

FEDERAL FACILITIES REMEDIAL SITE INSPECTION SUMMARY GUIDE

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Office of Enforcement and Compliance Assurance,
Federal Facilities Enforcement Office**

And

**Office of Solid Waste and Emergency Response,
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PURPOSE

The purpose of this Federal Facilities Remedial Site Inspection Summary Guide is to assist Federal agencies conducting Remedial Site Inspections (SIs) to obtain sufficient information under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to meet the requirements outlined in the National Contingency Plan (NCP). This Summary Guide identifies data items that should be included in a SI and in the SI report that is required to be provided to the US EPA. Following this guide should improve the overall quality of the information provided to EPA Regional programs and aid EPA's review of the information provided. This guide highlights elements from EPA's previous 1992 SI guidance, *Guidance for Performing Site Inspections Under CERCLA*. This guide also provides an update on Quality Assurance changes that have occurred since the publication of the original guidance in 1992.

This Guide highlights certain data and reporting parameters for conducting a SI at Federal facilities. Data for the following four core elements of an SI are discussed: Analytical Data Quality, Site and Source Characterization, Release(s) of Hazardous Substance(s) or pollutants or contaminants to migration/exposure pathways (ground water, surface water, soil, and air), and associated targets of concern. Also included is a brief discussion on SIs involving radioactive substances (or radionuclides). Sample Completion Checklists have been included for the core data elements. These Checklists identify recommended data elements for SIs and can be utilized as effective data collection tools. Following this Guide should improve the overall quality of data collected or developed during the remedial SI process.

BACKGROUND

The National Contingency Plan (NCP) requirements for a SI can be found at 40 CFR Section 300.420 (c). As described there, the SI should build off information collected during the Preliminary Assessment (PA), and has four goals: develop information to potentially eliminate a release from further consideration because it is determined that it poses no significant threat to human health or the environment; determine the potential need for a removal action; collect or develop data to evaluate the release for the Hazard Ranking System (HRS); and collect data in addition to that needed for the HRS, as appropriate, to better characterize the release for more effective and rapid initiation of a Remedial Investigation/Feasibility Study (RI/FS). These goals typically require the federal agency to collect and analyze waste and environmental samples to identify the contaminants present, determine whether hazardous substances, pollutants, or contaminants are being released to the environment, and determine whether the releases have or may affect specific human health or environmental targets. Typically, to develop sufficient information, the SI may include:

- Review of the PA including any available analytical data developed during the PA
- Developing a history of the facility's operations including waste handling
- Site reconnaissance, field observations and measurements
- Development of sampling and analysis plans, including a Quality Assurance Project Plan (QAPP)¹

¹ EPA requires that all environmental data used in decision making be supported by an approved Quality Assurance Project Plan. This requirement is defined in EPA Order 5360.1 A2 (EPA 2000), *Policy and Program Requirements for the Mandatory Agency-wide Quality System*, for EPA organizations. Non-EPA organizations funded by EPA are required to develop a QA Project Plan through:

- 48 CFR 46, for contractors;
- 40 CFR 30, 31, and 35 for assistance agreement recipients; and

- Sample collection and evaluation of all data
- photo documentation, as appropriate
- preparation of SI report

If the remedial SI indicates that a CERCLA removal action may be appropriate, the federal agency should then initiate a removal site evaluation as called for under the NCP (300.410).

At the completion of the remedial SI, there is a requirement to develop a Remedial SI report (see NCP: 300.420(c)(5)). The Remedial SI report should include the following:

- A description/history/nature of waste handling
- A description of known contaminants
- A description of pathways of migration of contaminants
- An identification and description of human and environmental targets, and
- A recommendation on whether further action is warranted

This Report should summarize what is known about the site, what is assumed or inferred, the activities conducted during the SI, all researched information, findings of the field investigation, and particularly the contamination associated with the site and migration pathways. The Remedial SI Report, as appropriate, should be accompanied by a photo documentation log and other pertinent information such as a sampling log, other reference materials, including any new analytical data, as described in the *Guidance for Performing Site Inspections Under CERCLA, 1992*.

Following the completion of the PA/SI for a release at a Federal facility, EPA is required under CERCLA to determine whether the release qualifies for possible inclusion on the CERCLA National Priorities List (NPL) or whether the release can be undertaken by another authority (see CERCLA 120(d)(2)(B)). Should a release not qualify for the NPL, a response action still may be required and undertaken by a federal agency under CERCLA or some other authority.

CORE REMEDIAL SI DATA ELEMENTS

- other mechanisms, such as consent agreements in enforcement actions.

In addition, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Parts 300-399) requires QAPPs according to §300.415(b)(4) for non-time critical removals and §300.420(c)(iv)(2, 3, and 4) for SIs. Also, 7.1.g of the *Uniform Federal Policy for Implementing Environmental Quality Systems* requires project specific QAPPs that are described in 7.2. EPA 505-B-04-900, *Uniform Federal Policy for Quality Assurance Project Plans* is a good source of guidance on QAPP development.

§120(a)(2) of CERCLA provides that all guidelines, rules, regulations, and criteria for Preliminary Assessments, Site Inspections, National Priorities List (NPL) listing, and remedial actions are applicable to Federal facilities..."

This section addresses data that should be included in an SI at a Federal facility. The categories of data elements discussed in this section are:

- analytical data of sufficient quality (to be defined in a site-specific QAPP) to make defensible SI and NPL decisions;
- characterization of **site and sources** (including hazardous waste quantity);
- determination of likelihood of **release** of hazardous substances, pollutants, or contaminants to ground water, surface water, soil, or air pathways²;
- to the extent practicable, establish where contamination has come to be located; and
- estimation of the **targets** (or receptors) actually or potentially exposed to releases via one or more of the four pathways.

The data elements addressed in this Summary Guide are not unique to Federal facilities and supplement those identified in the *Guidance for Performing Site Inspection Under CERCLA, 1992*. This Guide stresses reliance on existing data such as prior department-specific reports and evaluations. Sample Completion Checklists are provided throughout this Summary Guide to support in the gathering of site specific data.

Analytical Data Quality Needs

A comprehensive and well-documented quality assurance/quality control (QA/QC) program is essential for obtaining precise and accurate analytical data that represent the site. The QA/QC program should be according to the requirements in the *Uniform Federal Policy for Implementing Environmental Quality Systems* (EPA 505-F-03-001). This Policy is consistent with EPA Order 5360.1 A2, but is specifically applicable to Federal facilities. Site Specific QAPPs (incorporating site-specific Data Quality Objectives or DQOs) are key to defining analytical as well as other data quality needs. For Federal facilities, the *Uniform Federal Policy for Quality Assurance Project Plans* (UFP-QAPP), Parts 1 and 2 are applicable (EPA 505-B-04-900A, B and C). OSWER Directive 9272.0-17 provides information on implementing the UFP-QAPP. These documents are available at http://www.epa.gov/fedfac/documents/intergov_qual_task_force.htm and are consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5).

² The air pathway should be evaluated only if a release is suspected or identified.

Sample Field and Analytical Data Quality Needs Completion Checklist

A comprehensive and well-documented quality assurance/quality control (QA/QC) program is essential for obtaining precise and accurate analytical data that represents the site. The following are important SI QA/QC considerations:

- Develop a Quality Assurance Project Plan (QAPP) using the Uniform Federal Policy for Quality Assurance Project Plans.
- For Federal facilities, the responsible organization should prepare the QAPP for review and approval by the appropriate regulatory authority.
- Include a table or matrix that correlates field sample numbers with laboratory sample numbers and related sample results
- Include a map of sample locations, contaminated areas, and any other features pertinent to data evaluation
- Make notations on nature of sample (e.g., whether aqueous sample is muddy or clear, filtered or unfiltered)
- Establish background levels based on sampling results or published data
- Determine background levels of hazardous substance(s) in order to:
 - establish which ground water, surface water, sediment, or air samples are significantly higher than the background level for the same media.
 - define observed surficial soil or waste contamination
 - establish actual contamination of ground water
 - attribute hazardous substance(s) to sources at the site
 - establish natural or ubiquitous radiation exposure rates
- Background samples should be collected in the media of concern and where the hazardous substance, pollutant, or contaminant is not likely to be present
- Background and release samples should be comparable (i.e., similar location within media, time of sampling, nature of samples)
- All samples should be analyzed according to the QAPP, using appropriate analytical methods selected to achieve project quality objectives as well as adequate QA/QC data. Consider both fixed laboratory and/or field analytical methods appropriate for the Contaminants of Concern and that have adequate QA and QC specifications to ensure that data can be effectively reviewed.
- Adequate documentation of analytical data QA/QC to determine if QAPP Data Quality Objectives (DQOs) were met and data are suitable for intended use, following data review requirements as established in the QAPP.

Site and Source Characterization

The assessment of Site and Source Characterization during a SI should include the following:

- a comprehensive description of the site including information on past and current operations, spills, and any removal action(s) conducted;
- characterization of each source and their location at the site; sources may include waste piles, impoundment, landfills, tanks, drums, and soil contaminated by spills or migration of hazardous substances, pollutants, or contaminants;
- hazardous waste quantity information, such as wastestream quantities, area estimates, and volumes for each source;
- identification of major pathways of migration for hazardous substances, pollutants, or contaminants (ground water, surface water, soil, or air) and the routes that hazardous substances, pollutants, or contaminants may take to reach these pathways (e.g., flooding, overland flow, vapor migration);

- site location and ownership information;
- source samples to determine the type of wastes deposited at the site.

This information may be obtained through reviewing internal agency office files, interviews, regional geologic and hydrology reports, and during site reconnaissance.

Sample Site and Source Characterization Completion Checklist

The following are important SI considerations when characterizing the site and sources, including hazardous waste quantity (see also SI Guidance, Chapter 4.2 and Appendix C):

- Define and describe the site
- Describe past and current operations and site conditions
- Summarize (past and current):
 - Waste treatment, storage, and disposal activities (documented or alleged) including all spills and response (removal or remedial) actions
 - Any previous sampling data identifying hazardous substances, pollutants, or contaminants at each source and how they relate to hazardous substances, pollutants, or contaminants suspected to be present at the site
- Describe adjacent or nearby property, land uses, and tribe/native entities (including any areas for their reserved hunting, fishing, and gathering rights)
- Identify, describe & characterize sources:
 - Waste streams (past and current)
 - All hazardous substances, pollutants, or contaminants and wastes
 - Source type
 - Quantity of waste
 - Measurement of each source (area/volume, *etc.*)
 - Physical state of waste
 - Source area accessibility
 - Containment features, if any, and their effect on migration of hazardous substances, pollutants, or contaminants
 - Specific areas on the site where wastes may have been disposed, deposited, stored, or handled (based on past and current activities)
 - Any other potential source areas
 - Indicate source areas (including potential source areas) on a Site Sketch to be included in the SI Narrative Report
 - Identify and describe major pathways of migration (ground water, surface water, soil, air) and the routes that hazardous substances, pollutants, or contaminants may take to reach these pathways (e.g., flooding, overland flow, vapor migration)
- Sample the sources to determine one or more of the following:
 - Identify types of wastes and hazardous substances, pollutants, or contaminants
 - Attribute hazardous substances, pollutants, or contaminants to the site
 - More fully describe any observed surficial contamination
 - Delineate source boundaries and containment

Ground Water Migration Pathway

This section of the SI Summary Guide provides information for documenting releases or suspected releases of hazardous substances, pollutants, or contaminants to the ground water migration pathway and associated targets of concern.

Release to Ground Water

The assessment of a release to ground water during a SI, if known or suspected, should include the following:

- evaluation of the likelihood of a release to ground water of a hazardous substance, pollutant, or contaminant from a source based on site and pathway conditions, including considerations listed in the Checklist such as containment features;
- information on contaminant migration in ground water;
- identification of circumstantial evidence of ground water contamination (such as any closed wells, or reports of foul tasting or smelling water);
- maps of ground water wells used for monitoring, drinking, or other purposes including irrigation;
- documentation of any release to ground water by direct observation (e.g., material containing hazardous substances, pollutants, or contaminants is known to have entered ground water through direct deposition or is observed entering ground water);
- existing analytical data from previous investigations that document or indicate ground water contamination;
- documentation of release to ground water by chemical analysis.

Sample Release to Ground Water Completion Checklist

The following are important considerations when evaluating releases or suspected releases of hazardous substances, pollutants, or contaminants to the ground water pathway (see also SI Guidance, Chapter 4.5 and Appendix C):

- Describe local geology and hydrogeology, including:
 - Soil types and permeability
 - Aquifers and ground water use
 - Low-permeability or confining layers, impeding ground water movement into or between aquifers
 - Aquifer discontinuities
 - Hydrologic interconnections between multiple aquifers
 - Karst terrain and features
 - Infiltration rates
 - Precipitation levels and occurrence of extreme rain events
 - Depth to aquifer
- Describe containment features (engineered structures such as liners or a leachate collection system)
- Describe the mobility of the hazardous substances, pollutants, or contaminants in ground water
- Provide maps of ground water wells used for monitoring, drinking, or other purposes
- Document any release to ground water by direct observation (for e.g., material containing hazardous substances, pollutants, or contaminants is known to have entered ground water through direct deposition or seen entering ground water)
- Document release to ground water by chemical analysis:
 - Identify release well type (municipal or private drinking water well, monitoring well)
 - Samples must be collected from representative release and background wells finished in the same aquifer and screened in a comparable zone
 - Determine depth to aquifer in mean sea level (rather than below the ground surface)
 - Designate if ground water samples are filtered or unfiltered
 - Analyze all contaminants of concern released/stored/used at the site
- When necessary, monitoring wells may need to be installed to:
 - Establish an observed release to ground water
 - Establish background levels
 - Establish attribution of groundwater contamination to sources at the site
 - Determine direction of groundwater flow

Ground Water Targets

The assessment of ground water targets during a SI should include the following:

- identification and description of drinking water supply wells within a four mile radius of each source at the site;

- identification of public and private drinking water supply wells and systems, including the number of people they serve;
- identification and description of surface water sources of drinking water in addition to or in lieu of groundwater;
- comparison of ground water release concentrations to health-based benchmarks.

This type of information can often be obtained from local municipal and county water authorities, local government agencies, USGS, and the U.S. Bureau of the Census.

Sample Ground Water Targets Completion Checklist

The following are important SI considerations when evaluating the ground water pathway targets of concern (see also SI Guidance, Chapter 4.5 and Appendix C):

- Within a 4 mile radius of each potential or actual source, identify:
 - Drinking water systems at the Federal facility site and nearby areas and residences (private/municipal wells, blended water distribution system, surface water usage, population served or number of service connections and county multiplier, annual average well production, backup or standby wells)
 - Nearest drinking water well, the distance from the source, and the population served by the well
 - All existing wells (private and/or public drinking water wells, irrigation wells, livestock watering, etc..)
 - Any multiple aquifer systems
- Identify drinking water wells within ¼, ½, 1, 2, 3, and 4 miles of the sources, and quantify, and as necessary, apportion populations associated with each (among aquifers and distance rings and between surface water intakes and ground water wells)
- Establish actual contamination to ground water by sampling target drinking water (municipal or private) wells within the 4 mile radius, up-and down-gradient^b; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
- Obtain well construction information for all target drinking water wells and identify the screening intervals as well as the aquifer, or aquifers, the wells draw from
- Identify any nearby drinking water wells that have been closed (past and current)
- Identify any reports of foul tasting or smelling water from nearby wells
- Identify any drinking water wells located between the site and other wells suspected of contamination
- Determine if any nearby wells have a large drawdown or high production rate (cone of depression, change in flow gradients)

^b If sampling within the 4 mile radius of every potential or actual source cannot be conducted off the Federal facility property, the Federal facility should obtain documentation of existing analytical results from private/municipal drinking water wells from the local health department, or other local/state officials.

Surface Water Migration Pathway

This section of the SI Summary Guide provides information for documenting releases or suspected releases of hazardous substances, pollutants, or contaminants to the surface water migration pathway and associated targets within 15 miles downstream of the points where sources discharge (or may discharge) hazardous substances, pollutants, or contaminants to surface water.

Release to Surface Water

The assessment of a release to surface water during a SI should include the following:

- description of surface water bodies which are defined as naturally-occurring, perennial water bodies; also including some artificially-made and/or intermittently-flowing water bodies. Surface water bodies include streams and rivers, lakes, coastal tidal waters, oceans, and contiguous wetlands; in arid areas (where the mean annual precipitation is less than 20 inches) these include intermittently-flowing waters and contiguous intermittently-flowing streams and ditches;
- identification of existing analytical or circumstantial evidence of surface water contamination, including previous sampling data of surrounding surface waters or reports on closings (beach, fishing, recreational use) associated with the site;
- identification of any upstream samples to establish attribution of surface water contamination to sources at the site;
- documentation of any release to surface water by direct observation (e.g., material containing hazardous substances, pollutants, or contaminants is known to have entered surface water through direct deposition, is observed entering surface water, or is present in a source area in contact with surface water through flooding);
- existing analytical data from previous investigations that document or indicate surface water contamination;
- documentation of release to surface water by chemical analysis.

Sample Release to Surface Water Completion Checklist

The following are important considerations when evaluating the release of hazardous substances, pollutants, or contaminants to the surface water pathway (see also SI Guidance, Chapter 4.6 and a C):

- ▲ Describe each watershed's hydrology and topography for a 15-mile TDL, including:
 - Surface water bodies, including wetlands, and their proximity to a source
 - Surface water body flow rates
 - Precipitation levels, occurrence of extreme rain events, and potential for flooding
 - Soil types and infiltration rates
 - Size of drainage area
- ▲ Identify and map:
 - Overland runoff routes, and shortest overland distance to surface water from a source
 - Probable points of entry (PPEs) where hazardous substances, pollutants, or contaminants are likely to have migrated from each source or identify and document the nearest surface water body and its distance from the site
 - Probability and location of ground water discharge to surface water
 - Predominant type of water body between PPE to surface water and nearest drinking water intake (i.e., river, lake, both)
 - Fisheries or sensitive environments
- ▲ Identify visual or alleged evidence of direct deposition of hazardous waste to sediments and surface water:
 - Vegetation condition
 - Historical flooding of source areas
 - Absence or presence of terrestrial and/or aquatic wildlife
 - Any unnatural discoloration
- ▲ Document any release to surface water by direct observation (for e.g., material containing hazardous substances, pollutants, or contaminants is known to have entered surface water through direct deposition, is seen entering surface water, or is present in a source area in contact with surface water through flooding)
- ▲ Document a release to the surface water migration pathway by chemical analysis:
 - Identify type of release samples (aqueous, sediment, effluent, sessile benthic organism)
 - The release and upstream background samples must be from similar setting, flow, and physical characteristics (for e.g., sediment grain size)
- ▲ Establish attribution of surface water contamination to sources at the site by collecting samples upstream of the PPE
- ▲ Specifically, sample as appropriate, surface water, or sediment or both as determined by chemical characteristics, time of release, surface water flow, etc., to establish where contamination has come to be located; analyze for all contaminants of concern released /stored/used at the site

The assessment of surface water targets of a SI should include the following:

- identification and description of drinking water intakes that may serve as municipal systems, community systems, or individual residences;
- identification of local water authorities for information on the number of people utilizing drinking water intakes and information on the flow rates of water bodies at or near intakes (*e.g.*, from the USGS, local municipal and county water authorities, local government agencies);
- identification of sensitive environments, such as aquatic resources, protected aquatic species, fragile natural settings, or other areas with unique or highly-valued environmental or cultural features (most commonly these are wetlands);
- measurements of the total wetland frontage in each water body type;
- identification of local fish and game officials for information on fishery use, if data from published sources are lacking;
- measurements of flow rates and characteristics category for streams and rivers;
- qualitative assessment of surface water contamination, including discolored water or sediments, visible plume, or distressed terrestrial or aquatic life;
- comparison of surface water release concentrations to health-based benchmarks.

This information may be obtained through state water resource inventories, state natural heritage programs, local and private water purveyors, and maps illustrating the watersheds and target distance limits.

Sample Surface Water Targets Completion Checklist

The following are important SI considerations when evaluating the surface water pathway targets of concern (see also SI Guidance, Chapter 4.6 and Appendix C):

- Identify all targets within the 15-mile Target Distance Limit (TDL) of each source at the site (in multiple surface water migration routes where applicable):
 - Drinking/resource water intakes (including backup or standby intakes)
 - Fisheries (recreational, commercial, subsistence)
 - Sensitive environments (species, wetlands)
- For each intake,
 - State if intake is suspected to be contaminated
 - State the distance from the PPE to that intake
 - Quantify population served (including workers and students)
 - Determine the flow rate
 - Estimate annual human food chain production
 - Measure the distance from the PPE to the nearest intake
 - Establish actual contamination to surface water by sampling drinking water intake; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
 - Identify any other sample results (sediment, aqueous, effluent, sessile benthic organism)
- For each fishery,
 - State if fishery is suspected to be contaminated
 - State the distance from the PPE to that fishery
 - Determine the flow rate
 - Identify fishery with the lowest flow characteristic
 - Establish actual contamination by taking edible tissue sample results from sessile benthic organisms, non-sessile benthic organisms, or finfish, amphibians, and reptiles; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
 - Identify any other sample results (sediment, aqueous, effluent)
- For each sensitive environment
 - State if it is suspected to be contaminated
 - State the distance from the PPE to the sensitive environment
 - Indicate whether sensitive environments are present in or adjacent to the surface water migration pathway
 - Identify the sensitive environment with the lowest flow characteristic
 - If wetlands, provide wetland frontage
 - Establish actual contamination to wetland/sensitive environment using aqueous samples; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
 - Identify any other sample results (sediment, aqueous, effluent, edible sessile benthic organism)
- Identify if any intake, fishery, or recreational area has ever been closed

This section of the SI Summary Guide provides information for documenting the likelihood of exposure to areas of contaminated soil and associated targets of concern.

Soil Likelihood of Exposure

The assessment of soil likelihood of exposure during a SI should include the following:

- identification and description of areas of suspected contamination defined by the actual presence of hazardous substances, pollutants, or contaminants, which normally will require chemical analysis of waste areas;
- identification of sources (including in-ground sources such as surface impoundments and landfills, on-ground sources such as contaminated soil and piles, and above-ground sources such as drums and tanks) that are considered areas of contamination;
- identification of whether sources have more than two feet of clean cover, and sources with and impenetrable³ cover, regardless of thickness;
- identification of sites in which areas of surface soil contamination are not readily apparent based upon historical information, a visual survey of the site, and/or surface cover present (such as fill, asphalt, or concrete);
- visual examination of the site, including sites with areas of cover, paying attention to fill cover that may be unevenly distributed, and asphalt/concrete with cracks or fissures providing insufficient cover;
- consideration of all information relevant to soil exposure, such as ground water contamination (which may indicate the presence of surface or subsurface soil contamination unaccounted for by visual examination of the site);
- identification and description of areas of soil contamination;
- identification of extent of release (as this may impact the location of samples, if sampling is deemed necessary);
- sufficient samples in distinct areas of soil or waste contamination to determine areal extent (minimum of 3 samples in each distinct area);
- chemical analysis or documentation of all contaminants of concern released/stored/used at the site.

³ It should be noted that impenetrable cover, such as concrete or asphalt, must be permanent or otherwise maintained.

Sample Soil Likelihood of Exposure Completion Checklist

The following are important SI considerations when evaluating the soil exposure pathway (see also SI Guidance, Chapter 4.7 and Appendix C):

- Identify areas of known or suspected soil and non-soil contamination (such as gravel fill, waste pile, landfills, drums, tanks, etc..)
- State if area is covered by an essentially impenetrable cover or more than 2 ft.
- Within the area of suspected contamination, identify all contaminants, not just those in the suspected or known "hot spots"
- Take sufficient samples in distinct areas of soil contamination to determine areal extent (minimum of 3 samples in each distinct area)
- Chemical analysis for all contaminants of concern released/stored/used at the site; establish background levels (see Analytical Data Quality Needs Completion Checklist)
- Establish attribution of surficial contamination to sources at the site

Soil Exposure Targets

The assessment of soil exposure targets during a SI should include the following:

- identification of the following targets on or within 200 feet of a source: residents, students, infants, children, daycare attendees, workers, and terrestrial sensitive environments;
- examination and identification of health reports of adverse health effects, distressed vegetation or wildlife, suspected releases on adjacent or nearby properties, reports or observations of the site being flooded, overflow of hazardous substances, pollutants, or contaminants to other properties, or reports/observations of windblown substances deposited on nearby properties;
- determination of public recreation or terrestrial sensitive environment use within areas of surficial contamination.

This information may be obtained through reviewing internal agency office files, interviews, the US Bureau of Census, and during site reconnaissance.

Sample Soil Exposure Targets Completion Checklist

The following are important SI considerations when evaluating the soil exposure pathway targets of concern (see also SI Guidance, Chapter 4.7 and Appendix C):

- For each area of suspected contamination, identify on or within 200 feet the:
 - Number of workers and residents
 - Schools and day care facilities and number of attendees
 - Any terrestrial sensitive environments (describe where sensitive environments/species are located)
 - Use of the resource (land) for commercial agriculture, commercial silviculture, or commercial livestock production or grazing
- Identify any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator
- Identify any migration route to groundwater, surface water, or air
- Identify any reports on adverse health effects
- If subject property warrants sampling in the SI phase, determine if any neighboring property warrants sampling
- Establish actual contamination by the collection and analysis of soil samples in residential areas and school yard; establish background levels (see Analytical Data Quality Needs Completion Checklist)

Air Migration Pathway

This section of the SI Summary Guide provides information for documented releases or suspected releases of hazardous substances, pollutants, or contaminants to the air migration pathway and associated targets of concern.⁴

Release to Air

The assessment of a release to air during a SI should include the following:

- description of air releases, including rapid dispersion of released substances in the atmosphere which can usually be detected only while the release is occurring;
- evaluation of the likelihood of release to air based on site and pathway conditions as to whether a hazardous substance release could be detected in air;
- visual examination and consideration of the site and its environs;
- identification of reports of adverse health effects potentially resulting from migration of hazardous substances, pollutants, or contaminants through the air, and evidence of distressed or dead vegetation;
- visual documentation of any historical release to the air (for e.g., particulate matter observed entering atmosphere and information that it contains hazardous substances, pollutants, or contaminants);

⁴ The air pathway should be evaluated only if a release is suspected or identified.

- identification of any evidence of bio-gas (e.g., methane) releases from below-ground containers or tanks, landfills, or buried surface impoundments.

This information may be obtained through reviewing internal agency office files, interviews, local airport weather stations, and during site reconnaissance.

Sample Release to Air Completion Checklist

The following are important SI considerations when evaluating the release of hazardous substances, pollutants, or contaminants to the air pathway (see also SI Guidance, Chapter 4.8 and Appendix C):

- Has any release to air been suspected or identified?
- Describe any direct observation of a release, analysis of air samples, or any potential release(s) to air
- Identify and describe any reports (local Health Department, facility employees, or neighbors who may have reported health effects such as headaches, nausea, or dizziness) of adverse health effects potentially from hazardous substances, pollutants or contaminants in air
- Identify and describe any reports or presence of odor from the site
- Use any available analytical or circumstantial evidence (distressed or dead vegetation) suggesting release of hazardous substances, pollutants, or contaminants into the air
- Collect and analyze air samples if:
 - Air pathway contamination hypothesized during PA is solely responsible for further investigation
 - Public health concerns have been identified within the vicinity of the site
- Background samples (upwind or crosswind) and release samples (downwind of sources at the site) must be collected at the same time and same heights above the ground
- While sampling, monitor wind speed, direction, and other atmospheric conditions

Air Targets

The assessment of air targets during a SI should include the following:

- description of wind currents which may cause air releases to disperse in any direction;
- identification of human populations and sensitive environments within a 4 mile radius of the site;
- identification of land uses within ½ mile only (commercial agriculture, silviculture, major or designated recreation area).

Sample Air Targets Completion Checklist

The following are important considerations when evaluating the air pathway targets of concern (see also SI Guidance, Chapter 4.8 and Appendix C):

- ▲ Within each of the 1/4, 1/2, 1, 2, 3, and 4-mile target distance rings from the site:
 - Determine distance to the nearest regularly occupied onsite or offsite building
 - Identify populations (residents, students, workers, subsistence gatherers)
 - Identify sensitive environments/species (terrestrial and aquatic within 1/2 mile only)
 - Identify wetlands
- ▲ Establish actual contamination based upon observed a release of hazardous substance, pollutant, or contaminant into the air

Radionuclides

Investigation of radiation sites should be coordinated with EPA's Office of Radiation Programs (ORP). The assessment of radionuclides (or radioactive substances) during a SI should include the following:

- identification of specific radionuclides likely to be present, as releases are evaluated differently depending on whether radionuclides are man-made or naturally occurring;
- identification of a background or reference concentration for the site vicinity for ubiquitous or naturally-occurring radionuclides;
- review of site history and past records to identify radionuclides and radioactive sources and waste streams;
- determination of capabilities and limitations of various types of radiation field survey instruments in field planning; the selected radiation field survey instrument should be appropriately calibrated;
- selection of the appropriate field radiation survey technique (walkover or grid survey, downhole gamma logging, special purpose surveys);
- site map marking all areas with elevated exposure or count rates with survey stakes and record measurements on a site map (in the field).

Sample Radionuclides Completion Checklist

The following are important SI considerations when assessing radiation sites (see also SI Guidance, Chapter 3.8):

- Characterize sources using radioanalytical data:
 - Identify all radioactive substances and decay products present
 - Determine the concentration of each radionuclide
 - Determine natural background concentration of each radionuclide
 - Delineate source dimensions
 - Investigate source containment
- Use radio-analytical data to establish observed release differently depending upon whether radionuclides are man-made or naturally occurring:
 - Identify all man-made and/or naturally occurring radionuclides and decay products present in each migration pathway
 - Determine the concentration of each radionuclide in these media
 - For each naturally occurring radionuclide detected, determine the mean site-specific natural background concentrations and the minimum detectable activity (MDA) concentration in each medium
 - For each man-made radionuclide detected, determine the lower limit of detection (LLD) in each medium
 - For areas of observed soil contamination, determine gamma radiation exposure rates at one meter above the surface of contaminated surficial materials; also establish natural radiation exposure rates at uncontaminated background soil locations
- Identify background or reference concentration in site vicinity for ubiquitous or naturally-occurring radionuclides

Note: The Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual is a good resource for identifying appropriate analytical methods for radionuclides and can be found at <http://www.epa.gov/radiation/marlap/links.htm>

SI NARRATIVE REPORT REQUIREMENTS

A SI at a Federal facility should include a SI Narrative Report. This Report should summarize what is known about the site, what is assumed or inferred, the activities conducted during the SI, all researched information, findings of the field investigation, and particularly the contamination associated with the site and migration pathways. The SI Narrative Report should be accompanied by a photo documentation log, other attachments that could include a sampling log, and reference materials, including any new analytical data, as described in the *Guidance for Performing Site Inspections Under CERCLA*, 1992. A sample outline for such a report is presented below.

Sample Outline for a SI Narrative Report

1.0 INTRODUCTION

- 1.1 Project Objectives
- 1.2 Project Scope

2.0 SITE BACKGROUND

- 2.1 Site Location and Setting
- 2.2 Site Description
- 2.3 Site Ownership and History
- 2.4 Site Operations and Waste Characteristics
 - 2.4.1 Historical Waste Management Practices
 - 2.4.3 Regulatory Compliance
- 2.5 Previous Investigations
- 2.6 Summary of Source Locations

3.0 FIELD ACTIVITIES AND ANALYTICAL PROTOCOL

- 3.1 Sample Locations and Methodologies
 - 3.1.1 Ground Water Samples
 - 3.1.2 Surface Water Samples
 - 3.1.3 Surface and Subsurface Soil Samples
- 3.2 Analytical Methods used
- 3.3 Analytical results, with any review recommendations about data use
- 3.4 Conclusions

4.0 QUALITY ASSURANCE/QUALITY CONTROL

- 4.1 An EPA-approved QAPP that is project-specific Table 2, QAPP Requirement Summary, from the IDQTF UFP-QAPP Manual (http://epa.gov/fedfac/documents/intergov_qual_task_force.htm)

summarizes the elements to be included in a QAPP and Chapter 5 of that document clarifies the data review process that is appropriate. These requirements are compatible with EPA requirements and too detailed to include here.

4.2 Documentation that QAPP specifications have been met, any deviations noted, and a statement about the adequacy of the data for the intended use if all specifications are not met.

4.2.1 A data review and usability report should be included.

5.0 MIGRATION/EXPOSURE PATHWAYS AND TARGETS

5.1 Ground Water Migration Pathway

5.1.1 Local Geology and Hydrologic Setting

5.1.2 Releases and Potential Releases to Ground Water

5.1.3 Ground Water Migration Pathway Targets

5.1.4 Sample Locations

5.1.5 Ground Water Migration Pathway Analytical Results

5.1.6 Ground Water Migration Pathway Conclusions

5.2 Surface Water Migration Pathway

5.2.1 Hydrologic Setting

5.2.2 Releases and Potential Releases to Surface Water

5.2.3 Surface Water Migration Pathway Targets

5.2.4 Sample Locations

5.2.5 Surface Water Migration Pathway Analytical Results

5.2.6 Surface Water Migration Pathway Conclusions

5.3 Soil Exposure Pathway

5.3.1 Physical Source Access Conditions

5.3.2 Actual or Potential Contamination Areas

5.3.3 Soil Exposure Targets

5.3.4 Sample Locations

5.3.5 Soil Exposure Analytical Results

5.3.6 Soil Exposure Conclusions

5.4 Air Migration Pathway

5.4.1 Climate

5.4.2 Releases and Potential Releases to Air

5.4.3 Air Migration Pathway Targets

5.4.4 Sample/Monitoring Locations

5.4.5 Air Migration Pathway Analytical Results

5.4.6 Air Migration Pathway Conclusions

6.0 SUMMARY AND CONCLUSIONS

7.0 REFERENCES

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APPENDIX A

FEDERAL FACILITIES REMEDIAL PRELIMINARY ASSESSMENT AND REMEDIAL SITE INSPECTION SUMMARY GUIDE (INFORMATION SUPPLEMENT)

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INTRODUCTION

This section summarizes pertinent statutory and regulatory requirements that govern the Federal facilities site assessment process - specifically for conducting a Remedial Preliminary Assessment (PA) or a Remedial Site Inspection (SI).

Law/Regulations: Summary of Appropriate Legislation/Regulation

Section 120(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires EPA to establish a Federal Agency Hazardous Waste Compliance Docket (Docket) which contains information reported to EPA by Federal facilities that manage hazardous waste or from which hazardous substances, pollutants, or contaminants have been or may be released. The Docket is used to identify Federal facilities that should be evaluated to determine if they pose a threat to public health and the environment and to provide a mechanism to make this information available to the public. The Docket is developed from information submitted by the Federal facility under the following authorities:

- T** Section 103 of CERCLA requires owners or operators of vessels or facilities to notify the National Response Center of a release of a reportable quantity of a hazardous substance (notification of a release or potential release);
- T** Section 3005 of the Resource Conservation and Recovery Act (RCRA) provides EPA authority to establish a permitting system for hazardous waste treatment, storage, and disposal (TSD) facilities, which in turn requires the submission of certain information as part of the permit application (interim status/permitting authority). The hazardous waste permitting program is generally implemented by authorized states;
- T** Section 3010 of RCRA requires hazardous waste generators, transporters, and TSD facility owners/operators to notify EPA of their hazardous waste activities (notification of hazardous waste activity);
- T** Section 3016 of RCRA requires Federal facilities to submit an inventory of hazardous waste sites they own or operate, or have owned and operated in the past (biennial inventory of hazardous waste activities).

Other relevant legislative/statutory citations include:

- T** Section 120(a)(2) of CERCLA provides that all guidelines, rules, regulations, and criteria for Preliminary Assessments, Site Inspections, National Priorities List (NPL) listing and remedial actions are applicable to Federal facilities.
- T** Section 120(d)(1) of CERCLA requires that EPA take steps to assure that a PA be conducted for each Federal facility included on the published list of Federal facilities reported pursuant to Section 120(c) of CERCLA (the "Federal facilities docket").

- T** Section 120(d)(3) of CERCLA requires that such evaluation be completed within a reasonable time frame. The PA is designed to provide information for EPA to consider when evaluating the site for potential listing on the National Priorities List. When a Federal facility is included on the Federal facilities Docket, EPA generally lists the facility in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database¹.
- T** Section 104(b) and (e) of CERCLA grant to the President broad authority to conduct a PA or an SI. For Federal facilities, the President has delegated this authority through Executive Order 12580 to the heads of the respective executive departments and agencies with jurisdiction, custody, or control over their facilities.
- T** The National Oil and Hazardous Substances Pollution Contingency Plan, (NCP) provides for the lead agency to perform a PA on all sites in CERCLIS and, as appropriate, an SI. (see 40 CFR Part 300.420(b) (1) and (c) (1)). Part 300, sub-part A, Introduction, §300.5 Definitions, of the NCP defines “lead agency” as “the agency that provides the OSC/RPM to plan and implement response actions under the NCP. EPA, the USCG, another federal agency, or a state (or political subdivisions of a state) operating pursuant to a contract or cooperative agreement executed pursuant to section 104(d)(1) of CERCLA, or designated pursuant to a Superfund Memorandum of Agreement (SMOA) entered into pursuant to sub-part F of the NCP or other agreements may be the lead agency for a response action. In the case of a release of a hazardous substance, pollutant, or contaminant, where the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of Department of Defense (DOD) or Department of Energy (DOE) will be the lead agency...” Accordingly, each Federal agency typically is the lead agency to conduct a PA or an SI at facilities within its jurisdiction, custody, or control.

In summary, each Federal facility should conduct a PA within a reasonable time frame. EPA should take steps to assure that a PA is completed for facilities on the Federal facilities Docket where the Federal agencies are delegated the authority to conduct a PA and/or an SI (when appropriate).

Federal facilities that conduct a PA may satisfy some or all of the PA reporting requirements through work conducted pursuant to the RCRA corrective action program or state cleanup programs. For example, a facility at which a RCRA Facility Assessment (RFA) has been conducted may base its PA on the RFA report. When work conducted under such non-CERCLA authorities is the basis for satisfying PA requirements, the facility should demonstrate that all information required for the CERCLA PA is provided. In some instances, it may be appropriate to provide supplemental information to insure that all hazardous substances, pollutants, or contaminants at the facility are addressed. See section on ‘Site Assessment Process for Federal Facilities’ below for further details.

Discussion on Definition of “Site”

¹ There may be instances when a facility included in the docket may not be listed in the CERCLIS database.

As stated in the section of the PA guide titled “Definition of Site: Clarification of Definition of ‘Site’ in CERCLA/SARA,” there has been confusion in the Federal facility context between the definition of “facility” and “site.” There are citations of two memos issued by EPA that address this issue. One is from George Wyeth, entitled “Federal Facility Site Definition,” dated August 13, 1991, that focuses on how Federal facilities should be defined for NPL listing purposes. The other is from Stephen Luftig entitled “Clarification of NPL Listing Policy” dated August 3, 1995, that describes what is included in an NPL site, and specifically addresses Federal facilities.

Sometimes the two terms are used interchangeably while in other contexts they are used to refer to different areas. The NCP does not define “site.” It does define “facility” as “any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publically owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located, but does not include any consumer product in consumer use or any vessel.” A Federal facility may include lands on a military installation, a DOE nuclear production facility, a National Air and Space Administration (NASA) space center, a national forest, a national park or lands managed by the Bureau of Land Management (BLM) or some other Federal agency. The DOD often refers to “sites” on their installations. In this context, “site” refers to areas where a release has occurred and where contamination has migrated. The National Priorities List (NPL) is “the list of priority releases for long-term remedy evaluation and response.” Generally, releases on the NPL are referred to as “sites” although they may be identified by the facility’s name.

This guide will use the term “site(s)” to be consistent with common usage and to be consistent with the attachment to the “Clarification of NPL Listing Policy” memorandum of August 3, 1995, from Stephen Luftig, which was written to address the perception that Federal facilities are listed on a fence-line-to-fence-line basis. The attachment contained new wording for preambles to NPL rulemaking documents. Relevant language states that “While geographic terms are often used to designate the site in terms of the property owned by the particular party, the site properly understood is not limited to that property (e.g., it may extend beyond the property due to contaminant migration), and conversely may not occupy the full extent of the property (e.g., where there are uncontaminated parts of the identified property, they may not be, strictly speaking, part of the “site.”) The “site” is thus neither equal to nor confined by the boundaries of any specific property that may give the site its name, and the name itself should not be read to imply that this site is coextensive with the entire area within the property boundary of the facility or plant. The precise nature and extent of the site are typically not known at the time of listing on the NPL.”

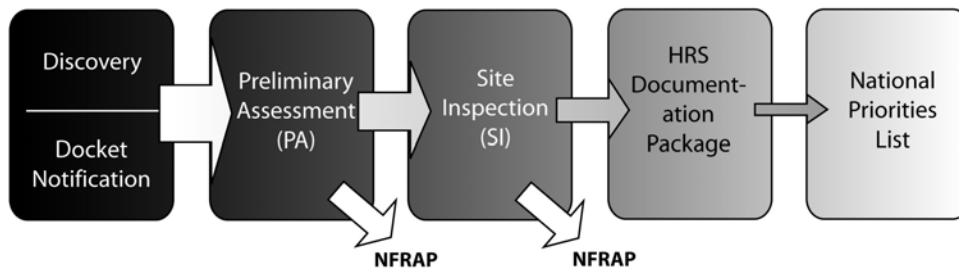
Defining the extent of a “site” for Federal facilities can be even more complex than for private sites. Federal facilities may consist of large areas (e.g., Federal lands or installations), much of which is not likely to be affected by releases of hazardous substances, pollutants, or contaminants. As a legal matter, the “site” is rarely coextensive with the boundaries of the installation, plant, or Federal lands. Rather, per EPA’s Office

of General Counsel², the site consists of all contaminated areas (hazardous substance, pollutant, or contaminant releases) within the area used to identify the site, as well as any other location to which that contamination has come to be located, or from which that contamination came.

²See the August 13, 1992, Memorandum “Federal Facility Site Definition,” from George B. Wyeth, Attorney.

Site Assessment Process for Federal Facilities

Diagram of overall Federal Facilities Site Assessment Process



Outline of Steps in Site Assessment

The Superfund site assessment process typically begins with site discovery or notification of a release or potential of a release into the environment and/or notification to EPA of a potential hazardous waste site. However, with Federal facilities, the process starts when the facility has been listed on the Federal Agency Hazardous Waste Compliance Docket. EPA will typically then request the Federal facility to submit a PA report within a reasonable time frame (determined upon consultation with EPA).

When a Federal facility provides a PA report for a site to EPA, EPA evaluates the site in accordance with the Hazard Ranking System (HRS) final rule to determine whether the site poses a threat to human health and/or the environment³.

If EPA determines that the facility or site does not pose a threat to human health and the environment sufficient to warrant Superfund action, EPA typically will designate a decision of “No Further Remedial Action Planned” (NFRAP) under Superfund. A decision not to take further response/remedial action under the Superfund program usually is based on a finding that there is no significant threat to human health or the environment and the site would not be proposed to the National

Purpose of a Preliminary Assessment (PA)**

The main purpose of a PA is to distinguish between sites that pose little or no threat to human health and the environment and sites that require further investigation. The PA generally is a compilation of existing information about the site and its surrounding area. This generally includes:

- a reconnaissance of the site and its environs
- documenting current site conditions to include hazardous waste on-site
- populations and other targets, and resources that might be threatened/affected by the site
- photo documentation
- migration pathways (ground water, surface water, soil, air)

*** Refer to Guidance for Performing Preliminary Assessments Under CERCLA, 1991*

³Hazard Ranking System; Final Rule, 40 CFR Part 300, Appendix A, Federal Register, Vol. 55, No. 241, December 14, 1990.

Priorities List (NPL) at that time by the EPA. *(If new or additional information becomes available suggesting that the site may warrant further evaluation, EPA will re-evaluate the site accordingly).* This decision does not preclude any further action at the facility by the State or other Federal agency.

If the PA concludes that further investigation is warranted, then a Site Inspection (SI) will be performed. When the Federal facility provides the SI report or the combined PA/SI⁴ report for a site to EPA, EPA evaluates the site in accordance with the HRS to determine if the site poses a threat to human health or the environment. If the site is found to present no significant threats to human health or the environment, the SI serves as a second screening investigation and the site is designated a decision of “No Further Remedial Action Planned” under Superfund.

When initial site sampling verifies some or all hypotheses, or other data indicate the site may pose a sufficient threat to warrant NPL consideration, all data necessary to prepare an HRS scoring package to propose the site to the NPL should be collected. To make a site disposition decision, EPA considers all data in the light of the SI results to evaluate whether the site score will be high enough to warrant preparation of the HRS package.

Federal facilities are encouraged to contact the appropriate EPA regional office prior to submission of their PA (and SI if performed) to discuss the site assessment process, site specific issues, problems, tribal and state involvement, *etc.* Such discussions with the regional office should further help the Federal facility in adequately completing the PA (and SI) so that EPA can evaluate the site in accordance with the HRS, if warranted, within a reasonable time frame.

Purpose of a Site Inspection (SI)**

The main purpose of site inspection (SI) is to collect and analyze waste and environmental samples to identify the substances present, determine whether hazardous substances are being released to the environment, and determine whether hazardous substances have impacted specific targets. This usually involves:

- site reconnaissance, field observations and measurements
- the review of available information, including analytical data
- development of work and sampling (and other) plans
- sample collection and evaluation of all data
- photo documentation
- preparation of SI report

*** Refer to Guidance for Performing Site Inspections*

⁴In certain cases, a combined Preliminary Assessment/Site Inspection (PA/SI) may be warranted. A PA/SI incorporates the Preliminary Assessment and the Site Inspection into one effort allowing for potential cost savings and expedited assessment schedules. The PA/SI is particularly useful at remote sites where travel and mobilization costs are high or at sites where the necessity for conducting an SI is fairly certain based upon a review of the available information.

APPENDIX B

FEDERAL FACILITIES REMEDIAL SITE INSPECTION SUMMARY GUIDE (SAMPLE COMPLETION CHECKLISTS)

Sample Field and Analytical Data Quality Needs Completion Checklist

A comprehensive and well-documented quality assurance/quality control (QA/QC) program is essential for obtaining precise and accurate analytical data that represents the site. The following are important SI QA/QC considerations:

- Develop a Quality Assurance Project Plan (QAPP) using the Uniform Federal Policy for Quality Assurance Project Plans.
- For Federal facilities, the responsible organization should prepare the QAPP for review and approval by the appropriate regulatory authority.
- Include a table or matrix that correlates field sample numbers with laboratory sample numbers and related sample results
- Include a map of sample locations, contaminated areas, and any other features pertinent to data evaluation
- Make notations on nature of sample (e.g., whether aqueous sample is muddy or clear, filtered or unfiltered)
- Establish background levels based on sampling results or published data
- Determine background levels of hazardous substance(s) in order to:
 - establish which ground water, surface water, sediment, or air samples are significantly higher than the background level for the same media.
 - define observed surficial soil or waste contamination
 - establish actual contamination of ground water
 - attribute hazardous substance(s) to sources at the site
 - establish natural or ubiquitous radiation exposure rates
- Background samples should be collected in the media of concern and where the hazardous substance, pollutant, or contaminant is not likely to be present
- Background and release samples should be comparable (i.e., similar location within media, time of sampling, nature of samples)
- All samples should be analyzed according to the QAPP, using appropriate analytical methods selected to achieve project quality objectives as well as adequate QA/QC data. Consider both fixed laboratory and/or field analytical methods appropriate for the Contaminants of Concern and that have adequate QA and QC specifications to ensure that data can be effectively reviewed.
- Adequate documentation of analytical data QA/QC to determine if QAPP Data Quality Objectives (DQOs) were met and data are suitable for intended use, following data review requirements as established in the QAPP.

Sample Site and Source Characterization Completion Checklist

The following are important SI considerations when characterizing the site and sources, including hazardous waste quantity (see also SI Guidance, Chapter 4.2 and Appendix C):

- ▲ Define and describe the site
- ▲ Describe past and current operations and site conditions
- ▲ Summarize (past and current):
 - Waste treatment, storage, and disposal activities (documented or alleged) including all spills and response (removal or remedial) actions
 - Any previous sampling data identifying hazardous substances, pollutants, or contaminants at each source and how they relate to hazardous substances, pollutants, or contaminants suspected to be present at the site
- ▲ Describe adjacent or nearby property, land uses, and tribe/native entities (including any areas for their reserved hunting, fishing, and gathering rights)
- ▲ Identify, describe & characterize sources:
 - Waste streams (past and current)
 - All hazardous substances, pollutants, or contaminants and wastes
 - Source type
 - Quantity of waste
 - Measurement of each source (area/volume, *etc.*)
 - Physical state of waste
 - Source area accessibility
 - Containment features, if any, and their effect on migration of hazardous substances, pollutants, or contaminants
 - Specific areas on the site where wastes may have been disposed, deposited, stored, or handled (based on past and current activities)
 - Any other potential source areas
 - Indicate source areas (including potential source areas) on a Site Sketch to be included in the SI Narrative Report
 - Identify and describe major pathways of migration (ground water, surface water, soil, air) and the routes that hazardous substances, pollutants, or contaminants may take to reach these pathways (e.g., flooding, overland flow, vapor migration)
- ▲ Sample the sources to determine one or more of the following:
 - Identify types of wastes and hazardous substances, pollutants, or contaminants
 - Attribute hazardous substances, pollutants, or contaminants to the site
 - More fully describe any observed surficial contamination
 - Delineate source boundaries and containment

Sample Release to Ground Water Completion Checklist

The following are important considerations when evaluating releases or suspected releases of hazardous substances, pollutants, or contaminants to the ground water pathway (see also SI Guidance, Chapter 4.5 and Appendix C):

- Describe local geology and hydrogeology, including:
 - Soil types and permeability
 - Aquifers and ground water use
 - Low-permeability or confining layers, impeding ground water movement into or between aquifers
 - Aquifer discontinuities
 - Hydrologic interconnections between multiple aquifers
 - Karst terrain and features
 - Infiltration rates
 - Precipitation levels and occurrence of extreme rain events
 - Depth to aquifer
- Describe containment features (engineered structures such as liners or a leachate collection system)
- Describe the mobility of the hazardous substances, pollutants, or contaminants in ground water
- Provide maps of ground water wells used for monitoring, drinking, or other purposes
- Document any release to ground water by direct observation (for e.g., material containing hazardous substances, pollutants, or contaminants is known to have entered ground water through direct deposition or seen entering ground water)
- Document release to ground water by chemical analysis:
 - Identify release well type (municipal or private drinking water well, monitoring well)
 - Samples must be collected from representative release and background wells finished in the same aquifer and screened in a comparable zone
 - Determine depth to aquifer in mean sea level (rather than below the ground surface)
 - Designate if ground water samples are filtered or unfiltered
 - Analyze all contaminants of concern released/stored/used at the site
- When necessary, monitoring wells may need to be installed to:
 - Establish an observed release to ground water
 - Establish background levels
 - Establish attribution of groundwater contamination to sources at the site
 - Determine direction of groundwater flow

Sample Ground Water Targets Completion Checklist

The following are important SI considerations when evaluating the ground water pathway targets of concern (see also SI Guidance, Chapter 4.5 and Appendix C):

- Within a 4 mile radius of each potential or actual source, identify:
 - Drinking water systems at the Federal facility site and nearby areas and residences (private/municipal wells, blended water distribution system, surface water usage, population served or number of service connections and county multiplier, annual average well production, backup or standby wells)
 - Nearest drinking water well, the distance from the source, and the population served by the well
 - All existing wells (private and/or public drinking water wells, irrigation wells, livestock watering, etc..)
 - Any multiple aquifer systems
- Identify drinking water wells within 1/4, 1/2, 1, 2, 3, and 4 miles of the sources, and quantify, and as necessary, apportion populations associated with each (among aquifers and distance rings and between surface water intakes and ground water wells)
- Establish actual contamination to ground water by sampling target drinking water (municipal or private) wells within the 4 mile radius, up-and down-gradient^b; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
- Obtain well construction information for all target drinking water wells and identify the screening intervals as well as the aquifer, or aquifers, the wells draw from
- Identify any nearby drinking water wells that have been closed (past and current)
- Identify any reports of foul tasting or smelling water from nearby wells
- Identify any drinking water wells located between the site and other wells suspected of contamination
- Determine if any nearby wells have a large drawdown or high production rate (cone of depression, change in flow gradients)

^bIf sampling within the 4 mile radius of every potential or actual source cannot be conducted off the Federal facility property, the Federal facility should obtain documentation of existing analytical results from private/municipal drinking water wells from the local health department, or other local/state officials.

Sample Release to Surface Water Completion Checklist

The following are important considerations when evaluating the release of hazardous substances, pollutants, or contaminants to the surface water pathway (see also SI Guidance, Chapter 4.6 and a C):

- Describe each watershed's hydrology and topography for a 15- mile TDL, including:
 - Surface water bodies, including wetlands, and their proximity to a source
 - Surface water body flow rates
 - Precipitation levels, occurrence of extreme rain events, and potential for flooding
 - Soil types and infiltration rates
 - Size of drainage area
- Identify and map:
 - Overland runoff routes, and shortest overland distance to surface water from a source
 - Probable points of entry (PPEs) where hazardous substances, pollutants, or contaminants are likely to have migrated from each source or identify and document the nearest surface water body and its distance from the site
 - Probability and location of ground water discharge to surface water
 - Predominant type of water body between PPE to surface water and nearest drinking water intake (i.e., river, lake, both)
 - Fisheries or sensitive environments
- Identify visual or alleged evidence of direct deposition of hazardous waste to sediments and surface water:
 - Vegetation condition
 - Historical flooding of source areas
 - Absence or presence of terrestrial and/or aquatic wildlife
 - Any unnatural discoloration
- Document any release to surface water by direct observation (for e.g., material containing hazardous substances, pollutants, or contaminants is known to have entered surface water through direct deposition, is seen entering surface water, or is present in a source area in contact with surface water through flooding)
- Document a release to the surface water migration pathway by chemical analysis:
 - Identify type of release samples (aqueous, sediment, effluent, sessile benthic organism)
 - The release and upstream background samples must be from similar setting, flow, and physical characteristics (for e.g., sediment grain size)
- Establish attribution of surface water contamination to sources at the site by collecting samples upstream of the PPE
- Specifically, sample as appropriate, surface water, or sediment or both as determined by chemical characteristics, time of release, surface water flow, etc., to establish where contamination has come to be located; analyze for all contaminants of concern released /stored/used at the site

Sample Surface Water Targets Completion Checklist

The following are important SI considerations when evaluating the surface water pathway targets of concern (see also SI Guidance, Chapter 4.6 and Appendix C):

- Identify all targets within the 15-mile Target Distance Limit (TDL) of each source at the site (in multiple surface water migration routes where applicable):
 - Drinking/resource water intakes (including backup or standby intakes)
 - Fisheries (recreational, commercial, subsistence)
 - Sensitive environments (species, wetlands)
- For each intake,
 - State if intake is suspected to be contaminated
 - State the distance from the PPE to that intake
 - Quantify population served (including workers and students)
 - Determine the flow rate
 - Estimate annual human food chain production
 - Measure the distance from the PPE to the nearest intake
 - Establish actual contamination to surface water by sampling drinking water intake; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
 - Identify any other sample results (sediment, aqueous, effluent, sessile benthic organism)
- For each fishery,
 - State if fishery is suspected to be contaminated
 - State the distance from the PPE to that fishery
 - Determine the flow rate
 - Identify fishery with the lowest flow characteristic
 - Establish actual contamination by taking edible tissue sample results from sessile benthic organisms, non-sessile benthic organisms, or finfish, amphibians, and reptiles; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
 - Identify any other sample results (sediment, aqueous, effluent)
- For each sensitive environment
 - State if it is suspected to be contaminated
 - State the distance from the PPE to the sensitive environment
 - Indicate whether sensitive environments are present in or adjacent to the surface water migration pathway
 - Identify the sensitive environment with the lowest flow characteristic
 - If wetlands, provide wetland frontage
 - Establish actual contamination to wetland/sensitive environment using aqueous samples; also establish background levels (see Analytical Data Quality Needs Completion Checklist)
 - Identify any other sample results (sediment, aqueous, effluent, edible sessile benthic organism)
- Identify if any intake, fishery, or recreational area has ever been closed

Sample Soil Likelihood of Exposure Completion Checklist

The following are important SI considerations when evaluating the soil exposure pathway (see also SI Guidance, Chapter 4.7 and Appendix C):

- ▀ Identify areas of known or suspected soil and non-soil contamination (such as gravel fill, waste pile, landfills, drums, tanks, etc..)
- ▀ State if area is covered by an essentially impenetrable cover or more than 2 ft.
- ▀ Within the area of suspected contamination, identify all contaminants, not just those in the suspected or known "hot spots"
- ▀ Take sufficient samples in distinct areas of soil contamination to determine areal extent (minimum of 3 samples in each distinct area)
- ▀ Chemical analysis for all contaminants of concern released/stored/used at the site; establish background levels (see Analytical Data Quality Needs Completion Checklist)
- ▀ Establish attribution of surficial contamination to sources at the site

Sample Soil Exposure Targets Completion Checklist

The following are important SI considerations when evaluating the soil exposure pathway targets of concern (see also SI Guidance, Chapter 4.7 and Appendix C):

- ▀ For each area of suspected contamination, identify on or within 200 feet the:
 - Number of workers and residents
 - Schools and day care facilities and number of attendees
 - Any terrestrial sensitive environments (describe where sensitive environments/species are located)
 - Use of the resource (land) for commercial agriculture, commercial silviculture, or commercial livestock production or grazing
- ▀ Identify any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator
- ▀ Identify any migration route to groundwater, surface water, or air
- ▀ Identify any reports on adverse health effects
- ▀ If subject property warrants sampling in the SI phase, determine if any neighboring property warrants sampling
- ▀ Establish actual contamination by the collection and analysis of soil samples in residential areas and school yard; establish background levels (see Analytical Data Quality Needs Completion Checklist)

Sample Release to Air Completion Checklist

The following are important SI considerations when evaluating the release of hazardous substances, pollutants, or contaminants to the air pathway (see also SI Guidance, Chapter 4.8 and Appendix C):

- ▲ Has any release to air been suspected or identified?
- ▲ Describe any direct observation of a release, analysis of air samples, or any potential release(s) to air
- ▲ Identify and describe any reports (local Health Department, facility employees, or neighbors who may have reported health effects such as headaches, nausea, or dizziness) of adverse health effects potentially from hazardous substances, pollutants or contaminants in air
- ▲ Identify and describe any reports or presence of odor from the site
- ▲ Use any available analytical or circumstantial evidence (distressed or dead vegetation) suggesting release of hazardous substances, pollutants, or contaminants into the air
- ▲ Collect and analyze air samples if:
 - Air pathway contamination hypothesized during PA is solely responsible for further investigation
 - Public health concerns have been identified within the vicinity of the site
- ▲ Background samples (upwind or crosswind) and release samples (downwind of sources at the site) must be collected at the same time and same heights above the ground
- ▲ While sampling, monitor wind speed, direction, and other atmospheric conditions

Sample Air Targets Completion Checklist

The following are important considerations when evaluating the air pathway targets of concern (see also SI Guidance, Chapter 4.8 and Appendix C):

- ▲ Within each of the 1/4, 1/2, 1, 2, 3, and 4-mile target distance rings from the site:
 - Determine distance to the nearest regularly occupied onsite or offsite building
 - Identify populations (residents, students, workers, subsistence gatherers)
 - Identify sensitive environments/species (terrestrial and aquatic within 1/2 mile only)
 - Identify wetlands
- ▲ Establish actual contamination based upon observed release of hazardous substance(s) into the air

Sample Radionuclides Completion Checklist

The following are important SI considerations when assessing radiation sites (see also SI Guidance, Chapter 3.8):

- Characterize sources using radioanalytical data:
 - Identify all radioactive substances and decay products present
 - Determine the concentration of each radionuclide
 - Determine natural background concentration of each radionuclide
 - Delineate source dimensions
 - Investigate source containment
- Use radioanalytical data to establish observed release differently depending upon whether radionuclides are man-made or naturally occurring:
 - Identify all man-made and/ or naturally occurring radionuclides and decay products present in each migration pathway
 - Determine the concentration of each radionuclide in these media
 - For each naturally occurring radionuclide detected, determine the mean site-specific natural background concentrations and the minimum detectable activity (MDA) concentration in each medium
 - For each man-made radionuclide detected, determine the lower limit of detection (LLD) in each medium
 - For areas of observed soil contamination, determine gamma radiation exposure rates at one meter above the surface of contaminated surficial materials; also establish natural radiation exposure rates at uncontaminated background soil locations
- Identify background or reference concentration in site vicinity for ubiquitous or naturally-occurring radionuclides

Note: The Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual is a good resource for identifying appropriate analytical methods for radionuclides and can be found at <http://www.epa.gov/radiation/marlap/links.htm>



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 13 1981

OFFICE OF
GENERAL COUNSEL

MEMORANDUM

SUBJECT: Federal Facility Site Definition

FROM: George B. Wyeth *GBW*
Attorney
Solid Waste and Emergency Response Division (LE-132S)

TO: Suzanne Wells
Site Assessment Branch
Office of Solid Waste and Emergency Response (OS-230)

A number of questions have arisen recently regarding the way in which federal facilities are defined for purposes of NPL listing. In particular, I have received a memorandum from Richard McAllister, of the office of Regional Counsel in Region X, asking about how federal facilities may be described in listing packages to ensure that all the potential sources that EPA considers appropriate to include in the NPL site are in fact included. This memorandum responds to that from Region X, and somewhat more generally to other questions that have arisen about federal facility site definition.

Federal facilities are often very large and encompass multiple potential sources of contamination arising out of a variety of different activities. Because of their size, and the fact that site investigations are not conducted under direct EPA supervision, it is not always possible to ensure that all areas of contamination within the facility boundaries have been identified at the time the facility is considered for NPL listing. While these features are not unique to federal facilities, they tend to arise most frequently at such facilities. These features of federal facilities have given rise to a number of problems for the site listing process.

The NPL is, according to section 105 (a)(8)(B) of CERCLA, a list of the nation's highest priority "releases." An NPL site therefore consists of a release (or releases), not (as is sometimes believed) a geographic unit defined by property lines.¹

¹ Section 105(a)(8)(B) also refers to "facilities" on the NPL. In general, EPA uses the term "facility" interchangeably with the terms "release" and "site". The term "facility" as defined in section 101(9) of CERCLA includes any "area where a

While geographic terms are often used to designate the site (e.g., the "Jones Co. plant site"), and listing packages sometimes describe the site in terms of the property owned by a particular party, the site properly understood is not limited to that property (e.g., it may extend beyond the property due to contaminant migration), and conversely may not occupy the full extent of the property (e.g., where there are uncontaminated parts of the identified property, they may not be, strictly speaking, part of the "site"). The precise nature and extent of the site are typically not known at the time of listing. The full extent of the site, including areas to which contamination has "come to be located", and sources not identified at listing, will be further delineated in the course of the RI/FS and the remedial action although in many cases the precise extent of contamination is never known. See 55 Fed. Reg. 35504-05 (August 30, 1990).

What the site consists of depends on how the listed release (or group of releases) is described in the listing package. In some cases this is straightforward, as where there is a known source and a groundwater plume. In other cases, the release may be defined in terms of an ongoing activity, such as the disposal of wastes generated by a particular company. In other cases, the site may consist of an identified area of known contamination with the sources less than fully specified.² Where a disposal unit such as a lagoon or landfill is involved, the location of that unit will also help to define the site. (For example, where a site is described as the "X Landfill", the site would include (but not necessarily be limited to) the landfill and any migration or releases from it). Finally, the site may be defined by reference to geographic boundaries for listing purposes, within the "site" ultimately consisting of any contamination within those boundaries (and any other areas to which such contamination has come to be located).

hazardous substance has been deposited, stored, disposed of, or placed", and that area could extend beyond the area that is actually contaminated. However, the term "facility" as used in CERCLA is not necessarily equivalent to what is commonly meant in referring to a "federal facility" -- i.e. an entire military or other government installation.

² See Washington State Department of Transportation v. EPA, 917 F. 2d 1309 (D.C. Cir. 1990) (source not mentioned in the listing package could later be treated as part of the site when it was found to be contributing to the listed contamination).

These general rules apply to federal facilities as well as other NPL sites.³ When a site is listed as "Smith Air Force Base", the site is not necessarily coextensive with the boundaries of the base. Rather, it is defined by the listing package. Where there are multiple sources or areas of known contamination, all sources and contaminated areas referred to in the package are included in the site. In addition, the site may be defined in such a way as to include any contaminated areas within the facility boundaries but not specifically identified as of the listing date. (If this approach is used, it is recommended that the method of defining the site is made very clear in the listing package to avoid misunderstandings later in the process.) Alternatively, EPA could choose to define the site to include only portions of a particular facility, either if it concludes that other portions are clean or if it concludes that it does not make sense administratively to address all contamination within the facility boundaries as part of one site.

The memo from Region X asked about the level of detail needed to describe sources at federal facilities in the listing package so as to make clear that they are part of the site. The Region indicated that it plans to characterize fully only those sources that drive the HRS score, and to describe other areas known or believed to be sources of contamination in a more general way. The Region asked if this would be sufficient, and if so, how to document the latter sources.

In general, the approach described by Region X should be sufficient to include all the sources within the site, including those that are not characterized in detail. If a few sources at a facility are sufficiently serious to generate an HRS score over 28.5 by themselves, it is sufficient to use those sources in scoring the site and to describe other known sources only in general terms.⁴ The latter would then be part of the NPL site.

³ Region X's memo correctly notes that for purposes of listing federal "facilities" on the Federal Agency Hazardous Waste Compliance Docket under section 120(c) of CERCLA, EPA has said that it uses the RCRA definition of "facility", which is based on property boundaries. Thus, on the docket, each facility is listed only once, even if it contains multiple areas of contamination. For NPL listing purposes, however, the CERCLA definition of "facility" applies

⁴ The converse is not true, however. It would not be appropriate to NFRAP a facility on the basis of data from only a few key sources. If the preliminary scoring of a few sources results in a score below 28.5, but other sources are known that could raise the score above 28.5, those other sources should not be ignored. (The region could use its discretion to conclude without detailed site investigation that even if all sources were

The more general descriptions need not conform to any specific, uniform format; generally, the kinds of identifies that would be useful would be references to the approximate location of the source, and the kind of activity that caused the contamination (or is believed to have caused contamination). If specific contaminants can be identified, either from actual sampling or from knowledge of the activity involved, this would be helpful but is not essential. Where sources are known because they have been identified in studies such as Installation Restoration Program reports, it may be helpful to include the portion of the study identifying the source in the listing package.

In such a case, the site as listed would include all the sources identified in the package, all areas to which contamination from those sources has come to be located, and in addition (unless EPA chooses otherwise) any sources not identified at the time of listing that are later found to have contributed to contamination that was identified in the listing package. For example, if the listing package identifies groundwater contamination at some point on the facility, and one or more known sources of that contamination, and other sources are later found to have contributed to that contamination, those later-identified sources would be considered part of the site. (To avoid disagreement later, it is probably advisable to make this clear in the listing package.)

Alternatively, it is possible to score the site based on a small number of sources, and simply describe the site at listing as including those sources and all other contaminated areas within the boundaries of the facility. In that case the site would include any contamination, either known at the time of listing or discovered later, that is within those boundaries. If this approach is followed, it is recommended that the description be made very clear so that all parties potentially affected may be made aware of the scope of the site. (For example, this approach could bring within the site contamination originating outside the facility from a private source, and unless the definition is clear outside private parties might assume that the listing did not affect them.) In addition, to serve the NPL's public information function, it is generally advisable even under this approach to describe in general terms those sources that are known at the time of listing.

The fact that sources at a federal facility are not contiguous, and involve different contaminants from different activities, does not preclude grouping them together as a single site. It has been EPA's policy since the NPL was first established that noncontiguous releases may be "aggregated" as a

scored the facility would be unlikely to qualify for the NPL, and NFRAP it on that basis.)

single site in certain cases. (See 48 FR 40663 (Sept. 8, 1983)). When EPA lists a variety of unrelated sources at a federal facility as one site, it is in effect utilizing the aggregation policy (although this is not always explicit in the listing packages). The factor that makes aggregation appropriate in such cases is generally the presence of a single responsible party which will serve as lead agency for any response and with whom EPA would have to enter into an IAG. There are clear administrative advantages in dealing with such sites collectively so as to simplify the response process, typically in a single umbrella IAG. At some federal facilities, however, administrative considerations may militate in favor of disaggregation; the DOE Hanford facility, for example, includes several distinct NPL sites.

It should be noted that, even if a site is identified for listing purposes by reference to the area within the facility boundaries, the NPL "site" includes only those areas that are contaminated (including both sources and areas to which contamination has come to be located). Areas within the facility boundaries that EPA ultimately concludes are clean would thus not be considered part of the "site". Pending completion of the RI/FS and ROD, the extent of the site may be uncertain, and all portions of the facility may be considered at least potentially part of the site, except to the extent EPA is satisfied based on the available evidence that certain portions are in fact uncontaminated.⁵

⁵ The question of site boundaries pending final characterization has come up from time to time in connection with proposals to sell or lease portions of the facility. Absent some provision in the IAG restricting the freedom of the agency to transfer a portion of the site, neither NPL listing nor site definition in fact have any effect on the owner agency's ability to sell property: the ability to sell is governed primarily by section 120(h)(3) of CERCLA which is independent of NPL listing.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG -3 1995

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM:

SUBJECT: Clarification of NPL Listing Policy

FROM: *Stephen D. Luffig*
Stephen D. Luffig, Acting Director
Office of Emergency and Remedial Response

TO: Director, Waste Management Division
Regions I, IV, V, VII
Director, Emergency and Remedial Response Division
Region II
Director, Hazardous Waste Management Division
Regions III, VI, VIII, IX
Director, Hazardous Waste Division
Region X

Purpose

The purpose of this memo is to inform you of a recent restatement of our National Priorities List (NPL) listing policy concerning what is included in the NPL site. This addresses the perception that Federal facilities (most particularly) are listed on a fenceline-to-fenceline basis. This perception of fenceline-to-fenceline listing has created a negative impact on the Superfund program, which this restatement should ameliorate.

Background

On March 31, 1995, Administrator Browner sent a letter to Governor Voinovich of Ohio. In that letter Ms. Browner promised that EPA would clarify, "the Agency's NPL [National Priorities List] listing policy... by the summer of 1995."

As a result of the Administrator's letter, the Site Assessment Branch, within the Office of Emergency and Remedial Response, formed an interagency workgroup to work with the Department of Defense to clarify the policy. This clarification statement of the listing policy has been implemented by three distinct actions.

Implementation

First, the workgroup developed new wording for the preambles to NPL rulemaking documents. The wording, approved by the Office of General Counsel, will appear in future Federal Register notices. This wording clarifies that NPL sites include only contaminated areas. Clean portions are not included even if the site name implies that the entire (fenceline-to-fenceline) facility is listed. This clarification is needed because of the misconception stakeholders have with what is included in the listing [a copy of the wording is attached].

Second, EPA has amended all currently proposed and final NPL docket listing packages to include a clear statement that the sites are not based upon the property boundaries, but rather the areas of contamination. A notice to that effect will be placed in the Federal Register at the next opportunity.

Third, the group has tasked the quality assurance reviewers of Hazard Ranking System packages to flag packages which are not consistent with this policy.

Further, the group intends to prepare a fact sheet to explain the policy.

If you have any questions regarding this clarification please call Trish Gowland of my staff at (703) 603-8721.

Attachment

cc: Thomas W. L. McCall, DOD
Tim Fields, OSWER
Steve Herman, OECA
Jerry Clifford, Acting Director, OSRE
Barry Breen, Director, FFEO
Jim Woolford, Director, FFRRO
Larry Reed, OERR
Superfund Branch Chiefs (Regions I - X)
Regional Counsel Branch Chiefs (Regions I - X)
Alan Carpien, OGC
Seth Thomas Low, FFRRO
Patricia Gowland, OERR

Superfund Facility (Site) Boundaries

The National Priorities List does not describe releases in precise geographical terms; it would be neither feasible nor consistent with the limited purpose of the NPL (as the mere identification of releases), for it to do so.

CERCLA section 105(a)(8)(B) directs the Environmental Protection Agency to list national priorities among the known "releases or threatened releases." Thus, the purpose of the NPL is merely to identify releases that are priorities for further evaluation. Although a CERCLA "facility" is broadly defined to include any area where a hazardous substance release has "come to be located" (CERCLA section 101(9)), the listing process itself is not intended to define or reflect the boundaries of such facilities or releases. Of course, HRS data upon which the NPL placement was based will, to some extent, describe which release is at issue. That is, the NPL site would include all releases evaluated as part of that HRS analysis (including noncontiguous releases evaluated under the NPL aggregation policy, described at 48 FR 40663 (September 8, 1983)).

When a site is listed, it is necessary to define the release (or releases) encompassed within the listing. The approach generally used is to delineate a geographical area (usually the area within the installation or plant boundaries) and define the site by reference to that area. As a legal matter, the site is not coextensive with that area, and the boundaries of the installation or plant are not the "boundaries" of the site. Rather, the site consists of all contaminated areas within the area used to define the site, and any other location to which contamination from that area has come to be located.

While geographic terms are often used to designate the site (e.g., the "Jones Co. plant site") in terms of the property owned by the particular party, the site properly understood is not limited to that property (e.g., it may extend beyond the property due to contaminant migration), and conversely may not occupy the full extent of the property (e.g., where there are uncontaminated parts of the identified property, they may not be, strictly speaking, part of the "site"). The "site" is thus neither equal to nor confined by the boundaries of any specific property that may give the site its name, and the name itself should not be read to imply that this site is coextensive with the entire area within the property boundary of the facility or plant. The precise nature and extent of the site are typically not known at the time of listing.

EPA regulations provide that the "nature and extent of the threat presented by a release" will be determined by an RI/FS as more information is developed on site contamination (40 CFR 300.68(d)). During the RI/FS process, the release may be found to be larger or smaller than was originally thought, as more is learned about the source and the migration of the contamination.

However, this inquiry focuses on an evaluation of the threat posed; the boundaries of the release need not be defined. Moreover, it generally is impossible to discover the full extent of where the contamination "has come to be located" before all necessary studies and remedial work are completed at a site. Indeed, the boundaries of the contamination can be expected to change over time. Thus, in most cases, it will be impossible to describe the boundaries of a release with certainty.

For these reasons, the NPL need not be amended if further research into the extent of the contamination expands the apparent boundaries of the release. Further, the NPL is only of limited significance, as it does not assign liability to any party or to the owner of any specific property. See Report of the Senate Committee on Environment and Public Works, Senate Rep. No. 96-848, 96th Cong., 2d Sess. 60 (1980), quoted above and at 48 FR 40659 (September 8, 1983). If a party contests liability for releases on discrete parcels of property, it may do so if and when the Agency brings an action against that party to recover costs or to compel a response action at that property.

It is the Agency's policy that, in the exercise of its enforcement discretion, EPA will not take enforcement actions against an owner of residential property to require such owner to undertake response actions or pay response costs, unless the residential homeowner's activities lead to a release or threat of release of hazardous substances, resulting in the taking of a response action at the site (OSWER Directive #9834.6, July 3, 1991). This policy includes residential property owners whose property is located above a ground water plume that is proposed to or on the NPL, where the residential property owner did not contribute to the contamination of the site. EPA may, however, require access to that property during the course of implementing a clean up.