MULTIYEAR WORK ELEMENT PLAN
LASL SOLID RADIOACTIVE WASTE DISPOSAL STUDIES
(LS - 1510A)

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General

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ABSTRACT

A multiyear program plan for assuring control of buried low-level radioactive waste at LASL is presented. Work breakdown structure, milestones and budgeting information is presented for fiscal years 1979 through 1985.

SUMMARY

Locations and quantities of past disposed solid low-level waste at LASL will be computerized. Potential release pathways will be defined and field sampling program will validate this model. Based upon the above information, action plans will be prepared which will recommend a monitoring system, changes necessary in site operations and any modifications required to the input waste to maintain site containment.

Schedule and work breakdown structure to complete this activity by FY-1985 is presented. Operating and capital equipment costs are also provided.

I. INTRODUCTION

Since its beginning in the early 1940s, operations at LASL have produced many kinds of radioactive wastes which have been buried at several different locations. Due to early security requirements and instrumentation limitations, little accurate information exists concerning early waste inventories. Careful records review and field surveys are now underway to fill this information gap. Transport mechanisms, site characterization, and an assessment methodology are being developed to assess the environmental impact of buried waste. Ultimately, this information will serve as the basis of an EIS covering waste disposal at LASL. Following this, plans will be developed to define a monitoring system and actions necessary to convert any problems at the burial grounds or changes to input waste forms to assure future activities meet environmental standards.

II. GOALS AND OBJECTIVES

The goal of this activity is to assure that LASL'S radioactive waste disposal activities comply with safety and environmental requirements.

The major objectives are to: (1) define the source term, (2) describe important potential release pathways, (3) produce action plans covering future operations.

III. SOLID RADIOACTIVE WASTE DISPOSAL STUDIES

A. Description of Tasks

1.1 Source Term Definition

Before an assessment of impact is possible, it is necessary to identify the kinds, amounts and locations of buried waste. The following activities are proposed.

1.1.1 Assembly and Review of Records

Due to its long operating history, the records of past disposal activities at LASL exist in different forms and locations. Due to security requirements and local jargon, some of the entries are in a local code or deliberately vague. Existing records are being collected, reviewed and interpreted with the help of as many of the people involved as can be located to construct an accurate a record as possible.

1.1.2 Computerization of Disposal Records

When the disposal records have been reconstructed, they will be entered into a computer data base along with records of current disposals activities for use in the assessment and EIS tasks. Work will continue on the records until it is concluded that no additional useful information can be generated.

1.1.3 Field Sampling

Adequate samples of soils, plants and animals will be taken at the disposal locations to verify the records and to estimate the current distribution of the radionuclides as input to the assessment task. Additional sampling could be required if EPA standards become more stringent or if the public comments on the EIS indicate dissatisfaction with data presented.

1.2 Potential Release Pathways

Site characteristics, transport mechanisms and pathways will be determined to permit the assessment of the potential for migration and its impact.

1.2.2 Site Description

Relevant site geological, hydrological and biological conditions are being determined and will be used as input to the assessment task.

1.2.2 Transport Mechanisms

Physical and chemical transport processes are being determined using both laboratory and field techniques. Rate of potential radionuclide release to the environment will be determined.

1.2.3 Assessment Methodology

In LASL project LS-1410A, biotic, sediment and surface water transport pathway simulations will be developed. However, evidence to date at LASL indicates that the hydrologic pathway is not significant. Surface erosion rates are being estimated from direct measurement and archeological inference. When the model development is completed, the potential for migration will be estimated as well as its significance. Past and future field measurements (obtained in projects sponsored by ASEV) will provide adequate data to validate the assessment results.

1.3 Action Plans

The results of tasks 1.1 and 1.2 will generate a need for and adequate information to design an effective monitoring system as well as changes to the disposal site and its operation. Recommendations will be in the form of active plans, and will be provided to the appropriate Groups (H-7 or H-8) for their implementation.

1.3.1 Design of Monitoring System

Based upon the information generated in task 1.2, a monitoring system for the burial grounds will be designed. The design basis will be to detect migration in time to take corrective action so that environmental standards will not be exceeded. The design will also include dynamic features to take advantage of information obtained from monitoring.

1.3.2 Design of Site Modifications

If a pathway is identified which shows a significant potential for release, engineered barriers will be designed or site operating practices will be suggested to control migration.

1.3.3 Design of Process Changes

If natural and/or engineered barriers do not seem to be adequate to control releases, recommendations will be made to modify waste input forms which may involve some process changes by the waste generators.

B. Programmatic Scheduling

Program schedule and level of effort are based upon completing the action plans in parallel with the TRU program (LS-1410A) action plan. This is desirable since both TRU and non-TRU LLW exist in the same locations and any action taken by one program necessarily impacts upon the other.

In developing an analytical methodology, we consider it essential that all major DOE disposal sites be involved to save time and money, to use the best techniques available, and to eliminate different (and possibly contradicting) methodologies which confuses the public and provides a basis for criticism. Task 1. 2. 3 plans to apply the analytical methodology being developed jointly with Battelle Pacific Northwest Laboratory for the TRU program (LS-1410A) and hopefully will include others in the future.

Due to LASL manpower limitations, the responsibilities of different Groups in the laboratory, and our success with contracts in universities and industry, contracts will be let for substantial portions of this project.

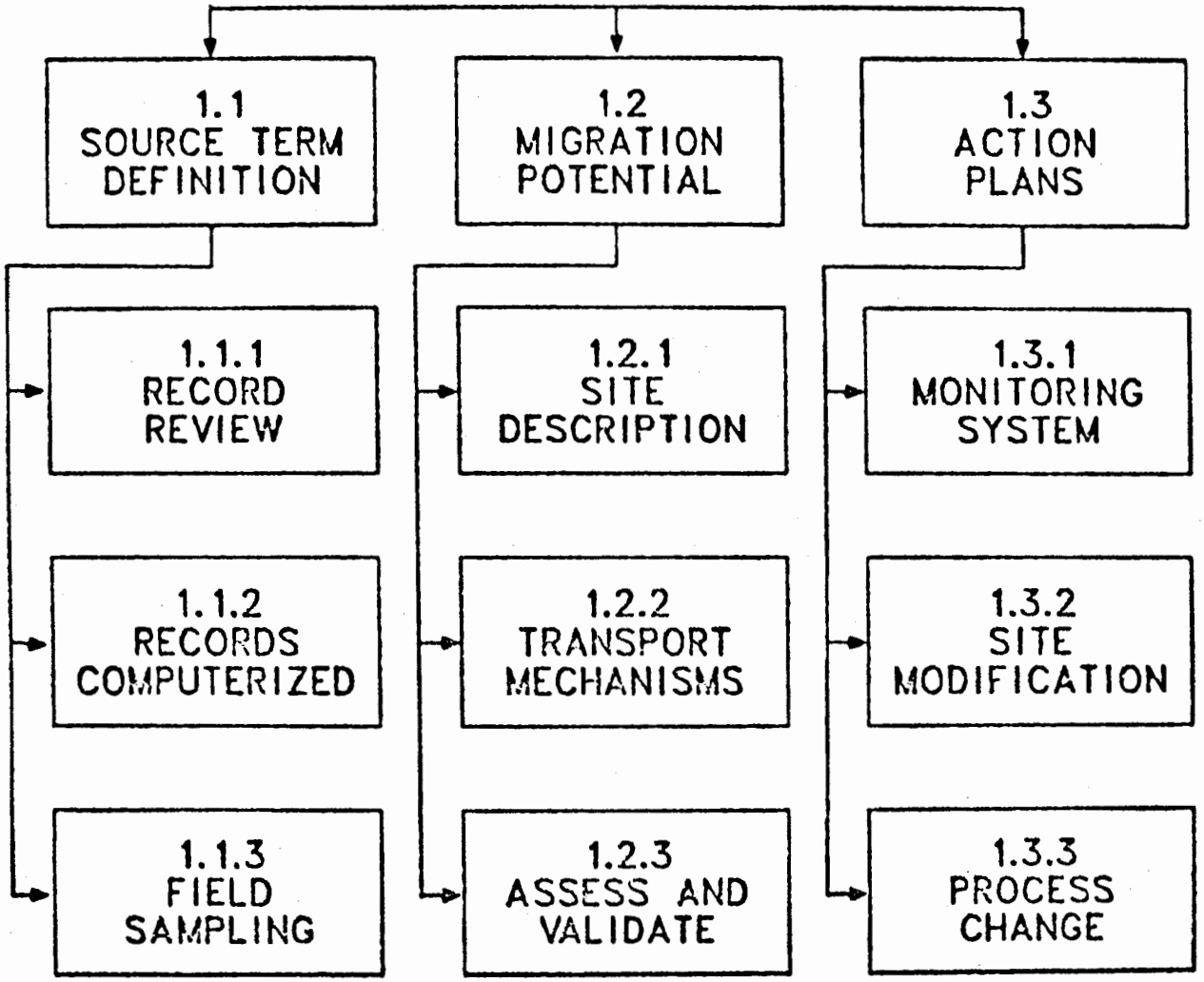
IV. CAPITAL EQUIPMENT AND SUBCONTRACT NEEDS

Programmatic capital equipment needs are presented in Table I, and subcontract needs are presented in Table II.

V. PROGRAMMATIC BUDGETING

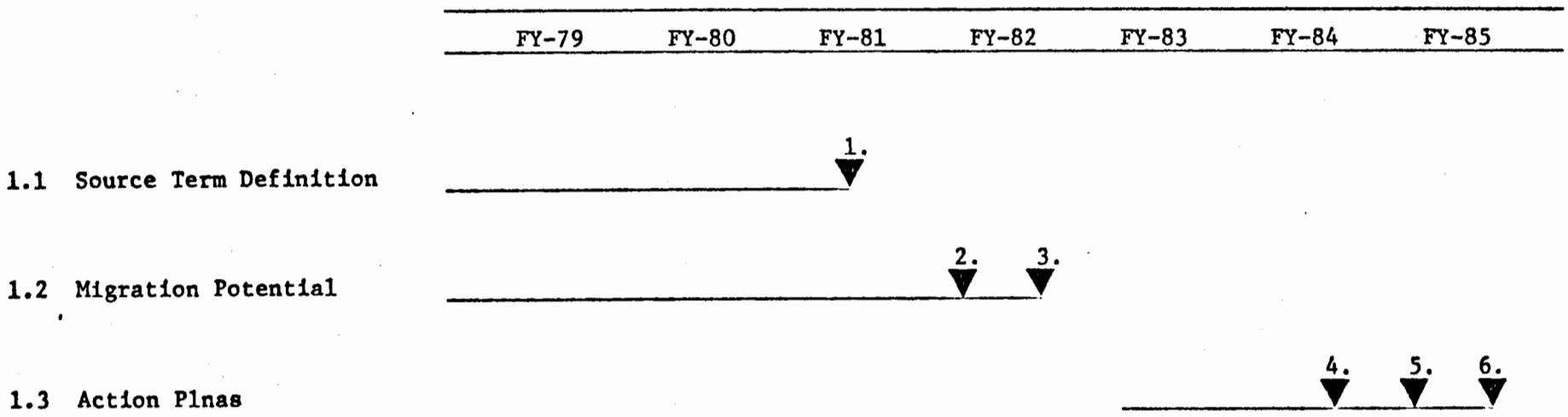
Programmatic budgets are structured according to the Work Breakdown Structure (WBS) and fiscal year. Table III presents the requirements for operating, equipment costs and obligations. Presented in Table IV are the programmatic costs for FY 79 through FY 85 according to WBS subtasks. Programmatic manpower requirements by fiscal year are presented in Table V.

Figure 1. Work Breakdown Structure
LASL Solid Radioactive
Waste Disposal Studies



Milestone Schedule for LASL Solid Radioactive Waste Disposal Studies

FY-1979 through FY-1985



1. Complete Source Term Definition.
2. Transport Processes Identified.
3. Pathway Analysis Validated.
4. Monitoring Plan
5. Site Plan
6. Waste Plan

Table IV

PROGRAM COSTS FOR FY-1979 THROUGH FY-1985 ACCORDING TO WORK BREAKDOWN STRUCTURE ($000)

evelopment Tasks	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84	FY-85
1 Source Term Definition	98	107	38	0	0	0	0
2 Potential Release Pathways	202	313	292	200	0	0	0
3 Action Plans	0	0	0	0	200	150	0
Total Operating	300	420	330	200	200	150	0

Table I
CAPITAL EQUIPMENT REQUIREMENTS

FY-1979	($000)	FY-1980	($000)
	0	Drill Rig for obtaining core samples and for monitoring wells	80

FY-1981	($000)	FY-1982	($000)
Sample analytical instrumentation	50		0

FY-1983	($000)	FY-1984	($000)
	0		0

FY-1985	($000)	FY-1986	($000)
	0		0

Table II

SUBCONTRACTS

FY	No.	Description	($000)
1979	1.2	PNL Model, Sediment Transport	50
1980	1.2	Geologic Map Printing	50
1981	1.2	PNL Model, Potential Pathways	100
1982			0
1983	1.4	Engineered Site Improvements Design	50
1984			0
1985			0

Table III
REQUIREMENTS FOR OPERATING AND EQUIPMENT
COSTS AND OBLIGATIONS

Contractor Name	Plan No.	B & R No.	Date Prepared
LASL		JM030362	February 1979

18 Manpower in Manyears:	FY-79	FY-80	FY-81		
			Minimum	Current	Enhanced
(a) Scientific	1.8	3.3	1.5	1.5	1.5
(b) Other	2.0	2.0	1.0	1.0	1.0
(c) Total	3.8	5.3	2.5	2.5	2.5
19 Operating in Thousands:					
(a) Total Direct	129	214	109	109	109
(b) Total Indirect	54	91	45	45	45
(c) Total Costs	300	420	330	330	330
(d) Total Obligations					
20 Equipment in Thousands:					
(a) Equipment Costs		80	50	50	50
(b) Equipment Obligations					
21 Other Costs:					
(a) PE&D					
(b) Construction					
(c) GPP					

22 Five Year Plan (in Thousands)

(Based on Current Levels for BY)	FY-81	FY-82	FY-83	FY-84	FY-85
(a) Total Operating Costs	330	200	200	150	0
(b) Total Operating Obl.					
(c) Total Equipment Costs	50	0	0	0	0
(d) Total Equipment Obl.					

Table IV

PROGRAM COSTS FOR FY-1979 THROUGH FY-1985 ACCORDING TO WORK BREAKDOWN STRUCTURE ($000)

Development Tasks	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84	FY-85
1.1 Source Term Definition	98	107	38	0	0	0	0
1.2 Potential Release Pathways	202	313	292	200	0	0	0
1.3 Action Plans	0	0	0	0	200	150	0
Total Operating	300	420	330	200	200	150	0

Table V

PROGRAMMATIC MANPOWER REQUIREMENTS BY FISCAL YEAR

MANPOWER (MANYEARS) SCIENTIFIC/OTHER DEVELOPMENT TASKS	FY-79		FY-80		FY-81		FY-82		FY-83		FY-84		FY-85	
	S	O	S	O	S	O	S	O	S	O	S	O	S	O
1.1 Source Term DEfinitaion	1	1	1	1	0.5	0	0	0	0	0	0	0	0	0
1.2 Potential Release Pathways	0.8	1	2.3	1	1	1	1	1	0	0	0	0	0	0
1.3 Action Plans	0	0	0	0	0	0	0	0	1	1	1	1	0	0
Total	1.8	2	3.3	2.0	1.5	1	1	1	1	1	1	1	0	0
Total Manyears	3.8		5.3		2.5		2		2		2		0	