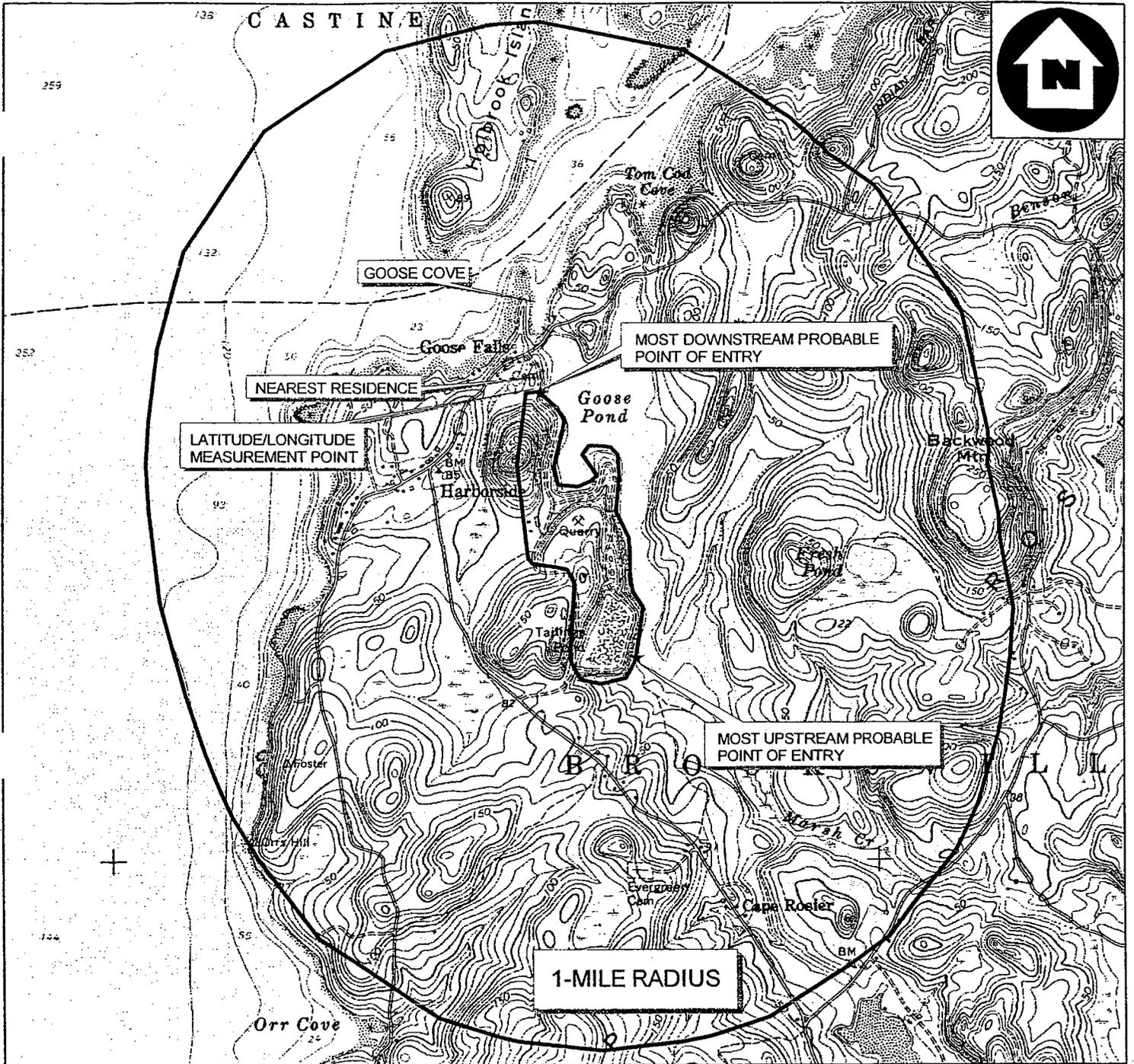


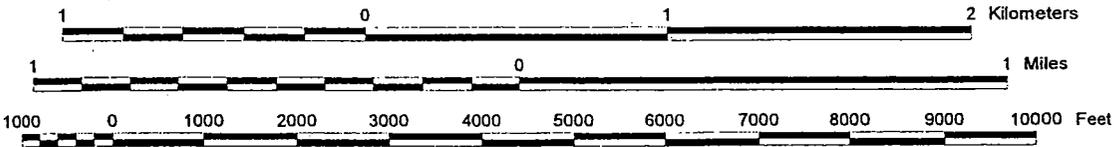
ATTACHMENT A

FIGURES



BASE MAP IS A PORTION OF THE FOLLOWING 7.5 X 15' U.S.G.S. QUADRANGLE(S): CAPE ROSIER, MAINE. 1973 REVISED 1979.

Note: only the most downstream and most upstream probable points of entry are depicted for clarity.



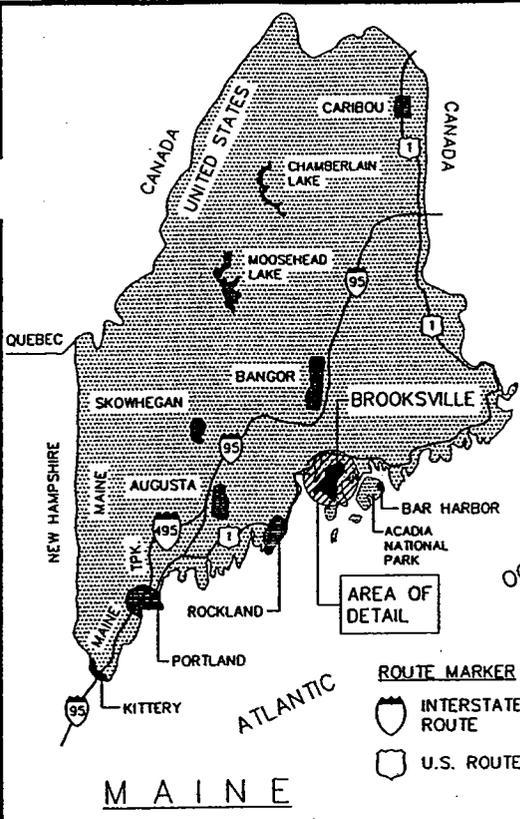
**SITE LOCATION MAP**

CALLAHAN MINE  
HARBORVIEW  
BROOKSVILLE, MAINE

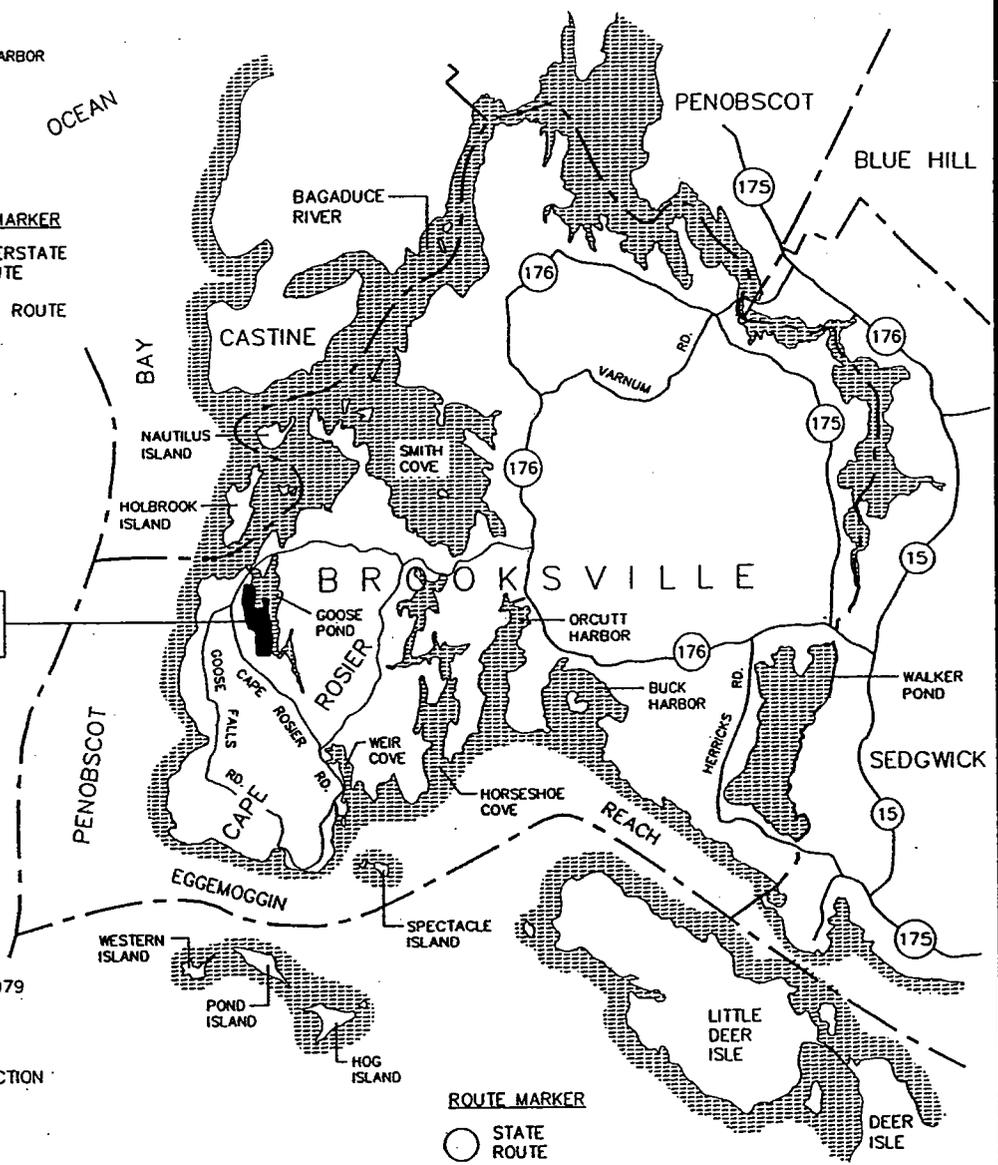


REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD #	DRAWN BY:	DATE:
00-06-0020	CAMPBELL	07/12/2000
FILE NAME:	FIGURE 2	
E:\ARC_APRS\START2\CALLAHAN.APR		



ROUTE MARKER  
 INTERSTATE ROUTE  
 U.S. ROUTE



ROUTE MARKER  
 STATE ROUTE

SOURCES:  
 U.S.G.S. 7.5 MINUTE SERIES QUADRANGLES: -  
 CAPE ROSIER, MAINE 1973, PHOTOINSPECTED 1979  
 CASTINE, MAINE 1973, PHOTOINSPECTED 1979  
 PENOBSCOT, MAINE 1981  
 SARGENTVILLE, MAINE 1981  
 MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 SITE INSPECTION PRIORITIZATION (SIP) - 1995  
 RAND McNALLY ROAD ATLAS  
 UNITED STATES/CANADA/MEXICO - 1991  
 NOT TO SCALE

LOCUS MAP

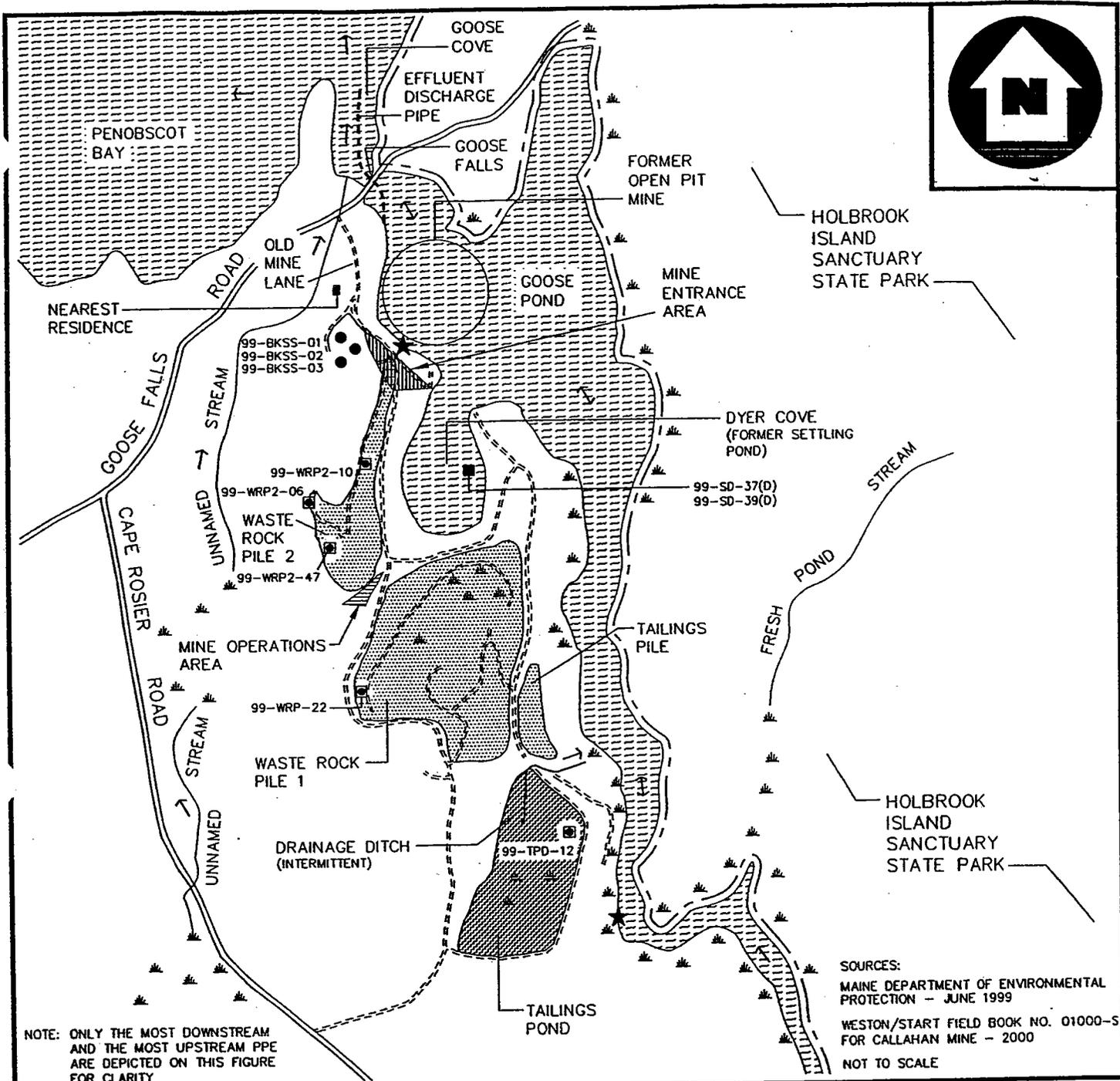
CALLAHAN MINE  
 HARBORSIDE  
 BROOKSVILLE, MAINE



REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD # 00-06-0020	DRAWN BY: W. SHAW	DATE 7/19/00
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FILE NAME: S:\00060020\LOCUS.DWG	FIGURE 1
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NOTE: ONLY THE MOST DOWNSTREAM AND THE MOST UPSTREAM PPE ARE DEPICTED ON THIS FIGURE FOR CLARITY

SOURCES:  
 MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION - JUNE 1999  
 WESTON/START FIELD BOOK NO. 01000-S FOR CALLAHAN MINE - 2000  
 NOT TO SCALE

**LEGEND**

- SURFACE WATER
- FLOW DIRECTION
- SOURCE SAMPLE
- HOLBROOK ISLAND SANCTUARY STATE PARK BOUNDARY
- SEDIMENT SAMPLE
- WASTE ROCK PILES (SOURCE 1)
- PROBABLE POINT OF ENTRY TO SURFACE WATER PATHWAY
- UNPAVED ROAD
- PAVED ROAD
- BACKGROUND SOIL SAMPLE
- TAILINGS POND (SOURCE 2)
- MINE ENTRANCE AREA
- MINE OPERATIONS AREA
- WETLAND

**SITE SKETCH**

CALLAHAN MINE  
 HARBORSIDE  
 BROOKSVILLE, MAINE



REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

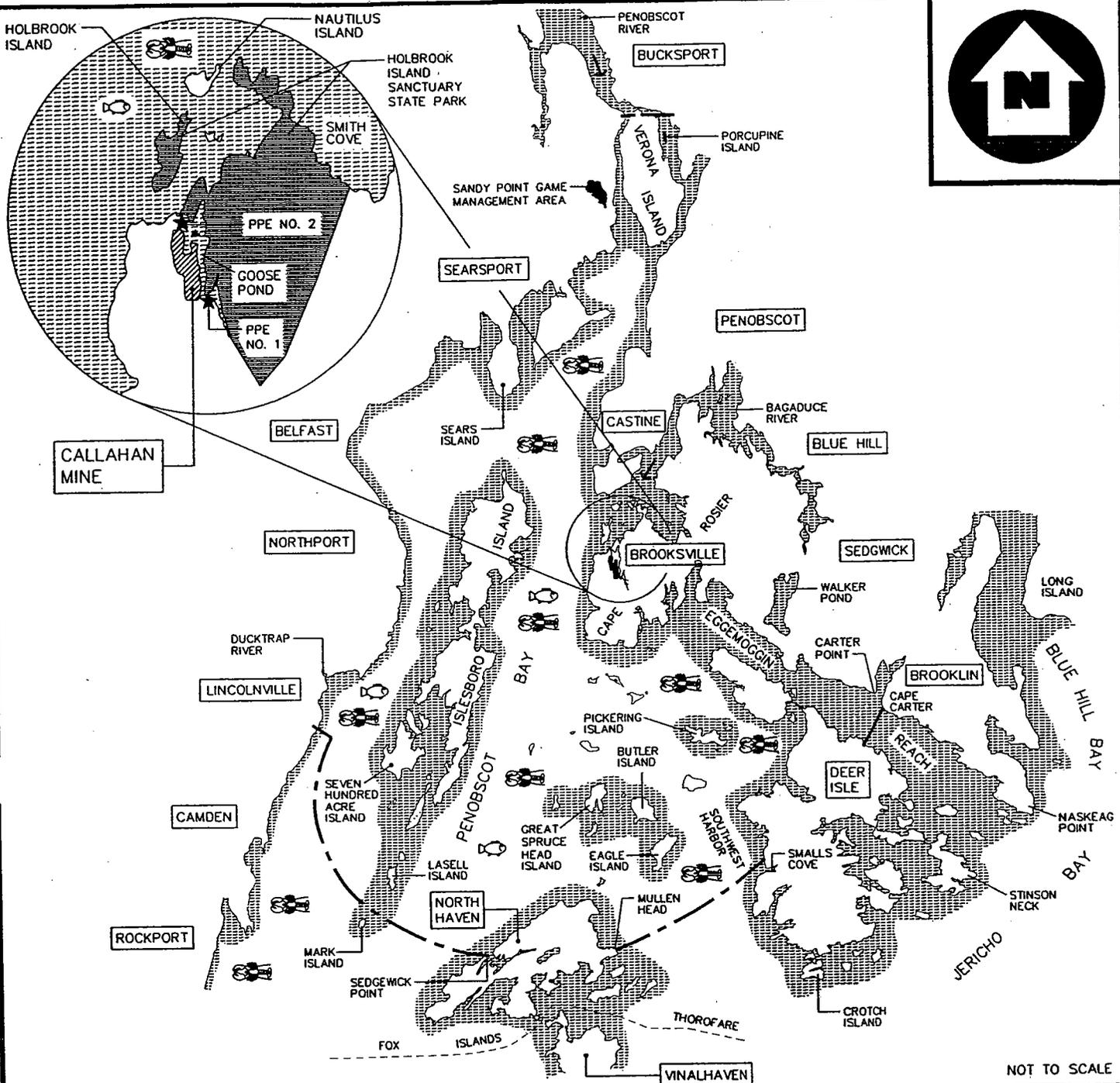
TDD #  
 00-06-0020

DRAWN BY:  
 W. SHAW

DATE  
 8/11/00

FILE NAME:  
 S:\00060020\FIG3.DWG

FIGURE 3



**LEGEND**

- ★ WETLANDS
- ★ PROBABLE POINT OF ENTRY TO SURFACE WATER PATHWAY
- FLOW DIRECTION
- 15-MILE DOWNSTREAM SURFACE WATER PATHWAY TERMINUS
- ▨ SURFACE WATER
- SHELLFISH FISHERY
- FINFISH FISHERY

SOURCE: U.S.G.S 7.5 MINUTE SERIES QUADRANGLE(S):-  
 BROOKLIN, MAINE 1981  
 BUCKSPORT, MAINE 1982  
 CAPE ROSIER, MAINE 1973 (PHOTOREVISED 1979)  
 CAMDEN, MAINE 1955 (PHOTOREVISED 1973)  
 DEER ISLE, MAINE 1983  
 ISLESBORO, MAINE 1973  
 LINCOLNVILLE, MAINE 1960 (PHOTOREVISED 1973)  
 NORTH HAVEN EAST, MAINE 1982  
 NORTH HAVEN WEST, MAINE 1983  
 SARGENTVILLE, MAINE 1981  
 STENSON NECK, MAINE 1983  
 SEARSPORT, MAINE 1973

**SURFACE WATER PATHWAY SKETCH**

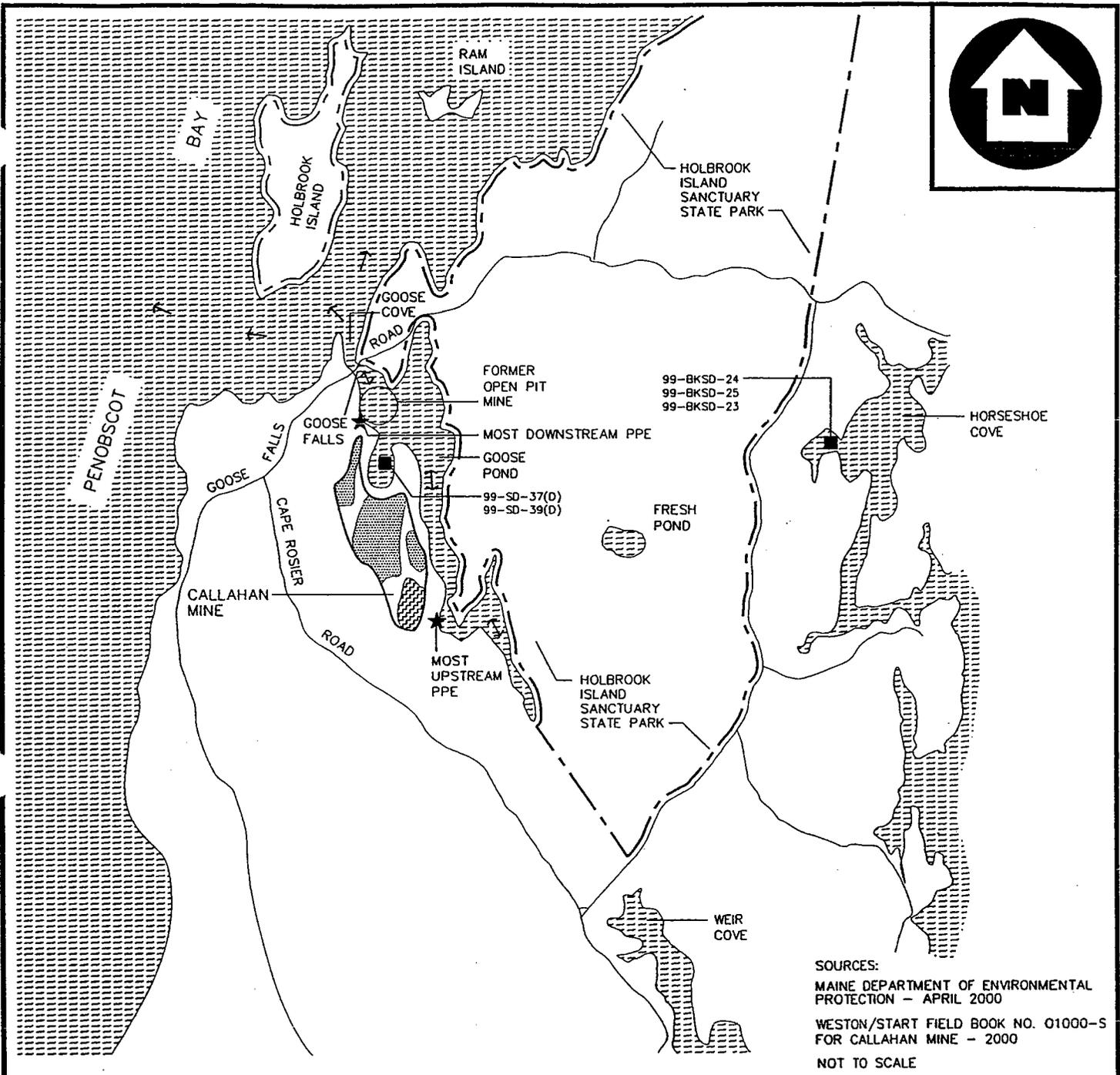
CALLAHAN MINE  
 HARBORSIDE  
 BROOKSVILLE, MAINE



REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD # 00-06-0020	DRAWN BY: W. SHAW	DATE 7/26/00
FILE NAME: S:\00060020\FIG4.DWG		FIGURE 4

NOT TO SCALE



SOURCES:  
 MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION - APRIL 2000  
 WESTON/START FIELD BOOK NO. 01000-S FOR CALLAHAN MINE - 2000  
 NOT TO SCALE

**LEGEND**

- SURFACE WATER
- SOURCE 1
- SOURCE 2
- SEDIMENT SAMPLE LOCATION
- HOLBROOK ISLAND SANCTUARY STATE PARK BOUNDARY
- PROBABLE POINT OF ENTRY TO SURFACE WATER PATHWAY
- FLOW DIRECTION

**SEDIMENT SAMPLE LOCATIONS**

CALLAHAN MINE  
 HARBORSIDE  
 BROOKSVILLE, MAINE



REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD # 00-06-0020	DRAWN BY: W. SHAW	DATE 8/11/00
FILE NAME: S:\00060020\FIG5.DWG		FIGURE 5

ATTACHMENT B

NPL CHARACTERISTICS DATA COLLECTION FORM

**NPL Characteristics  
Data Collection Form**  
(Version 2.0, October 1992)

Site Name: Callahan Mine  
Region: I State: Maine

This form should be completed for all sites being proposed for addition to the NPL and included as part of the complete HRS package submitted to EPA Headquarters.

**Office of Emergency and Remedial Response  
U.S. Environmental Protection Agency**

# NPL Characteristics Data Collection Form

## General Instructions

The NPL Characteristics Data Collection Form is designed to standardize the site information collected for input into the NPL Characterization Data Base. This data base serves as a repository for general information about NPL sites and is used to respond to queries about NPL sites from a variety of sources including the general public, the press, other government agencies, and members of Congress. The primary source materials for completing this form are Regional site file documents (e.g., PA and SI reports), along with the site's HRS scoring package. Although much of the information needed to complete the form is expected to be available in the HRS scoring package, other sources in a site file may need to be consulted for some questions. If definitive data are not available in the site file to answer a question, estimates based on best professional judgment and other sources of information are acceptable.

As you complete the NPL Characteristics Data Collection Form, keep the following points in mind.

- ▶ Please complete the form in ink, and print legibly.
- ▶ Use the most accurate level of information available (e.g., SI-level information has priority over PA-level information).
- ▶ Try to use the listed response options when answering a question, and use "unknown" and "other" responses *only* when absolutely necessary. If, however, the available response options for a question are not adequate to accurately describe the site, use the "other" response and provide a brief explanation in the space provided.
- ▶ Use the margins to explain responses that do not match listed response options or to provide clarifying information. If you need additional room to clarify responses, use the space provided in Appendix C.
- ▶ Some questions may go beyond the scope of the HRS scoring package (e.g., may relate to pathways not scored). Answer these questions with the best information available, making reasonable "educated guesses" if necessary.
- ▶ "Current," as used in this form, should be interpreted as the general time period of HRS scoring package preparation.
- ▶ "Principal contamination," as used in this form, should be interpreted as the contamination that is primarily responsible for a site's proposal to the NPL.

Please respond to *all* questions with the answer that you believe best represents the site conditions, given the information available at the time of HRS scoring package preparation. Do *not* skip questions except where specifically directed to do so.

### 1. Basic Identifying Information

1.1 Site Name (as entered in CERCLIS): Callahan Mine

1.2 CERCLIS ID Number: MED980524128

1.3 Name of Person(s) Completing Form: Thomas Campbell  
Affiliation (agency/company): START/Roy F. Weston  
Phone Number: 978-657-5400

1.4 Date Form Was Completed: 08 22 00 (mm/dd/yy)

1.5 Site Location: City: Brooksville State: Maine  
County: Hancock Zip Code: 04617

1.6 Site Coordinates (in degrees, minutes, seconds, and tenths of seconds):

44° 21' 05.9" North Latitude                      68° 48' 36.5" West Longitude

*If tenths of seconds are unknown, use "0" as a default value. If necessary, refer to Appendix E of EPA's 1991 PA guidance document for directions on how to determine coordinates.*

1.7 **ATSDR HEALTH ADVISORY.** Has an Agency for Toxic Substances and Disease Registry (ATSDR) Health Advisory been issued?  
 Yes     No

If yes, what was the date of issue? \_\_\_\_\_ (mm/dd/yy)

1.8 **HOW INITIALLY IDENTIFIED.** How was the site initially identified to EPA? If this information is not available in the HRS scoring package, check the PA narrative or other parts of the site file. (check one)  
 Citizen complaint (including PA petition)  
 State/local program  
 CERCLA notification  
 RCRA notification  
 Other Federal program (specify) \_\_\_\_\_  
 Incidental (e.g., identified while discovering/investigating another NPL site)  
 Anonymous  
 Other (specify) \_\_\_\_\_  
 Unknown

1.9 **UNKNOWN SOURCE.** Does the site consist exclusively of contaminated ground water or contaminated surface water sediments with *no identifiable primary source(s)*? (check one)  
 Yes, ground water plume(s)  
 Yes, surface water sediments  
 No

**STOP HERE.** If answer to question #1.9 is "Yes", proceed to Appendix A and complete the Supplemental Data Collection Form, then return to Section 6 (page 9) of this form. If answer is "No", continue to Section 2 of this form.

## 2. General Site Description

2.1 **SETTING.** What is the site setting? (check one)

- Large city: within boundaries of a city with a population  $\geq 100,000$
- Small city/town: within boundaries of a city/town with a population  $\geq 10,000$  and  $< 100,000$
- Suburban: within immediate suburbs of a city
- Rural: outside of city and suburban areas

2.2 **LAND USE.** What is the current land use(s) within 1 mile of the site? (check all that apply)

- Industrial
- Commercial
- Residential
- Agricultural
- Forest/fields/wetlands/other undeveloped
- Parks/recreation
- School/university/day care
- Military
- Other (specify) \_\_\_\_\_

If **readily available information** indicates that projected future land use(s) within 1 mile of the site may **differ** from the current use(s) checked above (e.g., building a mobile home park or other new residential area adjacent to a former landfill), write them in the blank that follows. Use the response options listed above if possible.

\_\_\_\_\_

\_\_\_\_\_

2.3 **AREA.** What is the approximate area of contamination (i.e., total area that includes all sources of contamination and other areas where contamination has come to be located, plus the area between the sources)? If the site is large with only a small contaminated portion, only the area of the contaminated portion should be estimated. If the approximate area of contamination cannot be estimated, use the area within the property boundary. (check one)

- $\leq 5$  acres
- $> 5$  and  $\leq 20$  acres
- $> 20$  and  $\leq 100$  acres
- $> 100$  acres
- Unknown

2.4 **OWNER AND OPERATOR.** What/who are the current owner(s) and operator(s) of the site, and who were the owner(s) and operator(s) at the time of principal contamination? If the owner and operator are the same, then check the same box under "Owner(s)" and "Operator(s)." If the current owner and/or operator and the owner and/or operator at time of principal contamination are the same, then check the same box under "CURRENT" and "AT TIME OF CONTAMINATION." (check all that apply, including at least one in each column; "NA" indicates that a response is not applicable)

CURRENT			AT TIME OF CONTAMINATION	
Owner(s)	Operator(s)		Owner(s)	Operator(s)
<input type="checkbox"/>	<input type="checkbox"/>	Private - industrial/commercial	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Private - small business	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Private - individual	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	County/city	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	State	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Federal	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Indian lands	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Bankruptcy/receivership	NA	NA
NA	<input type="checkbox"/>	None/currently inactive or abandoned	NA	NA
NA	<input type="checkbox"/>	None/spill or other one-time event	NA	<input type="checkbox"/>
<input checked="" type="checkbox"/>	NA	Other (specify) <u>Smith Cove Preservation Association Trust</u>	NA	NA
NA	<input type="checkbox"/>	Other (specify) _____	NA	NA
NA	NA	Other (specify) _____	<input type="checkbox"/>	NA
NA	NA	Other (specify) _____	NA	<input type="checkbox"/>
NA	NA	Unknown	<input type="checkbox"/>	NA
NA	NA	Unknown	NA	<input type="checkbox"/>

2.5 **SPILL/OTHER ONE-TIME EVENT.** Is this site the result of a one-time spill (e.g., truck, rail car, or barge accident) or other one-time event (e.g., one-time illegal dumping), with no other ongoing waste management or waste generation activities on site? (check one)

- Yes, specify year of spill/other one-time event \_\_\_\_\_
- No

If answer is "Yes" to this question, proceed to Section 3. If answer is "No," continue to question #2.6.

2.6 **YEARS OF OPERATION.** What are the beginning and ending years of operation at the site? "Operation" includes any activity occurring at the site (other than site remediation and related site investigation activity), and does *not* necessarily have to involve waste generation and/or management. Aggregated sites that have a combination of active and inactive/abandoned operations, and active sites that have had periods of inoperation during their existence, should be considered currently operating. For these sites, indicate the beginning year of their earliest operation. If sites such as this are no longer operating, indicate the beginning year of their earliest operation and the ending year of their latest operation. (check one)

- Currently operating: from (beginning year) \_\_\_\_\_
- Inactive or abandoned: from (beginning year) 1968 to (ending year) 1972
- Unknown (only if *no* historical information is available)

2.7 **YEARS OF WASTE MANAGEMENT ACTIVITIES.** What are the beginning and ending years of waste management at the site? Applicable waste management activities include generation, treatment, and/or recycling of waste containing hazardous substances and/or receipt of such wastes from off-site sources. Aggregated sites that have a combination of active and inactive/abandoned waste management activities, and sites that are actively managing waste that have had periods without waste management activities during their existence, should be considered currently managing waste. For these sites, indicate the beginning year of their earliest waste management activity. If sites such as this are no longer managing waste, indicate the beginning year of their earliest activity and the ending year of their latest activity. All responses should be consistent with responses given for question #2.6. (check one)

- Currently managing waste: from (beginning year) \_\_\_\_\_
- No longer managing waste: from (beginning year) 1968 to (ending year) 1972
- Unknown (only if *no* historical information is available)

### 3. Site Type

3.1 **SITE ACTIVITIES.** Which of the following best describe current activities/operations/conditions at the site (i.e., on-site activities)? Also, identify all former activities that are at least partly responsible for the principal contamination at the site. Check all responses that apply, including at least one in each column; if a primary item is checked, at least one sub-item also must be checked (e.g., if "Federal facility" is checked, a sub-item such as "DOD" also must be checked).

Current	Former	
<input type="checkbox"/>	<input type="checkbox"/>	Federal facility (must also indicate Federal in question #2.4)
<input type="checkbox"/>	<input type="checkbox"/>	DOD
<input type="checkbox"/>	<input type="checkbox"/>	DOE
<input type="checkbox"/>	<input type="checkbox"/>	DOI (e.g., Bureau of Land Management)
<input type="checkbox"/>	<input type="checkbox"/>	USDA (e.g., Forest Service)
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____
<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing/processing
<input type="checkbox"/>	<input type="checkbox"/>	Chemicals and allied products
<input type="checkbox"/>	<input type="checkbox"/>	Pesticides
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____
<input type="checkbox"/>	<input type="checkbox"/>	Primary metals/mineral processing
<input type="checkbox"/>	<input type="checkbox"/>	Petroleum refining
<input type="checkbox"/>	<input type="checkbox"/>	Metal fabrication/finishing/coating and allied industries
<input type="checkbox"/>	<input type="checkbox"/>	Lumber and wood products/pulp and paper
<input type="checkbox"/>	<input type="checkbox"/>	Wood preserving/treatment
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____
<input type="checkbox"/>	<input type="checkbox"/>	Plastic and rubber products
<input type="checkbox"/>	<input type="checkbox"/>	Electronic/electrical equipment
<input type="checkbox"/>	<input type="checkbox"/>	Electric power generation and distribution
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mining
<input type="checkbox"/>	<input type="checkbox"/>	Coal
<input type="checkbox"/>	<input type="checkbox"/>	Oil and gas
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Metals
<input type="checkbox"/>	<input type="checkbox"/>	Non-metal minerals
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____

(response options for question #3.1 continue on next page)

Current	Former	
<input type="checkbox"/>	<input type="checkbox"/>	Waste management as <i>principal</i> activity (i.e., no manufacturing or other principal activity)
<input type="checkbox"/>	<input type="checkbox"/>	Municipal solid waste landfill
<input type="checkbox"/>	<input type="checkbox"/>	RCRA Subtitle C TSD (non-generator)
<input type="checkbox"/>	<input type="checkbox"/>	Other industrial waste facility, including landfill (non-generator)
<input type="checkbox"/>	<input type="checkbox"/>	Radioactive waste treatment, storage, disposal (non-generator)
<input type="checkbox"/>	<input type="checkbox"/>	Recycling
<input type="checkbox"/>	<input type="checkbox"/>	Batteries
<input type="checkbox"/>	<input type="checkbox"/>	Used/waste oil
<input type="checkbox"/>	<input type="checkbox"/>	Automobiles/scrap metal/tires
<input type="checkbox"/>	<input type="checkbox"/>	Drums
<input type="checkbox"/>	<input type="checkbox"/>	Chemicals/chemical wastes (e.g., solvent recovery)
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____
<input type="checkbox"/>	<input type="checkbox"/>	Publicly owned treatment works/septic tanks/other sewage treatment
<input type="checkbox"/>	<input type="checkbox"/>	Illegal/open dump
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify) _____
<input type="checkbox"/>	<input type="checkbox"/>	Transportation (e.g., railroad yard, airport, barge docking site)
<input type="checkbox"/>	<input type="checkbox"/>	Product storage/distribution as <i>principal</i> activity
<input type="checkbox"/>	<input type="checkbox"/>	Retail/commercial
<input type="checkbox"/>	<input type="checkbox"/>	Agricultural
<input type="checkbox"/>	NA	Residential
<input checked="" type="checkbox"/>	NA	None/currently inactive or abandoned
NA	<input type="checkbox"/>	Spill or other one-time event, with no other activities (must also indicate spill in question #2.5)
<input type="checkbox"/>	<input type="checkbox"/>	Other (specify): _____

3.2 **WASTE TREATMENT, STORAGE, AND DISPOSAL ACTIVITIES.** What treatment, storage, and/or disposal activities occur/occurred at the site? (check all that apply)

- Municipal landfill (must also indicate municipal solid waste landfill in question #3.1)
- Industrial landfill
- Surface impoundment (primarily liquid)
- Waste pile (primarily solid, covered or uncovered)
- Drum/container storage (intentional storage in specified areas)
- Tank - above ground (if tank type is unknown check here)
- Tank - below ground
- Discharge to sewer/surface water (intentional permitted or illegal discharge; *not* secondary runoff)
- Recycling (must also indicate recycling in question #3.1)
- Incineration/other combustion activity (including burn pits)
- Underground injection well
- Land application/treatment
- Drain/leach field
- Illegal dumping (unpermitted dumping by site owner/operator in undesignated disposal area)
- Unauthorized dumping by a party other than the site owner/operator
- None/spill or other one-time event (must also indicate spill in question #2.5)
- Other (specify) \_\_\_\_\_

## 4. Waste Description

4.1 **ON-SITE/OFF-SITE GENERATION.** Is an on-site or off-site generator responsible for the waste disposed or deposited on site that resulted in the principal contamination? For consistency, recycling facilities should be considered on-site generators. (check one)

- On-site generator only
- Off-site generator(s) only
- Both on-site and off-site generators

4.2 **ENTITY THAT GENERATED THE WASTE.** What is the source(s) of the waste disposed or deposited on site that resulted in the principal contamination (*not* necessarily the entity that generated the original product)? Note that this question is different from question #3.1 regarding site activities, although the response options are similar. This question targets the generator(s) of the waste present on site, not the site activities. However, if the waste is/was generated entirely on site, then the response(s) to this question should match the response(s) to question #3.1. (check all that apply)

- Federal facility
  - DOD
  - DOE
  - DOI
  - USDA
  - Other (specify) \_\_\_\_\_
- Manufacturing
  - Chemicals and allied products
    - Pesticides
    - Other (specify) \_\_\_\_\_
  - Primary metals/mineral processing
  - Petroleum refining
  - Metal fabrication/finishing/coating and allied industries
  - Lumber and wood products
    - Wood preserving/treatment
    - Other (specify) \_\_\_\_\_
  - Plastic and rubber products
  - Electronic/electrical equipment
  - Electric power generation and distribution
  - Other (specify) \_\_\_\_\_
- Mining
  - Coal
  - Oil and gas
  - Metals
  - Non-metal minerals
  - Other (specify) \_\_\_\_\_
- Recycling
  - Batteries
  - Used/waste oil
  - Automobile junkyard/scrap metal/tires
  - Drums
  - Chemicals/chemical wastes (e.g., solvent recovery)
  - Other (specify) \_\_\_\_\_

(response options for question #4.2 continue on next page)

- Transportation (e.g., railroad yard, airport, barge docking site)
- Product storage/distribution facility
- Retail/commercial
- Agricultural
- Residential
- Laboratory/hospital
- Construction/demolition
- Site remediation (e.g., wastes from site cleanups)
- Waste management (e.g., leachate or ash from waste treatment processes)
- Other (specify) \_\_\_\_\_

4.3 **PHYSICAL STATE OF WASTE.** What is the physical state(s) of the hazardous substance-containing waste(s) deposited or detected on site? (check all that apply)

- Solid
- Liquid
- Sludge
- Gas

4.4 **GENERAL WASTE TYPES.** What are the waste types deposited or detected on site? Indicate all the waste types present on site under "Overall." If three or fewer waste types are known to comprise the majority (i.e., over 50%) of the waste volume on site, indicate their types under "Predominant." Otherwise, leave the "Predominant" column blank. (check all that apply)

**Overall    Predominant**

- |                                     |                                     |                               |
|-------------------------------------|-------------------------------------|-------------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | Organic chemicals             |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Metals                        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Non-metal inorganic chemicals |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Strong acids/bases            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Chlorinated solvents          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Pesticides                    |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Paints/pigments               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Oily wastes                   |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Explosives                    |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Fuels/propellants             |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Fly and bottom ash            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | POTW sludge                   |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Still and tank bottoms        |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Contaminated soil/sediment    |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Radioactive wastes            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Other (specify) _____         |

4.5 **SPECIFIC WASTE CONSTITUENTS.** Which of the following waste constituents have been deposited or detected on site? (check all that apply, and make sure that response is consistent with response to question #4.4)

- Asbestos
- Creosote
- Cyanides
- Dioxins (e.g., TCDD)
- Lead
- Pentachlorophenol (PCP)
- Polychlorinated biphenyls (PCBs)
- Polycyclic aromatic hydrocarbons (PAHs)
- None of the above

4.6 **QUANTITY OF WASTE.** What is the highest HRS hazardous waste quantity factor value among the pathways scored, regardless of which tier(s) (A, B, C, and/or D) was used in scoring? (check one)

- 1
- 10
- 100
- 10,000
- 1,000,000

4.7 **WASTE ACCESSIBILITY.** Is the waste on site currently accessible to the public (e.g., is site access unrestricted so people can potentially come into direct contact with contaminated materials)? Items to be considered when judging accessibility include, for example, presence or absence of a complete cover over the waste area and a secure fence around the site. A site with natural access restrictions (e.g., steep terrain) also can be considered inaccessible. Do not count on-site workers as part of the public when answering this question. (check one)

- Yes
- No
- Unknown

## 5. Demographics

*For this section, do not directly use the population factor values calculated in the HRS and entered in HRS scoresheets. Use actual (i.e., unweighted, unadjusted) population figures, which should be available in the HRS supporting documentation.*

5.1 **NUMBER OF WORKERS ON SITE.** What is the current number of workers present on site (not including workers involved in response activities)? (check one)

- 0
- $\geq 1$  and  $\leq 10$
- $\geq 11$  and  $\leq 100$
- $\geq 101$  and  $\leq 1,000$
- $> 1,000$
- Unknown

5.2 **DISTANCE TO POPULATION.** What is the shortest distance from any source or area of contamination at the site to the nearest residential individual (include all persons occupying homes, apartments, businesses, or schools)? If contamination has migrated off site onto the property of a nearby resident(s), then check the box next to "0 miles." If the source or contaminated area is not clearly identified, use distance from the site property boundary. (check one)

- 0 miles (i.e., on site)
- $> 0$  and  $\leq 1/4$  mile
- $> 1/4$  and  $\leq 1/2$  mile
- $> 1/2$  and  $\leq 1$  mile
- $> 1$  and  $\leq 4$  miles
- $> 4$  miles

5.3 **POPULATION.** What is the total residential population within 1 mile and 4 miles of the site (include all persons occupying homes, apartments, businesses, or schools)? (check one in each column)

Within 1 mile	Within 4 mile	
<input type="checkbox"/>	<input type="checkbox"/>	0
<input type="checkbox"/>	<input type="checkbox"/>	> 0 and ≤ 10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	> 10 and ≤ 100
<input type="checkbox"/>	<input type="checkbox"/>	> 100 and ≤ 1,000
<input type="checkbox"/>	<input checked="" type="checkbox"/>	> 1,000 and ≤ 10,000
<input type="checkbox"/>	<input type="checkbox"/>	> 10,000 and ≤ 100,000
<input type="checkbox"/>	<input type="checkbox"/>	> 100,000
<input type="checkbox"/>	<input type="checkbox"/>	Unknown

## 6. Water Use

*For purposes of this section, "local" refers to ground water withdrawals within 4 miles and surface water withdrawals within 15 "in-water" miles (e.g., downstream miles for streams and rivers) of the site (i.e., within HRS target distance limits).*

6.1 **TOTAL DRINKING WATER POPULATION SERVED.** What is the total population served by local ground and surface water sources of drinking water? Use actual population numbers and not adjusted values taken directly from HRS scoresheets. For blended systems, use total population served instead of prorated values. Note that the total population served does not have to reside within the HRS target distance limits, only the drinking water supply withdrawal point(s) needs to be within the limits. (check one in each column)

Ground	Surface	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	≤ 10
<input type="checkbox"/>	<input type="checkbox"/>	> 10 and ≤ 100
<input type="checkbox"/>	<input type="checkbox"/>	> 100 and ≤ 1,000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	> 1,000 and ≤ 10,000
<input type="checkbox"/>	<input type="checkbox"/>	> 10,000 and ≤ 100,000
<input type="checkbox"/>	<input type="checkbox"/>	> 100,000
<input type="checkbox"/>	<input type="checkbox"/>	Not applicable (no drinking water withdrawals within HRS target distance limits)

6.2 **TYPE OF DRINKING WATER SUPPLY SYSTEM.** What type(s) of local drinking water supply system(s) is present? "Public" should be checked for any central water supply system, even if operated by a private entity. (check all that apply)

Ground	Surface	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Public (serves over 25 people; e.g., municipal systems)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Private (e.g., individual wells)
<input type="checkbox"/>	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	<input type="checkbox"/>	Not applicable (no drinking water withdrawals within HRS target distance limits)

6.3 **OTHER GROUND WATER USES.** What are the other uses of ground water withdrawn within 4 miles of the site? (check all that apply)

- Irrigation
- Stock watering
- Commercial uses (e.g., food preparation, aquaculture)
- Industrial process/cooling
- Recreation (e.g., water supply for municipal swimming pool, infiltration into lakes used for recreation)
- Other (specify) \_\_\_\_\_
- None
- Unknown

6.4 **DEPTH TO AQUIFER.** What is the approximate depth from the ground surface to the uppermost usable aquifer (i.e., an aquifer having sufficient yield and water quality to be usable as drinking water or for other beneficial uses) beneath the site? (check one)

- $\leq 10$  feet
- $> 10$  and  $\leq 25$  feet
- $> 25$  and  $\leq 50$  feet
- $> 50$  and  $\leq 100$  feet
- $> 100$  feet
- Unknown

6.5 **OTHER SURFACE WATER USES.** What are the other uses of surface water withdrawn within 15 "in-water" miles of the site? (check all that apply)

- Not currently used, but designated by the state for potential drinking water use
- Recreational fishing
- Other recreation
- Irrigation
- Stock watering
- Industrial process/cooling
- Commercial fishery, including aquaculture
- Other commercial uses
- Other (specify) \_\_\_\_\_
- None
- Unknown

6.6 **TYPE OF SURFACE WATER ADJACENT TO/DRAINING SITE.** What are the type(s) of surface water adjacent to/drainage the site that could potentially be affected by overland runoff from the site (i.e., are within 2 miles of any source)? Indicate whether the water body is known or suspected of being contaminated by the site. "Yes" would indicate that the surface water body meets the HRS criteria for observed release. "Suspected" would indicate that there is some evidence of contamination that is attributable to the site, but the surface water body does not meet the HRS criteria for observed release. (check all that apply)

- |  |   |
|--|---|
|  | <b>Contaminated?</b>  |
| <input type="checkbox"/> Intermittent stream                       | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> Perennial stream                          | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> River (> 1,000 cfs annual avg. flow)      | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> Lake/reservoir                            | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> Pond                                      | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input checked="" type="checkbox"/> Bay                            | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Ocean                                     | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> Drainage ditch                            | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> Canal                                     | <input type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown            |
| <input checked="" type="checkbox"/> Other (specify) <u>estuary</u> | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Suspected <input type="checkbox"/> No <input type="checkbox"/> Unknown |
| <input type="checkbox"/> No surface water within 2 miles           |   |
| <input type="checkbox"/> Unknown                                   |   |

**7. Sensitive Environment and Reported Environmental Damage Information**

7.1 **EXISTENCE OF SENSITIVE OR POTENTIALLY VULNERABLE ENVIRONMENT.** Is the site in or near (i.e., within a 4-mile radial distance, or for surface water within 15 "in-water" miles) an HRS-designated sensitive environment(s) or other potentially vulnerable environment(s)? (check all that apply)

- Yes, HRS-designated sensitive environment(s)
  - Wetland
  - Habitat used by Federal or state designated endangered or threatened species
  - Other (specify) \_\_\_\_\_
- Yes, other potentially vulnerable environment(s) (see Appendix B for definitions)
  - Karst terrain
  - Seismic impact area
  - 100-year floodplain
  - Unstable terrain
  - Vulnerable ground water (class I, as defined by EPA)
  - Wellhead protection area
  - Other (specify) \_\_\_\_\_
- No
- Unknown

7.2 **HUMAN HEALTH/BIOLOGICAL IMPACTS.** Have human health or biological impacts attributable to the site been reported or observed? (check all that apply)

- Yes
  - Human health
  - Flora (e.g., stressed vegetation)
  - Fauna (e.g., fish kills, wildlife impacts)
- No
- Unknown

## 8. Response Actions

8.1 **TYPE OF RESPONSE ACTION.** What type(s) of response actions has already occurred at or near the site? (check all that apply)

- Action has been taken to reduce an immediate threat of fire or explosion
- Waste has been physically removed from the site
- Waste has been treated/stabilized/contained on site
- Site access has been restricted in response to the contamination
- Drinking water well(s) has been closed (on or off site)
- Alternate water supply(ies) has been provided (on or off site)
- Residents have been relocated
- Other (specify) \_\_\_\_\_
- None

8.2 **AUTHORITY RESPONSIBLE FOR RESPONSE ACTION.** Who performed (or contracted for) the response action(s)? (check all that apply)

- EPA under authority of CERCLA
- EPA under other authority
- Other Federal agency (specify) \_\_\_\_\_
- State/local authority
- Private party
- Other (specify) \_\_\_\_\_
- Not applicable (check only if checked "None" in question #8.1)

**STOP HERE. Section 9 will be completed by a Headquarters QA reviewer.**

**REVIEW OF COMPLETED FORM.** When you have completed Sections 1 through 8 of the NPL Characteristics Data Collection Form, please check to *make sure* that:

- (1) All questions are answered, except for ones that you were specifically directed to skip; and
- (2) All questions have been answered such that the responses are internally consistent, especially those in Sections 2 and 3. For example, if the site is the result of a spill or other one-time event, the responses for questions #2.4, #2.5, #3.1, and #3.2 should be consistent, while if the site is inactive or abandoned, the responses for questions #2.4, #2.6, #2.7, and #3.1 should be consistent.

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**9. Questions to be Completed by Headquarters QA Reviewer**

9.1 Name of QA Reviewer: \_\_\_\_\_

Affiliation (agency/company): \_\_\_\_\_

Phone Number: (\_\_\_\_) \_\_\_\_\_

9.2 Date QA Completed For This Form: \_\_\_\_/\_\_\_\_/\_\_\_\_ (mm/dd/yy)

9.3 NPL Proposed Rule Number (i.e., NPL "Update" number): \_\_\_\_\_

9.4 U.S. Congressional District Number: \_\_\_\_\_

9.5 **DISCOVERY DATE.** What is the date the EPA Region was notified of the hazardous waste release/site? (should match site assessment CERCLIS information) If the day and/or month is unknown use "01" as a default value for these entries.

\_\_\_\_/\_\_\_\_/\_\_\_\_ (mm/dd/yy)

9.6 **DATE OF PRELIMINARY ASSESSMENT (PA).** What is the date of the PA? (should match site assessment CERCLIS information) If the day and/or month is unknown use "01" as a default value for these entries.

\_\_\_\_/\_\_\_\_/\_\_\_\_ (mm/dd/yy)

9.7 **DATE OF SITE INVESTIGATION (SI).** What is the date of the SI? (should match site assessment CERCLIS information) If the day and/or month is unknown use "01" as a default value for these entries.

\_\_\_\_/\_\_\_\_/\_\_\_\_ (mm/dd/yy)

9.8 **RCRA SUBTITLE C STATUS.** What is the RCRA Subtitle C status of the site? (check all that apply) RCRA Subtitle C TSD(s) that meets listing policy Bankrupt Loss of interim status facility (LOIS) Non-filer or late filer Pre-HSWA permittee Protective filer Converter Large quantity hazardous waste generator Small quantity hazardous waste generator Not applicable (e.g., non-generator or very small quantity generator)9.9 **HRS SCORE.** What is the HRS site score (as proposed)? \_\_\_\_\_

9.10 **HRS PATHWAYS SCORED.** Which HRS pathways were scored, and for which pathways has observed release/contamination been documented? (check all that apply and provide score, as proposed)

Pathways Scored	Score	Observed Release/ Contamination
<input type="checkbox"/> Ground water	_____	<input type="checkbox"/>
<input type="checkbox"/> Surface water (overland/flood) _____	_____	<input type="checkbox"/>
<input type="checkbox"/> Drinking water threat _____	_____	
<input type="checkbox"/> Human food chain threat _____	_____	
<input type="checkbox"/> Environmental threat _____	_____	
<input type="checkbox"/> Surface water (ground water to surface water)	_____	<input type="checkbox"/>
<input type="checkbox"/> Drinking water threat _____	_____	
<input type="checkbox"/> Human food chain threat _____	_____	
<input type="checkbox"/> Environmental threat _____	_____	
<input type="checkbox"/> Soil exposure	_____	<input type="checkbox"/>
<input type="checkbox"/> Residential population threat _____	_____	
<input type="checkbox"/> Nearby population threat _____	_____	
<input type="checkbox"/> Air _____	_____	<input type="checkbox"/>
<input type="checkbox"/> None (ATSDR or state top priority site)	_____	

Appendix A
Supplemental Data Collection Form for
Unknown Source Sites

This supplemental form should be completed only for unknown source sites (i.e., those sites that consist exclusively of contaminated ground water or contaminated surface water sediments with no identifiable primary source(s)). The questions and response options in Sections 2, 3, 4, and 5 of the standard data collection form that are not applicable to unknown source sites have been eliminated from this supplemental form. The general instructions for the standard data collection form apply to this form as well.

A.1 SETTING. What is the site setting? (check one)

- Large city: within boundaries of a city with a population >= 100,000
Small city/town: within boundaries of a city/town with a population >= 10,000 and < 100,000
Suburban: within immediate suburbs of a city
Rural: outside of city and suburban areas

A.2 LAND USE. What is the current land use(s) within 1 mile of the site? (check all that apply)

- Industrial
Commercial
Residential
Agricultural
Forest/fields/wetlands/other undeveloped
Parks/recreation
School/university/day care
Military
Other (specify)

If readily available information indicates that projected future land use(s) within 1 mile of the site may differ from the current use(s) checked above (e.g., building a mobile home park or other new residential area adjacent to a former landfill), write them in the blank that follows. Use the response options listed above if possible.

Blank lines for writing future land use information.

A.3 AREA. What is the approximate area of contamination (i.e., total area that includes all sources of contamination and other areas where contamination has come to be located, plus the area between the sources)? If the approximate area of contamination cannot be estimated, use the area within the property boundary. (check one)

- <= 5 acres
> 5 and <= 20 acres
> 20 and <= 100 acres
> 100 acres
Unknown

- A.4 **GENERAL WASTE TYPES.** What are the waste types deposited or detected on site? Indicate all the waste types present on site under "Overall." If three or fewer waste types are known to comprise the majority (i.e., over 50%) of the waste volume on site, indicate their types under "Predominant." Otherwise, leave the "Predominant" column blank. (check all that apply)

**Overall    Predominant**

- |                          |                          |                               |
|--------------------------|--------------------------|-------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Organic chemicals             |
| <input type="checkbox"/> | <input type="checkbox"/> | Metals                        |
| <input type="checkbox"/> | <input type="checkbox"/> | Non-metal inorganic chemicals |
| <input type="checkbox"/> | <input type="checkbox"/> | Strong acids/bases            |
| <input type="checkbox"/> | <input type="checkbox"/> | Chlorinated solvents          |
| <input type="checkbox"/> | <input type="checkbox"/> | Pesticides                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Paints/pigments               |
| <input type="checkbox"/> | <input type="checkbox"/> | Oily wastes                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Explosives                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Fuels/propellants             |
| <input type="checkbox"/> | <input type="checkbox"/> | Fly and bottom ash            |
| <input type="checkbox"/> | <input type="checkbox"/> | POTW sludge                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Still and tank bottoms        |
| <input type="checkbox"/> | <input type="checkbox"/> | Contaminated soil/sediment    |
| <input type="checkbox"/> | <input type="checkbox"/> | Radioactive wastes            |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify) _____         |

- A.5 **SPECIFIC WASTE CONSTITUENTS.** Which of the following waste constituents have been deposited or detected on site? (check all that apply, and make sure that response is consistent with response to question #A.4)

- Asbestos
- Creosote
- Cyanides
- Dioxins (e.g., TCDD)
- Lead
- Pentachlorophenol (PCP)
- Polychlorinated biphenyls (PCBs)
- Polycyclic aromatic hydrocarbons (PAHs)
- None of the above

**Return to Section 6 (page 9) of the Data Collection Form.  
Do Not Complete Sections 2, 3, 4, and 5.**

Appendix B  
Definitions of Potentially Vulnerable Environments<sup>1</sup>

**Class I Ground Waters:** Ground waters that are highly vulnerable to contamination and are either (1) irreplaceable as a source of drinking water to a substantial population or (2) ecologically vital.

**Karst Terrain:** Areas where karst topography, with its characteristic surface and subterranean features, is developed as a result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terrain include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind alleys.

**Seismic Impact Areas:** Areas where the probability is greater than or equal to 10 percent that the maximum horizontal acceleration in firm ground or rock at a particular site will equal or exceed 0.10 g (expressed as a percentage of the earth's gravitational pull (g)), within a time period of 250 years. Horizontal ground acceleration is defined as maximum change in velocity over time relative to horizontal movement of the earth's surface as measured at a particular point during an earthquake. This parameter is used to calculate the acceleration values for any particular area and is derived from equations relating to the area's geology and its past seismicity.

**Unstable Terrain:** Areas capable of impairing the integrity of an engineered structure as a result of natural events or human activities. Relevant natural events include, but are not limited to, localized ground subsidence; differential settling, collapse and slope failure; sinkhole formation in karst terrains; liquefaction; and hydrocompaction. Relevant human activities include, but are not limited to, construction operations; flood controls; ground water pumping, injection, and withdrawal; resource extraction; storm water drainage; and seepage from human-made water reservoirs.

**Wellhead Protection Areas:** Areas designated by the states to protect wells in recharge areas of public drinking water supplies, under authority of Section 1428 of the Safe Drinking Water Act.

**100-year Floodplain:** Any area that is subject to a one percent or greater chance of flooding in any given year from any source. For riverine systems, both the floodway and the floodway fringe are included in the 100-year floodplain.

<sup>1</sup> To be used in responding to question #7.1.

Appendix C  
Additional Comments

Use this space to further clarify or explain responses to questions in the NPL Data Collection Form or Supplemental Data Collection Form For Unknown Source Sites. When clarifying or explaining a response, please *make sure to provide the question number*. Attach additional sheets if necessary.

ATTACHMENT B

NPL CHARACTERISTICS DATA COLLECTION FORM

United States  
Environmental Protection  
Agency

Office of Solid Waste  
and Emergency Response  
Washington, DC 20460

9345.1-21  
EPA/540/R-96/028  
PB96-963509  
June 1996

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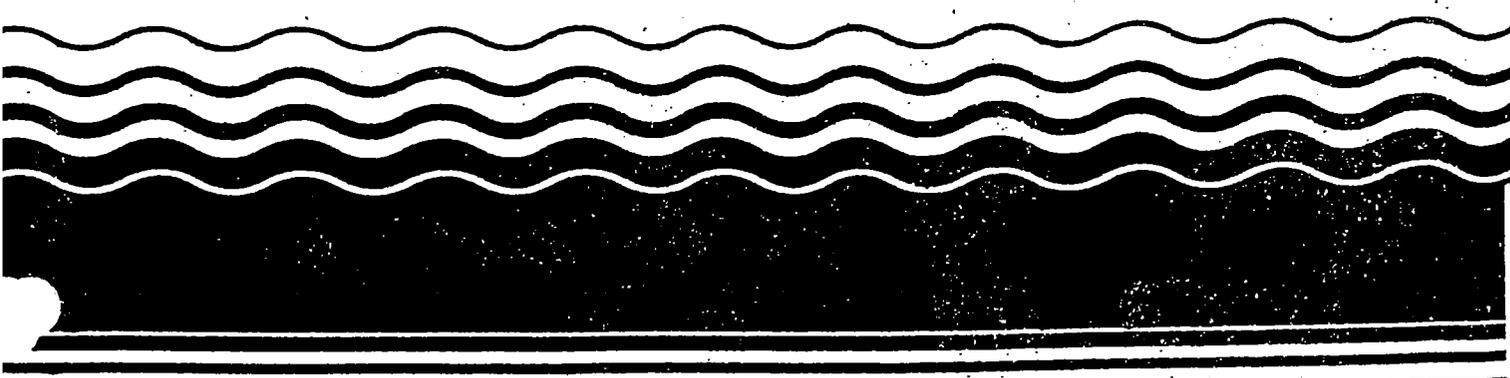
Superfund

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# Superfund Chemical Data Matrix

Reference 2



Publication 9345.1-21  
EPA/540/R-96/028  
PB96-963509  
June 1996

# Superfund Chemical Data Matrix

Office of Emergency and Remedial Response  
U.S. Environmental Protection Agency  
Washington, DC 20460

HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility						Bioaccumulation						Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		Persistence		Food Chain		Environmental		Fresh	Salt						
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt								
Ammonium picrate	000131-74-8	...	1.0E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes		
Ammonium sulfate	007773-06-0	10	1.0E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	1	1	NA	NA	No	Yes		
Aniline	000062-53-3	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	5.0	5.0	500.0	500.0	10000	10	11	1.0000	Yes	No		
Anthracene	000120-12-7	10	1.0E+00	1.0E-02*	2.0E-03	2.0E-05*	1.0000*	1.0000*	5000.0	5000.0	5000.0	5000.0	10000	100	6	0.0020	Yes	Yes		
Antimony	007440-38-0	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	5.0*	5.0*	100*	100*	NA	NA	No	Yes		
Arsenic	007440-38-2	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	5.0	500.0	500.0*	500.0	10	100	NA	NA	No	Yes		
Asbestos	001332-21-4	10000	1.0E+00	1.0E-04	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes		
Atrazine	001912-24-9	100	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.0007	0.0700	50.0	50.0	50.0	50.0	1000	10000	6	0.0020	Yes	Yes		
Azinphos- ethyl	002642-71-9	100	1.0E+00	1.0E+00*	2.0E-01*	2.0E-01*	0.4000	0.0700	500.0	500.0	500.0	500.0	10000	10000	NA	NA	No	Yes		
Azinphos- methyl	000086-50-0	1000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000*	1.0000*	50.0	50.0	50.0	50.0	10000	10000	NA	NA	No	Yes		
Aziridine	000151-56-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000*	0.5	0.5	0.5	0.5	10*	10*	11	1.0000	Yes	No		
Barium	007440-39-3	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	0.5	0.5	1	1	NA	NA	No	Yes		
Barium cyanide	000542-62-1	...	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes		
Benz(a)anthracene	000056-55-3	1000	1.0E+00	1.0E-02*	2.0E-05	2.0E-07*	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020*	Yes	Yes		
Benzene	000071-43-2	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000	5000.0	5000.0	500.0	50000.0	100	1000*	17	1.0000	Yes	No		
Benzene carbonyl chloride	000098-88-4	1	1.0E+00	...	...	...	0.4000	0.4000*	0.5	0.5	0.5	0.5	10	1	11	1.0000	Yes	No		
Benzidine	000092-87-5	10000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000*	0.4000*	50.0	50.0	50.0	50.0	...	...	0	0.0002	Yes	Yes		
Benzo(a)pyrene	000050-32-8	10000	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	50000.0	500.0	50000.0	500.0	10000	1000	6	0.0002	Yes	Yes		

\* Indicates difference between previous version of chemical data ( JUN94 ) and current version of chemical data ( JUN96 ).  
 \*\* Indicates new hazardous substance in current version of chemical data ( JUN96 ).

HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility						Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		Persistence		Food Chain		Environmental		Fresh	Salt				
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt						
Bromoxynil	001689-84-5	100	1.0E+00	1.0E+00*	1.0E+00*	1.0E+00*	0.4000	0.0700	50.0	50.0	50.0	50.0	10	10	0	0.0002	Yes	Yes
Butadiene, 1,3-	000106-99-0	1000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.0007	0.0700	5.0	5.0	5.0	5.0	...	...	17	1.0000	Yes	No
Butanol	000071-36-3	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	0.4000*	5.0	5.0	5.0	5.0	1	1	11	1.0000	Yes	No
Butylbenzyl phthalate	000085-68-7	10	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000	1.0000	500.0	500.0	500.0	500.0	100	10000*	6	0.0020	Yes	Yes
Butyric acid, 4-(2,4-dichlorophenoxy)	000094-82-6	100	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000*	0.4000*	500.0*	500.0*	500.0*	500.0*	100	100	0	0.0020	Yes	Yes
Cadmium	007440-43-9	10000	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	1000	1000	NA	NA	No	Yes
Calcium**	007440-70-2	...	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	NA	NA	No	Yes
Captaf	000133-06-2	10	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.0007	0.0700	50.0	50.0	50.0	50.0	10000	100	6	0.0200	Yes	Yes
Carbaryl	000063-25-2	10	1.0E+00	1.0E+00	1.0E+00*	1.0E+00*	1.0000*	0.4000*	50.0	50.0	50.0	50.0	10000	10000	0	0.0020	Yes	Yes
Carbazole**	000086-74-8	10	1.0E+00	1.0E+00	2.0E-01	2.0E-01	0.4000	0.0700	500.0	500.0	500.0	500.0	...	...	0	0.0020	Yes	Yes
Carbofuran	001563-66-2	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	1.0000	5.0*	5.0*	50.0	50.0	10000	10000*	11	1.0000	Yes	No
Carbon disulfide	000075-15-0	10*	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	0.4000	500.0*	500.0*	500.0*	500.0*	100	100	17	1.0000	Yes	No
Carbon tetrachloride	000056-23-5	1000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	1	17	1.0000	Yes	No
Carbophenothion	000786-19-6	100	1.0E+00	1.0E-02*	2.0E-03*	2.0E-05*	1.0000	1.0000	50000.0*	50000.0*	50000.0*	50000.0*	10000	10000	NA	NA	No	Yes
Cesium	007440-46-2	...	1.0E+00	1.0E-02*	1.0E+00*	1.0E-02*	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes
Chloral	000075-87-6	1000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	5.0	5.0	5.0	5.0	1*	1*	11	1.0000	Yes	No
Chlordane	000057-74-9	10000	1.0E+00	1.0E-02*	2.0E-03	2.0E-05*	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes
Chlordane, alpha**	005103-71-9	10	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	500.0	500.0	500.0	500.0	10000	10000	NA	NA	No	Yes
Chlordane, gamma**	005566-34-7	10	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	50000.0	50000.0	500.0	500.0	10000	10000	NA	NA	No	Yes

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HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Persistence				Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		River	Lake	Food Chain		Environmental		Fresh	Salt						
			Karst	Non-Karst	Karst	Non-Karst			Fresh	Salt	Fresh	Salt								
Cobalt	007440-48-4	1	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	5000.0	5000.0	...	...	NA	NA	No	Yes		
Copper	007440-50-8	...	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	100	100*	NA	NA	No	Yes		
Copper cyanide	000544-92-3	100	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	NA	NA	No	Yes		
Dounaphos	000056-72-4	100	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	0.4000	0.4000	500.0	500.0	500.0	500.0	10000	1000	NA	NA	No	Yes		
Dreosote	008001-58-9	10	1.0E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes		
Dresol, m*	000108-39-4	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	1.0000	5.0	5.0	5.0	5.0	100	100	11	1.0000	Yes	No		
Dresol, o**	000095-48-7	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	5.0	5.0	5.0	5.0	100	100	11	1.0000	Yes	No		
Dresol, p*	000106-44-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000*	0.0700	5.0	5.0	5.0	5.0	...*	...*	11	1.0000	Yes	No		
Dumene	000098-82-8	1000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.4000	0.4000*	500.0	500.0	500.0	500.0	100	1	17	1.0000	Yes	No		
Dyanazine	021725-46-2	1000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	0.0700	50.0	50.0	50000.0	50000.0	100	100	0	0.0020	Yes	Yes		
Dyanide	000057-12-5	100	1.0E+00	1.0E+00*	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	1000	1000	NA	NA	No	Yes		
Dyanogen	000460-19-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No		
Dyanogen bromide	000506-68-3	10	1.0E+00	1.0E+00*	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	1000	1000	17*	1.0000*	Yes*	No*		
Dylohexane	000110-82-7	1	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.4000	1.0000	500.0	500.0	500.0	500.0	100	100	17	1.0000	Yes	No		
Dylohexanone	000108-94-1	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	5.0	5.0	5.0	5.0	1	1	11	1.0000	Yes	No		
Dylotrimethylenetrinitriamine	000121-82-4	1000	1.0E+00	1.0E+00*	2.0E-01*	2.0E-01*	0.4000	0.0700	5.0*	5.0*	5.0*	5.0*	100	100	NA	NA	No	Yes		
DOD	000072-54-8	100	1.0E+00	1.0E-04	2.0E-03	2.0E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes		
DOE	000072-55-9	100	1.0E+00	1.0E-04	2.0E-03	2.0E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes		
DOT	000050-29-3	1000	1.0E+00	1.0E-04	2.0E-03	2.0E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes		

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HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility						Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		Persistence		Food Chain		Environmental		Fresh	Salt				
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt						
DEF	000078-48-8	10000	1.0E+00	1.0E+00*	2.0E-01*	2.0E-01*	1.0000	0.0700*	5000.0	5000.0	5000.0	5000.0	1000	10000	NA	NA	No	Yes
Di-n-butyl phthalate	000084-74-2	10	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	1000	10000	6	0.0200	Yes	Yes
Di-n-octyl phthalate	000117-84-0	100	1.0E+00	1.0E-04	2.0E-03	2.0E-07	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	6	0.0020	Yes	Yes
Diallate**	002303-16-4	100	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	500.0	500.0	500.0	500.0	100	100	11	0.2000	Yes	Yes
Diazinon	000333-41-5	1000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000*	1.0000*	500.0	500.0	500.0	500.0	10000	10000*	17	1.0000	Yes	No
Dibenz(a,h)anthracene	000053-70-3	10000*	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	...	...	NA	NA	No	Yes
Dibenzofuran	000132-64-9	...	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000	1.0000	500.0	500.0	500.0	500.0	100	100	11	0.0200	Yes	Yes
Dibromo-3-chloropropane, 1,2-	000096-12-8	10000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	1.0000	50.0	50.0	50.0	50.0	...	...	11	1.0000	Yes	No
Dibromochloromethane	000124-48-1	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	...	...	11	1.0000	Yes	No
Dibromoethane, 1,2-	000106-93-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	...	...	17	1.0000	Yes	No
Dicamba	001918-00-9	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	50.0*	50.0*	50.0*	50.0*	100	100	6	0.0200	Yes	Yes
Dichlorobenzene, 1,2-	000095-50-1	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No
Dichlorobenzene, 1,3-	000541-73-1	...	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No
Dichlorobenzene, 1,4-	000106-46-7	10	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No
Dichlorobenzidine, 3,3'-	000091-94-1	100	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.0700*	0.0700	500.0	500.0	500.0	500.0	...	...	0	0.0002	Yes	Yes
Dichlorodifluoromethane	000075-71-8	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	...	...	17	1.0000	Yes	No
Dichloroethane, 1,1- (1)	000075-34-3	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	...	...	17	1.0000	Yes	No
Dichloroethane, 1,2-	000107-06-2	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes	No
Dichloroethylene, 1,1-	000075-35-4	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	10	1	17	1.0000	Yes	No

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HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Persistence				Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		River	Lake	Food Chain		Environmental		Fresh	Salt						
			Karst	Non-Karst	Karst	Non-Karst			Fresh	Salt	Fresh	Salt								
Isophorone	000078-59-1	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	5.0	5.0	5.0	5.0	1	1	11	1.0000	Yes	No		
Kepono	000143-50-0	10000	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000*	1.0000*	50000.0	50000.0	50000.0	50000.0	10000	10000	0	0.0020	Yes	Yes		
Lead	007439-92-1	10000	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	50.0	5000.0	5000.0	5000.0	1000	1000	NA	NA	No	Yes		
Lindane	000058-89-9	10000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000	1.0000	500.0	500.0	500.0	500.0	10000	10000	11	0.0200	Yes	Yes		
Magnesium	007439-95-4	...	1.0E+00	1.0E+00	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes		
Malathion	000121-75-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	0.4000*	50.0	50.0	50.0	50.0	10000	10000	0	0.0020	Yes	Yes		
Maleic anhydride	000108-31-6	10	1.0E+00	...	...	...	0.0007	0.0007	0.5	0.5	0.5	0.5	1	1	11	1.0000	Yes	No		
Maleic hydrazide	000123-33-1	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	10	10	17	1.0000	Yes	No		
Manganese	007439-96-5	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	50000.0	50000.0	...	...	NA	NA	No	Yes		
Mercury	007439-97-6	10000	1.0E+00	1.0E-02*	2.0E-05	2.0E-07*	0.4000*	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	17*	0.2000	Yes	Yes		
Methacrylonitrile	000126-98-7	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No		
Methanol	000067-56-1	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	0.5	0.5	0.5	0.5	10*	1	11	1.0000	Yes	No		
Methylal	016752-77-5	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	10000	10000	17	1.0000	Yes	No		
Methoxychlor	000072-43-5	100	1.0E+00	1.0E-02*	2.0E-03	2.0E-05*	1.0000	1.0000	50000.0	5000.0	50000.0	5000.0	10000	10000	6	0.0020	Yes	Yes		
Methyl chlorocarbonate	000079-22-1	100	1.0E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No		
Methyl ethyl ketone	000078-93-3	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000	0.5	0.5	0.5	0.5	1	1	17	1.0000	Yes	No		
Methyl isobutyl ketone	000108-10-1	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000*	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes	No		
Methyl methacrylate	000080-62-6	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000*	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes	No		
Methylcholanthrene, 3**	000056-49-5	1000	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	50000.0	50000.0	50.0	50.0	...	...	6	0.0002	Yes	Yes		

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HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Persistence	Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part		
			Liquid		Non-Liquid			River	Lake	Food Chain		Environmental						Fresh	Salt
			Karat	Non-Karat	Karat	Non-Karat				Fresh	Salt	Fresh	Salt						
Methylene bis (2-chloroaniline), 4,4-	000101-14-4	1000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000*	1.0000*	5.0*	5.0*	5.0*	5.0*	...	...	0	0.0002	Yes	Yes	
Methylene bromide**	000074-95-3	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	...	...	17	1.0000	Yes	No	
Methylene chloride	000075-09-2	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	1	10	17	1.0000	Yes	No	
Methylenediphenyl diisocyanate, 4,4-	000101-68-8	10000	1.0E+00	...	...	...	0.0700*	0.0700	0.5	0.5	0.5	0.5	...	...	6	0.0020	Yes	Yes	
Methylnaphthalene, 2-	000091-57-4	...	1.0E+00	1.0E-02	2.0E-01	2.0E-03	0.4000	0.4000	5000.0	5000.0	5000.0	5000.0	1000	1000	11	0.2000	Yes	Yes	
Metribuzin	021087-64-9	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	100*	100*	17	1.0000	Yes	No	
Mirex	002385-85-5	10000	1.0E+00	1.0E-04*	2.0E-05*	2.0E-09*	1.0000*	1.0000*	5000.0	50000.0	50000.0	50000.0	10000	10000	NA	NA	No	Yes	
Molybdenum**	007439-98-7	100	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes	
N-nitroso-di-n-propylamine**	000621-64-7	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.0007	0.0700	5.0	5.0	5.0	5.0	...	...	11	1.0000	Yes	No	
N-nitrosopiperidine**	000100-75-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	0.5	0.5	0.5	0.5	...	...	11	1.0000	Yes	No	
Naphthalene	000091-20-3	100*	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.4000	0.4000	500.0	5.0	500.0	5000.0	1000	1000	11	0.2000	Yes	Yes	
Naphthylamine**	000091-59-8	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	50.0	50.0	50.0	50.0	...	...	6	0.0200	Yes	Yes	
Nickel	007440-02-0	10000*	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	0.5	500.0	500.0	500.0	10	1000	NA	NA	No	Yes	
Nitric acid	007697-37-2	10*	1.0E+00	1.0E+00	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No	
Nitric oxide	010102-43-9	10	1.0E+00	1.0E+00	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	17*	1.0000*	Yes*	No*	
Nitroaniline, 2-**	000088-74-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	5.0	5.0	5.0	5.0	10	10	11	0.0200	Yes	Yes	
Nitroaniline, 3-**	000099-09-2	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	5.0	5.0	5.0	5.0	10	10	6	0.0200	Yes	Yes	
Nitroaniline, p-	000100-01-6	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	5.0	5.0	5.0	5.0	10*	10*	0	0.0020	Yes	Yes	

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 \*\* Indicates new hazardous substance in current version of chemical data ( JUN96 ).

HAZARD RANKING SYSTEM  
Hazardous Substance Factor Values  
375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Persistence		Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		River	Lake	Food Chain		Environmental		Fresh	Salt				
			Karst	Non-Karst	Karst	Non-Karst			Fresh	Salt	Fresh	Salt						
PCBs	001336-36-3	10000	1.0E+00	1.0E-04	2.0E-03	2.0E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	11	0.0200	Yes	Yes
Pentachlorinated dibenzo-p-dioxin, 1,2,3,7,8-	040321-76-4	10000*	1.0E+00	1.0E-04*	2.0E-03*	2.0E-07*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	10000*	10000*	NA	NA	No	Yes
Pentachlorinated dibenzofuran, 1,2,3,7,8-	109719-77-9	10000*	1.0E+00	1.0E-04*	2.0E-05*	2.0E-09*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	...	...	NA	NA	No	Yes
Pentachlorinated dibenzofuran, 2,3,4,7,8-	057117-41-6	10000*	1.0E+00	1.0E-04*	2.0E-05*	2.0E-09*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	...	...	NA	NA	No	Yes
Pentachlorobenzene	000608-93-5	1000	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	1000*	1000	11	0.2000	Yes	Yes
Pentachloroethane	000076-01-7	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	0.4000*	50.0	50.0	50.0	50.0	100	1	17	1.0000	Yes	No
Pentachloronitrobenzene	000082-68-8	1000	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	11	0.0200	Yes	Yes
Pentachlorophenol	000087-86-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	1.0000	500.0	500.0	5000.0	500.0	100	1000*	6	0.0200	Yes	Yes
Phenanthrene	000085-01-8	...	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000*	1.0000*	50.0	50.0	5000.0	50.0	1000	1000	11	0.0200	Yes	Yes
Phenol	000108-95-2	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	5.0	5.0	5.0	5.0	10000	100	11	1.0000	Yes	No
Phenyl sulfide	000139-66-2	10	1.0E+00	1.0E-02*	2.0E-01*	2.0E-03*	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	11	0.2000*	Yes	Yes
Phenylenediamine, m**	000108-45-2	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	6	0.2000	Yes	Yes
Phenylmercuric acetate	000062-38-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	50.0*	50.0*	50.0*	50.0*	10000	1000	6	0.0002*	Yes	Yes
Phorate	000298-02-2	10000	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	0.4000	500.0	500.0	500.0*	500.0*	10000	10000	11	0.0200	Yes	Yes
Phosgene	000075-44-5	1000	1.0E+00	...	...	...	0.0007*	0.0700	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No
Phosphamidon	013171-21-6	1000	1.0E+00	...	1.0E+00*	...	0.4000	0.0700	0.5	0.5	0.5	0.5	10000	10000	11*	0.0200*	Yes*	Yes
Phosphine	007803-51-2	10000	1.0E+00	...	1.0E+00*	...	0.4000	0.0700	5000.0*	5000.0*	5000.0*	5000.0*	...	...	17	1.0000	Yes	No
Phosphonodithioic acid, phenyl-o-ethyl-o-(4-n	002104-64-5	10000	1.0E+00	1.0E-02*	2.0E-01*	2.0E-03*	0.4000	0.0700	50.0*	500.0	5000.0	500.0	10000	10000	NA	NA	No	Yes
Phosphoric acid	007664-38-2	1000*	1.0E+00	1.0E+00	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	10000	10000	NA	NA	No	Yes

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HAZARD RANKING SYSTEM  
 Hazardous Substance Factor Values  
 375 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Persistence		Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Gas	Part
			Liquid		Non-Liquid		River	Lake	Food Chain		Environmental		Fresh	Salt				
			Karst	Non-Karst	Karst	Non-Karst			Fresh	Salt	Fresh	Salt						
trichlorophenol, 3,4,5-	000609-19-8	...	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	500.0	500.0	500.0	500.0	1000	100*	11	0.0200	Yes	Yes
trichlorophenoxyacetic acid, 2,4,5-	000093-76-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000*	0.4000*	500.0*	500.0*	500.0	500.0	10000	100*	0	0.0020	Yes	Yes
trichloropropane, 1,2,3-	000096-18-4	10000*	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0*	50.0*	50.0*	50.0*	10	10	11	1.0000	Yes	No
triethanolamine	000102-71-6	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	0.5	0.5	0.5	0.5	1	10*	0	0.0020	Yes	Yes
rifluralin	001582-09-8	100	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000	1.0000	5000.0	5000.0	50000.0	50000.0	10000	1000	11	0.0200	Yes	Yes
trinitrobenzene, 1,3,5-	000099-35-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	5.0	5.0	5.0	5.0	1000*	1000*	6	0.0200	Yes	Yes
trinitrotoluene	000118-96-7	1000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.0700*	0.0700*	5.0	5.0	5.0	5.0	100	100	0*	0.0020*	Yes	Yes
tris (2,3-dibromopropyl) phosphate	000126-72-7	1000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000	0.4000*	500.0*	500.0*	5.0	5.0	...	...	11	0.0200	Yes	Yes
triadanium	007440-62-2	100	1.0E+00	1.0E-02	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes
triadanium pentoxide	001314-62-1	100	1.0E+00	...	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	1000*	1000*	NA	NA	No	Yes
trifluoroethyl acetate	000108-05-4	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000	0.5	0.5	0.5	0.5	10	10	17	1.0000	Yes	No
trifluoroethyl chloride	000075-01-4	10000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.0007	0.0700	5.0	5.0	5.0	5.0	...	...	17	1.0000	Yes	No
trifluorofarfin	000081-81-2	10000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000*	1.0000*	50.0	50.0	50.0	50.0	10	10	NA	NA	No	Yes
trifluoromethylene, m-	000108-38-3	1	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	500.0	500.0	500.0	500.0	100	10	17	1.0000	Yes	No
trifluoromethylene, o-	000095-47-6	1	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No
trifluoromethylene, p-	000106-42-3	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	1	17	1.0000	Yes	No
trifluoromethane	007440-66-6	10	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	500.0	50000.0	500.0	50000.0	10	100	NA	NA	No	Yes
trifluoromethane cyanide	000557-21-1	10	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	...	...	NA	NA	No	Yes

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 \*\* Indicates new hazardous substance in current version of chemical data ( JUN96 ).

MEMORANDUM

Reference 4

TO: Callahan Mine file  
 FROM: Christopher Sklaney, START  
 RE: Callahan Mine property coordinates calculations  
 TDD: 00-06-0020  
 DATE: 5 July 2000

Method: A ratio comparing the map arc distance and the map tangential distance between two points utilized to determine property coordinates (linear interpolation). Flat-earth scenario over the study area is assumed.

Tools: Cape Rosier, ME 7.5' USGS topographic quadrangle (1973, Photorevised 1979)  
 Engineering scale  
 Portland navigational protractor

Formula: Using the ratios  $\theta : d$  and  $\alpha : D$ , the formula  $\theta = \alpha \times d \div D$  was derived, where:

- $\theta$  = arc distance from a given line of latitude/longitude
- $\alpha$  = arc distance between two given lines of latitude/longitude (150")
- $d$  = linear distance from one line of latitude to a given point on the map (graphically determined by START member)
- $D$  = linear distance between two given lines of latitude/longitude (graphically determined by START member)

The values  $\alpha$ ,  $d$ , and  $D$  are known or calculated to determine  $\theta$ .

Calculations:

Base line of latitude: 44°22'30.0"N

$$\theta_{LAT} = (150") \times (4.28 \text{ in.}) \div (7.63 \text{ in.}) = 84.1"$$

44°22'30.0"N
- 1'24.1"
44°21'05.9"N

Base line of longitude: 68°50'00.0"W

$$\theta_{LONG} = (150") \times (3.03 \text{ in.}) \div (5.44 \text{ in.}) = 83.5"$$

68°49'60.0"W
- 1'23.5"
68°48'36.5"W

Property coordinates are 44° 21' 05.9" N, 68° 48' 36.5" W, as measured from entrance to the property, located at the point where the northern unimproved access road (located west of Goose Pond) jogs to the west. This point is located south of private residences and a cemetery, and is approximately 700 feet (±20 feet) south of the asphalt-paved road that crosses Goose Pond (refer to Attachment).



Christopher Sklaney  
 START

Attachment

UNITED STATES  
PARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

STATE OF MAINE  
PUBLIC UTILITIES COMMISSION

CAPE ROSIER QUADRANGLE  
MAINE  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
SE 1/4 CASTINE 15' QUADRANGLE





## MEMORANDUM

TO: Jean Firth, Environmental Scientist III, Division of Remediation

FROM: Camille Parrish, Certified Geologist, Division of Technical Services CP

DATE: April 3, 2000

SUBJECT: Soil and sediment sampling at the Callahan Mine, Brooksville, Maine

\*\*\*\*\*

In conjunction with chemical analyses, grain size analyses were conducted on soil and sediment samples collected during the HRS sampling for the Callahan Mine. The objective of the sieve analyses was to determine if any geologic variability existed between background and site-related samples that might affect the interpretation of the contaminant results. On-site soil samples were obtained from the tailings pond, tailings pile, waste rock piles and former operational areas. Sediment samples were collected from Goose Pond, Dyer Cove, and Weir Cove. In addition, background samples were gathered from locations that represent similar depositional environments. Care was taken to obtain background samples that were outside the area impacted by mining operations. The results of the grain size analyses are presented in Attachment 1 and figures showing sample locations are in Attachment 2. Because a hydrometer was not used in these analyses to differentiate the silt and clays, the grain-size distribution curves end with 0.063 mm (very fine sand). Accordingly the remaining percent of soil/sediment passing through sieve #200 is undifferentiated silt and clay. A discussion of the sieve results from each geologic/operational environment relative to the representative background samples is presented below.

## SEDIMENT SAMPLES

### Goose Pond:

The background samples, collected at Horseshoe Cove, are BKSD-23, BKSD-24, and BKSD-25. They are classified as undifferentiated silt and clay with an average of 19 % sand.

The sediment samples from Goose Pond are SD-29, SD-31, SD-33, and SD-35. These samples are also undifferentiated silt and clay with varying amounts of sand. The sand content in samples SD-29, SD-31, and SD-33 ranges from 2-9 %. These sediments are indicative of the very low energy, depositional environment in the upstream section of Goose Pond. Much of this stretch of Goose Pond is shallow with the presence of some wetland vegetation. SD-35 contains a higher percentage of sands, 35%. These sands are poorly sorted and range in texture from very coarse to very fine.

These sieve analyses indicate that the samples are similar in composition. They are predominantly silts and clay. Because of silt and clay's strong affinity for metals, if inorganic

contaminants were transported to Goose Pond from Callahan Mine, the analytical results should reflect this impact.

#### **Weir and Dyer Coves:**

In comparison to the background sediment samples, the samples collected from Weir and Dyer Coves, SD-27, SD-37 and SD-39, are much coarser. They are classified as poorly sorted sand, silt and clay with some gravel. As a result, any elevated metal concentrations in these sediments will be particularly significant considering the tendency for the finer-grained background sediments to be naturally higher in metals.

#### **SOIL SAMPLES**

##### **Mine Entrance:**

The background soil samples, BKSS-01, BKSS-02, and BKSS-03 are classified as poorly sorted sand and undifferentiated silt and clay with little gravel (<20%). The amount of silt and clay averages 41%.

With the exception of SS-05, the mine entrance soil samples, SS-04, SS-44, and SS-45 contain a higher percentage of very coarse to medium sand than the background samples. In particular, SS-44 and SS-45 are predominantly coarse sand with little gravel and some undifferentiated silt and clay. Sample SS-04 contains an equal percentage of sand and undifferentiated silt and clay, approximately 40%, and is most similar in texture to the background samples.

Soil sample SS-05 is the only sample that had a finer coarse fraction than the background samples. Even though it contained a lower percentage of coarse to very coarse sand and gravel, it is still classified as a medium to fine sand with 42% undifferentiated silt and clay.

As can be seen from the sieve results, the textural distinctions between the mine entrance samples and the background samples is small. The variability present is not enough to effect the interpretation of contaminant concentrations.

##### **Mine Operations:**

The background soil samples, BKSS-01, BKSS-02, and BKSS-03 are classified as poorly sorted sand and undifferentiated silt and clay with little gravel (<20%). The amount of silt and clay averages 41%.

The mine operation soil samples, SS-07, SS-08, SS-09, SS-43, and SS-46 are of similar or coarser texture than the background samples. The coarse textured soil samples were SS-07 and SS-43. These poorly sorted sands and gravel with little differentiated silt and clay (<20%). The remaining mine operation soil samples are classified as poorly sorted sand and undifferentiated silt and clay with little gravel, like the background samples. These sieve analysis results indicate that the background samples should serve as appropriate samples for a comparison of metals concentrations from impacted and unaffected areas of the site.

### **Waste Rock Piles:**

The background soil samples, BKSS-01, BKSS-02, and BKSS-03 are classified as poorly sorted sand and undifferentiated silt and clay with little gravel (<20%). The amount of silt and clay averages 41%.

The soil samples collected from the waste pile and waste pile 2 are WRP-19, WRP-20, WRP-21, WRP-22 and WRP2-06, WRP2-10, WRP2-47, WRP2-48, respectively. These soil samples represent poorly sorted sand and gravel with varying amounts of undifferentiated silt and clay. The finer fraction comprises 13% to 36% of the samples. In general, the soil samples from waste rock pile 2 are finer-grained than those collected from the waste rock pile. The percentage of gravel in the waste rock pile soil samples is in general 5% to 10% greater than the background samples. The exception to this statement is WRP2-47 that contains less gravel and more very coarse sand than background. This textural difference is not great however.

The sieve analyses indicate that the background samples are as fine as or comparable to the waste rock pile soils. As a result, the textural variability should not be a significant factor in assessing the potential contaminant load of the waste rock piles

### **Tailings Pile Samples:**

The background soil samples, BKSS-01, BKSS-02, and BKSS-03 are classified as poorly sorted sand and undifferentiated silt and clay with little gravel (<20%). The amount of silt and clay averages 41%.

The tailings pile samples, 99-TPI-16, 99-TPI-17, and 99-TPI-18, are coarser grained than the background samples. They are classified as fine gravel and medium to coarse sand with trace undifferentiated silt and clay (<10%).

As a result, the background samples should contain concentrations of naturally occurring metals equivalent to or biased high relative the tailings pile soils and should serve as appropriate soils for comparative purposes.

### **Tailings Pond Samples:**

The tailings pond was used as a settling basin for the fines during the mining operations. The soils present in this pond (TPd-11, TPd-12, TPd-13, TPd-14 and TPd-15) reflect this practice; they are well sorted fine to very fine sand with varying proportions of undifferentiated silt and clay. The amount of silt and clay varies between 20% and 73%.

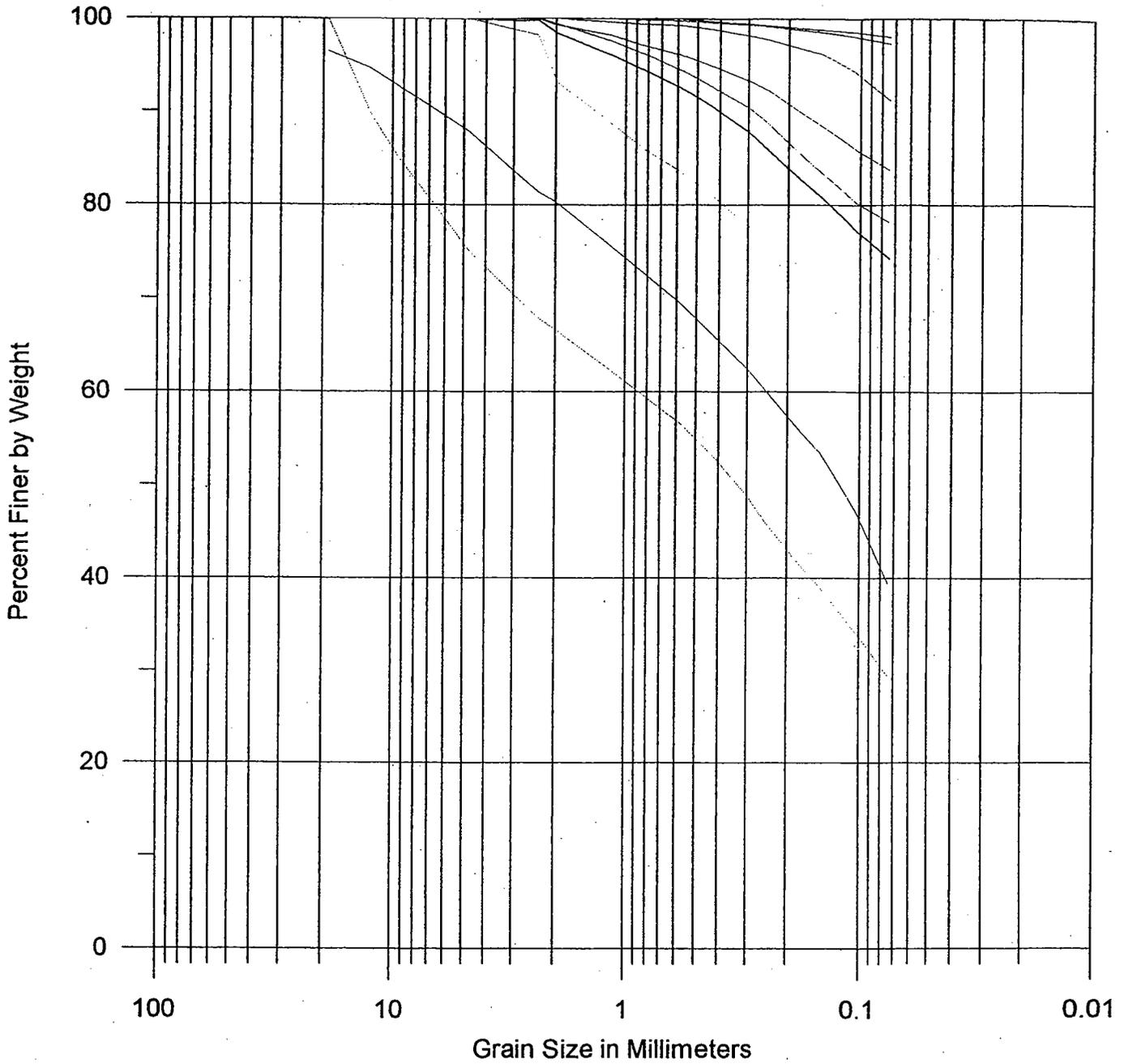
In comparison, the background soil samples, BKSS-01, BKSS-02, and BKSS-03 are classified as poorly sorted sand and undifferentiated silt and clay with little gravel (<20%). They are coarser grained due to the difference in the depositional environments and sources of the material.

The predominance of finer-grained material in the tailings pond and its operational history will

potentially result in higher contaminant concentrations than background. These elevated levels should be reflected in the analytical results.

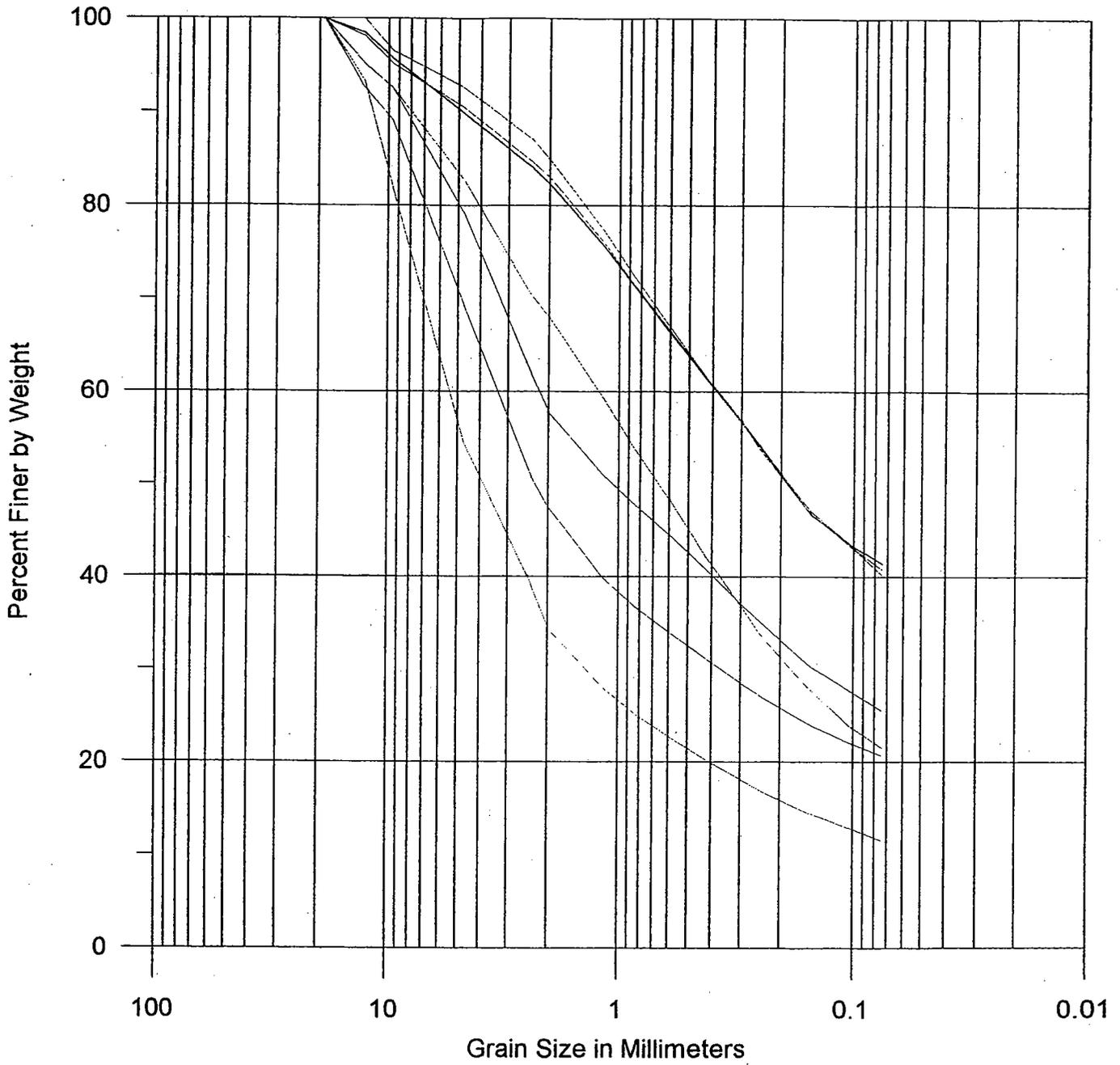
**ATTACHMENT 1**

SEDIMENT SAMPLES



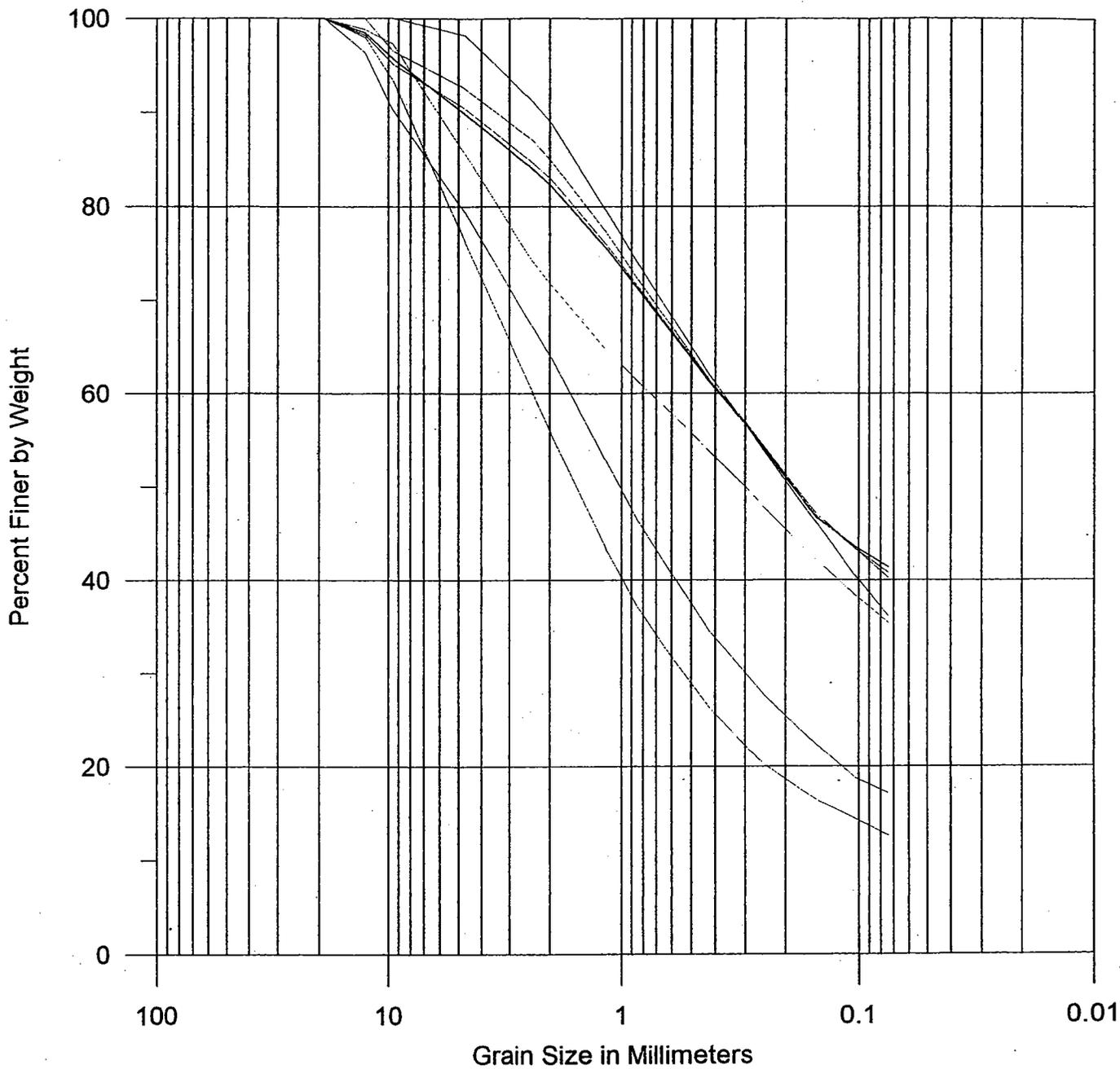
—————	99-BKSD-23
—————	99-BKSD-24
—————	99-BKSD-25
—————	99-SD-27
—————	99-SD-29
—————	99-SD-31
—————	99-SD-33
—————	99-SD-35
—————	99-SD-37
—————	99-SD-39

WASTE ROCK PILE SAMPLES

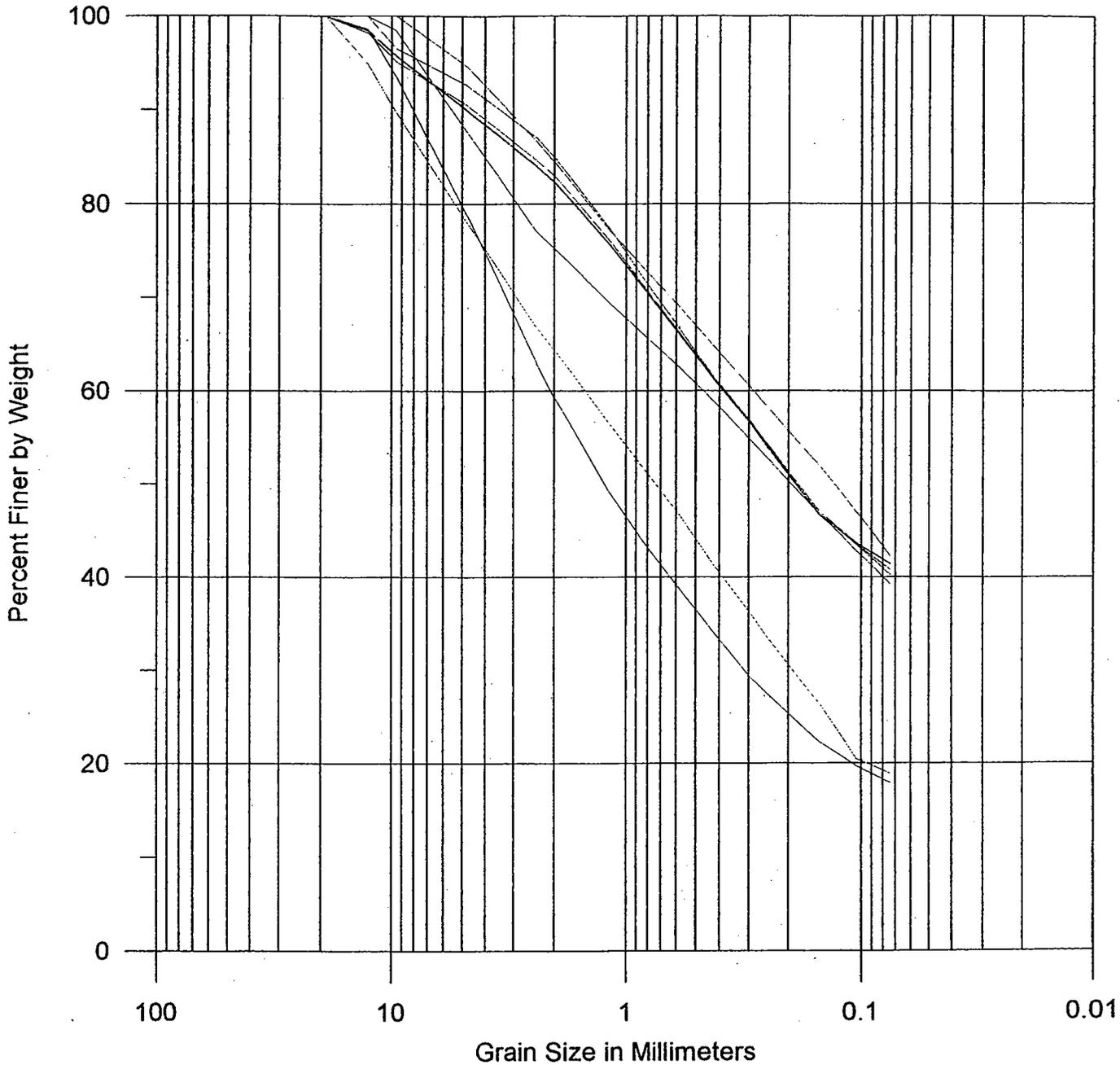


- 99-BKSS-01
- 99-BKSS-02
- 99-BKSS-03
- - - 99-WRP-19
- - - 99-WRP-20
- - - 99-WRP-21
- - - 99-WRP-22

WASTE PILE 2 SAMPLES

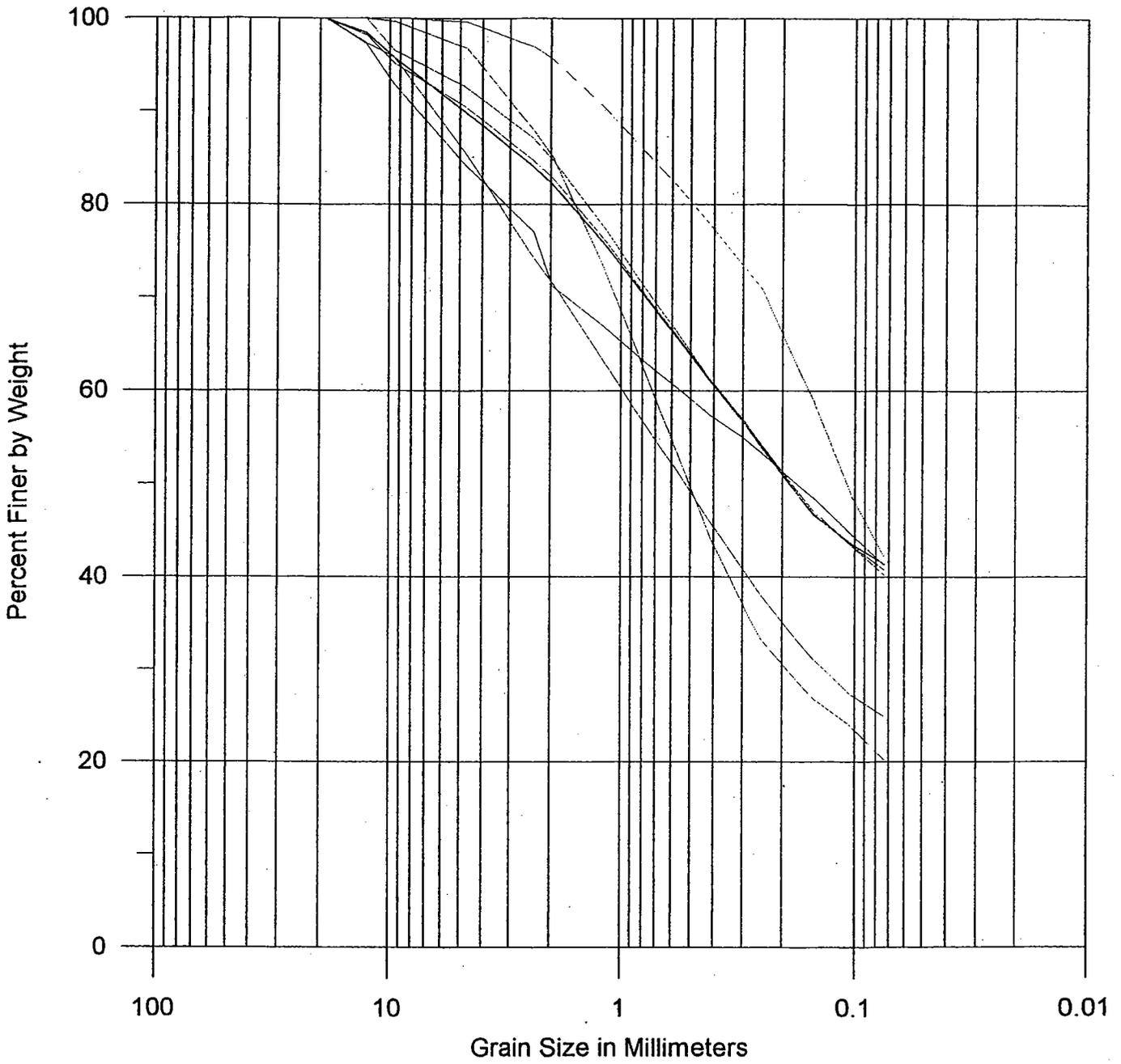


OPERATION SOIL SAMPLES



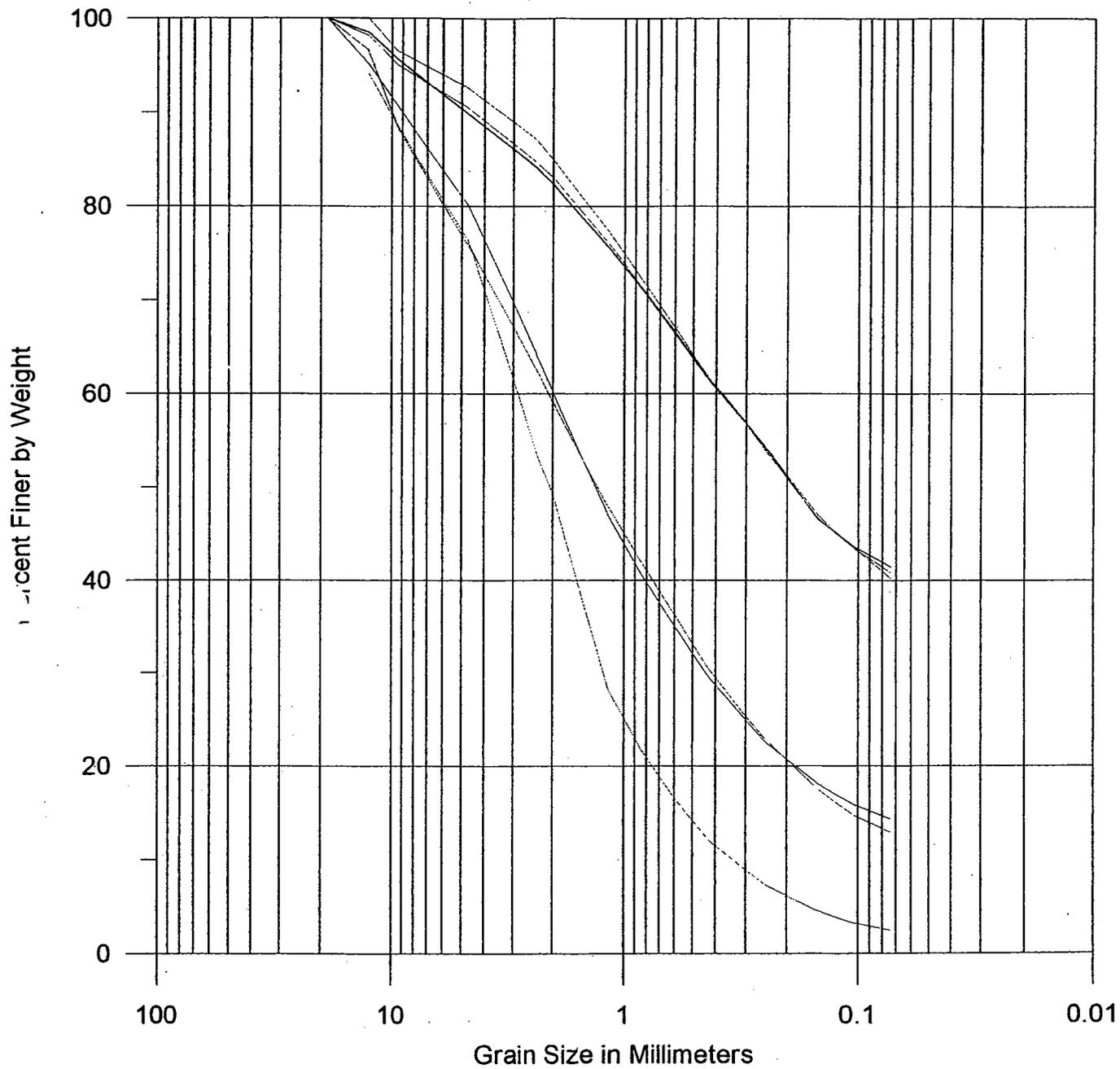
- 99-BKSS-01
- 99-BKSS-02
- 99-BKSS-03
- 99-SS-43
- 99-SS-07
- 99-SS-46
- 99-SS-08
- 99-SS-09

ENTRANCE SOIL SAMPLES



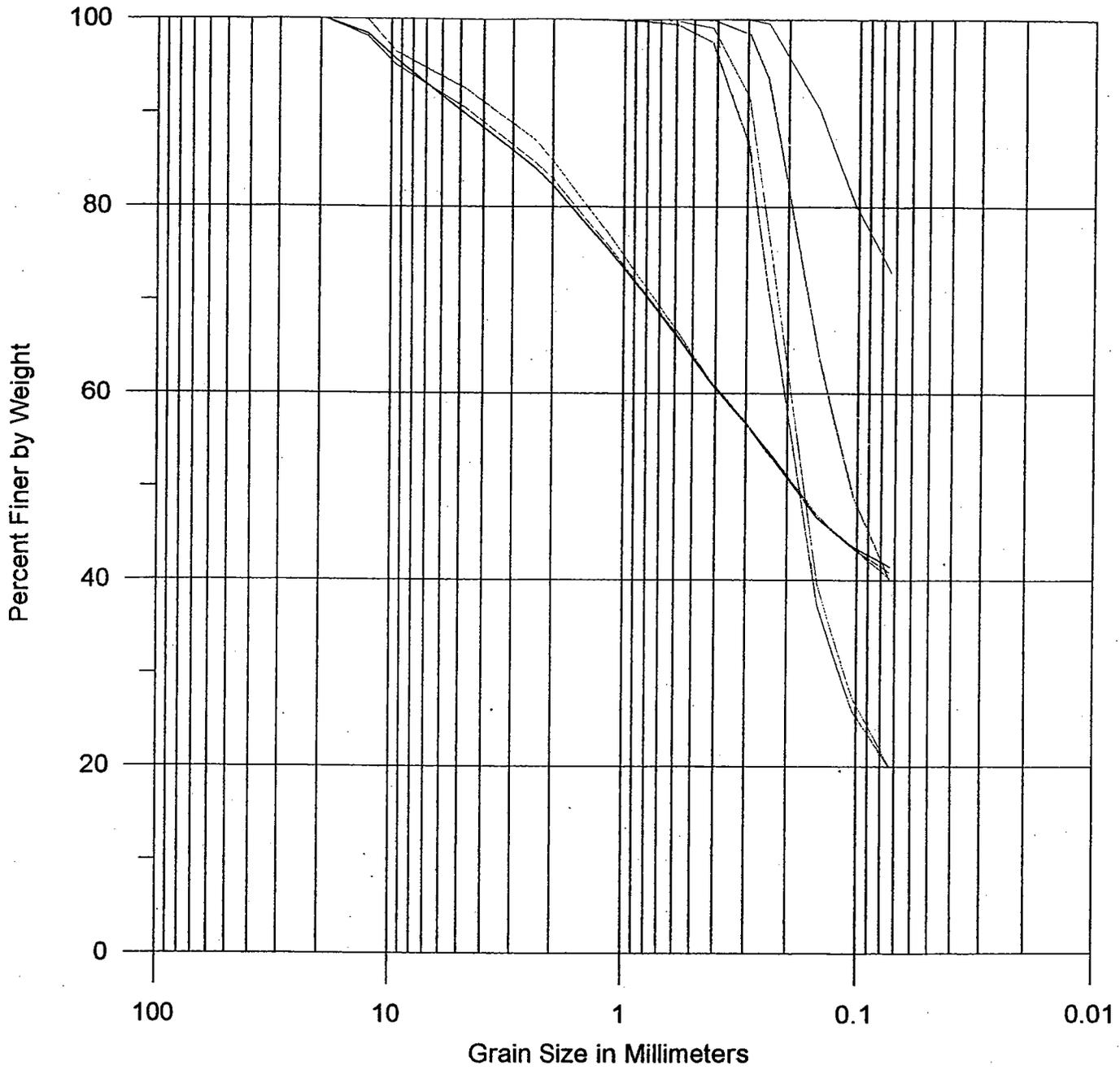
- 99-BKSS-01
- 99-BKSS-02
- 99-BKSS-03
- 99-SS-04
- 99-SS-05
- 99-SS-44
- 99-SS-45

TAILINGS PILE SAMPLES



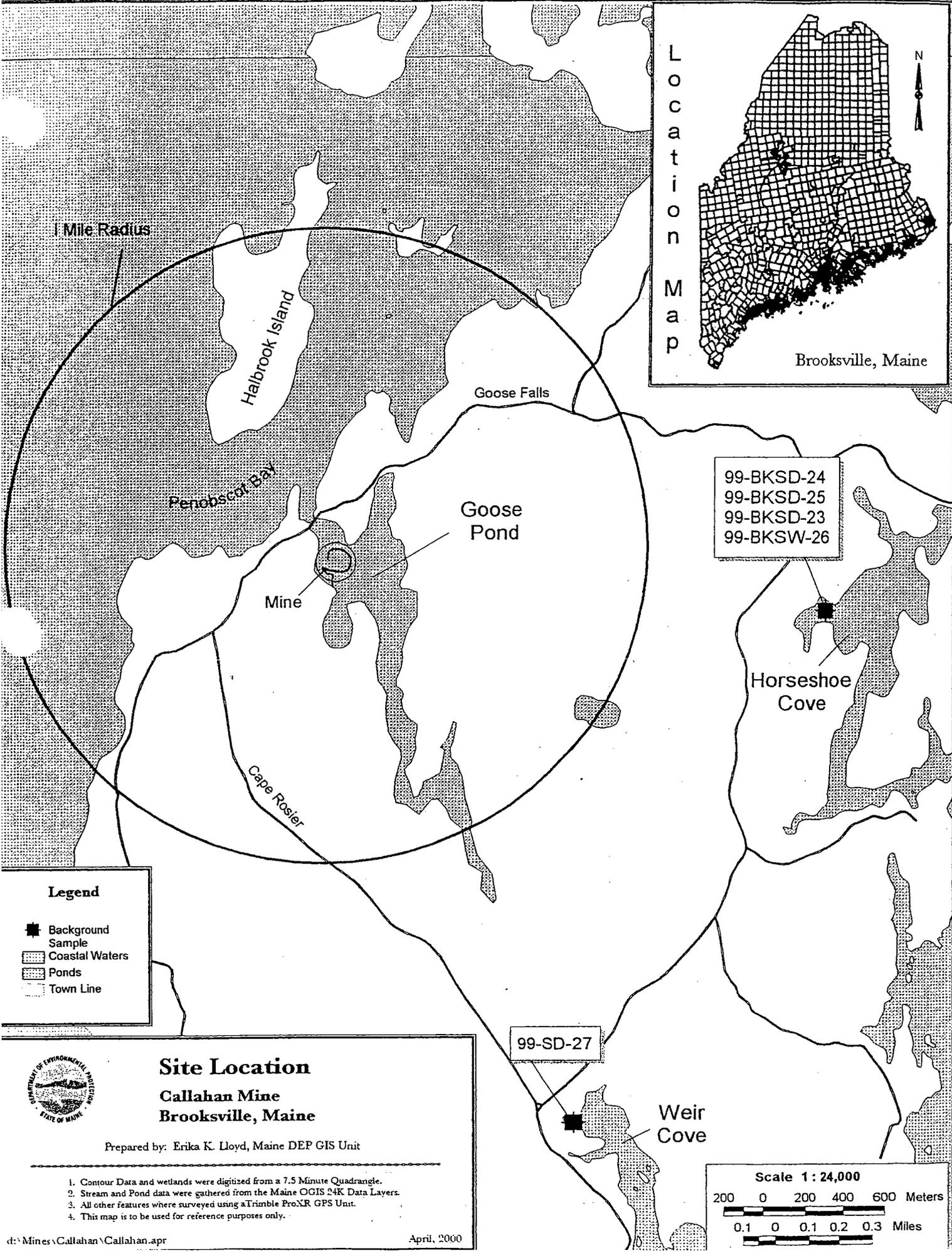
- 99-BKSS-01
- 99-BKSS-02
- 99-BKSS-03
- 99-TPI-16
- 99-TPI-17
- 99-TPI-18

TAILINGS POND SAMPLES



- 99-BKSS-01
- 99-BKSS-02
- 99-BKSS-03
- 99-TPd-11
- 99-TPd-12
- 99-TPd-13
- 99-TPd-14
- 99-TPd-15

**ATTACHMENT 2**



Location Map

Brooksville, Maine

99-BKSD-24  
 99-BKSD-25  
 99-BKSD-23  
 99-BKSW-26

Horseshoe Cove

99-SD-27

Weir Cove

1 Mile Radius

Halbrook Island

Goose Falls

Goose Pond

Penobscot Bay

Mine

Cape Rosier

**Legend**

- Background Sample
- Coastal Waters
- Ponds
- Town Line

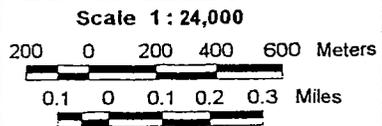


**Site Location**

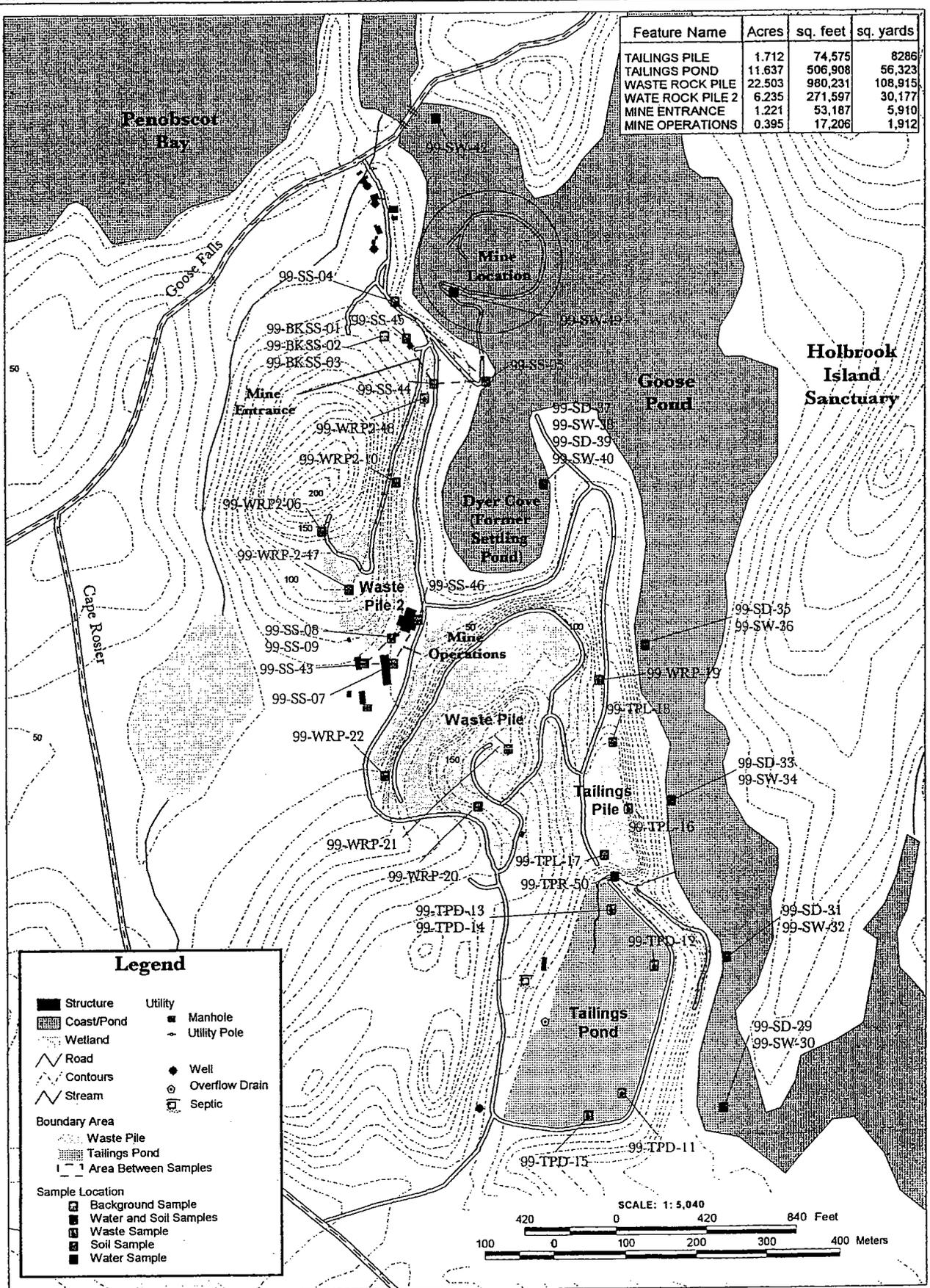
**Callahan Mine  
 Brooksville, Maine**

Prepared by: Erika K. Lloyd, Maine DEP GIS Unit

1. Contour Data and wetlands were digitized from a 7.5 Minute Quadrangle.
2. Stream and Pond data were gathered from the Maine OGIS 24K Data Layers.
3. All other features were surveyed using a Trimble ProXR GPS Unit.
4. This map is to be used for reference purposes only.



Feature Name	Acres	sq. feet	sq. yards
TAILINGS PILE	1.712	74,575	8286
TAILINGS POND	11.637	506,908	56,323
WASTE ROCK PILE	22.503	980,231	108,915
WASTE ROCK PILE 2	6.235	271,597	30,177
MINE ENTRANCE	1.221	53,187	5,910
MINE OPERATIONS	0.395	17,206	1,912



**Legend**

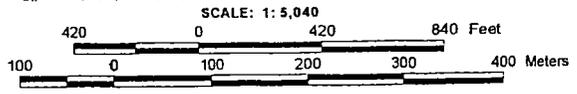
	Structure		Utility
	Coast/Pond		Manhole
	Wetland		Utility Pole
	Road		Well
	Contours		Overflow Drain
	Stream		Septic

**Boundary Area**

- Waste Pile
- Tailings Pond
- Area Between Samples

**Sample Location**

- Background Sample
- Water and Soil Samples
- Waste Sample
- Soil Sample
- Water Sample



**Callahan Mine**  
Brooksville, ME



- NOTES:**
1. Stream, Pond, and Contour Data were gathered from the Maine OGIS 24K Data Layers.
  2. All other features were surveyed using a Trimble ProXR GPS Unit.
  3. Wells have an accuracy <1 meter; all other features +/- 3 meters.
  4. This map is to be used for reference purposes only.