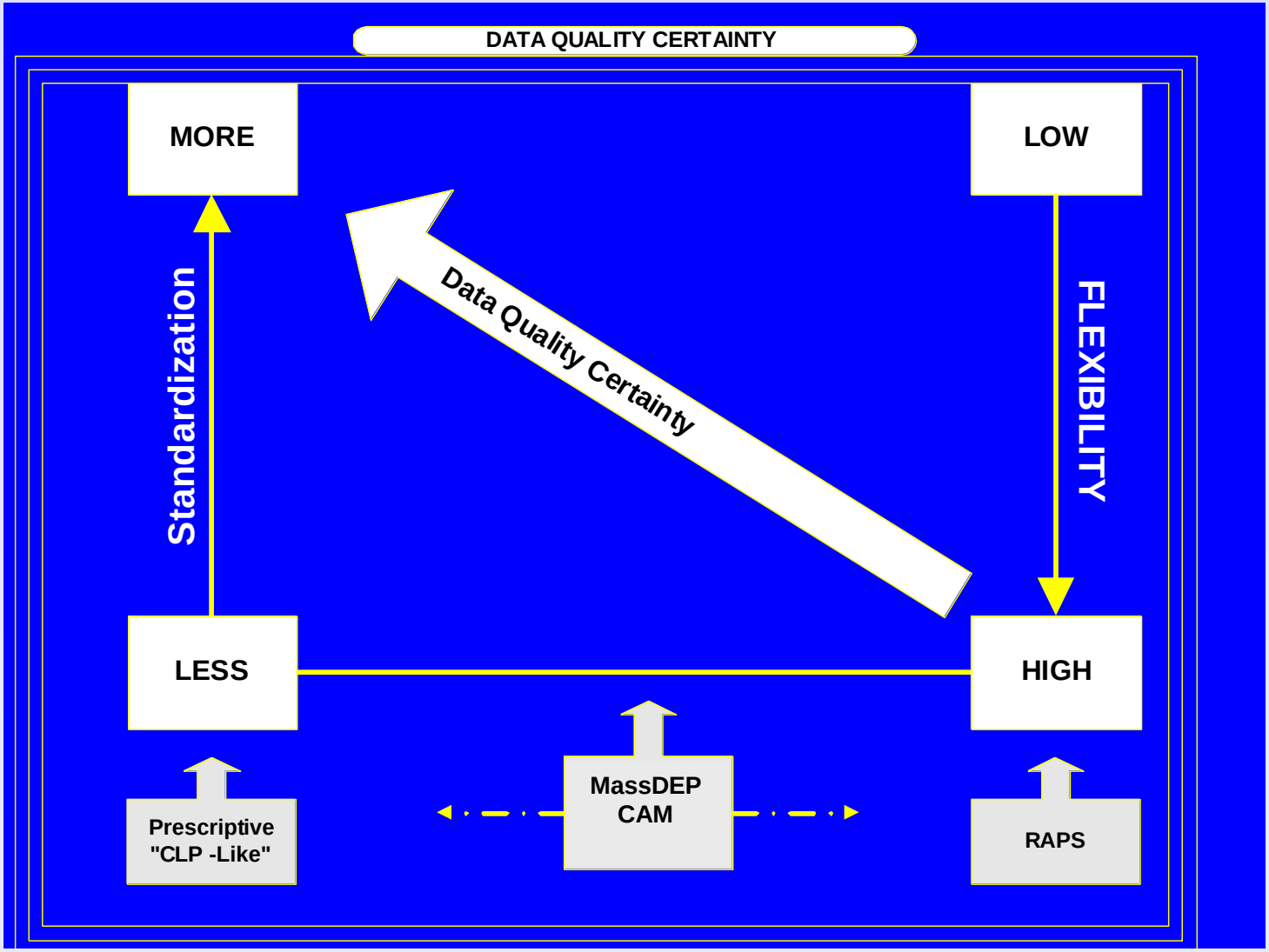
CAM Refresher

MassDEP's CAM Web Page

http://www.mass.gov/dep/cleanup/laws/qaqcdocs.htm

Basic Elements of Data Quality




DATA QUALITY CERTAINTY
MORE
LOW
Standardization
Data Quality Certainty
FLEXIBILITY
LESS
HIGH
Prescriptive
"CLP -Like"
MassDEP
CAM
RAPS

CAM Concepts

- Utilizes **Established Analytical Procedures** (MassDEP (CAM), VPH/EPH, etc.)
- **Method-Specific QA/QC Requirements**, **Performance Standards**
- Method-Specific Analyte Lists
- Laboratory Certification
- **"Presumptive Certainty"** of Data Acceptability for LSP if Data is CAM Compliant

Elements of MassDEP Analytical Methods

Method Summary

QA/QC Requirements

Method Performance Standards

Target Analyte Lists

Laboratory Reporting Requirements

Typical Reporting Limits for Water, Soil and Waste Samples (Lowest analytical standard)

Sample Preservation and Hold Times

Elements of MassDEP Analytical Methods
(*continued*)

Laboratory QC Requirements

- **General** Method Quality Control Requirements
- **Specific** Quality Control Requirements & Performance Standards for Method - Initial and Continuing Calibration
  - Method Blanks and Laboratory Control Spikes (LCSs)
  - Matrix Spikes and Matrix Spike Duplicates
  - Internal Standards and Surrogates
  - General Reporting Issues, including Reporting Limits

Presumptive Certainty Concept

To assure **Presumptive Certainty** of suitability of analytical data the LSP must …

- Specify MADEP Analytical Methods
- Provide Laboratory Certification that …
  - ✓ Attests to Compliance with All Method QA/QC Requirements and Performance Standard
  - ✓ States All Analytes Encountered (Analyte List and Calibrated Compounds) are Reported
  - ✓ Conditions Detailed on Chain of Custody Documentation are Accurate

MCP Analytical Method Report Certification Form

MADEP MCP ANALYTICAL METHOD REPORT CERTIFICATION FORM

Laboratory Name:	Project #:
Project Location:	MADEP RTN[1]:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

Sample Matrices: □ Groundwater □ Soil/Sediment □ Drinking Water □ Other: _____

MCP SW-846 Methods Used	8260B ( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A ( )
	8270C ( )	8081A ( )	VPH ( )	6020 ( )	9014M[2] ( )
As specified in MADEP Compendium of Analytical Methods. (check all that apply)	8082 ( )	8021B ( )	EPH ( )	7000 S[3] ( )	7196A ( )

1 List Release Tracking Number (RTN), if known
2 M – SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method
3 S – SW-846 Methods 7000 Series List individual method and analyte.

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set?	□ Yes □ No[1]
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	□ Yes □ No[1]
C	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	□ Yes □ No[1]
D	*VPH and EPH Methods only*: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)	□ Yes □ No[1]

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all analytical QC performance standards and recommendations for the specified methods achieved?	□ Yes □ No[1]
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	□ Yes □ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:_____	Position:_____
Printed Name:_____	Date:_____

CAM VII A, rev. 3.2 April 2004

- An **affirmative response** for questions A, B, C and D is required for "Presumptive Certainty" status

AND

- A response (affirmative or negative) to questions E and F is required for "Presumptive Certainty" status.

MCP Analytical Report Certification Form

Question A

Were all Samples received by the laboratory in a condition consistent with the description described on the Chain-of-Custody documentation for the data set?	•**Yes** •**No**[1] (*if* **No** must address in narrative. A*ttach additional information if required*)

MCP Analytical Report Certification Form
Question B

Were all **QA/QC procedures** required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	•**Yes** •**No**[1] (*if* **No** must address in narrative. *Attach additional information if required*)

MCP Analytical Report Certification Form
Question C

Does the data included in this report meet all the analytical requirements for "**Presumptive Certainty**" as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	•**Yes** •**No**[1] (*if* **No** must address in narrative. *Attach additional information if required*)

MCP Analytical Report Certification Form
Question C (*continued*)

(a) Use the "MCP Analytical Methods" detailed in the CAM;

(b) Comply with the applicable QC analytical requirements prescribed for the individual testing procedures in the CAM;

(c) Evaluate, and narrate, as necessary, compliance with performance standards described for the individual testing procedures in the CAM; and

(d) Adopt the reporting formats and elements specified in the CAM

MCP Analytical Report Certification Form
Question D

VPH and EPH Methods only: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)	•**Yes** •**No**[1] (*if* **No** must address in narrative. *Attach additional information if required*)

MassDEP

MCP Analytical Report Certification Form
Question E

Were all analytical QC performance standards and recommendations for specified methods achieved?	•**Yes** •**No**[1] (*if* **No** must address in narrative. *Attach additional information if required*)

MCP Analytical Report Certification Form
Question F

Were results for all analyte-list compounds/elements for the specified method(s) reported	•**Yes** •**No**[1] (*if* **No** must address in narrative. *Attach additional information if required*)

Laboratory Case Narrative

- All project and method-specific QC non-conformances must be reported to the data user in the form of an **EXCEPTION REPORT**
- The following information, if applicable, should also be reported
  - Non-routine QC requirements provided to the laboratory
  - Follow-up to “NOs” on Certification Report
  - Reporting Limit (***as specified by LSP***) Issues
  - Method modifications or corrective actions, or
  - Holding time exceedances and/or exceptions

LSP Responsibilities Under CAM

- Provide Laboratory with site-specific analytical Instructions regarding reporting limits, analyte lists and field QC
- Provide chain-of-custody documentation
- Evaluate the overall quality and suitability of MCP data subject to the requirements of:

  - MCP Sample Collection and Analyses Requirements (310 CMR 40.0017)
  - Response Action Performance Standard (310 CMR 40.0191)
  - RAO Representativeness Evaluations (310 CMR 40.1056(2)(k))

SUPPLEMENTAL "PRESUMPTIVE CERTAINTY" STATUS REQUEST FOR MCP ANALYTICAL SERVICES FORM

Client Name: _____	Project Name: _____
Project Location: _____	MADEP RTN [1] _____
Chain of Custody Reference: _____	Data Set[2] Reference: _____

General Questions:

Is MCP Analytical Presumptive Certainty status being requested for the referenced data set*? **Laboratory must use approved MCP Analytical Methods*	☐ Yes[3] ☐ No
Were all samples comprising this data set collected in appropriate containers as specified in CAM VII A, Appendix VII A-1 for requested analytes ?	☐ Yes ☐ No
Were all samples preserved as specified in CAM VII A, Appendix VII A-1 for requested analytes ?	☐ Yes ☐ No
Were all samples that require preservation at 4 °C maintained at this temperature from time of collection to the time samples were received by the laboratory?	☐ Yes ☐ No
Are any of the soil/sediment samples in the data set preserved by freezing or require freezing (< 7 °C) by the laboratory (within 48 hours of the time of collection)	☐ Yes ☐ No
Should laboratory report standard MCP Analyte List for requested analytical methods?	☐ Yes ☐ No[4]
Specify minimum Reporting Limits (RLs) for aqueous samples (Method 1 GW-1, RC[5] GW-2, etc.)	
Specify minimum Reporting Limits (RLs) for soil/sediment samples (Method 1 S-1 Soil & GW-3, etc.)	
Are Matrix Spikes (MS) or MS Duplicates required for this data set? Has adequate sample volume/duplicate samples been identified and/or provided?	☐ Yes[6] ☐ No ☐ Yes ☐ No
Are any of the samples in the data set characterized as "drinking water" as described in CAM VII A, Section 2.5?	☐ Yes ☐ No
If YES, samples identified as "drinking water" must be analyzed using analytical methods specified in 310 CMR 22.06 B (10), i.e., EPA 500 Series for organics, EPA 200 Series for metals, etc., and require analysis[4] of Tentatively Identified Compounds (TICs), if GC/MS analyses requested, Field Duplicates, and Trip Blanks as described in CAM VII A, Section 2.5.	
Field Duplicate Samples provided and identified for all "drinking water" samples*.	☐ Yes ☐ No
Trip Blanks provided and identified for all "drinking water" samples *. ** Complete analysis only if target Analyte is encountered above RL.*	☐ Yes ☐ No
Is any alternative, supplemental or non-routine QC required for this data set?	☐ Yes[7] ☐ No

1. MCP Release Tracking Number
2. A group of samples collected, processed and transported to a laboratory for analyses under similar conditions
3. Laboratory must use approved MCP Analytical Methods
4. Attach modified analyte list (may include non-standard Analyte List compounds)
5. MCP Reportable Concentration (310 CMR 40.1600, Massachusetts Oil and Hazardous Material List)
6. List identifying candidate samples for MS and/or MSD attached. Data user responsible to provide laboratory with adequate sample volume to prepare field QC samples.
7. Attached description of alternative, supplemental or non-routine QC.

Signature _____ Date _____

CAM VII A, rev 3.2 April 2004

Request for MCP Analytical Services

- Reporting Limit
- Analyte List
- Field QC

MassDEP

MassDEP's CAM
Data Quality Improvements

- Improved **Analytical Quality**, Documentation and Reporting Uniformity
- Standardized **Analyte Lists**
- **Certification** of CAM Compliance by Laboratory with ***exception reporting***
- **Reporting Limits** Consistent with Regulatory Compliance Requirements
- More Comprehensive and focused MassDEP **data audits** of Analytical Deliverables

CAM MCP Impact Summary

- After some "initial reluctance" the CAM approach has been been well received by LSPs and laboratories
- Most agree that the CAM has been a positive influence on the MCP process
- Most current analytical reports include "Presumptive Certainty" certification (> 90%)
- Laboratories using MassDEP Method 8260 B performed very well in the VOC double-blind study