



C-400 Scoping Process

March 13, 2018

Introductions

- Around the room and on the phone
 - Decision makers
 - Role of facilitation
-
- *GREEN Text in subsequent slides represent modifications discussed during 3/13 meeting.*

Ground Rules

- ❏ Golden Rule
- ❏ Be clear when you are “thinking out loud” versus defining your position/perspective
- ❏ Be clear when an issue requires input from others not present in the meeting

Purpose and Objectives of Scoping

❏ Purpose

- Collaboratively discuss and reach agreement to the technical elements of an RI/FS Work Plan for the C-400 Project.

❏ Objectives

- Achieve common understanding of the scope of the project;
- Achieve common understanding of the conceptual site model for contamination associated with the defined SWMUs; C-400 building remnants (i.e., sub-grade structure); vadose zone soils under the building remnants; and underlying groundwater.
- Identify data needs and resultant work plan scope necessary to
 - **Determine a basis for action (RI);**
 - **Evaluate and select response actions (FS).**
- **Note:** Existing information can take us a long way down the RI/FS path.

Inputs and Outputs of Scoping

Inputs

- 2018 Scoping Document
- Prior regulatory documents and associated data (document library)
- Experience of participants
- PGDP process history
- OTHERS?

Outputs

- Meeting summaries
- Technical elements of Work Plan
- Draft Work Plan

Process Documentation

- ❏ Meeting summaries from Sapere
 - Technical topic, major points of discussion, agreements, action items, unresolved issues
- ❏ Substantive technical elements that will be incorporated into the Work Plan, for example:
 - Conceptual site model;
 - List of COPCs;
 - Data needs, data gaps, investigation approaches
 - Basis for Action (e.g., Problem Statements) for discrete pieces of the project (e.g., SWMUs)
 - “short-list” of Likely Response Actions

Scoping Meeting Layout

- ❏ See proposed agenda
 - March 13-15 ~ 20 hours of face-to-face meetings
 - April 10-11 ~ 8 hours of web meetings
 - May 1 ~ 4 hours of web meetings
 - May 15-16 ~ 8 hours of web meetings
 - June 5 ~ 4 hours of web meetings
 - June 19-21 ~ 20 hours of face-to-face meetings
- ❏ Initial thoughts?
- ❏ We will revisit our path forward on March 15th

Issue Resolution Process

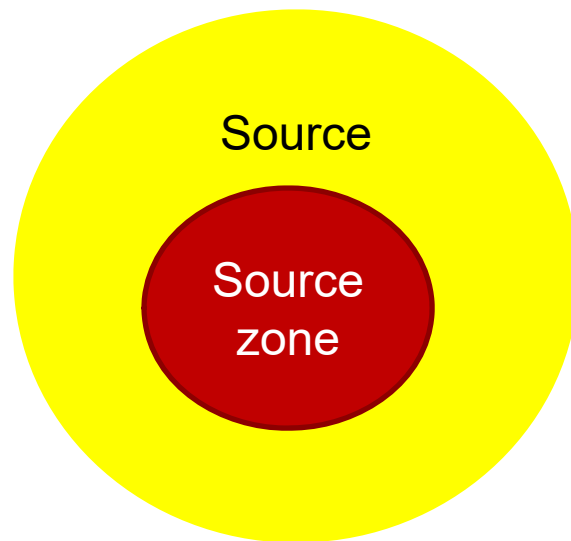
- ❏ If we get stuck on an issue, how will it be resolved?
 - Reconvene later
 - Reconvene later with others
 - Seek input from Senior Managers
 - Individually go up organizational chain and come back to thee-party scoping table with input
- ❏ Remember what we don't resolve in scoping will be left to comment resolution during Work Plan review and approval.

Key Definitions

- ❏ Source Zone – Actionable area for a decision. (for any receptor) ~~The area of contamination posing a risk~~ Subset of “Source” as it was used in SWMU 1 project. Specific to the action you are discussing.
- ❏ Source – The area of contamination posing a risk... (RAGS definition)
- ❏ ~~Residual (non-source) Soil Contamination covered in how we define source zone~~
- ❏ Contamination – anything above background
- ❏ Characterization Level – Detection Limit
- ❏ No Action Level – Levels that do not pose a risk to a receptor (typically residential— 10^{-6} or $HI=0.1$ for an individual compound)
- ❏ Action Level – RMD = 10^{-4} or HI of 3 (early action numbers); QAPP = value to be looked for analytically (no action level for the resident)
VI (VISL/C-400 VI Report?) GW Protection (SSL at 1) First screen does not take expected exposure into account. Triggers will need to be discussed/defined.

Key Definitions Continued

- ❏ **De-minimus** – from FFA, those that define risk (10-6 cumulative, HI of 1)
- ❏ **High Concentration Area**-per MOA? concentrations in water that could lead to continued contamination downgradient. potential to impact other areas; or non mobile with the ability to impact risk (similar to source zone) TCE in groundwater has been defined (1% of solubility)
Also needs to be defined in terms of not spreading contamination
- ❏ **Limited Area (need current map)**
- ❏ **OTHERS?**



DQO Framework

- ❏ State the Problem –
 - generally, why do I need data?;
- ❏ Principal Study Questions –
 - what specific questions will I answer with the data?;
- ❏ Data Needs;
 - what data are needed to answer the question?
- ❏ Data Gaps;
 - after I try to fill my needs with existing data, what gaps do I still have requiring additional investigation?
- ❏ Investigation Approaches
 - how will I design my investigation to ensure I fill my gaps sufficiently to answer my PSQs?

List of action items from whiteboard

1. Go/No Go Map
2. FFCA/TSCA requirements
3. Contamination coming into project (upgradient MW data)
4. Line between C-400 Complex and Dissolved Phase
5. Define triggers for early action
6. Map of current limited area
7. FFA parties define intent of "High Concentration Area" in MOA
8. Confirm issue resolution process
9. RI/FS for City Block for N&E not just sources to GW
10. List of SWMUs that are flow filled
11. Spatial representation of existing data
 - a. Where is max – be able to ascertain concentrations
 - b. Annotated cross section
 - c. Similar figures to SWMU 4, by horizon, by sector
12. Summary of exclusion of data (e.g., validation codes, removed/remediated)
 - a. Data usability rules
13. SWMU 47 – D1 soils RI risk assessment
14. How will we use prior risk assessment – **SWMU 4 approach**
 - a. needs paragraph from SWMU 4 WP
 - b. Compare to Industrial Worker**
15. Align WAG 6 Sectors to C-400 Complex Boundary
 - a. Scope Sectors
 - i. Bldg broken up into multiple sectors
16. Potential surface soil contamination from C-410/420 Demo
 - a. Also post C400 demo
17. Where are drains/penetrations in areas to be filled.
18. Graphic/map of location of SWMUs (all 22)

Definitions requiring additional clarification:

Definitions of Source/Source Zone

COPC by soil zones:

0-1 = Surface Soil (COPC all minus Pest/VOC)
1-16 = Subsurface Soil (COPC all minus Pest)
>16 = Deep Soil (COPC all minus Pest)
GW = COPCs: VOC, PCBs**, metals*, rads*, PAHs**

*from Table 2.1 of RMD—need to check this

**if diluting, don't run PAH and PCB

Statement of the Problem for DQOs as edited in meeting:

Hazardous substances that have been historically present and/or migrated from the C-400 Complex and its SWMUs have been released to surrounding environmental media. These substances, in turn, have infiltrated into groundwater and been transported through subsurface pathways. The nature and extent of contamination has been adequately defined for some SWMUs and areas and risk assessments have been prepared. For other SWMUs and areas, the nature and extent of contamination has not been adequately defined to assess whether potential contaminants pose unacceptable risks to human health and the environment at the C-400 Complex and at downgradient exposure points. Data gaps must be identified so that a comprehensive RI/FS report can be prepared for the C-400 Complex.

PSQs by Goal for DQOs as edited:

GOAL 1: CHARACTERIZE NATURE OF CONTAMINATION

Decisions and questions

1-1: What are the suspected contaminants?

1-2: What are the plant processes/activities that could have contributed to the contamination? When and over what duration did releases occur?

1-3: Are there hazardous substances present in the building infrastructure?

1-~~4~~3: What are the chemical concentrations and radionuclide activities at the source?

1-~~5~~4: What is the area and volume of the source zone?

1-~~6~~5: What are the chemical and physical properties of associated material (e.g., groundwater, soil, concrete) at the source areas?

1-~~7~~6: Where is the source?

GOAL 2: DEFINE EXTENT OF CONTAMINATION

Decisions and questions

2-1: What are the past, current, and potential future migratory paths?

2-2: What are the past, current, and potential future release mechanisms?

2-3: What are the contaminant chemical concentrations or radionuclide activity gradients?

2-4: What is the vertical and lateral extent of contamination?

2-5: What is the extent of contamination to integrator units (e.g.i.e., groundwater, soil/surface water)?

GOAL 3: DETERMINE SURFACE AND SUBSURFACE TRANSPORT MECHANISMS AND PATHWAYS

Decisions and questions

3-1: Are and how ~~What~~ are the contaminants ~~migration trends~~ migrating from the source?

3-2: ~~To what area is the dissolved phase plume migrating~~ What is the direction of contaminant transport in groundwater?

3-3: What are the effects of building construction, underground utilities, previous remedial actions, and plant operations on migration pathways including ditches?

3-4: What is the role of the UCRS in contaminant release and transport?

3-5: What are the physical, ~~and~~ chemical, and hydrogeological properties of the formations and subsurface matrices?

GOAL 4: COMPLETE A FINAL BASELINE RISK ASSESSMENT FOR THE C-400 COMPLEX RI/FS

Decisions and questions

- 4-1: Where ~~do the contaminant concentrations exceed characterization levels (i.e., detection limits)~~ have contaminants been detected?
- 4-2: Are isolated areas of contamination present or is contamination general?
- 4-3: What are the COCs that define the contamination?
- 4-4: What are the characterization levels?
 - 4-5: Are SWMUs within the C-400 Complex RI/FS similar enough to be addressed in the same manner?

GOAL 5: IDENTIFY, DEVELOP, AND EVALUATE REMEDIAL ALTERNATIVES

Decisions and questions

- What is the nature and extent of contamination?
- What are stakeholder's perceptions of ~~potential contamination at or migrating from source zone or secondary sources~~ remedial alternatives?
- What are the principal threats?
- What media are contaminated to unacceptable levels?
- What contaminant groups are present driving the unacceptable risk?
- What are the preliminary remedial action objectives (RAOs)?
- What is unacceptable risk?
- What are the PRGs?
- What are the general remedial alternatives/what are the remedial technology types?
- What is the schedule of remedial action?
- What are the possible remedial technologies applicable for this unit?
- Are possible remedial technologies incompatible?
- Are cultural impediments present?
- What are the process option(s) to be used/what are the representative remedial technologies to be assessed?
- What are the physical, ~~and~~ chemical, ~~and~~ hydrogeological properties of media to be remediated?
- What treatability studies would be required?
- What is the area/volume of affected media?
- Are process options innovative or proven?
- Are process options applicable to multiple contaminant families?
- What would be the impact of a process option on and by other sources?
- What would the impact of a process options on the integrator units (e.g., groundwater)?
- Are there geologic limitations to the process options?
- Are process options acceptable to the community and state?
 - Are process options reversible?

PSQs by GOAL for C-400 Areas to be filled (from PPT)

Goal #2 - Define Extent of Contamination

- 2-1: What are the past, current, and potential future migratory paths?
- 2-4: What is the vertical and lateral extent of contamination [within the concrete ~~flooring~~]?

Concrete Sampling for areas being filled with flowable fill:

Fan Room, Plenum Room, Basement being filled to grade. Tanks will be filled (above grade) with flowable fill, concrete cap.

Premise: all releases are integrated into basement, so should be “worst case” . EPA not sure yet.



Figure of concrete core, samples at top and bottom of core.

Pilot hole or vapor intrusion work could be used to verify concrete thickness.

Is concrete contaminated?

Did contamination migrate through concrete?

Goal: Sample areas that would be inaccessible after flowable fill. Data needs to support excavate/dispose and leave in place.

Location #1 would include rad survey, smear and swipes (gamma emitters) Gamma would be an indicator of use. Tc-99 would not be picked up by the gamma scan, but would be included in the definitive concrete sample. Tc-99 was a contaminant of the process—uranium was the primary part of the process. Presence of Tc-99 was a deviation from the norm. Through the process, there was no way to have Tech without the presence of uranium. (There was not trapping mechanism for Tech.)

Proposed analyses are metals, PCBs, and rads in the floor. Rad surveys in the ducts. PCBs included in sampling due to the paint, no documentation of PCB spills or PCB equipment. Historically paint has had PCBs in it. Paint would be on the floor as well as the wall.

Rad surveys are primarily for health and safety, not necessarily for characterization. The survey would provide an indicator whether the location is contaminated. Survey data can be considered screening data.

Location #2 is proposed for sampling VOCs, SVOCs, metals, PCBs, and rads. PCBs—no indication of PCB equipment at this location

Standard analytes are in Table 2.1 of the Risk Methods Document. Metals would be entire list; chromium would be analyzed as total, not speciated

Dioxins/furans are not proposed for analysis.

Toluene should be added because it is a BTEX constituent, but not a “Significant Chemicals and Radionuclides of Potential Concern at PGDP”

Expected contaminant cross-walk should be included (from Process Structure Review Document)

No samples proposed in the southwest corner “Condensation Pit” because location #2 would be representative. A sample location was proposed here as Location #9.

SAP/QAPP needs to be presented such that flowable fill does not preclude future actions.

Any additional information that may need collection prior to fill should be considered.

Extra casings would be documented in the RI/FS WP

Would the concrete sampling SAP/QAPP be secondary document? How does it relate to the RI/FS WP?

Is the type of data (i.e., samples for the COPCs discussed from concrete) usable?

Location #10 is recommended at photo location.

Will C-400 be an URMA?

Surface Radiological Screening Survey over basement area should be considered with instruments capable of alpha/beta/gamma readings. Nathan or Stephanie will provide info on instrumentation.

SAP/QAPP would contain information on sampling concrete to preserve VOCs. (Ben and Eva providing information)

Follow-up call on **March 28** to finalize SAP inputs for “filled areas”

- 1) EPA will identify additional data needs, if any. **(3)**
- 2) DOE respond to KY request for Rad Survey & drain pipe scoping. **(4)**
 - a. Stephanie to provide info to DOE
 - b. Yes and how OR No
- 3) EPA/DOE discuss TSCA Reqs and data needs **(2) (Different folks, separate meeting – Jana White setting up meeting Ken, Julie, attorneys, Tracey Duncan, FRNP folks, Mike G, Aaron)**
- 4) DOE define regulatory “pedigree” of SAP for “filled areas” **(1) (DOE to send e-mail by Tuesday Dave to Julie and Brian)**
 - a. CERCLA SAP pre-Work Plan
 - b. Deactivation doc FYI

- c. Other?
- 5) DOE describe concrete sampling method (5)
 - a. EPA share ideas ahead of time

Edits to PSQs for Basement Areas

GOAL 1: CHARACTERIZE NATURE OF CONTAMINATION

Decisions and questions

1-1: What are the suspected contaminants?

1-2: What are the plant processes/activities that could have contributed to the contamination?

When and over what duration did releases occur?

1-3: Are there hazardous substances present in the building infrastructure?

Goal #2 - Define Extent of Contamination

2-1: What are the past, current, and potential future migratory paths?

2-4: What is the vertical and lateral extent of contamination [within the concrete-flooring]?

CSM Discussions

Geologic Data Gaps

1. N/S transect through C400 footprint
2. E/W transect near south end of C-400 footprint
3. GW divide east of C-400
4. Metals, rads, PCBs, PAHs in RGA and UCRS and McNairy (GW)
 - a. General GW need
5. *Uncertainty for cosolvent transport*
6. Soils data – full suite in areas on west side of building
7. Soils under Building full suite
8. ~~Is 1999 data of sufficient quality (captured from previous discussions)~~

Raw notes captured on screen 3/15/18

CSM Discussions Continued from 3/14

Depict current stormwater flow/system

Depict “future state” of stormwater system

What responsibility does C400 Complex Project have with respect to storm drains/sewers

What is demo end state for stormwater management?

What is being done with C-410?

Deac end state is plugging Building storm drains

How will water be managed during demo?

What are future active utilities we have to work around?

Which roads can we block to support project activities?

Depict land surfaces

Ground Rule:

Core Team for e-mails: Julie, Brian, Dave, Todd, Kevin

Copy all then each distribute to others.

Data Usability for plotting/mapping data

Historical data that has been qualified as rejected by data validation or by data assessment will not be included in the historical dataset.

Historical data that contain units inconsistent with the sampled media or with the analysis will not be included in the historical dataset (e.g., a soil sample with analytical units reported in mg/L or a radiological result with units reported in mg/kg).

Historical data for radionuclide results with no minimum detectable concentration recorded will not be included in the historical dataset. CASE-BY-CASE, to be decided after plotting (Data without reported detection limit can be used to inform impacted areas but cannot be used to confirm not impacted. Keep it in for initial compilation and eliminate case by case.)

Historical data for nonradionuclide results with no reported result and no detection limit recorded will not be included in the historical dataset.

Historical data for radionuclide results with a null or zero recorded as a counting error will not be included in the historical dataset. . CASE-BY-CASE, to be decided after plotting (Data without reported detection limit can be used to inform impacted areas but cannot be used to confirm not impacted. Keep it in for initial compilation and eliminate case by case.)

Data assessment qualifiers previously placed on the data will be noted and applied as appropriate

A result will be considered a nondetect if it is qualified by the reporting laboratory **includes** the following:

- a “U” qualifier or a “<” qualifier or
- an “A” qualifier if the result is a radiological result analyzed by a laboratory with codes “PGDP” or “PARGN”.

A result will be considered a nondetect if it has a “U” validation code or a “U” data assessment code, including UJ, etc.

A radiological result may be considered a nondetect if the reported total propagated uncertainty is greater than the reported result.

Any exceptions to these rules will be documented in the data quality analysis as part of the RI.

Negative radiological results will be nondetects.

Not representative of current conditions, as coded in OREIS (i.e., RMVO or RA)

Evaluation of sampling—Data were examined to ensure that sampling methods were adequate for determining the nature and extent of contamination. Specific details of the sampling methods used and the equipment employed to collect samples are described in Section 5 of the SWOU SAP (DOE 2005) and Chapter 2 of Volume 1 of this report. Sample collection followed approved work plans and can be accepted as adequate for site characterization for risk assessment.

Evaluation of analytical methods—These methods, as described in Section 5 of the SWOU SAP (DOE 2005), are adequate for the risk assessment.

List of analytes to consider for plotting (*Plots)

*TCE

*Tc-99

*U-238, U-235, U-234

*Uranium (mg/kg)

*Lead

*VC, 111TCA, 12DCE (no many detects)

*Total PCBs

*Total Carcinogenic PAHs

*Arsenic

*Chromium, note chromium VI

*Mercury?

Summarize D/F data

Freon summary

*Np-237

*Cs-137

Age of groundwater data: currently using previous 5 years

Boring vs Well Data

Keep boring data for volatiles, not for metals and rads

Look at VI Report

Not definitive data

Not a source investigation

Is informative