

Federal Contaminated Sites Site Closure Tool

Version 3.1, March, 2012

1. Purpose

Every year, hundreds of contaminated sites are assessed and remediated under the supervision of departments of the federal government. The ten-step process outlined in *A Federal Approach to Contaminated Sites* (FACS) provides guidance on the pathway from identification of suspect sites to long-term monitoring of sites that have been remediated or risk managed. In order to guide and demonstrate the successful closure of federal contaminated sites, this Site Closure Tool (SCT) has been developed.

The SCT is composed of the excel worksheets within this workbook, including a subset of worksheets that constitute the Tool for Risk Assessment Validation (TRAV). The FCSAP Secretariat strongly encourages the TRAV to be completed for all quantitative risk assessments completed on federal properties under FCSAP.

The SCT serves several purposes:

- it guides you through steps 6-10 of the ten-step FACS process to help standardize the process,
- it includes a tool to validate a risk assessment (TRAV), if it was required
- it evaluates whether your site can be considered closed or is still active depending on whether you meet minimum requirements
- it documents and summarizes the activities that were conducted to close the site for reporting purposes.

Structure

The TRAV worksheets are indicated by those worksheets starting with a roman numeral I through VIII. The TRAV is strongly encouraged to be completed for any detailed risk assessment that is being used to either close a site, or to develop site specific target levels in support of risk management measures.

Based on data provided by the user, the outcome of the tool is a description of the site status, and a determination of whether the site is closed or active, and if active, at what point in the closure process the site has reached. The closure evaluation process will indicate one of the following possible outcomes for your site.

2. Types of Closure

While there are variations of contaminated sites status under FCSAP, this tool distinguishes sites into four main categories. It attempts to highlight achievements of closing a site as defined by FCSAP, but it also communicates progress in managing risk at active sites where key risk management steps (e.g., remediation/risk management planning, construction of engineered works) have been achieved or are underway (long term monitoring).

Active, Additional Work Required: This category indicates that deficiencies were found with the environmental site assessment(s) or risk assessment through the Site Closure Tool (including the TRAV). For example, this may mean that additional characterization work is required or a risk assessment must be revised.

Active, Construction Complete: Sites falling into this category are ones at which the remedial measures described in a remediation/risk management plan are substantially implemented, but remedial objectives have not yet been achieved. This category describes the completion of the major capital expenditures at a site (e.g., installation of a barrier treatment wall, construction of land treatment facility or biocell, installation of an in situ ground water treatment system, construction of a water treatment plant). Active operations and maintenance, including performance monitoring, will be required. This is separate from long-term monitoring, which may be required later in the project life cycle.

Active, Remedial/Risk Management Objectives Achieved but Long-Term Monitoring Required or Underway:

Remediation or risk management measures have been implemented at the site and confirmed to be effective. Risks to human health and ecological receptors have been removed or mitigated; however, long-term monitoring is required to confirm that the measures continue to operate effectively. As a result, there is an environmental liability (for future monitoring costs) associated with the site. For example, a site where a landfill has been constructed to segregate impacted soils will require long-term monitoring on a regular schedule over a specific period.

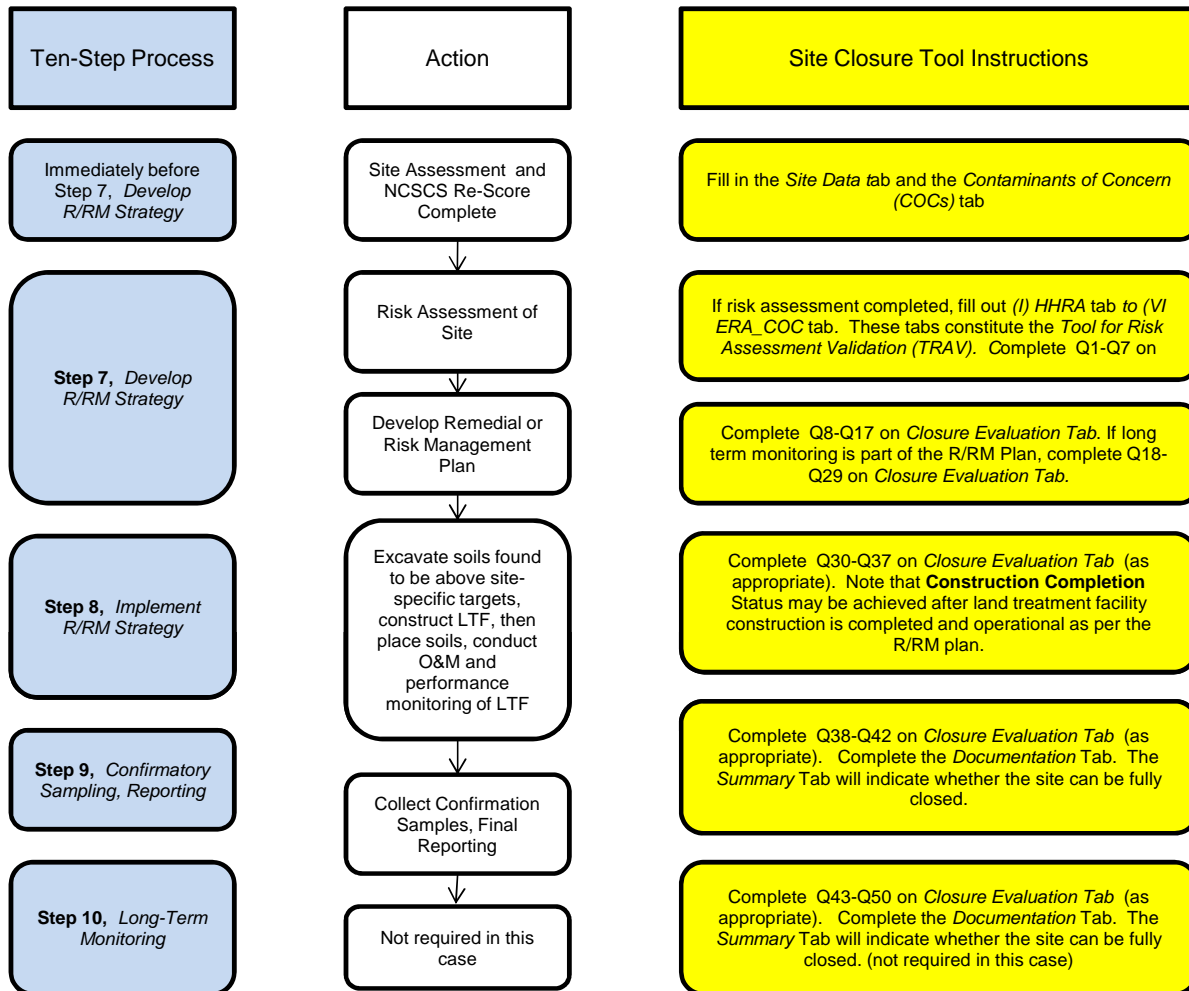
Closed: Remedial Objectives Achieved: All risks to human and ecological receptors at the site have been shown to be acceptable either by meeting generic guidelines, through risk assessment or by removing or mitigating any contamination that exceeded remedial objectives. There is no future environmental liability associated with the site, and long-term monitoring is not required.

3. Structure of Site Closure Tool

The Site Closure Tool should start to be completed after the completion of Step 6 (i.e., the re-classification of the site with the National Classification System for Contaminated Sites) and after the completion of detailed testing at the site. The tool is divided into five main sections, as follows:

| | | | | |
|---|--|---|---|---|
| Closure Evaluation: completed for all sites, determines whether site can be closed following minimum requirements. The Closure Evaluation tab is a series of true/false questions laying out the minimum requirements for R/RM planning, implementation and site closure. | Site Data / Contaminants of Concern (COCs) Tabs: Regardless of whether remediation to generic standards or risk assessment/risk management were used, the User provides basic information about the site. The Site Data tab also provides a baseline evaluation of the Site Assessments. | Tool for Risk Assessment Validation (TRAV): If a risk assessment is part of the R/RM strategy, Worksheets III through VIII should be completed. TRAV validates the quality of the risk assessment to ensure findings are reliable and defensible. | (Site Status) Documentation: not mandatory (except for recording maximum contaminant concentrations versus remedial targets in Section 4). Recommended to be completed based on custodian requirements for closure reporting. Provides a closure narrative that can be used for future reference and as a communication tool. | SCT Summary: Collects the information provided in other tabs to provide an "at-a-glance" summary of site conditions at closure. |
|---|--|---|---|---|

An example of one potential pathway through the site closure tool is presented below. The example project is a site with petroleum hydrocarbon impacts in soil. A risk assessment is completed in an attempt to reduce the volume of soil excavation required. Some soil remains above risk-based site-specific target levels after the risk assessment. The impacted soil is removed to a land treatment facility (LTF) constructed on-site. After LTF construction is complete, performance monitoring is specified in the risk management plan to determine when the risk management objectives have been achieved. When performance monitoring indicates the objectives have been met, a round of confirmatory sampling is completed to demonstrate that all previously impacted soils remain below risk management targets, at which point no further risk exists and the site can be closed.



FCSAP SCT/TRAV SPREADSHEET**Site Data Sheet**

| | |
|------------------------------|--|
| Site Name: | |
| FCSI# : | |
| Completed By: | |
| Date Completed (dd/mm/yyyy): | |

| Question | Response | Rationale/Evidence (document any assumptions, reports, or site-specific information; provide references) | Guidance | Instructions | Flag | |
|------------------------------------|--|---|---|---------------------------------|------|--|
| Site Data | | | | | | |
| 1. Sources of Contamination | | | | | | |
| A | List main sources of contamination for this site - describe any additional sources in the rationale box: | | Based on historical and current property use, areas of environmental concern identified in the Phase II ESA should be considered in the RA and/or remedial action planning. Also, consider that source areas could include off-site sources of contamination. | | | |
| | Source 1 | | | Define Source 1 | | |
| | Source 2 | | | Define Source 2 (if applicable) | | |
| | Source 3 | | | Define Source 3 (if applicable) | | |
| | Source 4 | | | Define Source 4 (if applicable) | | |
| | Additional sources? | | | | | |
| B | For each source below please indicate if all typical contaminants were assessed in the Phase II ESA. Note that the list of typical contaminants is not exhaustive and professional judgement should be used to determine substances that should be assessed. | | | | | |
| | Source 1: | | | | | |
| | | | | | | |
| | Were the typical contaminants listed above considered in the site assessment? | | | | | |
| | Source 2: | | | | | |
| | | | | | | |
| | Were the typical contaminants listed above considered in the site assessment? | | | | | |
| | Source 3: | | | | | |
| | | | | | | |
| | Were the typical contaminants listed above considered in the site assessment? | | | | | |
| | Source 4: | | | | | |
| | | | | | | |
| | Were the typical contaminants listed above considered in the site assessment? | | | | | |
| | If Other Sources were listed | | | | | |
| | Were the typical contaminants listed above considered in the site assessment? | | | | | |
| 2. Media with COCs | | | | | | |
| A | Based on sources of contamination, measured concentrations and contaminant migration, indicate if there are known COCs in each of the media listed below. Provide rationale if COCs are not present in a given medium. | | | | | |

FCSAP SCT/TRAV SPREADSHEET**Site Data Sheet**

| | |
|------------------------------|--|
| Site Name: | |
| FCSI#: | |
| Completed By: | |
| Date Completed (dd/mm/yyyy): | |

| Question | Response | Rationale/Evidence (document any assumptions, reports, or site-specific information; provide references) | Guidance | Instructions | Flag |
|---|---|---|--|--------------------|------|
| Site Data | | | | | |
| i | Surface Soil (0 - 1.5 mbgs) | | Considered and COCs present (e.g., directly measured or calculated) - For this category, medium is known or assumed to be impacted by COCs based on direct measurements or consideration of contaminant fate and transport mechanisms. | Response required. | |
| ii | Subsurface Soil (> 1.5 mbgs) | | Considered and COCs not present (e.g., by testing, modeling, barrier to migration, etc.) - If selecting this answer, it is known or assumed that the medium is NOT impacted with COCs based on direct measurements or consideration of contaminant fate and transport mechanisms. Rationale should be provided to explain why COC not present in a given medium. | Response required. | |
| iii | Groundwater | | | Response required. | |
| iv | Surface Water (including seawater) | | Not considered in assessment - If selecting this answer, the medium was NOT considered in the assessment and/or contaminant fate and transport mechanisms were not incorporated into the assessment. Rationale is required to explain why the medium was not considered. | Response required. | |
| v | Sediment | | | Response required. | |
| vi | Outdoor Air | | na - If selecting this answer, the medium was considered not applicable in the assessment. Rationale is required to explain why the medium was considered not applicable. | Response required. | |
| vii | Indoor Air | | Ensure that contaminant fate and transport is considered and if not that sufficient rationale is provided. Contaminant transport considerations are based on contaminant properties and site characteristics including physical setting and hydrogeology. | Response required. | |
| viii | Other Media 1 | | | | |
| ix | Other Media 2 | | For surface water, Expert Support recommends that contaminant migration to surface water be considered for sites within 500 m of a surface water body. See Reference Material for additional information. | | |
| B | Have all potential contaminant release and transport mechanisms been described? | | Contaminant transport considerations are based on contaminant properties and site characteristics including physical setting and hydrogeology. See Reference Material for additional information. | Response required. | |
| C | Have all potentially impacted media been sampled? | | | Response required. | |
| 3. Additional Site Data Considerations | | | | | |
| A | Have areas of environmental concern been delineated horizontally and vertically? | | See CCME 1993. <i>Guidance Manual on sampling, Analysis, and Data Management for Contaminated Sites. Volume I: Main Report.</i> http://www.ccme.ca/ourwork/soil.html?category_id=68 | Response required. | |
| B | Were sufficient samples collected from areas of environmental concern to reflect maximum concentrations? | | Is the sampling density and coverage sufficient with respect to likely maximum concentrations and site delineation? Was the dataset sufficiently large if statistical interpretation of data was conducted? See CCME 1993. <i>Guidance Manual on sampling, Analysis, and Data Management for Contaminated Sites. Volume I: Main Report.</i> http://www.ccme.ca/ourwork/soil.html?category_id=68 | Response required. | |
| C | Have QA/QC program elements been incorporated to ensure the validity of the data and scientific approach? | | The report should detail both the sampling and analytical testing quality assurance and quality control measures employed and describe if the laboratory QA/QC program was acceptable. The laboratory analysis should be completed by an accredited laboratory (e.g., CALA). Analytical detection limits should be sufficiently low to achieve the accuracy and precision required by the RA. Additional information can be found at http://www.cala.ca/ See Reference Material for QA/QC considerations. | Response required. | |

FCSAP SCT/TRAV SPREADSHEET**Site Data Sheet**

| | |
|------------------------------|--|
| Site Name: | |
| FCSI# : | |
| Completed By: | |
| Date Completed (dd/mm/yyyy): | |

| Question | Response | Rationale/Evidence (document any assumptions, reports, or site-specific information; provide references) | Guidance | Instructions | Flag |
|---|--|---|---|--------------------|------|
| Site Data | | | | | |
| i | If the answer is No, does the lack of sufficient QA/QC measures compromise the results of the assessment? | | | Response required. | |
| D | Is the site assessment testing program described, including methodology used to collect samples, number of testing locations and analytical program? | | CCME provides guidance on sampling design in CCME (1993) Guidance Manual on sampling, Analysis, and Data Management for Contaminated Sites. Volume I: Main Report. http://www.ccme.ca/ourwork/soil.html?category_id=68 There is also guidance on sampling and analysis plans in the FCSAP ERA Guidance document. | Response required. | |
| E | Was rationale provided for the selection of samples for analytical testing? | | | Response required. | |
| F | Are all sampling locations identified on site plans and in data tables? | | | Response required. | |
| 4. Screening COCs (applicable to risk assessments (RA) only) | | | | | |
| A | Was a risk assessment conducted? | | | Response required. | |
| B | Were CCME guidelines used to screen COCs? If not, provide rationale. | | CCME guidelines should be used appropriately (e.g., relevant land use). If guidelines other than CCME were used, justification should be provided. | Response required. | |
| C | Were maximum concentrations used in the screening process? | | Maximum concentrations should be used for screening. The purpose of this screening step is to compile a conservative list of chemicals for further evaluation. If another approach was used, provide rationale and a reference. | Response required. | |
| D | Were chemicals whose detection limit was greater than the screening guidelines retained as COCs? | | Chemicals whose detection limits exceed guideline values should be retained for further evaluation. | Response required. | |
| E | If chemicals were screened out because their concentrations fell within background levels, were background concentrations determined appropriately and used correctly? | | Please refer to current guidance for methods related to establishing background or reference conditions (e.g., FCSAP ERA guidance). | Response required. | |
| F | Was consideration given to the following: | | | | |
| i | Substances for which there are no guidelines? | | These substances should be retained unless the rationale for their exclusion is recorded so that the decision process is understood, transparent, easily retraced, and verifiable. If exclusion cannot be rationalized during this step, the chemical is regarded as a COC and retained for further assessment. | Response required. | |
| ii | Persistent, bioaccumulative or biomagnifying substances? | | See Reference Material for examples of bioaccumulative substances and degradation products. Appropriate food chain considerations should be incorporated into the risk assessment for these substances. | Response required. | |
| iii | Degradation products? | | See Reference Material for examples of bioaccumulative substances and degradation products. Consideration should be given to degradation products when these are more toxic than their parent substances (e.g., tetrachloroethylene and its degradation products). | Response required. | |

FCSAP SCT/TRAV SPREADSHEET**COC Sheet**

Site Name: <fill in Site Name on Site Data Tab>
 FCSI# : <fill in FCSI# on Site Data Tab>
 Completed By: <fill in Completed By on Site Data Tab>
 Date Completed: <fill in Date Completed on Site Data Tab>

For each medium with contamination, list COCs. These are the COCs on the site at the time of the risk assessment and/or remedial action planning. There is enough space for 15 COCs. If the site has more than 15 COCs, consider listing the COCs that are the drivers of the risk assessment and remediation, if applicable. Additional COCs can be included in row 28 "others", which is for record keeping purposes only. For example, consider listing benzo(a)pyrene instead of all PAHs if there are more than 15 COCs, if benzo(a)pyrene is a driver for risk and remediation.

In each row of the table, enter the COC in column B. For each medium, indicate if the COC is present by selecting "y" or "n" from the drop down list. Alternatively, in this table a blank cell is equivalent to selecting "n" from the drop down list.

COCs and Media

| COC # | COC | Surface Soil (0-1.5 mbgs) | Sub- surface Soil (>1.5 mbgs) | Groundwater | Surface Water | Sediment | Outdoor Air | Indoor Air |
|--------|-----|---------------------------------|-------------------------------------|-------------|------------------|----------|-------------|------------|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| others | | | | | | | | |
| | | | | | | | | |
| Notes | | | | | | | | |

Site Closure Tool Closure Evaluation Page

Federal Contaminated Sites Action Plan Site Closure Tool (2012) Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#: _____

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| Question | Response (Yes / No) | Instructions | User Comments |
|---|------------------------|---|---------------|
| Steps 1-6 Site Assessment and Step 7 Risk Assessment | | | |
| 1 Complete the Site Data and COCs Worksheets. Were any major deficiencies noted? | Yes | Automatically scored based on Site Data worksheet. If Yes, there is a major deficiency identified in the Site Data worksheet that needs to be addressed. If No, proceed to next question. | |
| 2 Based on the Phase II and III ESAs, did any of the COC concentrations exceed Tier 1 (generic) thresholds? | | If Yes, proceed to next question. If No, SITE IS CLOSED. Complete sections 1 & 2 of Documentation worksheet to confirm. | |
| 3 If following a risk management approach, was a risk assessment completed or is it in the process of being completed? | | If Yes, proceed to next question. If No, proceed to Q8 and document risk management objectives in section 3.1 of Documentation worksheet. | |
| 4 If you are still in Step 7 or 8 of the FACS it is recommended that you use TRAV to validate the risk assessment to ensure you are addressing all risks. Will you be using TRAV? | | If Yes, Open TRAV and complete Sheets III to VIII. Proceed to Q5. If No, proceed to Q7. | |
| 5 Based on the TRAV, were any major deficiencies in the risk assessment noted? | No | Automatically scored based on the results of the TRAV. If Yes, the risk assessment should be revised until it is acceptable based on TRAV (see bottom of (VI) Summary sheet for list of deficiencies) If No or N/A, proceed to next question. | |
| 6 Did the TRAV validated risk assessment identify any | N/A | Automatically scored based on TRAV. If No, the site does not present | |

Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | |
|---|--|---|--|
| <p>unacceptable risks posed by the site?</p> <p>OR</p> | | <p>any unacceptable risk based on assumptions used in risk assessment and site can be closed. Complete Documentation Tab to summarize findings.</p> <p>If yes, further work is required. Establish remediation or risk management objectives and proceed to sections below.</p> <p>If you did not use TRAV and you completed a risk assessment, answer the next question.</p> | |
| <p>7 If you didn't use TRAV, did a risk assessment identify any unacceptable risks posed by the site?</p> | <input type="checkbox"/> | <p>User-defined.</p> <p>If no, the site does not present any unacceptable risk based on assumptions used in risk assessment and site can be closed. Complete Documentation Tab to summarize findings.</p> <p>If yes, further R/RM work is required. Establish remediation or risk management objectives, and document them in Documentation Tab section 3.1.</p> | |
| <p>Summary Evaluation: Do the ESAs and risk assessment meet minimum requirements?</p> | <p>Revisions Required Site Active</p> | <p>If "Revisions Required", revise the ESA and risk assessment until they are acceptable, and re-complete this section of the tool.</p> <p>If "Minimum Requirements Met, Site Closed", Complete sections 1,2 & 4 of Documentation Tab, as appropriate.</p> <p>If "Minimum Requirements Met, Site Active", proceed to the next section, describing remedial or risk management planning. Complete sections 1,2 & 4 of Documentation Tab, as appropriate.</p> | |

Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| Step 7 Remediation / Risk Management Plan | | | | |
|---|---|----------------------|--|--|
| 8 | Does the R/RM Plan address all unacceptable risks as identified by a risk assessment or exceedances of CCME Tier 1 guidelines? | <input type="text"/> | If Yes, proceed to the next question. If N/A, it is assumed R/RM Plan is not required. If No, site cannot be closed and further work must be completed on the R/RM plan. | RAP addresses all risks associated with the fuel spill |
| 9 | Are the R/RM objectives clearly stated for each AEC and/or source area. | <input type="text"/> | If Yes or N/A, complete s. 3.1 of Documentation Tab and proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | Objective for the AEC was to excavate PHC impacted soils and |
| 10 | Have all regulatory requirements been identified (e.g. permitting) and included in the R/RM plan? | <input type="text"/> | If Yes or N/A, proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| 11 | Does the plan identify aesthetic objectives (e.g., removal of scattered surface debris) and safety-based objectives (e.g., elimination of potential trip hazards or danger related to slope stability)? | <input type="text"/> | If Yes or N/A, proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| 12 | Have other site-specific objectives identified in a risk assessment or other ESAs been included in the R/RM plan? (e.g., prevention of off-site migration, community concerns) | <input type="text"/> | If Yes or N/A, proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| 13 | Are all AECs as confirmed by Environmental Site Assessments addressed by the R/RM Plan? | <input type="text"/> | If Yes or N/A, proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| 14 | Does the R/RM Plan include areal extent of impact, depth interval and volumes of impacts for each AEC and for each medium? | <input type="text"/> | If Yes or N/A, proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |

**Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire**

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | | |
|---|---|---------------------------------|--|--|
| 15 | Are all AECs and COCs identified on a site plan? | <input type="text"/> | If Yes or N/A, proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| 16 | Was a remedial options analysis completed and documented with the preferred option identified? | <input type="text"/> | If Yes or N/A, complete s. 3.2 of Documentation Tab and proceed to the next question. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| 17 | Is the description of the recommended option sufficiently detailed in the R/RM plan? (e.g., system components, disposal routes, facilities, overview of operational procedures, monitoring requirements, timeline for implementation, potential changes in site use, regulatory requirements, performance metrics, long-term monitoring requirements, responsibilities, communication plan, contingency measures) | <input type="text"/> | If Yes or N/A, complete s. 3.3, 3.4, 3.5, 3.6 of Documentation Tab. If No, site cannot be closed and further work must be completed on the R/RM plan. | |
| Summary Evaluation: Does the R/RM Plan meet minimum requirements as indicated by answering yes to the above questions? | | Minimum Requirements Met | If Minimum Requirements Met, proceed to the next section, describing remedial or risk management activities. If Revisions Required, revise the R/RM plan until it is acceptable, and re-complete this section of the tool. Information regarding the R/RM plan should be included in Section 3 of the Documentation section. | |
| Step 7 Long Term Monitoring (LTM) Plan | | | | |
| 18 | Does the R/RM Plan require LTM as part of the strategy? | <input type="text"/> | If Yes, proceed to the next question. If No or N/A, LTM is not required. Proceed to next section (Q30). | |
| 19 | Is there a LTM plan included in the R/RM Plan? | <input type="text"/> | If Yes, summarize the plan in section 6.1 of Documentation tab. Proceed to next question. If No, site cannot be closed and further work must be completed on the R/RM plan to include a LTM plan. | |
| 20 | Does the LTM plan identify the location and nature of residual contaminants and physical hazards to be risk managed? | <input type="text"/> | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 3.1. | |
| 21 | Does the LTM plan identify the key organizations or groups | <input type="text"/> | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to | |

**Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire**

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | | |
|----|---|--|---|--|
| | involved in LTM activities for the site, including descriptions of their roles and responsibilities. | | the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 4.0. | |
| 22 | Does the LTM plan describe each engineered control that is being implemented, how it is being implemented and maintained as part of LTM? | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 5.1. | |
| 23 | If monitoring site media, does the LTM plan specify the media to be monitored along with the frequency, methodology, objectives, reporting requirements, and contingency measures in the event of non-compliance and quality assurance processes? | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 5.0. | |
| 24 | Are trigger criteria identified that would require implementation of contingencies and are contingency actions specified in the LTM plan? | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 5.2. | |
| 25 | If institutional controls are being implemented, is there a description of how they are being implemented and maintained? | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 5.3. | |
| 26 | Does the LTM plan identify all of the LTM activities that are specifically required by regulation, orders, directives, policies, permits, licenses or other third party enforceable agreements and the enforcement mechanisms. | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 6.0. | |
| 27 | Does the LTM plan identify any existing or required | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to | |

**Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire**

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | |
|---|---------------------|---|--|
| | | agreements with third parties (e.g., land use or access agreements)? the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 6.0. | |
| 28 Are anticipated costs of the LTM activities provided, including assumptions used to develop the cost estimates, as well as assumptions for determining when sites or portions of a site will start and stop LTM activities? Is there a description of how the LTM activities will be funded? | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 7.1. | |
| 29 Does the LTM plan identify the purpose, methods and means by which information will be preserved, stored, maintained, and accessed? | | If Yes, summarize this in section 6.1 of Documentation Tab. Proceed to the next question. If No, site cannot be closed and further work must be completed on the LTM plan. Refer to the FCSAP Long Term Monitoring Guidance document Appendix A, Section 8.0. | |
| Summary Evaluation: Does the LTM Plan meet minimum requirements? | Not Required | If Minimum Requirements Met, proceed to the next section. Information regarding the LTM plan must be included in Section 3 of the Documentation section as appropriate. If Revisions Required, revise the LTM plan until it is acceptable, and re-complete this section of the tool. | |
| Approval & Sign Off of R/RM Plan | | | |
| 30 Was the R/RM Plan signed, by a P.Eng. or P.Geo. or other | | If Yes, proceed to the next question. | |

Federal Contaminated Sites Action Plan Site Closure Tool (2012) Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

qualified professional?

A "qualified professional" for the purposes of this question, is defined as:

(a) the person holds a bachelor's degree in science, engineering or applied technology from a post-secondary institution; and

(b) the person has experience in the conduct or supervision of remedial/risk management plans, as follows:

(i) if the person holds a doctoral degree in science or engineering from a university, five years' experience,

(ii) if the person holds a master's degree in science or engineering from a university, seven years' experience,

(iii) in any other case, eight years' experience.

If No, R/RM plan should be reviewed and signed by a qualified professional.

Summary Evaluation: Was the R/RM Plan (and LTM if applicable) signed, by a P.Eng. or P.Geo. or other qualified professional?

**Revisions
Required**

If Minimum Requirements Met, proceed to the next question.

If Revisions Required, R/RM plan should be reviewed and signed by a qualified professional.

Step 8 Construction Completion

Note: This section applies to sites where there has been completion of major capital expenditures (e.g., installation of a barrier treatment wall, construction of land treatment facility or biocell, installation of an in situ ground water treatment system, construction of a water treatment plant, etc.) but where there will be lag time of more than a year between construction completion and achievement of remedial objectives. This applies to sites requiring active operations and maintenance, including performance monitoring. This is also applies to constructed engineered controls as part of a risk management strategy, and which may or may not require long-term monitoring.

- | | | | |
|----|---|--------------------------|---|
| 31 | Does the remedial or risk management approach include constructed or installed works that will require operation and maintenance and/or long term monitoring? | <input type="checkbox"/> | If No, this section does not need to be completed. If Yes, inspect constructed works according to requirements (e.g., inspection check list) set out in R/RM Plan and summarized in s. 3.5 of Documentation Tab |
| 32 | Is the physical construction of the remedy complete? (e.g., construction of treatment plant, pumps, extractions wells, containment structure) | <input type="checkbox"/> | If Yes, proceed to the next question. If No, construction is not complete and further work is required. |
| 33 | Have the constructed works / installed system been inspected and inspection results documented, including as-built drawings? | <input type="checkbox"/> | If Yes, summarize inspection activities in s. 3.5 of Documentation tab. If No, the constructed works / installed system must be inspected. Construction completion classification cannot be assigned without inspection. |
| 34 | Was the inspection completed without noting major deficiencies? | <input type="checkbox"/> | If Yes, proceed to the next question. If no, construction is not complete and further work is required. |
| 35 | Do constructed / installed works meet R/RM plan | <input type="checkbox"/> | If Yes, proceed to the next question. If no, construction is not complete |

Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | |
|--|---------------------------------|---|--|
| specifications? | | and further work is required. | |
| 36 Is the remedy operational (e.g., is the treatment system removing/reducing contaminant concentration levels, is barrier system preventing contaminated groundwater migration, has the cap eliminated pathways to receptors) in accordance with the R/RM plan? | <input type="checkbox"/> | If Yes, proceed to the next question. If no, construction is not complete and further work is required. | |
| 37 Are any expected future adjustments likely to be minimal in nature? (e.g., well replacement) | <input type="checkbox"/> | If Yes, proceed to next question. If No, substantial work is expected (e.g., installation of additional extraction network or treatment components). The site does not qualify for construction completion classification. | |
| Summary Evaluation: Does the site meet minimum Construction Completion requirements as indicated by answering yes to the above questions. | Minimum Requirements Met | If Not Required, proceed to next section. | |
| | | If Minimum Requirements Met, complete Section 3.5 of the Documentation worksheet and proceed to the next section. This will demonstrate that while the site is not closed, there has been major progress towards achieving remedial objectives. | |
| | | If No, correct deficiencies and re-score. | |
| Step 8 Operations and Maintenance | | | |
| 38 Is/was operations and maintenance (O&M) required for R/RM measures at the site? (e.g., treatment plants, pumping systems, injection programs, performance monitoring of installed systems, tilling and fertilizing land treatment facilities) | <input type="checkbox"/> | If Yes, this section must be completed. Summarize O&M requirements in s.3.6 of Documentation Tab. If No, proceed to next section. | |
| 39 Are maximum concentrations in all media less than established R/RM objectives or have termination criteria otherwise been met? (e.g., duration) | <input type="checkbox"/> | If Yes, proceed to the next question. If No, further system operation or other changes are required to meet objectives. | |
| 40 Have required O&M activities been completed according to the schedule outlined in the R/RM plan? | <input type="checkbox"/> | If Yes, proceed to the next question. If No, further system operation or other changes are required. | |
| 41 Have all O&M activities been documented? | <input type="checkbox"/> | If Yes, summarize this in s. 3.6 of Documentation Tab. If No, complete documentation to achieve construction completion. | |

Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | |
|--|---------------------------------|---|--|
| Summary Evaluation: Does the site meet minimum O&M requirements as indicated by answering yes to the above questions. | Not Required | If Not Required or Minimum Requirements Met, complete Section 3.7 of the Documentation worksheet, as appropriate, and proceed to the next section. If Minimum Requirements Not Met, correct deficiencies and re-score. | |
| Step 9, Confirmatory Sampling and Final Report | | | |
| 42 Complete Section 4.1 of Documentation. Are maximum concentrations in all media below or meet numeric clean up targets (Tier 1 or SSTLs) identified in the R/RM plan? | Yes | Automatically completed from Documentation Tab. If Yes, site can be closed. Remaining sections do not require completion. If No, more work is required and site cannot be closed. Proceed to Q43. | |
| Summary Evaluation: Does the site meet minimum requirements for closure as indicated by answering yes to the above question. | Minimum Requirements Met | If Minimum Requirements Met, sites is closed. Ensure sections 1, 2, 3, and 4 of the Documentation Tab are completed, as appropriate. Completing Sections 5, 7, 8 and 9 is also recommended. Skip remaining sections. If Minimum Requirements Not Met, site is active. Additional work is required. | |
| Step 10 Long-Term Monitoring to Support Risk Management (Do Not Complete if Answer to Question 42 is Yes) | | | |
| 43 Are risk management (RM) measures in place to address all risks resulting from exceedances or is LTM required to confirm risk assessment assumptions? | | If N/A, LTM is not required. If Yes, summarize RM measures in s.4.2 Documentation Tab. Proceed to next question. If No, RM must be implemented to address risks. | |
| 44 Based on Section 4.2 of Documentation Tab comparing implemented RM measures vs. planned RM measures, do all risk management measures implemented comply with goals of risk assessment recommendation? | | If Yes, Proceed to next question. If No, further work is required to fulfill actions recommended by the R/RM plan. | |
| 45 From Section 4.2 of Documentation, is long-term monitoring required as part of the risk management plan? | | If Yes, proceed to next question. If No or N/A, site should be closed on condition remedial targets have been met. | |
| 46 Are LTM requirements documented (i.e., LTM measures, objectives, description of measures, frequency & duration, responsibilities, etc.)? | | If Yes, complete Section 6.1 of Documentation Tab. Proceed to next question. If No, document LTM requirements. | |

Federal Contaminated Sites Action Plan Site Closure Tool (2012)
Site Closure Evaluation Questionnaire

Site Name (per IDEA): <fill in Site Name on Site Data Tab>

FCSI#: <fill in FCSI# on Site Data Tab>

DFRP#:

Date (MM/DD/YY) <fill in Date Completed on Site Data Tab>

Completed By: <fill in Completed By on Site Data Tab>

| | | | | |
|---|---|----------------------|---|--|
| 47 | Have you identified applicable LTM planning documents and LTM progress reports? | <input type="text"/> | If Yes, complete Sections 6.2 and 6.3 of Documentation document | |
| 48 | Are all risk management measures operating as intended (as specified in R/RM plan)? | <input type="text"/> | If Yes, Log LTM results in Section 6.3 of Documentation worksheet and proceed to the next question. If No, further work on the remedy will be required. | |
| 49 | Is the LTM plan being reviewed and updated as required at least annually to reflect new information obtained? | <input type="text"/> | If Yes, indicate updates to LTM in Section 6.2 of Documentation Tab. If No, review and update LTM as required, and update Section 6.2 of Documentation Tab. | |
| Summary Evaluation: Does the site meet minimum requirements for risk managed closure as indicated by answering yes to the above questions. | | Not Required | If not required, the site is closed. If minimum requirements met, RM measures are working as planned If the minimum requirements are not met, continue LTM activities. Update the Section 6.0 of the Documentation worksheet as required. | |
| Risk Managed to Site Closure (Do Not Complete if Answer to Question 42 is Yes) | | | | |
| 50 | Have the LTM termination criteria been met? | <input type="text"/> | If Yes, complete s. 4.2 of Documentation Tab. Site is closed. If No, site is active. Continue LTM activities. | |
| Summary Evaluation: Does the site meet minimum requirements for closure as indicated by answering yes to the above questions. | | Not Required | If Yes, complete the remaining portions of the Documentation worksheet as required. If No, continue LTM activities until termination criteria are met. | |

FCSAP SCT/TRAV Spreadsheet

| Site Closure Tool Summary Page | | | | | | |
|---|--|---------------------------|--|--|------------------------------------|--------|
| Reporting Date (MM/DD/YY) | <fill in Date Completed on Site Data Tab> | | | | | |
| Site Name | <fill in Site Name on Site Data Tab> | | | | | |
| Property Identification | FCSI No. | <fill in FCSI# on \$ | DFRP # | 0 | | |
| Acceptable Property Use(s) | | | | | | |
| Land Use Assumptions / Restrictions | | | | | | |
| Applicable Standards | | | | | | |
| Site Status | Steps 1-6 ESA & Step 7 Validated Risk Assessment Complete | Step 7 R/RM Plan Complete | Step 8 Construction of R/RM Measures Completed | Step 8 Remedial Action & Step 9 R/RM Objectives Achieved | Step 10 Long Term Monitoring (LTM) | Status |
| | Not Achieved | Not Achieved | Construction Not Complete | Not Achieved | LTM Required | Active |
| Final Site Conditions | | | | | | |
| Surface Soil | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Subsurface Soil | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Groundwater | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Surface Water | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Sediment | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Outdoor Air | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Indoor Air | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |

FCSAP SCT/TRAV Spreadsheet

[illegible]

FCSAP SCT/TRAV Spreadsheet

| Site Closure Tool Summary Page | | | | | | |
|---|--|---------------------------|--|--|------------------------------------|--------|
| Reporting Date (MM/DD/YY) | <fill in Date Completed on Site Data Tab> | | | | | |
| Site Name | <fill in Site Name on Site Data Tab> | | | | | |
| Property Identification | FCSI No. | <fill in FCSI# on \$ | DFRP # | 0 | | |
| Acceptable Property Use(s) | | | | | | |
| Land Use Assumptions / Restrictions | | | | | | |
| Applicable Standards | | | | | | |
| Site Status | Steps 1-6 ESA & Step 7 Validated Risk Assessment Complete | Step 7 R/RM Plan Complete | Step 8 Construction of R/RM Measures Completed | Step 8 Remedial Action & Step 9 R/RM Objectives Achieved | Step 10 Long Term Monitoring (LTM) | Status |
| | Not Achieved | Not Achieved | Construction Not Complete | Not Achieved | LTM Required | Active |
| Final Site Conditions | | | | | | |
| Surface Soil | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Subsurface Soil | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Groundwater | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Surface Water | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Sediment | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Outdoor Air | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |
| Indoor Air | | | | | | |
| Contaminants of Concern | | | | | | |
| Are concentrations below Tier 1 or Site-Specific Target Levels? | All COCs meet Guidelines / SSTLs with 0 error(s). Acceptable Conditions for Site Closure | | | | | |

FCSAP SCT/TRAV Spreadsheet

[illegible]