APPENDIX Q
WASTE PROCESSING SCHEDULE ANALYSIS

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WASTE PROCESSING SCHEDULE ANALYSIS

1.0 INTRODUCTION

1.1 SCHEDULE DEVELOPMENT

The schedules for implementing the waste processing engineered alternatives (EA) were evaluated using PRIMAVERA, a commonly used computer application. Since the waste processing EAs include the construction of major capital facilities, it was assumed that these would be line item projects, as defined by DOE Order 4700.1, *Project Management System* (DOE 1992a). The schedules for these projects include activities required to take a project from initial conception through design, permitting, construction, operations, and final decontamination and decommissioning. These activities are grouped into the following summary-level activities:

- **Project Conception and Funding Request**—This includes preparing a preconceptual design, conducting laboratory scale and pilot scale testing (if required), and requesting and receiving approval for line item funding.

- **National Environmental Policy Act Process**—The National Environmental Policy Act (NEPA) requires that any major federal action be analyzed to provide decision makers information on the environmental impact of the proposed action. The level of analysis required for each action may vary depending on the potential impacts, but it was assumed that an Environmental Impact Statement (EIS) would be required for each of the waste processing EAs. Preparing an EIS includes preparing an Action Description Memorandum (ADM), scoping the analysis, preparing a draft and a final EIS, soliciting and responding to comments, and ultimately issuing a Record of Decision (ROD).

- **Other Permitting**—To demonstrate compliance with the Clean Air Act (CAA) and other federal and state regulations, several plans and regulatory documents must be prepared, including a Health and Safety Plan, Quality Assurance Program Plan (QAPP), Air Pollution Emission Notices (APENs), a determination that the project complies with National Emission Standards for Hazardous Air Pollutants (NESHAPS), and a Prevention of Significant Deterioration (PSD) permit.

- **Resource Conservation and Recovery Act Permitting**—The Resource Conservation and Recovery Act (RCRA) requires that any treatment/storage/disposal (TSD) facility for hazardous waste must operate under a RCRA permit. Most DOE facilities are already operating under a RCRA permit, so this section illustrates the required activities to modify an existing RCRA permit.

- **Safety Analysis Review**—DOE Order 5480.23, *Nuclear Safety Analysis Reports* (DOE 1994c) requires that safety analyses be developed that establish and evaluate the adequacy of the safety bases for nuclear facilities. The results of the safety analysis are documented in a Safety Analysis Report (SAR). A SAR is prepared in stages which include a Preliminary Safety Analysis Report (PSAR) and a Final Safety Analysis Report (FSAR).

- **Design & Construction**—This includes the activities required for development of a detailed design and for facility construction. Construction could not begin until the RCRA permit modification is approved.

- **Procedures Development and Personnel Training**—DOE Order 5480.19, *Conduct of Operations* (DOE 1992b) requires that operations at DOE facilities be conducted in accordance with written and approved directives, plans, and/or procedures, and that personnel be adequately trained to perform their assigned tasks. The activities included in the schedule include the development of plans and procedures for equipment testing, data management, operations, and maintenance, and the training of personnel.

- **Equipment and Facility Testing**—All equipment and systems must be tested, both individually and in combination, to assure that they perform as planned and to assure that the facility will operate safely. Testing includes the performance of system operations (SO) tests and conduct of an Operational Readiness Review (ORR), as required by DOE Order 5480.31, *Startup and Restart of Nuclear Facilities* (DOE 1993).

- **Operations**—Operations includes the activities required for the retrieval, characterization, repackaging, treatment, certification, storage, and shipment of transuranic (TRU) waste. It was assumed that facilities would have an operating life of 20 years.

- **Decontamination and Decommissioning**—Decontamination and Decommissioning (D&D) includes deactivating the facilities after their operational lives have expired and decontaminating the facility equipment, structures, and surrounding areas so that the area can be safety used for another purpose.

1.2 SCHEDULING ASSUMPTIONS

In the process of developing the schedules for the various waste processing EAs, it was necessary to make many assumptions regarding the relationships between activities (e.g., which activities must be complete before another could begin). Tables Q-1 through Q-5 (see Attachment 1) present the assumptions used for each major element of each waste processing EA.

1.3 ACTIVITY DURATIONS

A key element to establishing schedules for waste processing EAs is to estimate the time required to accomplish each activity. For activities which are the same or similar to activities that have been accomplished as part of previous projects, estimating the duration of the activity based on historical performance information is appropriate. The critical path method (CPM) is best suited for this type of situation (see Section 1.3.1). Each of the waste processing EAs, with the exception of Alternative 10 (plasma melting), involves activities and processes that are well understood and for which historical data is available. Therefore, CPM was used to estimate the duration of these activities.

Little or no scheduling information is available for processes similar to utilizing plasma melting to treat mixed TRU waste. The program evaluation review technique (PERT) was used to develop time estimates for critical plasma melting activities (see Section 1.3.2). The PERT techniques use multiple time estimates in order to take into account time variability. PERT time estimates were also developed for major activities that were assigned CPM durations to assure that the CPM estimates are reasonable.

Activity schedules and durations for possible scenarios are presented in Figures Q-1 through Q-5.

1.3.1 Critical Path Method

The critical path method (CPM) of scheduling involves developing a network model of the project by organizing the work to be accomplished into logical activities and linking activities to other activities in ways to illustrate their relationships (e.g., by defining the activities that must be accomplished before another can begin). The CPM technique involves using a single estimate for the time duration of an activity. This estimate is best based on historical information from similar projects. Time estimates were based on schedule information from a number of projects including: 1) the environmental restoration, waste management, and technology development programs at the Rocky Flats Environmental Technology Site (RFETS), 2) the RFETS Site Treatment Plan, 3) the Hanford High-Level Waste Tanks, and 4) the Pit 9 Comprehensive Demonstration at the Idaho National Engineering Laboratory.

In this analysis, Alternative 6 (shred and compact) was used as the basis for establishing baseline time estimates. The durations for major components (i.e., Design, Construction, and D&D) of other EAs were adjusted to account for the complexity and anticipated difficulty of implementing the different EAs, as shown below:

Alternative	Adjustment to Title I and Title II Design, Construction, and Internal D&D.
#6 Shred and compact	NA
Baseline	0%
#1 Supercompact	+12%
#94 Enhanced cement and shred/add clay	+10%

1.3.2Program Evaluation Review TechniqueTo determine appropriate times to accomplish major activities, three time estimates were developed, an optimistic estimate (T_o), a most probable estimate (T_m), and a pessimistic estimate (T_p). The time estimate used for the schedule analysis (T_e) was calculated by the following formula:

$$T_e = [T_o + T_m(4) + T_p]/6$$

Table Q-6 shows the preliminary PERT time estimates for Alternative #6 (Shred and Compact).

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Act ID	Activity Description	Orig Dur	Early Start
WIPP TRU FACILITY			
05	WIPP TRU FACILITY	10,451*	14JUL88A
PROJECT CONCEPT/FUNDING REQUEST PROCESS			
09	PROJECT CONCEPT DEV./FUNDING	2,600*	14JUL88A
10	PRECONCEPTUAL DESIGN	250	14JUL88A
15	DECISION TO PROCEED	0	14JUL88A
20	DEVELOP & SUBMIT FUNDING REQUEST	248	14JUL88A
25	BENCH SCALE TESTING	640	17JUL89A
30	DETERMINE PROJECT FEASIBILITY	20	28JAN92A
35	PILOT SCALE	840	25FEB92A
40	DETERMINE PROJECT FEASIBILITY	90	01JUN95A
45	FUNDING REQUEST	60	09OCT95
50	DETERMINE LINE ITEM FUNDING	248	04JAN96
51	DESIGN CRITERIA COMPLETE	0	
55	PRIORITIZATION & SELECTION OF PROJECTS	60	23DEC96
60	GAIN FUNDING APPROVAL	248	19MAR97
65	OPERATIONAL REQUIREMENTS DOCUMENT	60	10MAR98
70	DESIGN INPUT & REVIEW/APPROVAL	20	27AUG98
NEPA PROCESS			
74	NEPA PROCESS	530*	04JAN96
75	PREPARE ENVIRONMENTAL CHECKLIST	60	04JAN96
80	NEPA COMPLIANCE COMMITTEE REVIEW	10	28MAR96
100	PREPARE ADM	60	11APR96
105	NEPA DETERMINATION DOE REVIEW ADM	30	08JUL96
165	PREPARE NOTICE OF INTENT	10	19AUG96
170	PUBLIC SCOPING	30	03SEP96
175	PREPARE IMPLEMENTATION PLAN	60	15OCT96
180	PREPARE DRAFT ENVIRONMENTAL IMPACT	120	10JAN97
185	DOE REVIEW DRAFT ENVIR. IMPACT	30	30JUN97
190	ISSUE FINAL DRAFT ENVIR. IMPACT	0	12AUG97
195	STATE REVIEW & PUBLIC COMMENT PERIOD	60	12AUG97
200	REVIEW & FINALIZE ENV. IMPACT	60	05NOV97
205	ISSUE ROD	0	
OTHER PERMITTING			
434	MISCELLANEOUS PERMITTING	881*	10MAR98
440	HEALTH AND SAFETY PLAN	60	10MAR98
435	PREPARE QAPP FOR IMPLEMENTATION	60	10MAR98
460	PREPARE OPERATING QAPP	60	03JUN98
465	REVIEW/APPROVE IMPLEMENTATION PHASE	30	03JUN98
485	REVIEW AND APPROVE OPERATING QAPP	30	27AUG98
486	QAPP COMPLETE	0	
445	UPDATE/REVISE PROGRAM PLAN	60	10MAR98
470	DOE REVIEW PROGRAM PLAN	30	03JUN98
490	FINALIZE PROGRAM PLAN	30	16JUL98
450	APENs DETERMINATION	120	10MAR98
475	AGENCY REVIEWS APENs	60	27AUG98
495	FINALIZE APENs	40	20NOV98
451	APENs DETERMINATION COMPLETE	0	

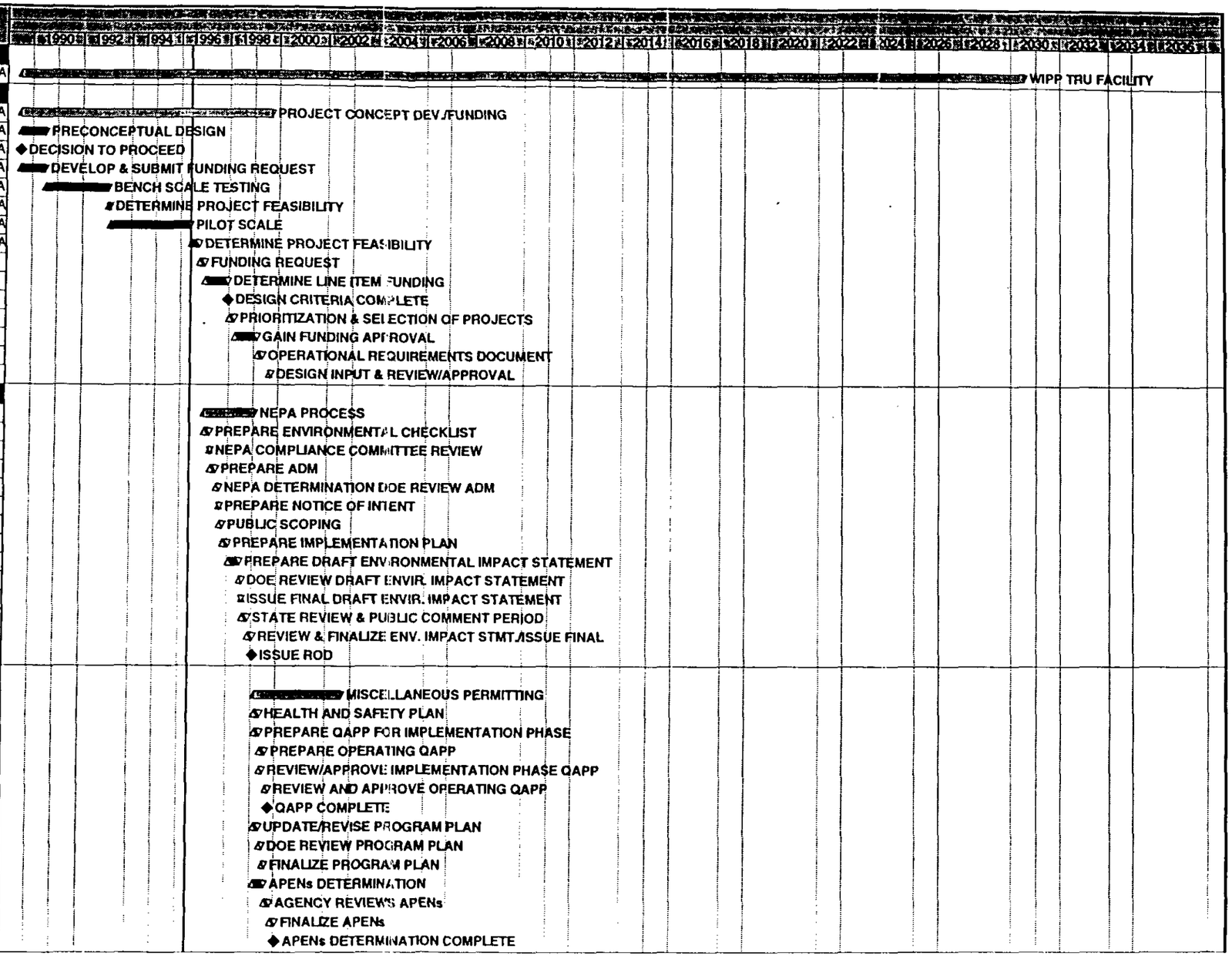

Figure Q-1a
Basecase Scenario

Act ID	Activity Description	Orig Dur	Early Start
455	NESHAPS DETERMINATION	150	07SEP99
480	AGENCY REVIEWS NESHAPS	60	07APR00
500	FINALIZE NESHAPS	40	03JUL00
501	NESHAPS DETERMINATION COMPLETE	0	
502	PREPARE PSD PERMIT APPLICATION	250	07SEP99
503	PSD PERMIT REVIEW and APPROVAL	250	29AUG00
504	PSD PERMIT COMPLETE	0	
RCRA PERMITTING			
338	RCRA PERMITTING PROCESS	530*	29AUG00
339	BEGIN RCRA PERMIT MOD	0	29AUG00
380	PREPARE RCRA PERMIT MODIFICATION	140	29AUG00
385	DOE REVIEWS PERMIT MOD	30	19MAR01
390	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	90	30APR01
395	PUBLIC COMMENT PERIOD	60	06SEP01
400	PUBLIC HEARING	2	06SEP01
405	RESPOND TO COMMENTS & FINALIZE PERMIT	90	30NOV01
410	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	120	09APR02
430	PERMIT APPROVAL	0	
SAFETY ANALYSIS REVIEW			
209	SAFETY ANALYSIS REVIEW	550*	03JUN98
210	PREPARE HAZARD CLASSIFICATION	60	03JUN98
215	PSAR DEVELOPMENT	120	27AUG98
220	TSAR DEVELOPMENT	120	27AUG98
225	CRITICALITY SAFETY ASSESSMENT	120	27AUG98
230	ORC REVIEW	40	17FEB99
235	DOE REVIEW & APPROVE PSAR	40	14APR99
240	FSAR DEVELOPMENT	250	10JUN99
245	DOE REVIEW	40	02JUN00
DESIGN & CONSTRUCTION			
249	DESIGN & CONSTRUCTION	1,571*	25SEP98
250	BID/NEGOTIATE & AWARD DESIGN	90	25SEP98
260	PREPARE TITLE I DESIGN	151	03FEB99
265	PREPARE TITLE II DESIGN	375	07SEP99
270	LONG LEAD PROCUREMENT	210	07SEP99
266	TITLE II DESIGN COMPLETE	0	
275	PREPARE CONSTRUCTION PACKAGE	21	26FEB01
280	BID/NEGOTIATE & AWARD CONSTRUCTION	90	27MAR01
285	RCRA HOLD	0	
289	BEGIN CONSTRUCTION	0	27SEP02
290	CONSTRUCTION	450	27SEP02
291	CONSTRUCTON COMPLETE	0	
295	FINAL INSPECTIONS	10	02JUL04
300	TITLE III AS-BUILTS	90	19JUL04
PROCEDURES/TRAINING			
304	OPERATION PROCEDURES DEVELOPMENT &	180*	02JUL04
305	PREPARE S.O. TEST PLAN & PROCEDURES	60	02JUL04
310	DEVELOP DATA MANAGEMENT PROCEDURES	60	02JUL04
315	DEVELOP TECHNICAL PROCEDURES	60	02JUL04

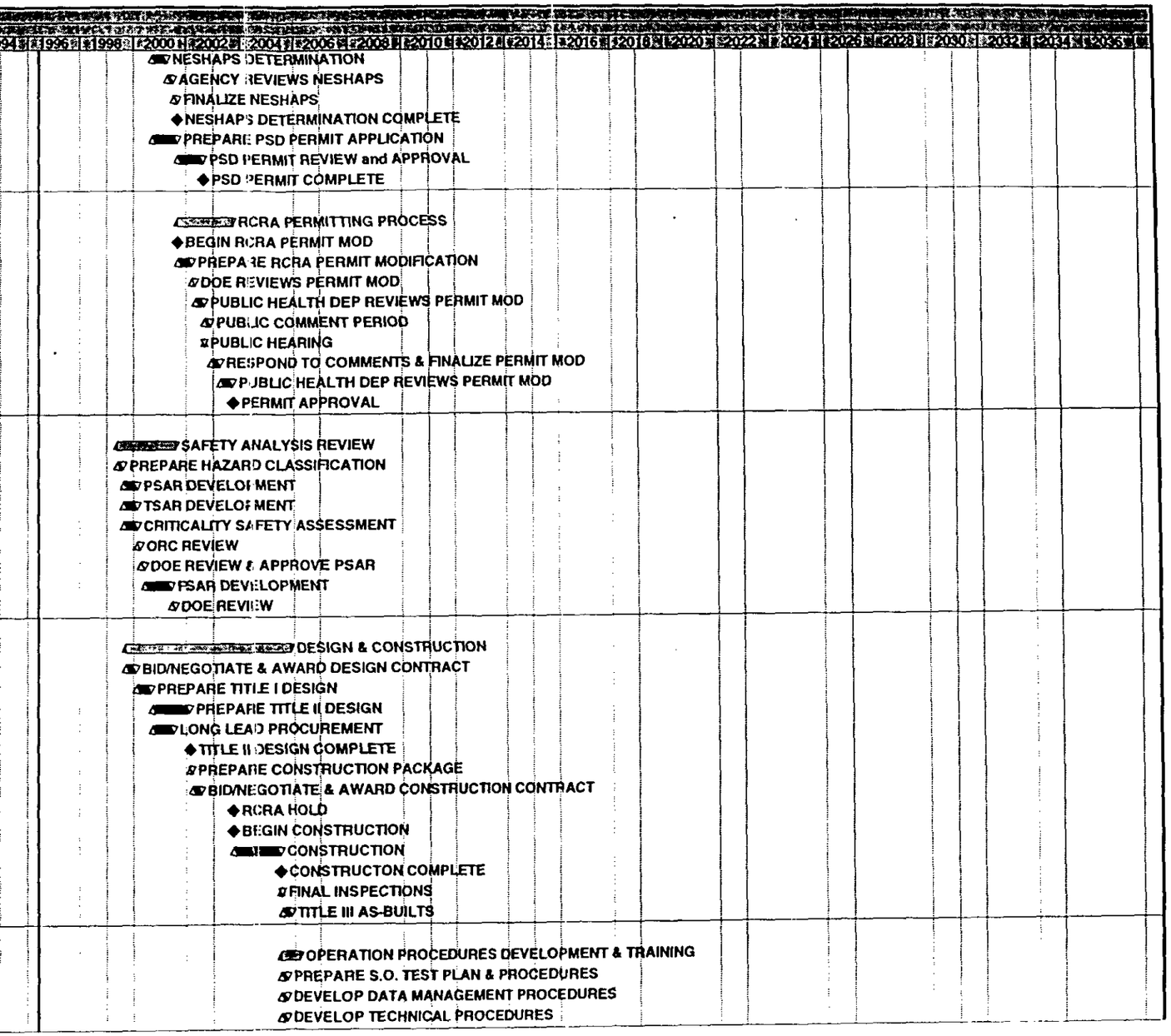

Figure Q-1b
Basecase Scenario

A8 D	Activity Description	Orig Dur	Early Start
320	DEVELOP MAINTANENCE PROCEDURES	60	28SEP04
330	DEVELOP OPERATOR TRAINING PROGRAM	60	28SEP04
325	MAINTENANCE TRAINING	40	22DEC04
335	TRAIN OPERATORS	60	22DEC04
TESTING			
507	TESTING	460*	28SEP04
509	PERFORM S.O. TEST	120	28SEP04
510	ORR	160	18MAR05
520	PROCESS CONTROL PLAN	40	02NOV05
525	REVIEW AND APPROVAL OF ORR	140	02NOV05
530	ORR COMPLETE	0	
535	START-UP	40	22MAY06
OPERATIONS			
539	OPERATIONS	5,100*	19JUL06
545	BENEFICIAL OCCUPANCY	20	19JUL06
550	SYSTEM/OPERATOR CERTIFICATION	60	19JUL06
555	FINAL WASTE ANALYSIS/CERTIFICATION	20	19JUL06
560	IMPLEMENT SYSTEM USAGE	0	19JUL06
565	FACILITY ACCEPTANCE	0	12OCT06
570	FACILITY OPERATION	5,040	12OCT06
567	OPERATIONS COMPLETE	0	
D&D			
574	D&D	760*	22JUL26
575	FACILITY DEACTIVATION	120	22JUL26
580	ENGINEERING DESIGN	120	12JAN27
585	INTERNAL D&D OPERATIONS	220	30JUN27
590	STRUCTURAL D&D OPERATIONS	120	10MAY28
595	SUB-GRADE D&D OPERATIONS	120	30OCT28
600	VERIFICATION OF CLOSEOUT	60	19APR29

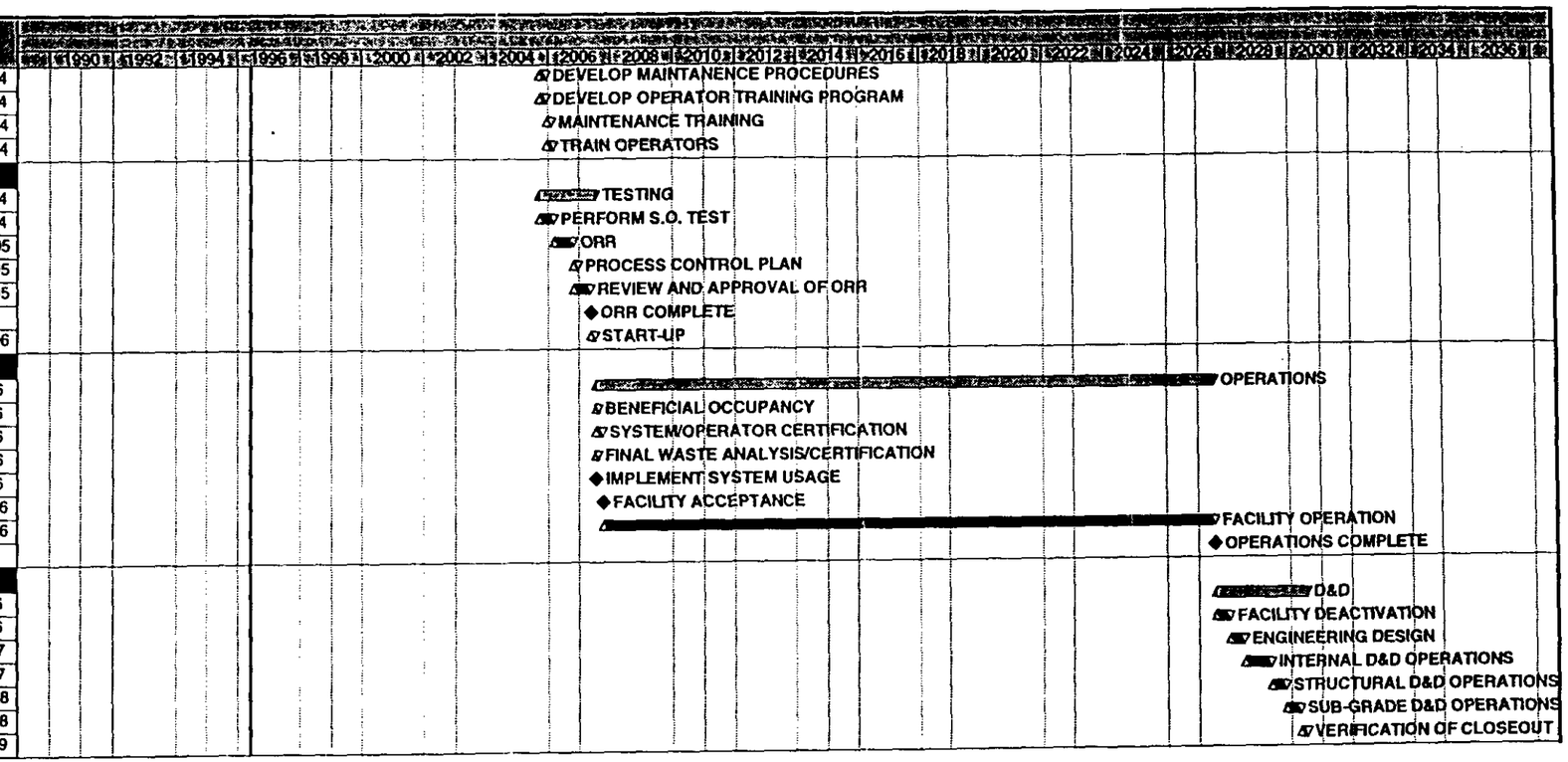

Figure Q-1c
Basecase Scenario

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
WIPP TRU FACILITY				
05	WIPP TRU FACILITY	10,681*	14JUL88A	07JUN30
PROJECT CONCEPT/FUNDING REQUEST PROCESS				
09	PROJECT CONCEPT DEV./FUNDING	2,600*	14JUL88A	24SEP98
10	PRECONCEPTUAL DESIGN	250	14JUL88A	17JUL89A
15	DECISION TO PROCEED	0	14JUL88A	
20	DEVELOP & SUBMIT FUNDING REQUEST	248	14JUL88A	14JUL89A
25	BENCH SCALE TESTING	640	17JUL89A	27JAN92A
30	DETERMINE PROJECT FEASIBILITY	20	28JAN92A	24FEB92A
35	PILOT SCALE	840	25FEB92A	31MAY95A
40	DETERMINE PROJECT FEASIBILITY	90	01JUN95A	06OCT95
45	FUNDING REQUEST	60	09OCT95	03JAN96
50	DETERMINE LINE ITEM FUNDING	248	04JAN96	20DEC96
51	DESIGN CRITERIA COMPLETE	0		20DEC96
55	PRIORITIZATION & SELECTION OF PROJECTS	60	23DEC96	18MAR97
60	GAIN FUNDING APPROVAL	248	19MAR97	09MAR98
65	OPERATIONAL REQUIREMENTS DOCUMENT	60	10MAR98	02JUN98
70	DESIGN INPUT & REVIEW/APPROVAL	20	27AUG98	24SEP98
NEPA PROCESS				
74	NEPA PROCESS	530*	04JAN96	30JAN98
75	PREPARE ENVIRONMENTAL CHECKLIST	60	04JAN96	27MAR96
80	NEPA COMPLIANCE COMMITTEE REVIEW	10	28MAR96	10APR96
100	PREPARE ADM	60	11APR96	05JUL96
105	NEPA DETERMINATION DOE REVIEW ADM	30	08JUL96	16AUG96
165	PREPARE NOTICE OF INTENT	10	19AUG96	30AUG96
170	PUBLIC SCOPING	30	03SEP96	14OCT96
175	PREPARE IMPLEMENTATION PLAN	60	15OCT96	09JAN97
180	PREPARE DRAFT ENVIRONMENTAL IMPACT	120	10JAN97	27JUN97
185	DOE REVIEW DRAFT ENVIR. IMPACT	30	30JUN97	11AUG97
190	ISSUE FINAL DRAFT ENVIR. IMPACT	0	12AUG97	11AUG97
195	STATE REVIEW & PUBLIC COMMENT PERIOD	60	12AUG97	04NOV97
200	REVIEW & FINALIZE ENV. IMPACT	60	05NOV97	30JAN98
205	ISSUE ROD	0		30JAN98
OTHER PERMITTING				
434	MISCELLANEOUS PERMITTING	899*	10MAR98	17SEP01
440	HEALTH AND SAFETY PLAN	60	10MAR98	02JUN98
435	PREPARE QAPP FOR IMPLEMENTATION	60	10MAR98	02JUN98
460	PREPARE OPERATING QAPP	60	03JUN98	26AUG98
465	REVIEW/APPROVE IMPLEMENTATION PHASE	30	03JUN98	15JUL98
485	REVIEW AND APPROVE OPERATING QAPP	30	27AUG98	08OCT98
486	QAPP COMPLETE	0		08OCT98
445	UPDATE/REVISE PROGRAM PLAN	60	10MAR98	02JUN98
470	DOE REVIEW PROGRAM PLAN	30	03JUN98	15JUL98
490	FINALIZE PROGRAM PLAN	30	16JUL98	26AUG98
450	APENs DETERMINATION	120	10MAR98	26AUG98
475	AGENCY REVIEWS APENs	60	27AUG98	19NOV98
495	FINALIZE APENs	40	20NOV98	19JAN99
451	APENs DETERMINATION COMPLETE	0		19JAN99

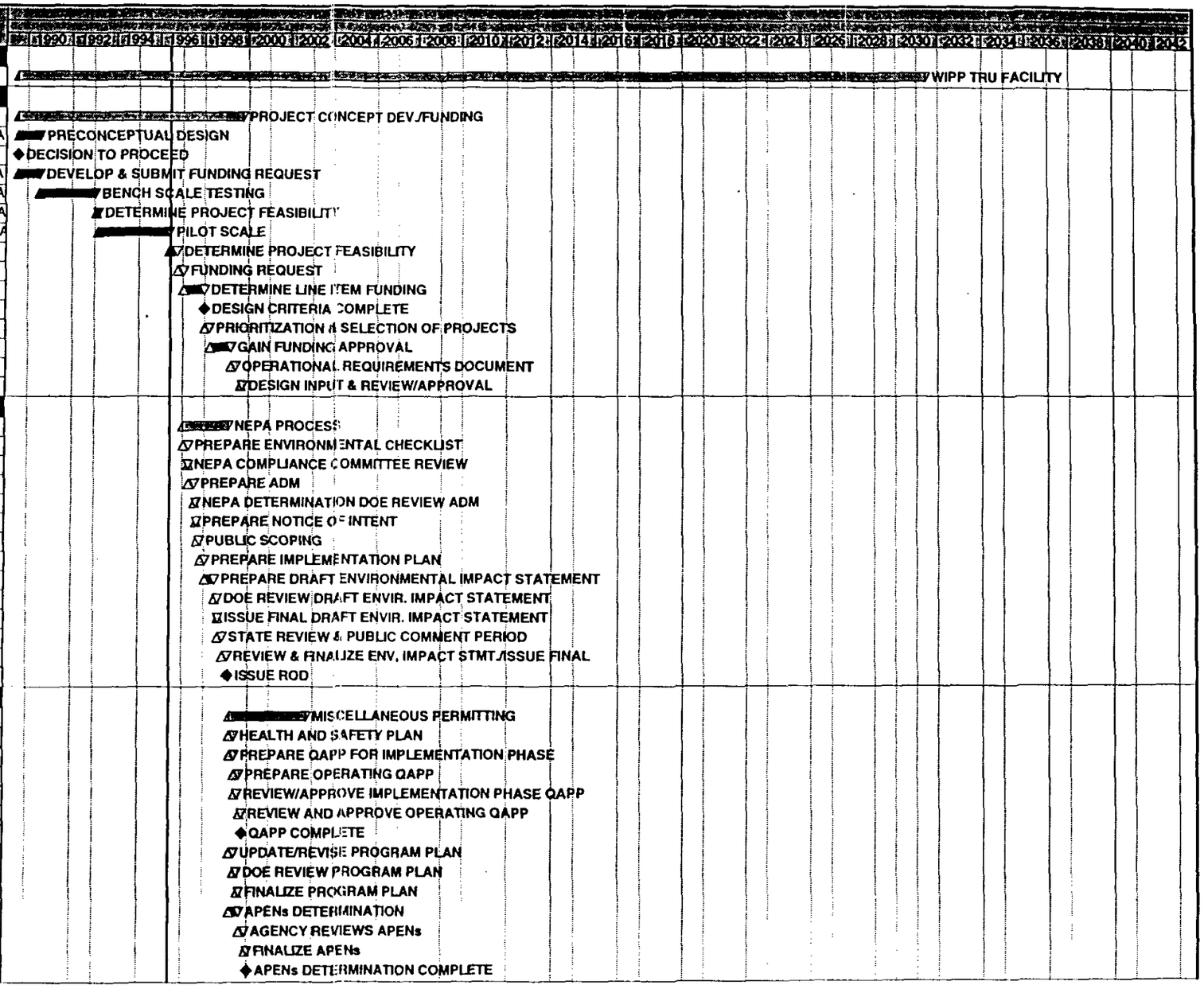

Figure Q-2a
Supercompaction Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
455	NESHAPS DETERMINATION	150	01OCT99	02MAY00
480	AGENCY REVIEWS NESHAPS	60	03MAY00	27JUL00
500	FINALIZE NESHAPS	40	28JUL00	22SEP00
501	NESHAPS DETERMINATION COMPLETE	0		22SEP00
502	PREPARE PSD PERMIT APPLICATION	250	01OCT99	22SEP00
503	PSD PERMIT REVIEW and APPROVAL	250	25SEP00	17SEP01
504	PSD PERMIT COMPLETE	0		17SEP01
RCRA PERMITTING				
338	RCRA PERMITTING PROCESS	530*	28NOV00	26DEC02
339	BEGIN RCRA PERMIT MOD	0	28NOV00	
380	PREPARE RCRA PERMIT MODIFICATION	140	28NOV00	14JUN01
385	DOE REVIEWS PERMIT MOD	30	15JUN01	27JUL01
390	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	90	30JUL01	04DEC01
395	PUBLIC COMMENT PERIOD	60	05DEC01	28FEB02
400	PUBLIC HEARING	2	05DEC01	06DEC01
405	RESPOND TO COMMENTS & FINALIZE PERMIT	90	01MAR02	08JUL02
410	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	120	09JUL02	26DEC02
430	PERMIT APPROVAL	0		26DEC02
SAFETY ANALYSIS REVIEW				
209	SAFETY ANALYSIS REVIEW	550*	03JUN98	28JUL00
210	PREPARE HAZARD CLASSIFICATION	60	03JUN98	26AUG98
215	PSAR DEVELOPMENT	120	27AUG98	16FEB99
220	TSAR DEVELOPMENT	120	27AUG98	16FEB99
225	CRITICALITY SAFETY ASSESSMENT	120	27AUG98	16FEB99
230	ORC REVIEW	40	17FEB99	13APR99
235	DOE REVIEW & APPROVE PSAR	40	14APR99	09JUN99
240	FSAR DEVELOPMENT	250	10JUN99	01JUN00
245	DOE REVIEW	40	02JUN00	28JUL00
DESIGN & CONSTRUCTION				
249	DESIGN & CONSTRUCTION	1,744*	25SEP98	28JUL05
250	BID/NEGOTIATE & AWARD DESIGN	90	25SEP98	02FEB99
260	PREPARE TITLE I DESIGN	169	03FEB99	30SEP99
265	PREPARE TITLE II DESIGN	420	01OCT99	23MAY01
270	LONG LEAD PROCUREMENT	210	01OCT99	27JUL00
266	TITLE II DESIGN COMPLETE	0		23MAY01
275	PREPARE CONSTRUCTION PACKAGE	21	24MAY01	22JUN01
280	BID/NEGOTIATE & AWARD CONSTRUCTION	90	25JUN01	30OCT01
285	RCRA HOLD	0		26DEC02
289	BEGIN CONSTRUCTION	0	27DEC02	
290	CONSTRUCTION	560	27DEC02	08MAR05
291	CONSTRUCTION COMPLETE	0		08MAR05
295	FINAL INSPECTIONS	10	09MAR05	22MAR05
300	TITLE III AS-BUILTS	90	23MAR05	28JUL05
PROCEDURES/TRAINING				
304	OPERATION PROCEDURES DEVELOPMENT &	180*	09MAR05	18NOV05
305	PREPARE S.O. TEST PLAN & PROCEDURES	60	09MAR05	01JUN05
310	DEVELOP DATA MANAGEMENT PROCEDURES	60	09MAR05	01JUN05
315	DEVELOP TECHNICAL PROCEDURES	60	09MAR05	01JUN05

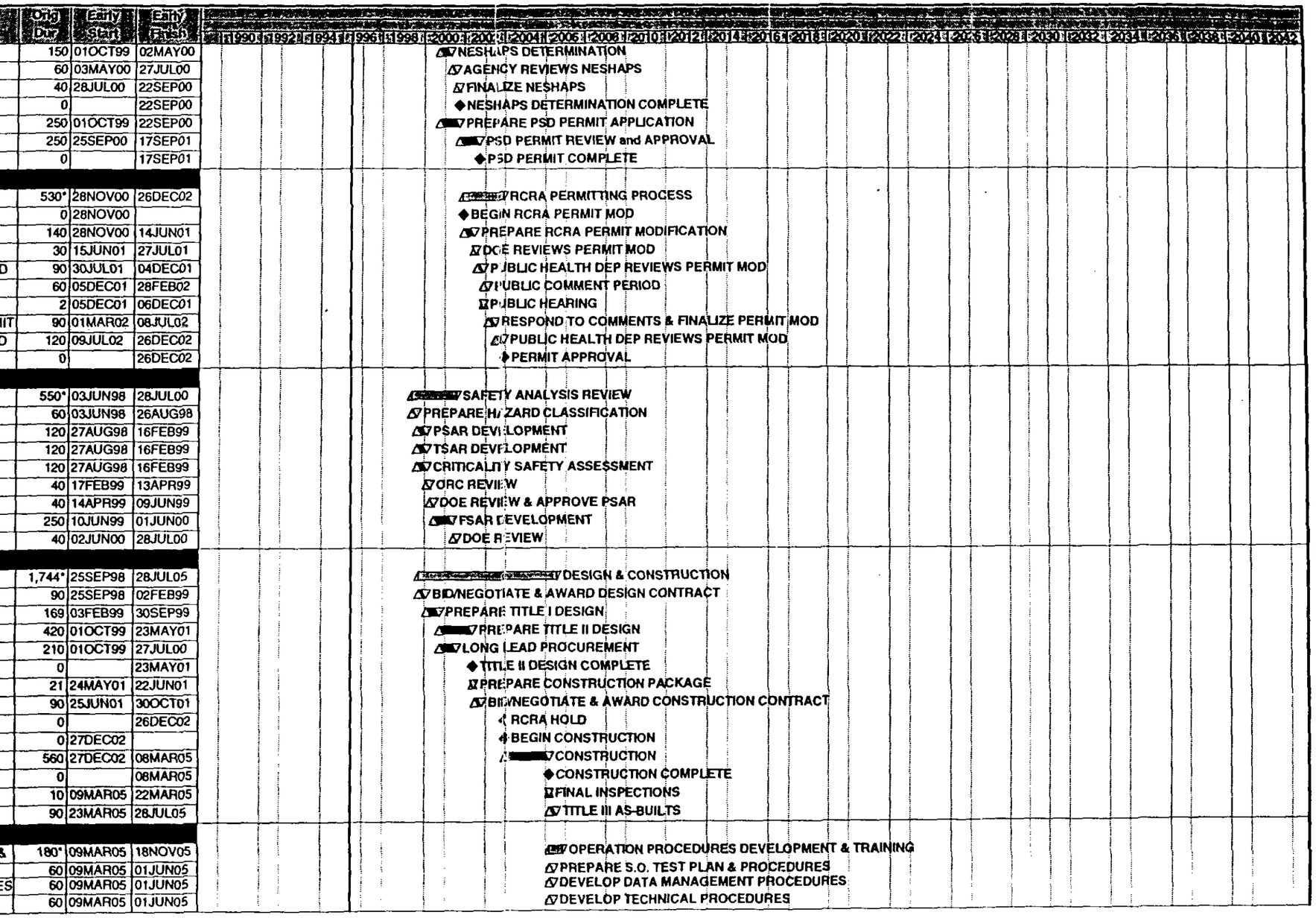

Figure Q-2b
Supercompaction Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
320	DEVELOP MAINTENANCE PROCEDURES	60	02JUN05	25AUG05
330	DEVELOP OPERATOR TRAINING PROGRAM	60	02JUN05	25AUG05
325	MAINTENANCE TRAINING	40	26AUG05	21OCT05
335	TRAIN OPERATORS	60	26AUG05	18NOV05
TESTING				
507	TESTING	460*	02JUN05	22MAR07
509	PERFORM S.O. TEST	120	02JUN05	18NOV05
510	ORR	160	21NOV05	07JUL06
520	PROCESS CONTROL PLAN	40	10JUL06	01SEP06
525	REVIEW AND APPROVAL OF ORR	140	10JUL06	25JAN07
530	ORR COMPLETE	0		25JAN07
535	START-UP	40	26JAN07	22MAR07
OPERATIONS				
539	OPERATIONS	5,100*	23MAR07	25MAR27
545	BENEFICIAL OCCUPANCY	20	23MAR07	19APR07
550	SYSTEM/OPERATOR CERTIFICATION	60	23MAR07	15JUN07
555	FINAL WASTE ANALYSIS/CERTIFICATION	20	23MAR07	19APR07
560	IMPLEMENT SYSTEM USAGE	0	23MAR07	
565	FACILITY ACCEPTANCE	0	18JUN07	
570	FACILITY OPERATION	5,040	18JUN07	25MAR27
567	OPERATIONS COMPLETE	0		25MAR27
D&D				
574	D&D	817*	26MAR27	07JUN30
575	FACILITY DEACTIVATION	120	26MAR27	14SEP27
580	ENGINEERING DESIGN	120	15SEP27	03MAR28
585	INTERNAL D&D OPERATIONS	277	06MAR28	04APR29
590	STRUCTURAL D&D OPERATIONS	120	05APR29	24SEP29
595	SUB-GRADE D&D OPERATIONS	120	25SEP29	14MAR30
600	VERIFICATION OF CLOSEOUT	60	15MAR30	07JUN30

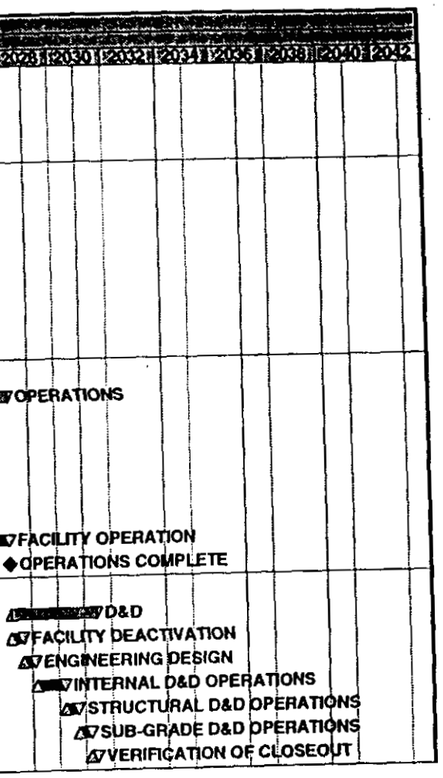

Figure Q-2c
Supercompaction Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
WIPP TRU FACILITY				
05	WIPP TRU FACILITY	10,529*	14JUL88A	01NOV29
PROJECT CONCEPT/FUNDING REQUEST PROCESS				
09	PROJECT CONCEPT DEV./FUNDING	2,600*	14JUL88A	24SEP98
10	PRECONCEPTUAL DESIGN	250	14JUL88A	17JUL89A
15	DECISION TO PROCEED	0	14JUL88A	
20	DEVELOP & SUBMIT FUNDING REQUEST	248	14JUL88A	14JUL89A
25	BENCH SCALE TESTING	640	17JUL89A	27JAN92A
30	DETERMINE PROJECT FEASIBILITY	20	28JAN92A	24FEB92A
35	PILOT SCALE	840	25FEB92A	31MAY95A
40	DETERMINE PROJECT FEASIBILITY	90	01JUN95A	06OCT95
45	FUNDING REQUEST	60	09OCT95	03JAN96
50	DETERMINE LINE ITEM FUNDING	248	04JAN96	20DEC96
51	DESIGN CRITERIA COMPLETE	0		20DEC96
55	PRIORITIZATION & SELECTION OF PROJECTS	60	23DEC96	18MAR97
60	GAIN FUNDING APPROVAL	248	19MAR97	09MAR98
65	OPERATIONAL REQUIREMENTS DOCUMENT	60	10MAR98	02JUN98
70	DESIGN INPUT & REVIEW/APPROVAL	20	27AUG98	24SEP98
NEPA PROCESS				
74	NEPA PROCESS	530*	04JAN96	30JAN98
75	PREPARE ENVIRONMENTAL CHECKLIST	60	04JAN96	27MAR96
80	NEPA COMPLIANCE COMMITTEE REVIEW	10	28MAR96	10APR96
100	PREPARE ADM	60	11APR96	05JUL96
105	NEPA DETERMINATION DOE REVIEW ADM	30	08JUL96	16AUG96
165	PREPARE NOTICE OF INTENT	10	19AUG96	30AUG96
170	PUBLIC SCOPING	30	03SEP96	14OCT96
175	PREPARE IMPLEMENTATION PLAN	60	15OCT96	09JAN97
180	PREPARE DRAFT ENVIRONMENTAL IMPACT	120	10JAN97	27JUN97
185	DOE REVIEW DRAFT ENVIR. IMPACT	30	30JUN97	11AUG97
190	ISSUE FINAL DRAFT ENVIR. IMPACT	0	12AUG97	11AUG97
195	STATE REVIEW & PUBLIC COMMENT PERIOD	60	12AUG97	04NOV97
200	REVIEW & FINALIZE ENV. IMPACT	60	05NOV97	30JAN98
205	ISSUE ROD	0		30JAN98
OTHER PERMITTING				
434	MISCELLANEOUS PERMITTING	881*	10MAR98	21AUG01
440	HEALTH AND SAFETY PLAN	60	10MAR98	02JUN98
435	PREPARE QAPP FOR IMPLEMENTATION	60	10MAR98	02JUN98
460	PREPARE OPERATING QAPP	60	03JUN98	26AUG98
465	REVIEW/APPROVE IMPLEMENTATION PHASE	30	03JUN98	15JUL98
485	REVIEW AND APPROVE OPERATING QAPP	30	27AUG98	08OCT98
486	QAPP COMPLETE	0		08OCT98
445	UPDATE/REVISE PROGRAM PLAN	60	10MAR98	02JUN98
470	DOE REVIEW PROGRAM PLAN	30	03JUN98	15JUL98
490	FINALIZE PROGRAM PLAN	30	16JUL98	26AUG98
450	APENs DETERMINATION	120	10MAR98	26AUG98
475	AGENCY REVIEWS APENs	60	27AUG98	19NOV98
495	FINALIZE APENs	40	20NOV98	19JAN99
451	APENs DETERMINATION COMPLETE	0		19JAN99

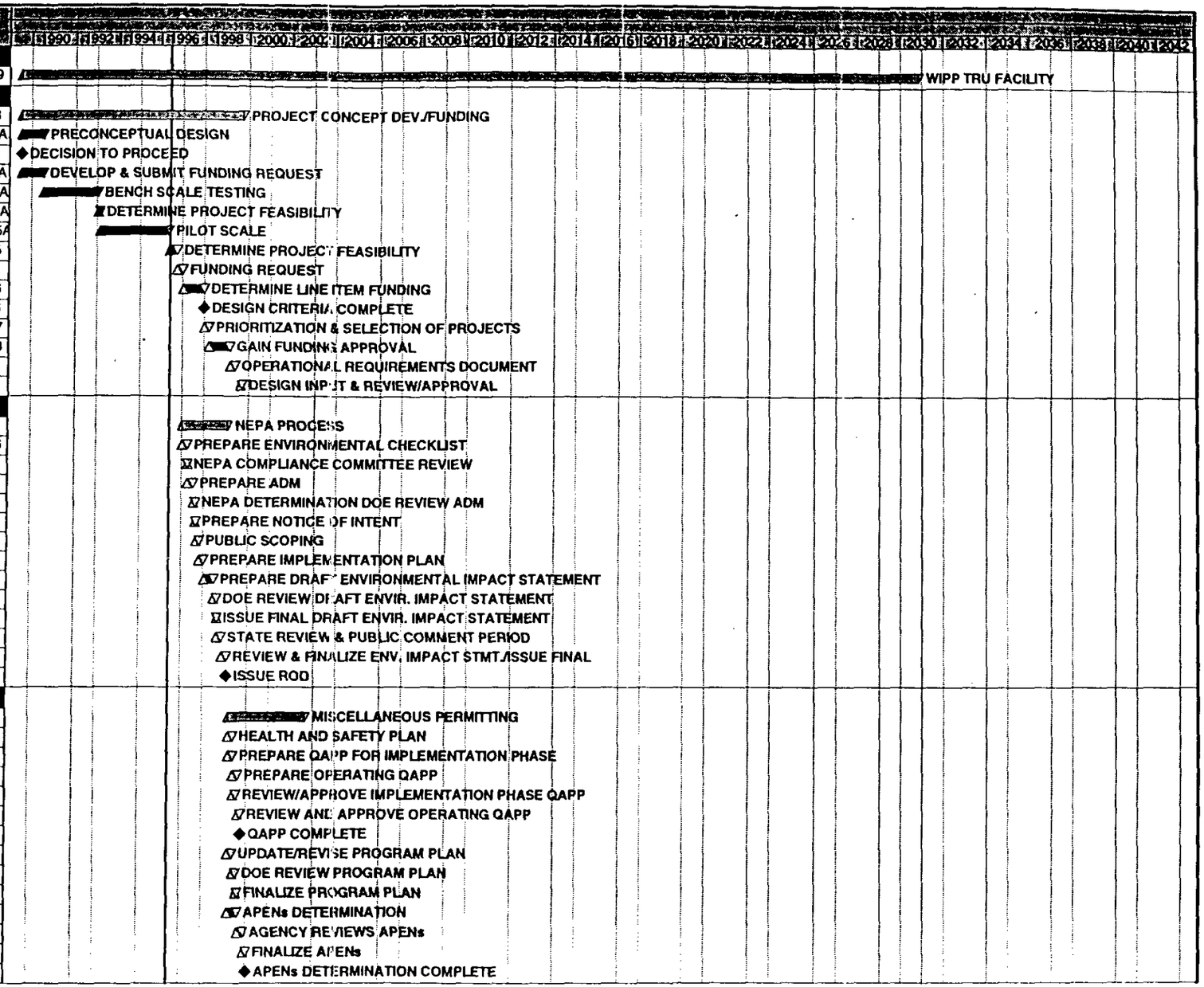

Figure Q-3a
Shred & Compact Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
455	NESHAPS DETERMINATION	150	07SEP99	06APR00
480	AGENCY REVIEWS NESHAPS	60	07APR00	30JUN00
500	FINALIZE NESHAPS	40	03JUL00	28AUG00
501	NESHAPS DETERMINATION COMPLETE	0		28AUG00
502	PREPARE PSD PERMIT APPLICATION	250	07SEP99	28AUG00
503	PSD PERMIT REVIEW and APPROVAL	250	29AUG00	21AUG01
504	PSD PERMIT COMPLETE	0		21AUG01
RCRA PERMITTING				
338	RCRA PERMITTING PROCESS	530*	29AUG00	26SEP02
339	BEGIN RCRA PERMIT MOD	0	29AUG00	
380	PREPARE RCRA PERMIT MODIFICATION	140	29AUG00	16MAR01
385	DOE REVIEWS PERMIT MOD	30	19MAR01	27APR01
390	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	90	30APR01	05SEP01
395	PUBLIC COMMENT PERIOD	60	06SEP01	29NOV01
400	PUBLIC HEARING	2	06SEP01	07SEP01
405	RESPOND TO COMMENTS & FINALIZE PERMIT	90	30NOV01	08APR02
410	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	120	09APR02	26SEP02
430	PERMIT APPROVAL	0		26SEP02
SAFETY ANALYSIS REVIEW				
209	SAFETY ANALYSIS REVIEW	550*	03JUN98	28JUL00
210	PREPARE HAZARD CLASSIFICATION	60	03JUN98	26AUG98
215	PSAR DEVELOPMENT	120	27AUG98	16FEB99
220	TSAR DEVELOPMENT	120	27AUG98	16FEB99
225	CRITICALITY SAFETY ASSESSMENT	120	27AUG98	16FEB99
230	ORC REVIEW	40	17FEB99	13APR99
235	DOE REVIEW & APPROVE PSAR	40	14APR99	09JUN99
240	FSAR DEVELOPMENT	250	10JUN99	01JUN00
245	DOE REVIEW	40	02JUN00	28JUL00
DESIGN & CONSTRUCTION				
249	DESIGN & CONSTRUCTION	1,621*	25SEP98	03FEB05
250	BID/NEGOTIATE & AWARD DESIGN	90	25SEP98	02FEB99
260	PREPARE TITLE I DESIGN	151	03FEB99	03SEP99
265	PREPARE TITLE II DESIGN	375	07SEP99	23FEB01
270	LONG LEAD PROCUREMENT	210	07SEP99	30JUN00
266	TITLE II DESIGN COMPLETE	0		23FEB01
275	PREPARE CONSTRUCTION PACKAGE	21	26FEB01	26MAR01
280	BID/NEGOTIATE & AWARD CONSTRUCTION	90	27MAR01	01AUG01
285	RCRA HOLD	0		26SEP02
289	BEGIN CONSTRUCTION	0	27SEP02	
290	CONSTRUCTION	500	27SEP02	13SEP04
291	CONSTRUCTION COMPLETE	0		13SEP04
295	FINAL INSPECTIONS	10	14SEP04	27SEP04
300	TITLE III AS-BUILTS	90	28SEP04	03FEB05
PROCEDURES/TRAINING				
304	OPERATION PROCEDURES DEVELOPMENT &	180*	14SEP04	26MAY05
305	PREPARE S.O. TEST PLAN & PROCEDURES	60	14SEP04	07DEC04
310	DEVELOP DATA MANAGEMENT PROCEDURES	60	14SEP04	07DEC04
315	DEVELOP TECHNICAL PROCEDURES	60	14SEP04	07DEC04
320	DEVELOP MAINTENANCE PROCEDURES	60	08DEC04	03MAR05

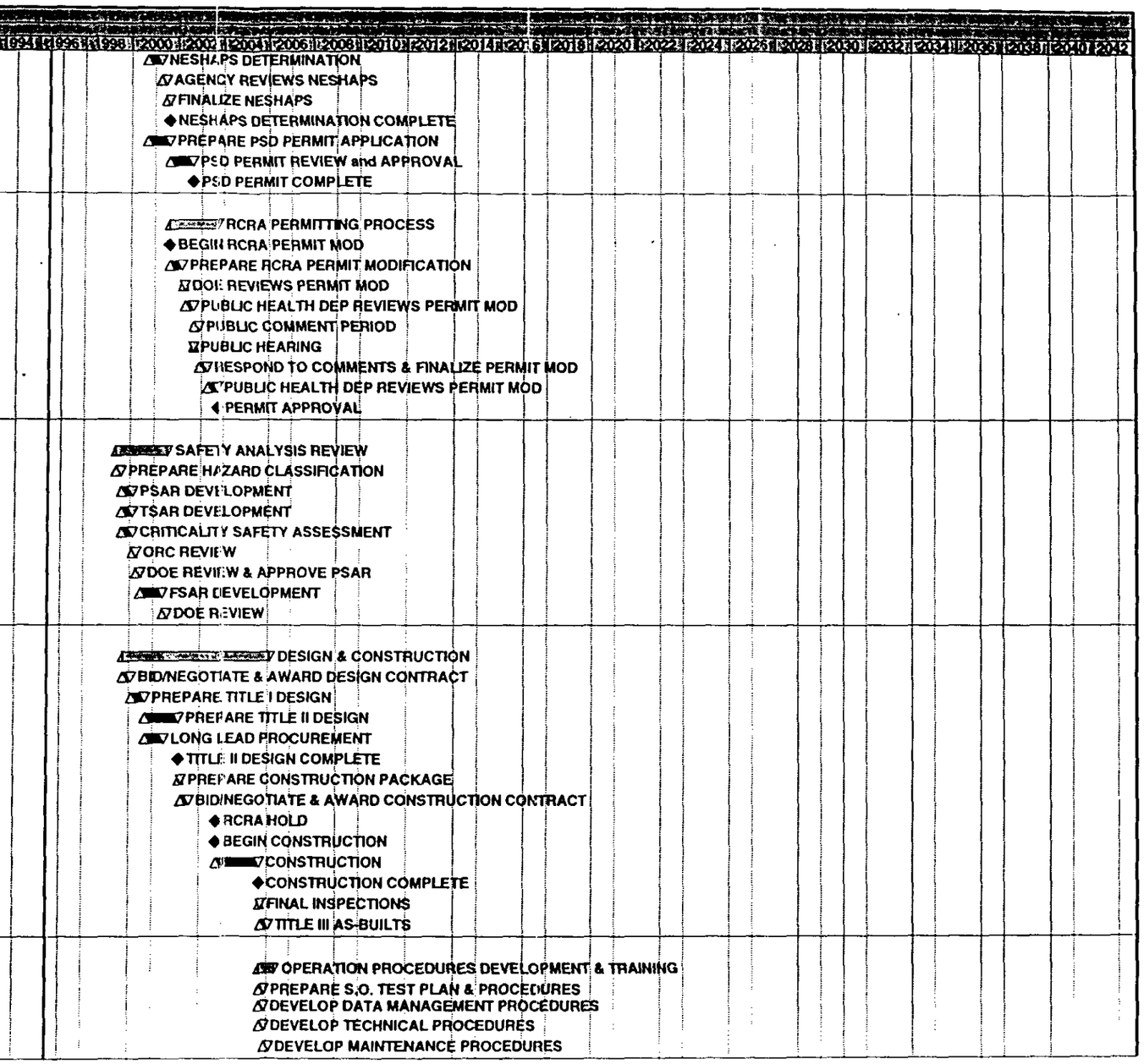

Figure Q-3b
Shred & Compact Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
330	DEVELOP OPERATOR TRAINING PROGRAM	60	08DEC04	03MAR05
325	MAINTENANCE TRAINING	40	04MAR05	28APR05
335	TRAIN OPERATORS	60	04MAR05	26MAY05
TESTING				
507	TESTING	460*	08DEC04	27SEP06
509	PERFORM S.O. TEST	120	08DEC04	26MAY05
510	ORR	160	27MAY05	13JAN06
520	PROCESS CONTROL PLAN	40	16JAN06	10MAR06
525	REVIEW AND APPROVAL OF ORR	140	16JAN06	01AUG06
530	ORR COMPLETE	0		01AUG06
535	START-UP	40	02AUG06	27SEP06
OPERATIONS				
539	OPERATIONS	5,100*	28SEP06	30SEP26
545	BENEFICIAL OCCUPANCY	20	28SEP06	25OCT06
550	SYSTEM/OPERATOR CERTIFICATION	60	28SEP06	21DEC06
555	FINAL WASTE ANALYSIS/CERTIFICATION	20	28SEP06	25OCT06
560	IMPLEMENT SYSTEM USAGE	0	28SEP06	
565	FACILITY ACCEPTANCE	0	22DEC06	
570	FACILITY OPERATION	5,040	22DEC06	30SEP26
567	OPERATIONS COMPLETE	0		30SEP26
D&D				
574	D&D	788*	01OCT26	01NOV29
575	FACILITY DEACTIVATION	120	01OCT26	22MAR27
580	ENGINEERING DESIGN	120	23MAR27	09SEP27
585	INTERNAL D&D OPERATIONS	248	10SEP27	29AUG28
590	STRUCTURAL D&D OPERATIONS	120	30AUG28	19FEB29
595	SUB-GRADE D&D OPERATIONS	120	20FEB29	08AUG29
600	VERIFICATION OF CLOSEOUT	60	09AUG29	01NOV29

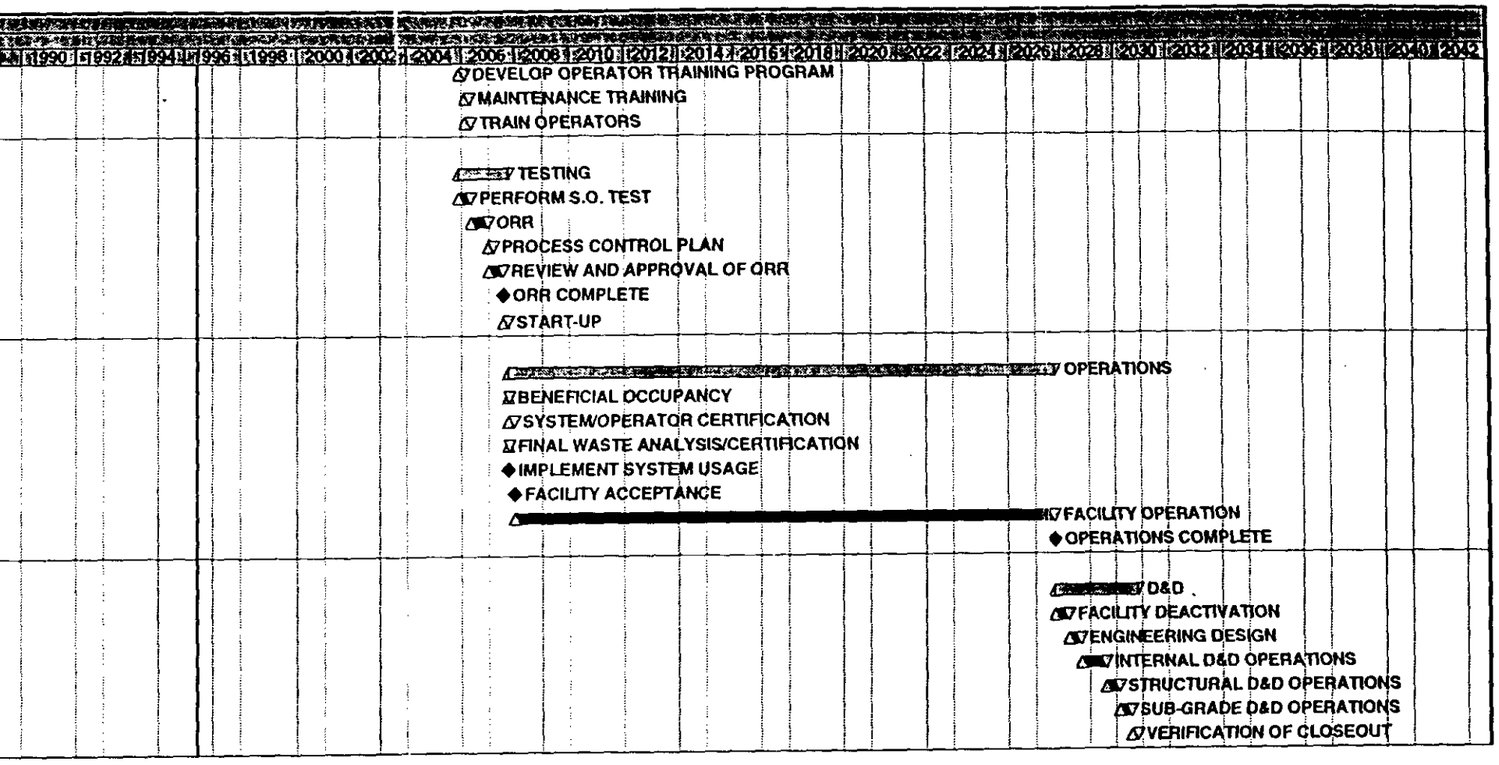

Figure Q-3c
Shred & Compact Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
WIPP TRU FACILITY				
05	WIPP TRU FACILITY	10,903*	14JUL88A	22APR31
PROJECT CONCEPT/FUNDING REQUEST PROCESS				
09	PROJECT CONCEPT DEV./FUNDING	2,600*	14JUL88A	24SEP98
10	PRECONCEPTUAL DESIGN	250	14JUL88A	17JUL89A
15	DECISION TO PROCEED	0	14JUL88A	
20	DEVELOP & SUBMIT FUNDING REQUEST	248	14JUL88A	14JUL89A
25	BENCH SCALE TESTING	640	17JUL89A	27JAN92A
30	DETERMINE PROJECT FEASIBILITY	20	28JAN92A	24FEB92A
35	PILOT SCALE	840	25FEB92A	31MAY95A
40	DETERMINE PROJECT FEASIBILITY	90	01JUN95A	06OCT95
45	FUNDING REQUEST	60	09OCT95	03JAN96
50	DETERMINE LINE ITEM FUNDING	248	04JAN96	20DEC96
51	DESIGN CRITERIA COMPLETE	0		20DEC96
55	PRIORITIZATION & SELECTION OF PROJECTS	60	23DEC96	18MAR97
60	GAIN FUNDING APPROVAL	248	19MAR97	09MAR98
65	OPERATIONAL REQUIREMENTS DOCUMENT	60	10MAR98	02JUN98
70	DESIGN INPUT & REVIEW/APPROVAL	20	27AUG98	24SEP98
NEPA PROCESS				
74	NEPA PROCESS	680*	04JAN96	01SEP98
75	PREPARE ENVIRONMENTAL CHECKLIST	60	04JAN96	27MAR96
80	NEPA COMPLIANCE COMMITTEE REVIEW	10	28MAR96	10APR96
100	PREPARE ADM	60	11APR96	05JUL96
105	NEPA DETERMINATION DOE REVIEW ADM	30	08JUL96	16AUG96
165	PREPARE NOTICE OF INTENT	10	19AUG96	30AUG96
170	PUBLIC SCOPING	30	03SEP96	14OCT96
175	PREPARE IMPLEMENTATION PLAN	60	15OCT96	09JAN97
180	PREPARE DRAFT ENVIRONMENTAL IMPACT	240	10JAN97	17DEC97
185	DOE REVIEW DRAFT ENVIR. IMPACT	60	18DEC97	13MAR98
190	ISSUE FINAL DRAFT ENVIR. IMPACT	0	16MAR98	13MAR98
195	STATE REVIEW & PUBLIC COMMENT PERIOD	60	16MAR98	08JUN98
200	REVIEW & FINALIZE ENV. IMPACT	60	09JUN98	01SEP98
205	ISSUE ROD	0		01SEP98
OTHER PERMITTING				
434	MISCELLANEOUS PERMITTING	1,138*	10MAR98	23AUG02
440	HEALTH AND SAFETY PLAN	60	10MAR98	02JUN98
435	PREPARE QAPP FOR IMPLEMENTATION	60	10MAR98	02JUN98
460	PREPARE OPERATING QAPP	60	03JUN98	26AUG98
465	REVIEW/APPROVE IMPLEMENTATION PHASE	30	03JUN98	15JUL98
485	REVIEW AND APPROVE OPERATING QAPP	30	27AUG98	08OCT98
486	QAPP COMPLETE	0		08OCT98
445	UPDATE/REVISE PROGRAM PLAN	60	10MAR98	02JUN98
470	DOE REVIEW PROGRAM PLAN	30	03JUN98	15JUL98
490	FINALIZE PROGRAM PLAN	30	16JUL98	26AUG98
450	APENs DETERMINATION	240	10MAR98	16FEB99
475	AGENCY REVIEWS APENs	90	17FEB99	23JUN99
495	FINALIZE APENs	80	24JUN99	15OCT99
451	APENs DETERMINATION COMPLETE	0		15OCT99

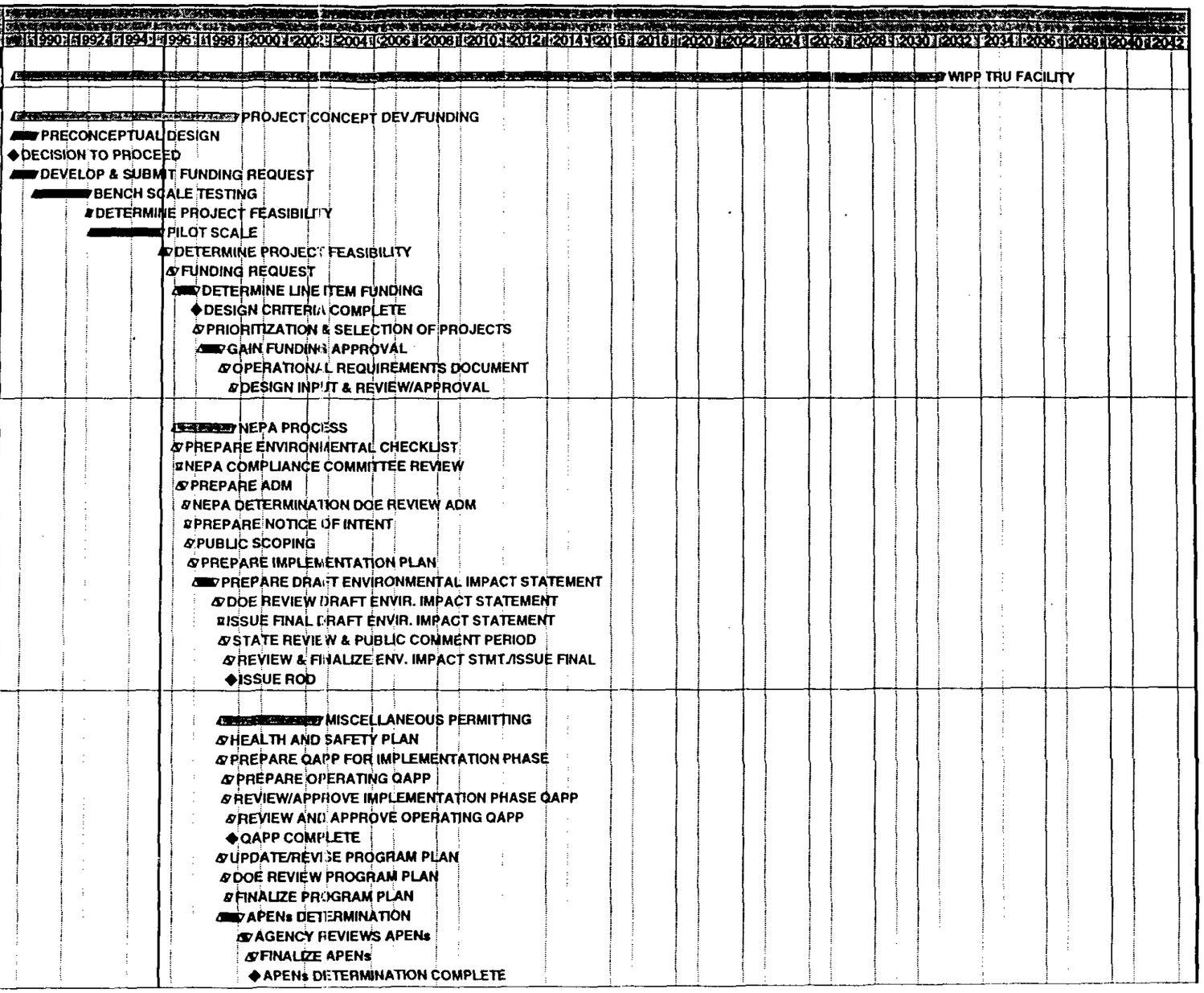

Figure Q-4a
Plasma Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
455	NESHAPS DETERMINATION	300	28OCT99	02JAN01
480	AGENCY REVIEWS NESHAPS	90	03JAN01	08MAY01
500	FINALIZE NESHAPS	80	09MAY01	30AUG01
501	NESHAPS DETERMINATION COMPLETE	0		30AUG01
502	PREPARE PSD PERMIT APPLICATION	250	28OCT99	19OCT00
503	PSD PERMIT REVIEW and APPROVAL	250	31AUG01	23AUG02
504	PSD PERMIT COMPLETE	0		23AUG02
RCRA PERMITTING				
338	RCRA PERMITTING PROCESS	700*	22SEP00	20JUN03
339	BEGIN RCRA PERMIT MOD	0	22SEP00	
380	PREPARE RCRA PERMIT MODIFICATION	250	22SEP00	14SEP01
385	DOE REVIEWS PERMIT MOD	60	17SEP01	10DEC01
390	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	120	11DEC01	30MAY02
395	PUBLIC COMMENT PERIOD	60	31MAY02	23AUG02
400	PUBLIC HEARING	2	31MAY02	03JUN02
405	RESPOND TO COMMENTS & FINALIZE PERMIT	90	26AUG02	02JAN03
410	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	120	03JAN03	20JUN03
430	PERMIT APPROVAL	0		20JUN03
SAFETY ANALYSIS REVIEW				
209	SAFETY ANALYSIS REVIEW	550*	03JUN98	28JUL00
210	PREPARE HAZARD CLASSIFICATION	60	03JUN98	26AUG98
215	PSAR DEVELOPMENT	120	27AUG98	16FEB99
220	TSAR DEVELOPMENT	120	27AUG98	16FEB99
225	CRITICALITY SAFETY ASSESSMENT	120	27AUG98	16FEB99
230	ORC REVIEW	40	17FEB99	13APR99
235	DOE REVIEW & APPROVE PSAR	40	14APR99	09JUN99
240	FSAR DEVELOPMENT	250	10JUN99	01JUN00
245	DOE REVIEW	40	02JUN00	28JUL00
DESIGN & CONSTRUCTION				
249	DESIGN & CONSTRUCTION	1,933*	25SEP98	25APR06
250	BID/NEGOTIATE & AWARD DESIGN	90	25SEP98	02FEB99
260	PREPARE TITLE I DESIGN	188	03FEB99	27OCT99
265	PREPARE TITLE II DESIGN	468	28OCT99	28AUG01
270	LONG LEAD PROCUREMENT	350	28OCT99	13MAR01
266	TITLE II DESIGN COMPLETE	0		28AUG01
275	PREPARE CONSTRUCTION PACKAGE	60	31AUG01	26NOV01
280	BID/NEGOTIATE & AWARD CONSTRUCTION	120	27NOV01	15MAY02
285	RCRA HOLD	0		20JUN03
289	BEGIN CONSTRUCTION	0	23JUN03	
290	CONSTRUCTION	625	23JUN03	02DEC05
291	CONSTRUCTION COMPLETE	0		02DEC05
295	FINAL INSPECTIONS	10	05DEC05	16DEC05
300	TITLE III AS-BUILTS	90	19DEC05	25APR06
PROCEDURES/TRAINING				
304	OPERATION PROCEDURES DEVELOPMENT &	180*	05DEC05	17AUG06
305	PREPARE S.O. TEST PLAN & PROCEDURES	60	05DEC05	28FEB06
310	DEVELOP DATA MANAGEMENT PROCEDURES	60	05DEC05	28FEB06
315	DEVELOP TECHNICAL PROCEDURES	60	05DEC05	28FEB06
320	DEVELOP MAINTENANCE PROCEDURES	60	01MAR06	23MAY06

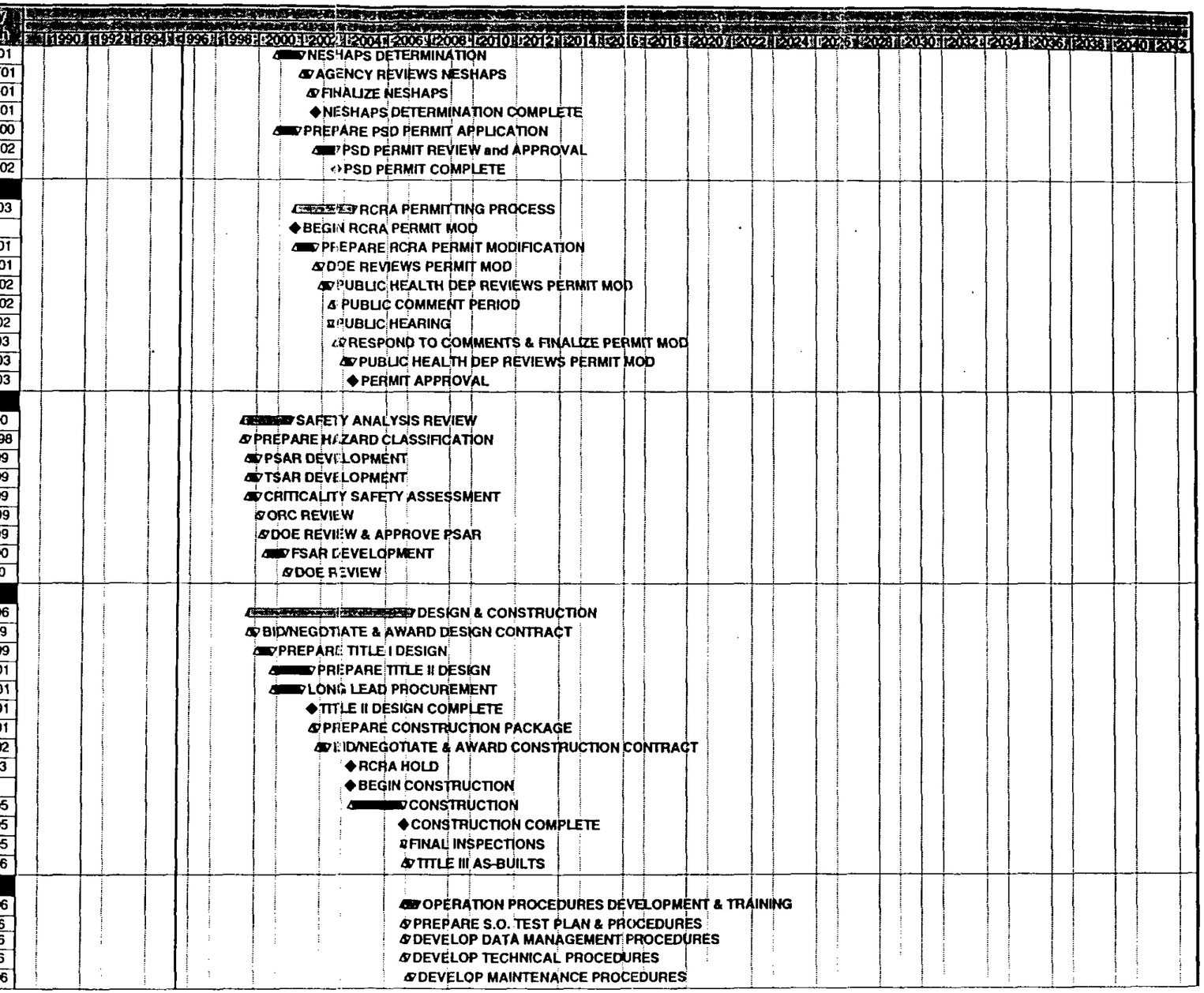

Figure Q-4b
Plasma Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
330	DEVELOP OPERATOR TRAINING PROGRAM	60	01MAR06	23MAY06
325	MAINTENANCE TRAINING	40	24MAY06	20JUL06
335	TRAIN OPERATORS	60	24MAY06	17AUG06
TESTING				
507	TESTING	460*	01MAR06	18DEC07
509	PERFORM S.O. TEST	120	01MAR06	17AUG06
510	ORR	160	18AUG06	04APR07
520	PROCESS CONTROL PLAN	40	05APR07	31MAY07
525	REVIEW AND APPROVAL OF ORR	140	05APR07	22OCT07
530	ORR COMPLETE	0		22OCT07
535	START-UP	40	23OCT07	18DEC07
OPERATIONS				
539	OPERATIONS	5,100*	19DEC07	21DEC27
545	BENEFICIAL OCCUPANCY	20	19DEC07	17JAN08
550	SYSTEM/OPERATOR CERTIFICATION	60	19DEC07	13MAR08
555	FINAL WASTE ANALYSIS/CERTIFICATION	20	19DEC07	17JAN08
560	IMPLEMENT SYSTEM USAGE	0	19DEC07	
565	FACILITY ACCEPTANCE	0	14MAR08	
570	FACILITY OPERATION	5,040	14MAR08	21DEC27
567	OPERATIONS COMPLETE	0		21DEC27
D&D				
574	D&D	850*	22DEC27	22APR31
575	FACILITY DEACTIVATION	120	22DEC27	09JUN28
580	ENGINEERING DESIGN	120	12JUN28	29NOV28
585	INTERNAL D&D OPERATIONS	310	30NOV28	18FEB30
590	STRUCTURAL D&D OPERATIONS	120	19FEB30	07AUG30
595	SUB-GRADE D&D OPERATIONS	120	08AUG30	28JAN31
600	VERIFICATION OF CLOSEOUT	60	29JAN31	22APR31

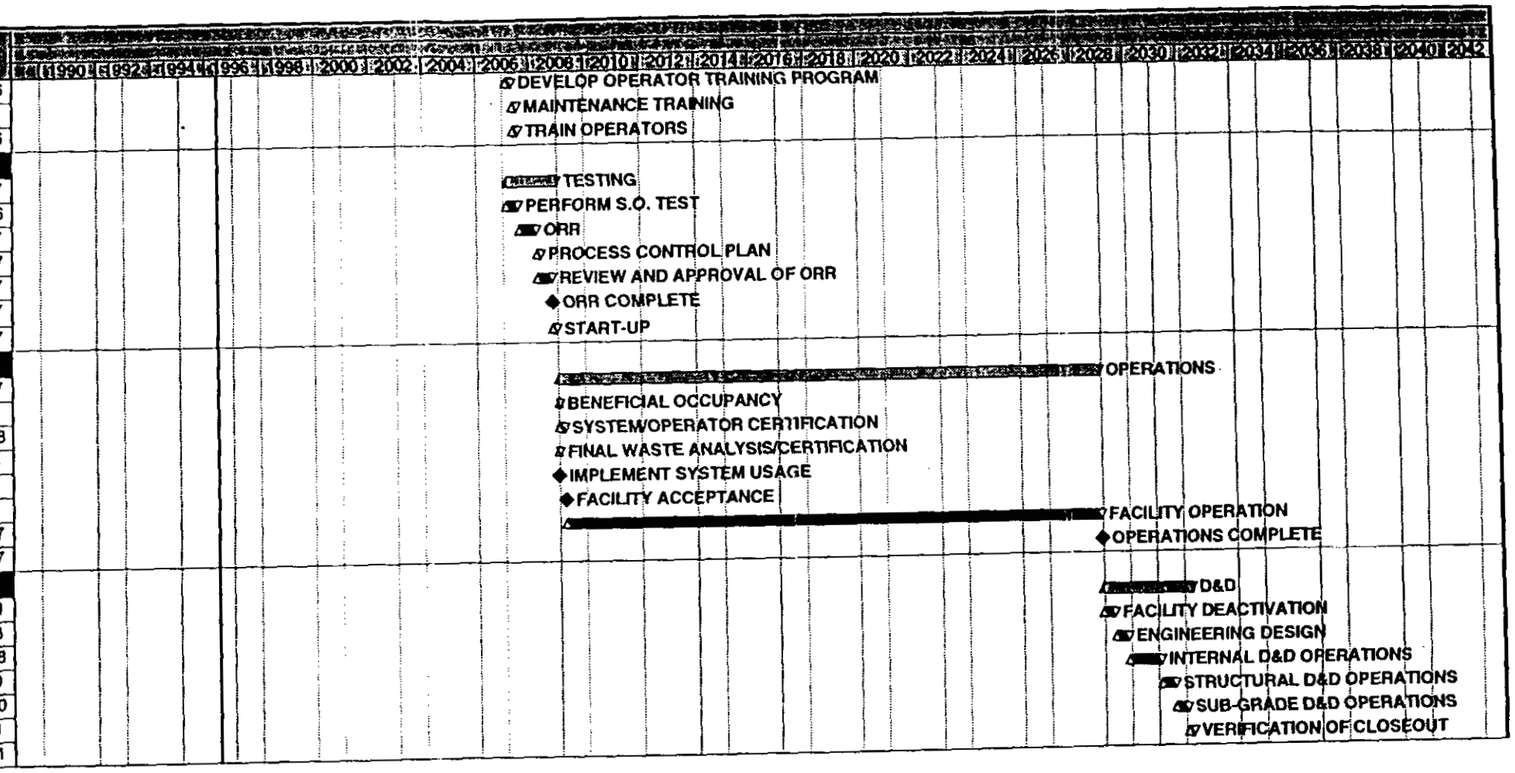

Figure Q-4c
Plasma Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
WIPP TRU FACILITY				
05	WIPP TRU FACILITY	10,618*	14JUL88A	11MAR30
PROJECT CONCEPT/FUNDING REQUEST PROCESS				
09	PROJECT CONCEPT DEV./FUNDING	2,600*	14JUL88A	24SEP98
10	PRECONCEPTUAL DESIGN	250	14JUL88A	17JUL89A
15	DECISION TO PROCEED	0	14JUL88A	
20	DEVELOP & SUBMIT FUNDING REQUEST	248	14JUL88A	14JUL89A
25	BENCH SCALE TESTING	640	17JUL89A	27JAN92A
30	DETERMINE PROJECT FEASIBILITY	20	28JAN92A	24FEB92A
35	PILOT SCALE	840	25FEB92A	31MAY95A
40	DETERMINE PROJECT FEASIBILITY	90	01JUN95A	06OCT95
45	FUNDING REQUEST	60	09OCT95	03JAN96
50	DETERMINE LINE ITEM FUNDING	248	04JAN96	20DEC96
51	DESIGN CRITERIA COMPLETE	0		20DEC96
55	PRIORITIZATION & SELECTION OF PROJECTS	60	23DEC96	18MAR97
60	GAIN FUNDING APPROVAL	248	19MAR97	09MAR98
65	OPERATIONAL REQUIREMENTS DOCUMENT	60	10MAR98	02JUN98
70	DESIGN INPUT & REVIEW/APPROVAL	20	27AUG98	24SEP98
NEPA PROCESS				
74	NEPA PROCESS	530*	04JAN96	30JAN98
75	PREPARE ENVIRONMENTAL CHECKLIST	60	04JAN96	27MAR96
80	NEPA COMPLIANCE COMMITTEE REVIEW	10	28MAR96	10APR96
100	PREPARE ADM	60	11APR96	05JUL96
105	NEPA DETERMINATION DOE REVIEW ADM	30	08JUL96	16AUG96
165	PREPARE NOTICE OF INTENT	10	19AUG96	30AUG96
170	PUBLIC SCOPING	30	03SEP96	14OCT96
175	PREPARE IMPLEMENTATION PLAN	60	15OCT96	09JAN97
180	PREPARE DRAFT ENVIRONMENTAL IMPACT	120	10JAN97	27JUN97
185	DOE REVIEW DRAFT ENVIR. IMPACT	30	30JUN97	11AUG97
190	ISSUE FINAL DRAFT ENVIR. IMPACT	0	12AUG97	11AUG97
195	STATE REVIEW & PUBLIC COMMENT PERIOD	60	12AUG97	04NOV97
200	REVIEW & FINALIZE ENV. IMPACT	60	05NOV97	30JAN98
205	ISSUE ROD	0		30JAN98
OTHER PERMITTING				
434	MISCELLANEOUS PERMITTING	896*	10MAR98	12SEP01
440	HEALTH AND SAFETY PLAN	60	10MAR98	02JUN98
435	PREPARE QAPP FOR IMPLEMENTATION	60	10MAR98	02JUN98
460	PREPARE OPERATING QAPP	60	03JUN98	26AUG98
465	REVIEW/APPROVE IMPLEMENTATION PHASE	30	03JUN98	15JUL98
485	REVIEW AND APPROVE OPERATING QAPP	30	27AUG98	08OCT98
486	QAPP COMPLETE	0		08OCT98
445	UPDATE/REVISE PROGRAM PLAN	60	10MAR98	02JUN98
470	DOE REVIEW PROGRAM PLAN	30	03JUN98	15JUL98
490	FINALIZE PROGRAM PLAN	30	16JUL98	26AUG98
450	APENs DETERMINATION	120	10MAR98	26AUG98
475	AGENCY REVIEWS APENs	60	27AUG98	19NOV98
495	FINALIZE APENs	40	20NOV98	19JAN99
451	APENs DETERMINATION COMPLETE	0		19JAN99

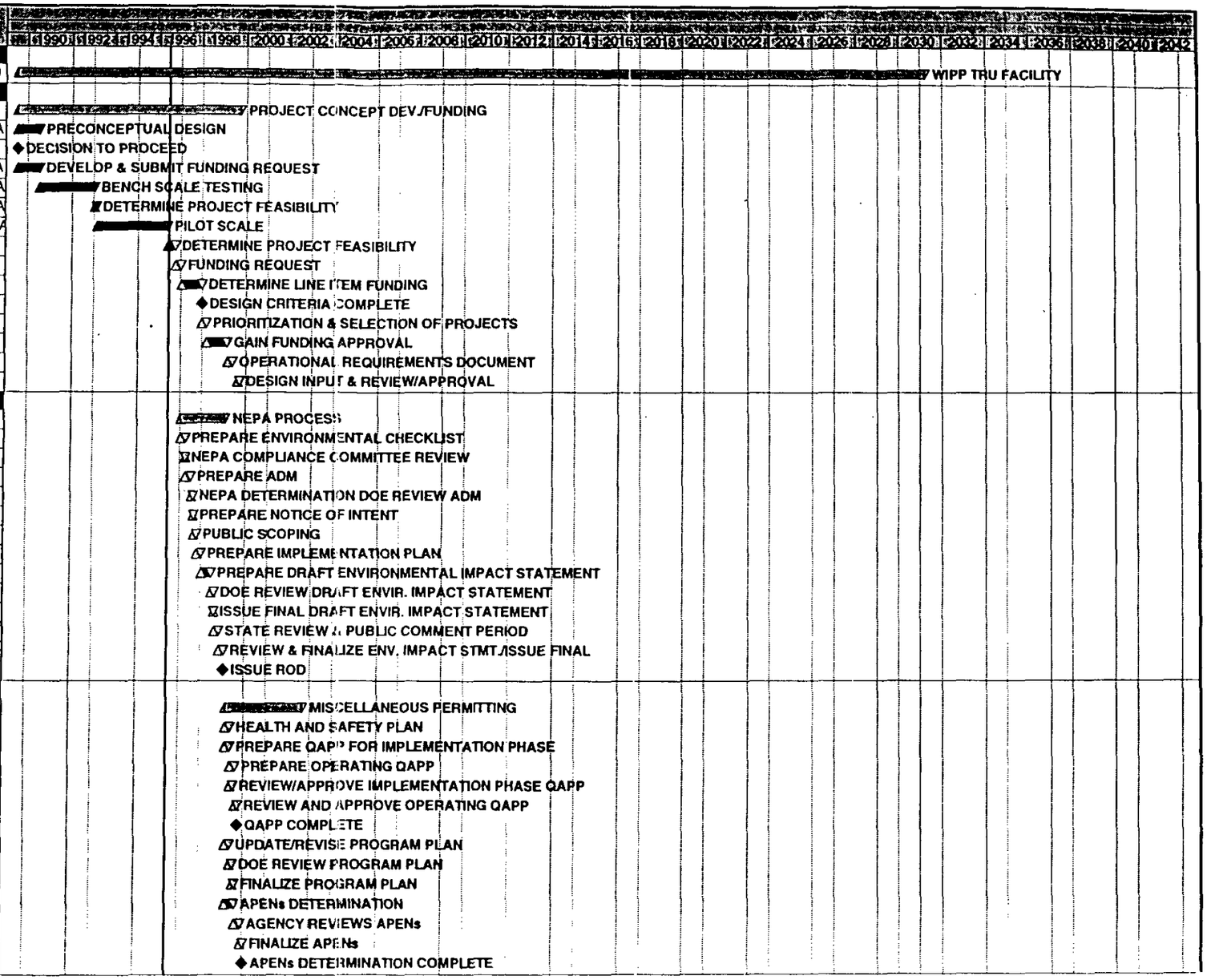

Figure Q-5a
Cementation/Shred/
Add Clay Scenario

ACT ID	Activity Description	Orig Dur	Early Start	Early Finish
455	NESHAPS DETERMINATION	150	28SEP99	27APR00
480	AGENCY REVIEWS NESHAPS	60	28APR00	24JUL00
500	FINALIZE NESHAPS	40	25JUL00	19SEP00
501	NESHAPS DETERMINATION COMPLETE	0		19SEP00
502	PREPARE PSD PERMIT APPLICATION	250	28SEP99	19SEP00
503	PSD PERMIT REVIEW and APPROVAL	250	20SEP00	12SEP01
504	PSD PERMIT COMPLETE	0		12SEP01
RCRA PERMITTING				
338	RCRA PERMITTING PROCESS	530*	20SEP00	17OCT02
339	BEGIN RCRA PERMIT MOD	0	20SEP00	
380	PREPARE RCRA PERMIT MODIFICATION	140	20SEP00	06APR01
385	DOE REVIEWS PERMIT MOD	30	09APR01	18MAY01
390	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	90	21MAY01	26SEP01
395	PUBLIC COMMENT PERIOD	60	27SEP01	20DEC01
400	PUBLIC HEARING	2	27SEP01	28SEP01
405	RESPOND TO COMMENTS & FINALIZE PERMIT	90	21DEC01	29APR02
410	PUBLIC HEALTH DEP REVIEWS PERMIT MOD	120	30APR02	17OCT02
430	PERMIT APPROVAL	0		17OCT02
SAFETY ANALYSIS REVIEW				
209	SAFETY ANALYSIS REVIEW	550*	03JUN98	28JUL00
210	PREPARE HAZARD CLASSIFICATION	60	03JUN98	26AUG98
215	PSAR DEVELOPMENT	120	27AUG98	16FEB99
220	TSAR DEVELOPMENT	120	27AUG98	16FEB99
225	CRITICALITY SAFETY ASSESSMENT	120	27AUG98	16FEB99
230	ORC REVIEW	40	17FEB99	13APR99
235	DOE REVIEW & APPROVE PSAR	40	14APR99	09JUN99
240	FSAR DEVELOPMENT	250	10JUN99	01JUN00
245	DOE REVIEW	40	02JUN00	28JUL00
DESIGN & CONSTRUCTION				
249	DESIGN & CONSTRUCTION	1,686*	25SEP98	05MAY05
250	BID/NEGOTIATE & AWARD DESIGN	90	25SEP98	02FEB99
260	PREPARE TITLE I DESIGN	166	03FEB99	27SEP99
265	PREPARE TITLE II DESIGN	412	28SEP99	08MAY01
270	LONG LEAD PROCUREMENT	210	28SEP99	24JUL00
266	TITLE II DESIGN COMPLETE	0		08MAY01
275	PREPARE CONSTRUCTION PACKAGE	21	09MAY01	07JUN01
280	BID/NEGOTIATE & AWARD CONSTRUCTION	90	08JUN01	15OCT01
285	RCRA HOLD	0		17OCT02
289	BEGIN CONSTRUCTION	0	18OCT02	
290	CONSTRUCTION	550	18OCT02	14DEC04
291	CONSTRUCTION COMPLETE	0		14DEC04
295	FINAL INSPECTIONS	10	15DEC04	29DEC04
300	TITLE III AS-BUILTS	90	30DEC04	05MAY05
PROCEDURES/TRAINING				
304	OPERATION PROCEDURES DEVELOPMENT &	180*	15DEC04	29AUG05
305	PREPARE S.O. TEST PLAN & PROCEDURES	60	15DEC04	10MAR05
310	DEVELOP DATA MANAGEMENT PROCEDURES	60	15DEC04	10MAR05
315	DEVELOP TECHNICAL PROCEDURES	60	15DEC04	10MAR05
320	DEVELOP MAINTENANCE PROCEDURES	60	11MAR05	03JUN05

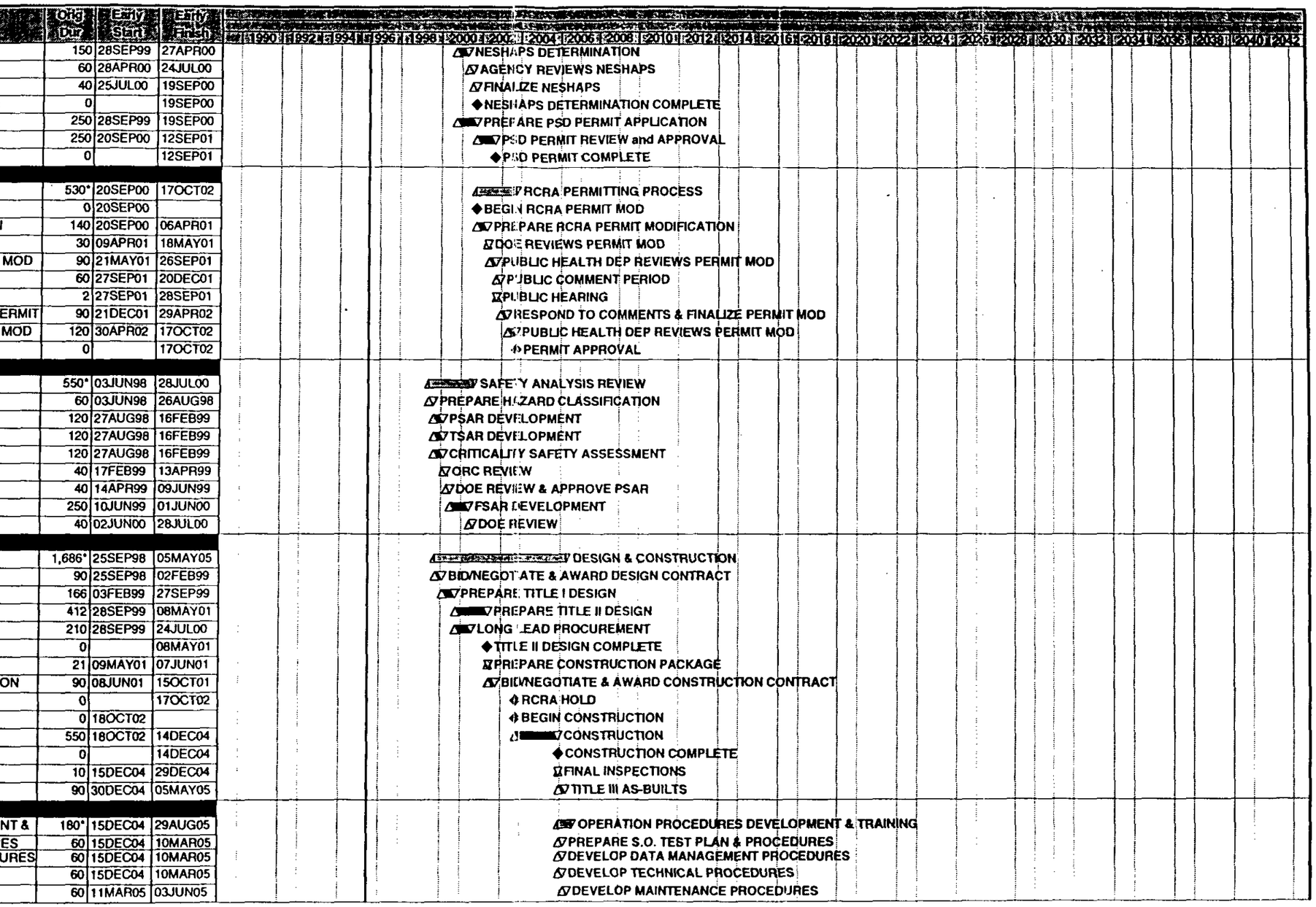

Figure Q-5b
Cementation/Shred/
Add Clay Scenario

Act ID	Activity Description	Orig Dur	Early Start	Early Finish
330	DEVELOP OPERATOR TRAINING PROGRAM	60	11MAR05	03JUN05
325	MAINTENANCE TRAINING	40	06JUN05	01AUG05
335	TRAIN OPERATORS	60	06JUN05	29AUG05
TESTING				
507	TESTING	460*	11MAR05	29DEC06
509	PERFORM S.O. TEST	120	11MAR05	29AUG05
510	ORR	160	30AUG05	14APR06
520	PROCESS CONTROL PLAN	40	17APR06	12JUN06
525	REVIEW AND APPROVAL OF ORR	140	17APR06	01NOV06
530	ORR COMPLETE	0		01NOV06
535	START-UP	40	02NOV06	29DEC06
OPERATIONS				
539	OPERATIONS	5,100*	02JAN07	04JAN27
545	BENEFICIAL OCCUPANCY	20	02JAN07	29JAN07
550	SYSTEM/OPERATOR CERTIFICATION	60	02JAN07	26MAR07
555	FINAL WASTE ANALYSIS/CERTIFICATION	20	02JAN07	29JAN07
560	IMPLEMENT SYSTEM USAGE	0	02JAN07	
565	FACILITY ACCEPTANCE	0	27MAR07	
570	FACILITY OPERATION	5,040	27MAR07	04JAN27
567	OPERATIONS COMPLETE	0		04JAN27
D&D				
574	D&D	812*	05JAN27	11MAR30
575	FACILITY DEACTIVATION	120	05JAN27	22JUN27
580	ENGINEERING DESIGN	120	23JUN27	10DEC27
585	INTERNAL D&D OPERATIONS	272	13DEC27	05JAN29
590	STRUCTURAL D&D OPERATIONS	120	08JAN29	25JUN29
595	SUB-GRADE D&D OPERATIONS	120	26JUN29	13DEC29
600	VERIFICATION OF CLOSEOUT	60	14DEC29	11MAR30

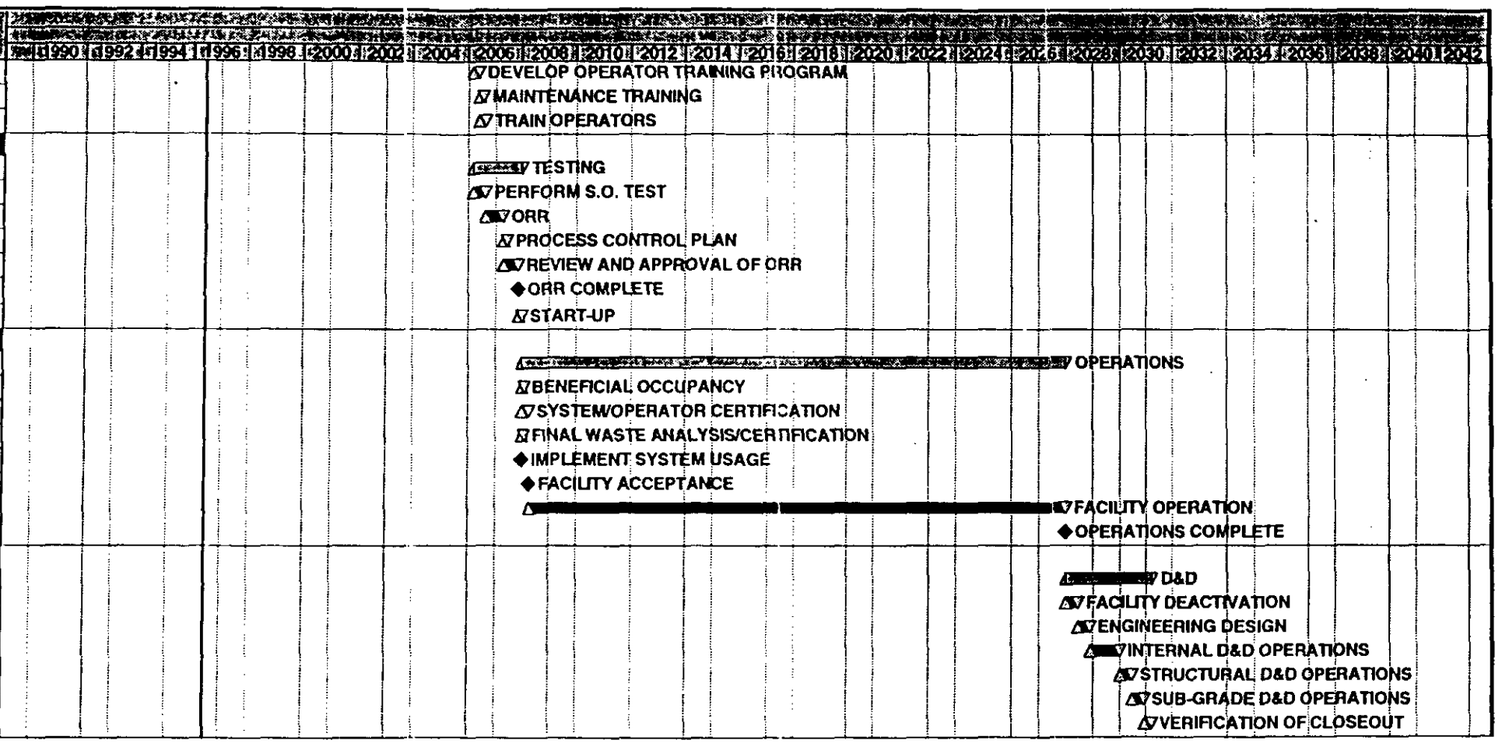

Figure Q-5c
Cementation/Shred/
Add Clay Scenario

TABLE Q-6

PRELIMINARY PERT TIME ESTIMATES FOR ALTERNATIVE #6
(Time in Years)

Major Activity	T_o	T_m	T_p	T_e	T_e (days)
Preliminary Safety Analysis Report	.890	1.00	2.25	1.19	298
Final Safety Analysis Report	1.420	2.000	4.440	2.310	578
Title I Design	.375	.500	1.250	.604	151
Title II Design	.738	.860	1.810	.998	250
Construction	.910	1.000	2.160	1.178	295
NEPA Documentation	1.781	2.120	7.632	2.982	746
PSD Permit Preparation	.840	1.000	2.250	1.182	295
PSD Permit Approval	.335	.830	2.330	.996	249
NESHAPs	.750	1.000	2.500	1.208	302
RCRA Permit Preparation	.269	.320	.720	.378	95
ORR	1.840	1.840	4.287	2.248	562

The time estimates for Alternative #10 (Plasma Melting) were adjusted from the values given in Table Q-6 by the following:

Activity	Adjustment
Title I and Title II Design	+25%
Construction	+25%
D&D	+25%
RCRA Permit & NEPA	+100%

1.4DETAILED SCHEDULESAttachment 2 shows the detailed schedules for the waste processing EAs.

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APPENDIX Q

ATTACHMENT 1
SCHEDULING ASSUMPTIONS FOR WASTE PROCESSING ENGINEERED ALTERNATIVES

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APPENDIX Q

ATTACHMENT 1
SCHEDULING ASSUMPTIONS FOR WASTE PROCESSING ENGINEERED ALTERNATIVES

This attachment presents the assumptions used in developing the detailed schedules for each of the waste processing EAs. The assumptions are organized into tables, where each table presents the assumptions used for a specific alternative, as shown:

TABLE	ALTERNATIVE
Q-1	Baseline
Q-2	#1 Supercompact
Q-3	#6 Shred & Compact
Q-4	#10 Plasma Melting
Q-5	#94 Enhanced Cement/Shred & Clay

TABLE Q-1

Schedule Assumptions
Baseline Case

09 PROJECT CONCEPT DEVELOPMENT/FUNDING

Assumptions:

1. Funding request submitted after demo-scale will drive NEPA activities

2. Funding approval after project prioritization will drive other permitting and RCRA activities

3. Project requests line item funding

74 NEPA PROCESS

Assumptions:

1. EIS will be required resulting in a ROD

2. NEPA must be complete prior to Title I Design

209 SAFETY ANALYSIS REVIEW

Assumptions:

1. Preparation of the operational requirement document initiates the SAR process

2. PSAR must be completed prior to construction

3. FSAR must be completed prior to ORR

249 DESIGN AND CONSTRUCTION

Assumptions:

1. Facility is a concrete/steel structure

2. Facility retrieves, characterizes, treats to WIPP WAL, stores, and ships waste

338 RCRA PERMITTING PROCESS

Assumptions:

1. Facility requires a RCRA permit modification

2. Permit required prior to construction

434 MISCELLANEOUS PERMITTING

Assumptions:

1. A H&S Plan is required prior to construction

2. Current program plan will require updating

3. APENS will be determined

4. NESHAPS will be determined prior to design

5. A QAPP is required prior to construction

6. PSD permit required

539 OPERATIONS

Assumptions:

1. Facility will operate for 20 years

574 D&D

Assumptions:

1. Facility will undergo decontamination and decommissioning after its 20 year operation period

TABLE Q-2

Schedule Assumptions
Alternative #1—Supercompaction

09 PROJECT CONCEPT DEVELOPMENT/FUNDING

Assumptions:

1. Funding request submitted after demo-scale will drive NEPA activities

2. Funding approval after project prioritization will drive other permitting and RCRA activities

3. Project requests line item funding

74 NEPA PROCESS

Assumptions:

1. EIS will be required resulting in a ROD

2. NEPA must be complete prior to Title I Design

209 SAFETY ANALYSIS REVIEW

Assumptions:

1. Preparation of the operational requirement document initiates the SAR process

2. PSAR must be completed prior to construction

3. FSAR must be completed prior to construction of ORR

249 DESIGN AND CONSTRUCTION

Assumptions:

1. Facility is a concrete/steel structure

2. In addition to baseline functions, facility receives drums and supercompacts solid organic and solid inorganic waste

3. Title II design complete prior to RCRA permit application submittal

338 RCRA PERMITTING PROCESS

Assumptions:

1. Facility requires a RCRA permit modification

2. Permit required prior to construction

434 MISCELLANEOUS PERMITTING

Assumptions:

1. A H&S Plan is required prior to construction

2. Current program plan will require updating

3. APENS will be determined

4. NESHAPS will be determined

5. A QAPP is required prior to design

6. PSD permit required prior to construction

539 OPERATIONS

Assumptions:

1. Facility will operate for 20 years

574 D&D

Assumptions:

1. Facility will undergo decontamination and decommissioning after its 20 year operation period

TABLE Q-3

Schedule Assumptions
Alternative #6—Shred and Compact

09 PROJECT CONCEPT DEVELOPMENT/FUNDING

Assumptions:

1. Funding request submitted after demo-scale will drive NEPA activities
2. Funding approval after project prioritization will drive other permitting and RCRA activities
3. Project requests line item funding

74 NEPA PROCESS

Assumptions:

1. EIS will be required resulting in a ROD
2. NEPA must be complete prior to Title I Design

209 SAFETY ANALYSIS REVIEW

Assumptions:

1. Preparation of the operational requirement document initiates the SAR process
2. PSAR must be completed prior to construction
3. FSAR must be completed prior to ORR

249 DESIGN AND CONSTRUCTION

Assumptions:

1. Facility is a concrete/steel structure
2. In addition to baseline functions, facility receives drums, shreds and compacts contents, and repacks for disposal
3. Title II design complete prior to RCRA permit application submittal

338 RCRA PERMITTING PROCESS

Assumptions:

1. Facility requires a RCRA permit modification

2. Permit required prior to construction

434 MISCELLANEOUS PERMITTING

Assumptions:

1. A H&S Plan is required prior to construction

2. Current program plan will require updating

3. APENS will be determined

4. NESHAPS will be determined

5. A QAPP is required prior to design

6. PSD permit required prior to construction

539 OPERATIONS

Assumptions:

1. Facility will operate for 20 years

574 D&D

Assumptions:

1. Facility will undergo decontamination and decommissioning after its 20 year operation period

TABLE Q-4

Schedule Assumptions
Alternative #10—Plasma Melting

09 PROJECT CONCEPT DEVELOPMENT/FUNDING

Assumptions:

1. Funding request submitted after demo-scale will drive NEPA activities
2. Funding approval after project prioritization will drive other permitting and RCRA activities
3. Project requests line item funding

74 NEPA PROCESS

Assumptions:

1. EIS will be required resulting in a ROD
2. NEPA must be complete prior to Title I Design

209 SAFETY ANALYSIS REVIEW

Assumptions:

1. Preparation of the operational requirement document initiates the SAR process
2. PSAR must be completed prior to construction
3. FSAR must be completed prior to ORR

249 DESIGN AND CONSTRUCTION

Assumptions:

1. Facility is a concrete/steel structure
2. In addition to baseline functioning, facility houses a plasma arc furnace
3. Title II design complete prior to RCRA permit application submittal

338 RCRA PERMITTING PROCESS

Assumptions:

1. Facility requires a RCRA permit modification

2. Permit required prior to construction

434 MISCELLANEOUS PERMITTING

Assumptions:

1. A H&S Plan is required prior to construction

2. Current program plan will require updating

3. APENS will be determined

4. NESHAPS will be determined

5. A QAPP is required prior to design

6. PSD permit required prior to construction

539 OPERATIONS

Assumptions:

1. Facility will operate for 20 years

574 D&D

Assumptions:

1. Facility will undergo decontamination and decommissioning after its 20 year operation period

TABLE Q-5

Schedule Assumptions
Alternative #94—Enhanced Cementation/Shred and Add Clay

09 PROJECT CONCEPT DEVELOPMENT/FUNDING

Assumptions:

1. Funding request submitted after demo-scale will drive NEPA activities

2. Funding approval after project prioritization will drive other permitting and RCRA activities

3. Project requests line item funding

74 NEPA PROCESS

Assumptions:

1. EIS will be required resulting in a ROD

2. NEPA must be complete prior to Title I Design

209 SAFETY ANALYSIS REVIEW

Assumptions:

1. Preparation of the operational requirement document initiates the SAR process

2. PSAR must be completed prior to construction

3. FSAR must be completed prior to ORR

249 DESIGN AND CONSTRUCTION

Assumptions:

1. Facility is a concrete/steel structure

2. In addition to baseline functions, facility receives drums, shreds contents, and adds clay. Enhanced cementation will be used for sludges.

3. Title II design complete prior to RCRA permit application submittal

338 RCRA PERMITTING PROCESS

Assumptions:

1. Facility requires a RCRA permit modification

2. Permit required prior to construction

434 MISCELLANEOUS PERMITTING

Assumptions:

1. A H&S Plan is required prior to construction

2. Current program plan will require updating

3. APENS will be determined

4. NESHAPS will be determined

5. A QAPP is required prior to design

6. PSD permit required prior to construction

539 OPERATIONS

Assumptions:

1. Facility will operate for 20 years

574 D&D

Assumptions:

1. Facility will undergo decontamination and decommissioning after its 20 year operation period

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APPENDIX Q

ATTACHMENT 2
DETAILED SCHEDULES FOR WASTE PROCESSING ENGINEERED ALTERNATIVES

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APPENDIX Q

ATTACHMENT 2
DETAILED SCHEDULES FOR WASTE PROCESSING ENGINEERED ALTERNATIVES

this attachment presents detailed schedules for the waste processing EAs. The schedule for each alternative is presented in a separate figure, as shown below:

FIGURE	ALTERNATIVE
Q-1	Baseline
Q-2	#1 Supercompact
Q-3	#6 Shred & Compact
Q-4	#10 Plasma Melting
Q-5	#94 Enhanced Cement/Shred & Clay

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