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Hanford Federal Facility Agreement and Consent Order Quarterly Progress Report for the Period Ending June 30, 1990

United States
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United States
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P.O. Box 550
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EXECUTIVE SUMMARY

This is the fifth quarterly report as required by the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989), also known as the Tri-Party Agreement, established between the U.S. Department of Energy, the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology). The Tri-Party Agreement sets the plan and schedule for achieving regulatory compliance and cleanup of waste sites at the Hanford Site. This report covers progress for the quarter that ended June 30, 1990.

Tri-Party Agreement Status at a Glance

A total of 54 milestones have been completed to date, all of which were completed on or ahead of schedule.

All of the 12 milestones scheduled for completion during the quarter that ended June 30, 1990 were completed on or ahead of schedule. Another five milestones not yet due were also completed. The milestones completed this quarter are listed below:

M-12-08: 'Submit 100-BC-1 Operable Unit Work Plan (source operable unit) to EPA and Ecology for Review'

M-12-09: 'Submit 100-BC-5 Operable Unit Work Plan (groundwater operable unit) to EPA and Ecology for Review'

M-12-10: 'Submit 100-KR-1 Operable Unit Work Plan'

M-12-11: 'Submit 100-KR-4 Operable Unit Work Plan'

M-20-10: 'Submit 300 Area Waste Acid System (TS-3-1) Closure Plan to Ecology and EPA'

M-20-13: 'Submit 303-K Storage Area (S-3-1) Closure Plan to Ecology and EPA'

M-20-15: 'Submit 304 Concretion Facility (TS-3-2) Closure Plan to Ecology and EPA'

M-23-01: 'Resubmit Treatment by Generator Requests for: T-Plant, 222-S, Plutonium/Uranium Extraction (PUREX) and 204-AR'

M-23-04: 'Complete Waste Analysis Plans for 4843 Storage Facility and Single Shell Tanks'

M-23-05: 'Complete Contingency Plans for Low-Level Burial Grounds, 4843 Storage Facility, Central Waste Complex, T-Plant, Transuranic Waste Storage and Assay Facility, and 616'

M-23-08: 'Complete Interim Status Corrective Actions for 4843 Storage Facility'

M-23-15: 'Complete Interim Status Corrective Actions for Transuranic Waste Storage and Assay Facility (224-T)'

M-23-16: 'Complete Interim Status Corrective Actions for 616 Facility'

M-23-17: 'Complete Interim Status Corrective Actions for Central Waste Complex'.

M-24-06: 'Install 6 Additional Wells Around the Low-Level Burial Grounds for a Total of 51 Resource Conservation and Recovery Act (RCRA) Monitoring Wells'

M-24-08: 'Install 4 Wells Around the B-63 Trench for a Total of 4 RCRA Monitoring Wells'

M-24-10: 'Install Four Wells Around the U-12 Crib for a Total of Four RCRA Monitoring Wells'

The following nine milestones are scheduled for completion in the quarter ending September 30, 1990:

M-04-00: 'Provide Annual Reports of Tank Waste Treatability Studies'

M-05-02: 'Interim Stabilize an Additional Five Single-Shell Tanks'

M-12-10: 'Submit 100-KR-1 Operable Unit Work Plan' (this interim milestone and M-12-11 were completed during the quarter ending June 30, 1990 as indicated above)

M-12-11: 'Submit 100-KR-4 Operable Unit Work Plan'

M-14-01: 'Complete Definitive Design for a Low-Level Mixed Waste Laboratory'

M-20-07: 'Submit Nonradioactive Dangerous Waste Landfill (D-6-1) Closure/Post-Closure Plan to Ecology and EPA'

M-20-11: 'Submit PUREX Tunnels (S-2-1) Part B to Ecology and EPA'

M-20-41: 'Submit 105-DR (T-1-1) Closure Plan to Ecology and EPA'

M-23-09: 'Notify Ecology of Decision on Operating Status of 3718-F Alkali Metal Treatment Facility'.

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LIST OF FIGURES

1.0 HIGHLIGHTS

This section highlights some of the activities completed during the second quarter of calendar year 1990. A more detailed discussion of activities during the quarter is provided in the technical status section.

IN SITU VITRIFICATION DEMONSTRATION. The in situ vitrification process was developed by Pacific Northwest Laboratory to provide significantly lower leach properties of metal ions and to degrade organic materials to reduce the hazard of contaminated soils without exhumation. An array of four electrodes is inserted into the ground and a 'starter path' of electrically conductive material is placed between the electrodes. An electric current is passed between the electrodes and through the starter path, creating temperatures high enough to melt the starter path and the soil beneath it. As the molten zone grows downward and outward to a depth of approximately 20 feet, it encompasses the contaminated soil and incorporates the radionuclides and hazardous elements into a glass-like form, while destroying organic components by pyrolysis. A hood placed over the area being treated directs the gaseous effluents to an offgas treatment system. Upon cooling, the product of in situ vitrification is a glass-like mass of high strength and enhanced chemical integrity.

An in situ vitrification treatability test was performed at the 116-B-6A Crib (see Figure 1 and 2) site in April. The test culminates two years of site characterization and test preparations and demonstrates for the first time the large-scale vitrification of mixed radioactive and hazardous waste at an actual waste site. The 116-B-6A Crib site was chosen for this demonstration test because it contained both radioactive and hazardous contaminants and had a potential for impacting groundwater. The 116-B-6A Crib site is located in the 100-B Area near B-Reactor and received about 5,000 liters (1,325 gallons) of decontamination wastes between 1951 and 1968. The in situ vitrification test lasted 12 days and vitrified an estimated 900 metric tons of soil. The projected block size produced by the test is 4.2 meters (14 feet) deep and 12 meters (40 feet) in diameter. Approximately 75 percent of the crib and its contents were vitrified. Reasons for the less-than-projected melt depth are being evaluated. The wooden timbers in the crib wall and lid were safely decomposed in the melt while maintaining containment of the gaseous effluents.

Although the testing of in situ vitrification is not required by the Tri-Party Agreement, it is being performed as a technology demonstration test under U.S. Environmental Protection Agency's (EPA) guidance for remedial investigation/feasibility study (RI/FS) treatability tests under *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* and represents a promising technology for stabilizing waste sites during the cleanup of the Hanford Site. Details and results of the testing will be included in future quarterly progress reports.

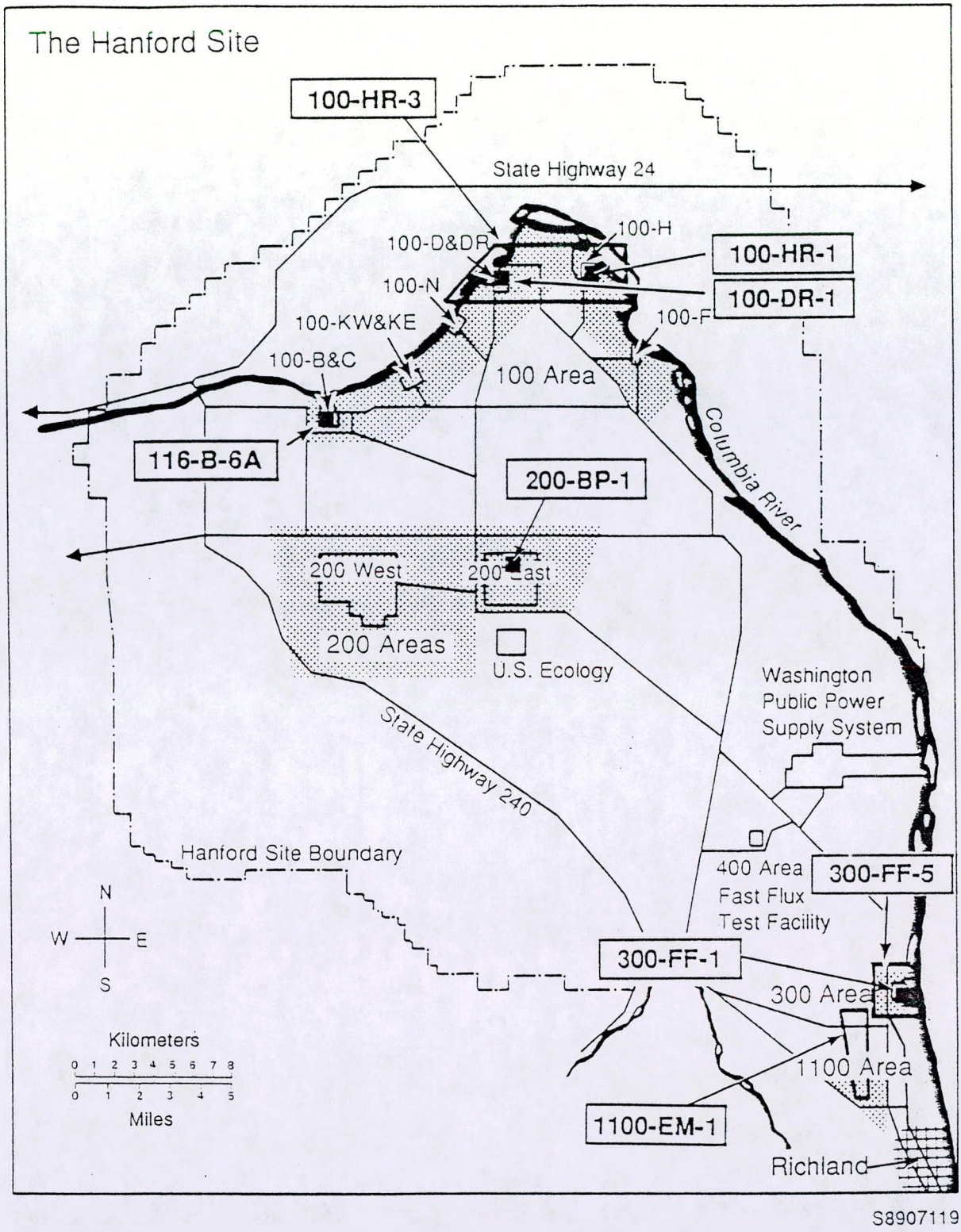


Figure 1. Map of the Hanford Site Showing the Four National Priorities List Areas (1100, 300, 200, and 100 Areas), the First Operable Units Currently Being Worked, and the In Situ Vitrification Demonstration Site.

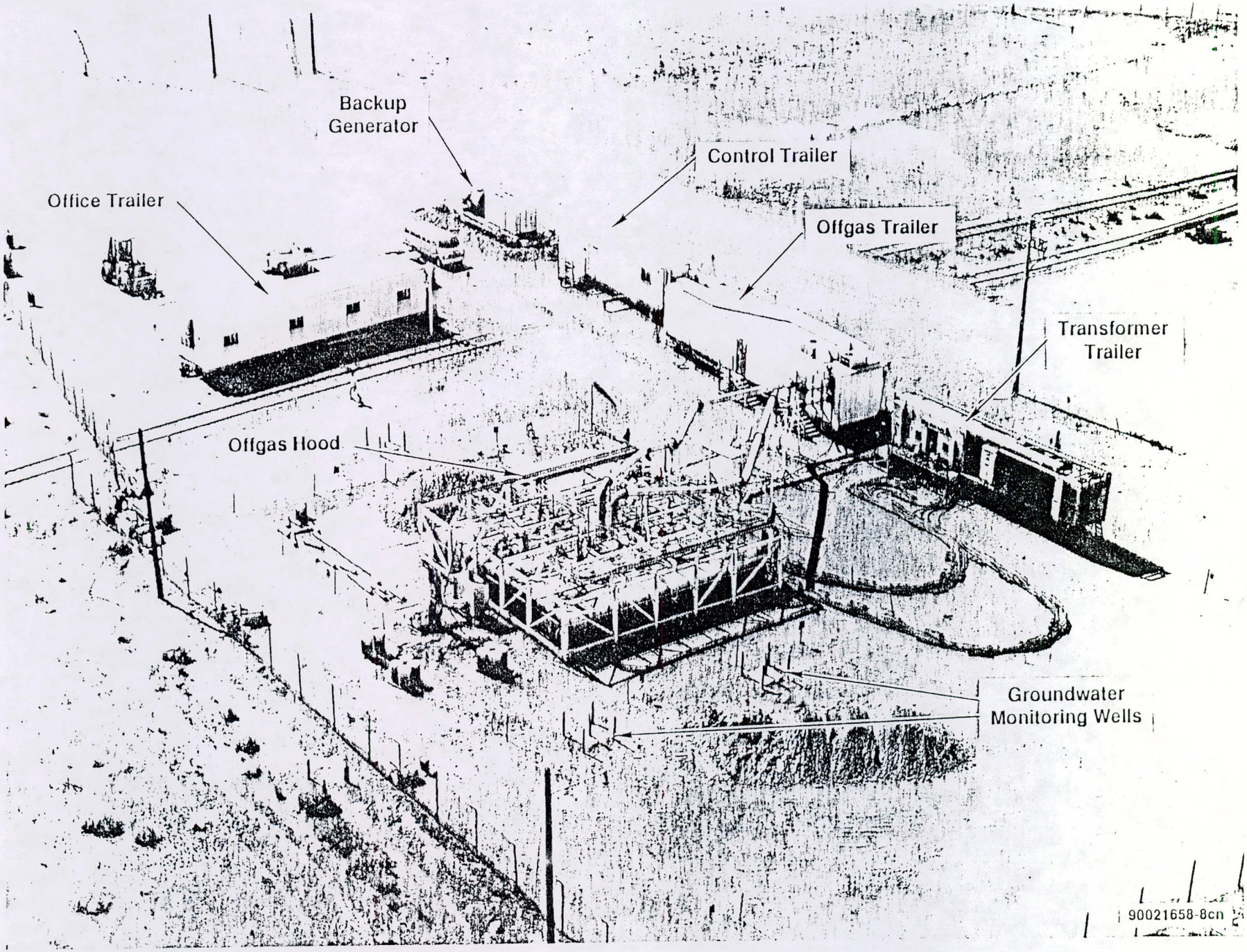


Figure 2. Aerial View of the 116-B-6A Crib Site and the In Situ Vitrification Demonstration Test Equipment.

THE 100-BC-1 OPERABLE UNIT. The 100-BC-1 operable unit is located in the north-central part of the Hanford Site along the southern shoreline of the Columbia River, within the 100 Areas, approximately 28 miles northwest of the city of Richland, Washington. The 100-BC-1 operable unit is an assemblage of individual waste units associated with the B and C Reactors which include liquid waste disposal trenches, French drains, cribs, outfall structures, retention basins, septic tanks, solid waste disposal burial grounds, ash pits, burn pits, a reactor building, storage buildings, and a reactor exhaust stack. The scope of the 100-BC-1 operable unit investigation includes these sources of contamination and the associated contamination of soils above the water table and terrestrial biota.

The *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-BC-1 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1990a) was submitted to EPA and Washington State Department of Ecology (Ecology) for review as required by Interim Milestone M-12-08. See Figure 1 for location of the 100-B Area.

THE 100-BC-5 OPERABLE UNIT. The 100-BC-5 operable unit is located in the north-central part of the Hanford Site along the southern shoreline of the Columbia River encompassing the 100 B/C Areas (see Figure 1) approximately 28 miles northwest of the city of Richland, Washington. The 100 B/C Areas contain the facilities associated with operation of the B and C Reactors and are divided into four source operable units, 100-BC-1, 100-BC-2, 100-BC-3, and 100-BC-4. The 100-BC-5 operable unit includes the groundwater below these source operable units plus the groundwater, surface water, sediments and aquatic biota impacted by 100 B/C Area operations.

The *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-BC-5 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1990b) was submitted to EPA and Ecology for review as required by Interim Milestone M-12-09.

THE 100-KR-1 OPERABLE UNIT. The 100-KR-1 operable unit is located at the 100-K Area (see Figure 1) located in the north central part of the Hanford Site, along the southern shoreline of the Columbia River approximately 25 miles northwest of the city of Richland, Washington. The 100-K Area contains the facilities associated with operation of the KE and KW Reactors. The 100-KR-1 operable unit covers an area of approximately 0.23 square miles and contains a liquid waste disposal trench, effluent crib, outfall structure, and retention basins. The scope of the 100-KR-1 source operable unit includes these sources of contamination and the associated contamination of soils above the water table, air and terrestrial biota.

The *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-KR-1 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1990c) was submitted to EPA and Ecology for review as required by Interim Milestone M-12-10. This milestone was completed ahead of schedule and is

the result of implementing a new document review streamlining process, whereby work plans are reviewed concurrently by the U.S. Department of Energy-Richland Operations Office (DOE-RL), EPA, and Ecology.

THE 100-KR-4 OPERABLE UNIT. The 100-KR-4 operable unit encompasses the 100-K Area (see Figure 1) located in the north central part of the Hanford Site, along the southern shoreline of the Columbia River approximately 25 miles northwest of the city of Richland, Washington. The 100-K Area contains the facilities associated with operation of the KE and KW Reactors and is divided into three source operable units, 100-KR-1, 100-KR-2, and 100-KR-3. The 100-KR-4 groundwater operable unit includes the groundwater below these source operable units plus the groundwater, surface water, sediments and aquatic biota impacted by 100 K Area operations.

The *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-KR-4 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1990d) was submitted to EPA and Ecology for review as required by Interim Milestone M-12-11. This milestone was completed ahead of schedule and is the result of implementing a new document review streamlining process, whereby work plans are reviewed concurrently by the DOE-RL, EPA, and Ecology.

300 AREA WASTE ACID TREATMENT SYSTEM CLOSURE. The 300 Area Waste Acid Treatment System was used for the storage and treatment of radioactive mixed waste generated during the fuel fabrication operation in the 300 Area of the Hanford Site (see Figure 1). The 300 Area Waste Acid Treatment System consists of several buildings and tanks plus various equipment which have been used for storage and treatment such as ph adjustment, filtering and centrifuging of wastes.

The *300 Area Waste Acid Treatment System Closure Plan* (DOE-RL 1990e) was submitted to the EPA and Ecology for review on June 29, 1990. The submittal of the closure plan met the Interim Milestone M-20-10 date of June 30, 1990.

303-K STORAGE AREA CLOSURE. The 303-K Storage Facility, located in the 300 Area of the Hanford Site, (see Figure 1) consists of a building and outside storage pad and is used for the storage of radioactive mixed wastes in Department of Transportation specification steel drums. Liquid wastes are stored on a 600 square foot pad within the building. Solid wastes are stored outside the building on a 3,500 square foot asphalt and concrete pad.

The *303-K Radioactive Mixed-Waste Storage Facility Closure Plan* (DOE-RL 1990f) was submitted to the EPA and Ecology for review on April 30, 1990. The submittal of the closure plan met the Interim Milestone M-20-13 date of April 30, 1990.

304 CONCRETION FACILITY CLOSURE. The 304 Concretion Facility, located in the 300 Area of the Hanford Site, (see Figure 1) consists of a container storage pad and a building housing a concretion unit that was used to treat radioactive mixed wastes generated during the fuel fabrication process. The wastes were concreted into 30- and 55-gallon Department of Transportation containers using portland cement to treat the wastes and eliminate the hazard of ignitability.

The *304 Concretion Facility Closure Plan* (DOE-RL 1990g) was submitted to the EPA and Ecology for review on April 30, 1990. The submittal of the closure plan met the Interim Milestone M-20-15 date of April 30, 1990.

2.0 TECHNICAL STATUS

2.1 DISPOSAL OF TANK WASTES

SINGLE-SHELL TANK WASTE SAMPLING AND CHARACTERIZATION. Sampling of the single-shell waste storage tanks is being performed to develop data for the following:

- Support the timely development of tank waste retrieval technology
- Assist in preparation of the supplemental environmental impact statement (for determining final disposal or remediation of single-shell tank wastes)
- Prepare a single-shell tank system closure/post closure plan.

Sampling the contents of the single-shell tanks is a complex process because of the radioactive and hazardous nature of the waste, as well as the complexity of the equipment. Under the requirements of the Tri-Party Agreement, sampling will involve the removal of at least two core samples from each of the 149 single-shell tanks. The *Waste Characterization Plan for the Hanford Site Single-Shell Tanks* (Winters et al. 1989) describes the initial phase of a two-phase plan to characterize the mixed wastes stored in single-shell tanks on the Hanford Site. The waste characterization plan is based on the requirements of *Resource Conservation and Recovery Act of 1976* (RCRA) and the *State of Washington Hazardous Waste Management Act, 1976*, and incorporates requirements used for characterizing radioactive waste under the *Atomic Energy Act of 1954*. The waste characterization plan represents an all-purpose plan to identify analytical requirements for regulatory performance assessment and technology, and some process development.

Ecology provided extensive reviews of the plan and required additional work scope be added to the existing characterization work effort. Resolving Ecology's comments required adjustments to single-shell tank sampling interim milestones. A Tri-Party Agreement change form was approved by the U.S. Department of Energy (DOE), EPA, and Ecology reducing the number of core samples obtained for Interim Milestones M-10-04 and M-10-05 to 4 samples from 2 tanks and 16 samples from 8 tanks respectively. The deferred core samples will be obtained in subsequent years. These changes to the interim milestones do not impact the Major Milestone M-10-00 for obtaining two core samples from each single-shell tank by September 1998.

A purchase order has been placed with the manufacturer for a second core-sampling truck. This second truck will provide backup to the first and help prevent mechanical delays with this unique equipment.

Acquisition of a core sample from tank 110-B was completed during the quarter ending June 30, 1990.

Key individuals from the single-shell tank characterization team have had to expend manpower on the support of the waste tank hydrogen issues. The extent of the impact to the single-shell tank characterization activity is under review.

Target dates (see work schedule, Appendix A, Milestone M-10-00) to initiate use of throw-away samplers and the use of a windscreen with the core sampling truck will be completed in November 1990 when tank sampling resumes.

SINGLE-SHELL TANK INTERIM STABILIZATION. The single-shell tanks were used to store highly radioactive liquid wastes through the 1970's. The tanks are made of reinforced concrete with a single carbon-steel liner. These tanks were finally taken out of service in 1980 and replaced with double-shell tanks that were built in part to store liquid removed from the single-shell tanks. The free liquid in the single-shell tanks was concentrated by evaporation and pumped out, leaving (1) the liquid coating the salt cake, (2) the sludge contained within the tanks as part of operations, and (3) small, isolated pockets of freestanding liquid. An interim stabilization program is currently underway to remove the pumpable liquid still contained within the single-shell tanks. The following status of the 1990 interim stabilization activities are:

- The installation and operability testing of pumps and associated equipment is complete on tanks 107-BX and 110-BX (the two of five tanks to be interim stabilized by September 1990) and pumping has been initiated.

- Operability testing of pumping equipment for tanks 109-BX, 111-BX and 112-BX (the remaining three tanks to be interim stabilized by September 1990) is in progress.

Overall activities toward meeting Interim Milestone M-05-02 are running approximately two months behind schedule. These delays are due to the diversion of manpower to resolve the ferrocyanide and hydrogen tank issues and other unforeseen problems that developed. These problems included the installation of a vapor removal system and repair and replacement of an exhauster assembly on two waste storage tanks. Recovery of the behind-schedule condition is expected.

SINGLE-SHELL TANK WASTE RETRIEVAL TECHNOLOGY. Waste contained in the single-shell tanks varies in volume from 5 percent to 95 percent full with a consistency ranging from liquid to sludge to salt cake. The waste consists of hazardous and nuclear (high- and/or low-level radioactive) waste. In consideration of these conditions and in support of final closure of the single-shell tanks a retrieval equipment test facility is necessary. This test facility will develop and simulate installation and removal of retrieval equipment and demonstrate the equipment's ability to remove various simulated waste types in a nonradioactive environment. The facility, as planned,

would consist of a complete cylindrical, full-scale tank and support buildings. Retrieval technology, development, reliability and operability testing, and operator training will be important functions of this facility.

Configuration of the single-shell tank waste retrieval test facility was established along with a rough order-of-magnitude cost estimate. This information represents the basis for completion of conceptual design. Currently, conceptual design is one month behind schedule due to manpower constraints and rescoping efforts required to stay within the overall cost target. The impact to initiating the definitive design is being evaluated. A delay is not anticipated at this time.

Acceptable single-shell tank waste simulants have been determined. This knowledge will provide vendors with the necessary steps to prepare bulk batches of both the sludge and salt cake simulants. Commercially available technologies will be functionally tested at the vendor site using the waste simulants.

Retrieval technologies for development and testing in a scale model tank have been identified for each type of waste. The completion of this work is on schedule to support the Tri-Party Agreement Milestone M-06-01, "Identify Waste Retrieval Technologies to be Tested in Scale Model Tank" due in October 1990.

GROUT DISPOSAL PROGRAM. The Grout Treatment Facility consists of processing equipment and disposal vaults. Liquid waste is piped from a waste feed tank into the transportable grout equipment. The dry blend from the Dry Materials Facility, which blends commercially produced cement-based materials, is hauled in trucks to the transportable grout equipment where it is mixed with the liquid waste. The resulting slurry is then pumped to large underground concrete vaults where it will harden. The grout vaults are designed to meet the requirements established by Ecology and EPA for hazardous waste disposal, including a double liner/leachate collection system.

Construction of grout vaults is currently four months behind schedule. The majority of the delay stems from the requirement to incorporate a new diffusion barrier design in the vaults, impacts due to the 242-A Liquid Effluent Retention Facility funding issues (see fiscal year [FY] 1990 budget in Section 2.4), and delays encountered in initiating construction with the construction contractor. The new barrier design will solve diffusional-release and vapor-return issues. Further delays are expected due to the 1991 budget shortfall (see Section 2.4 for details of this situation).

B-PLANT PREPARATION FOR PRETREATMENT OF TANK WASTES. Some Hanford Site wastes stored in double-shell tanks must be pretreated before final disposal. Current plans call for the necessary pretreatment operations to be performed in an upgraded B Plant facility located in the 200 East Area. Waste from various double-shell tanks will be routed to the B Plant for separation of low-level waste from the high-level waste streams. The plans call for the low-level wastes to be routed to the Grout Treatment Facility for

immobilization and final disposal in near-surface vaults as a cementitious grout. The remaining high-level waste will be returned to double-shell tanks for interim storage until immobilized in a borosilicate glass waste form at the Hanford Waste Vitrification Plant, with final disposal in a geologic repository.

A project to upgrade B Plant ventilation systems has been validated by U.S. Department of Energy-Headquarters (DOE-HQ) on May 10, 1990. This project will provide safety class I ventilation and filtering capabilities for B Plant's pretreatment mission.

As reported in the previous Quarterly Progress Report, Milestone M-02-00, "Initiate B Plant Operations for Pretreatment of Double-Shell Tank Waste" is no longer achievable as currently defined. Detailed planning revealed a serious problem with startup and full operation of B Plant by October 31, 1993. Funding shortfalls, identified in FY 1990 which led to deferral of planned FY 1990 work scope combined with planned facility outages for installation of the B Plant Canyon Crane, will result in the delay of the start of neutralized current acid waste pretreatment demonstration processing. Thus far, no impacts to Milestone M-03-00, "Initiate Hanford Waste Vitrification Plant Operations," have been identified.

2.2 CLEANUP OF PAST-PRACTICE UNITS

THE 1100-EM-1 OPERABLE UNIT. The 1100-EM-1 operable unit is the first of 78 operable units identified for investigation in the Tri-Party Agreement. It includes seven waste units in the southeastern corner of the Hanford Site in close proximity to the city of Richland, as shown in Figure 1. It has been used as a maintenance area, warehouse facility, and equipment storage yard in support of Hanford Site operations.

Arochlor 1248, a polychlorinated biphenyl has been found in a vadose zone boring on the southern edge of the Horn Rapids Landfill ranging in concentrations from 65,000 parts per billion just below the surface to 28 parts per billion at 14 feet down. Established soil cleanup limits are 45,000 parts per billion.

An expedited response action is being considered to clean up the groundwater at the Horn Rapids Landfill where contamination by trichloroethylene and nitrates has been found in amounts greater than the primary drinking water standards.

The second round of groundwater sampling in the Remedial Investigation, begun on May 14, 1990, has been completed. Additional wells between the 1100 Area and the 300 Area were sampled during the second round to determine if contaminants from the groundwater at the Horn Rapids Landfill may have migrated down-gradient into that area.

Work continued on the Remedial Investigation Phase I report for submittal on August 31, 1990 to EPA and Ecology.

THE 200-BP-1 OPERABLE UNIT. The 200-BP-1 operable unit is the first operable unit involving an investigation of waste units contaminated with radioactive substances such as tritium, cobalt, uranium, cesium, strontium, and plutonium. It is located approximately in the center of the Hanford Site, along the northern boundary of the 200 East Area (see Figure 1). The 200-BP-1 operable unit includes nine inactive cribs, as well as three unplanned release sites designated as waste units. The cribs received low-level liquid waste from U Plant uranium reclamation operations and waste storage tank condensate from the adjacent 241-BY Tank Farm. The 200-BP-1 operable unit is a high priority operable unit because of its possible contribution to groundwater contamination observed in the vicinity, and because of its proximity to single-shell tanks.

Field work was initiated on April 6, 1990 with the start of groundwater monitoring well installation. However, issues related to development and implementation of safety plans and monitoring have required the stopping of work on the wells pending resolution of the issues. Efforts are in progress to resolve these issues and resume well drilling.

THE 300-FF-1 OPERABLE UNIT. Adjacent to the Columbia River, the 300-FF-1 operable unit is located in the northeastern corner of the 300 Area of the Hanford Site (see Figure 1), and consists of 19 waste units. These waste units include process trenches, retention basins, burial grounds, and process ponds that have received and/or continue to receive wastes from reactor fuel fabrication, laboratory operations, filter backwash from the water treatment plant, power house operation (flyash slurry), and sanitary sewers. The 300 Area process trenches will be closed, under RCRA requirements, in conjunction with the RI/FS and subsequent remedial actions associated with the 300-FF-1 operable unit.

The *Draft Remedial Investigation/Feasibility Study Work Plan for the 300-FF-1 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1989a) underwent public comment from April 6, 1990 to May 5, 1990 and was approved by the EPA on June 15, 1990.

Sampling of vegetation in and around the operable unit was performed during the last quarter. The samples will be analyzed for potential contaminants.

Surface radiation surveys were also restarted during the last quarter. Surface radiation surveys have revealed several "hot spots" (radiological surface contamination areas) located within the 300-FF-1 operable unit. Access control, remediation and cleanup are being initiated as a result.

A Tri-Party Agreement change form was approved by DOE, EPA, and Ecology which established interim milestone dates for submittal of the feasibility study reports for phase 1, 2 and 3 and the remedial investigation report phase 2.

THE 300-FF-5 OPERABLE UNIT. The 300-FF-5 operable unit is a groundwater operable unit and consists of the aquifer beneath the 300-FF-1, 300-FF-2, and 300-FF-3 operable units. Ultimately, the extent of the operable unit will include all significant contamination emanating from 300-FF-1, 300-FF-2, and 300-FF-3. The 300-FF-5 operable unit is located adjacent to the Columbia River, on the southeastern section of the Hanford Site in Benton County, Washington.

The *Draft Remedial Investigation/Feasibility Study Work Plan for the 300-FF-5 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1989b) underwent public comment from April 6, 1990 to May 5, 1990 and was approved by the EPA on June 15, 1990.

A Tri-Party Agreement change form was approved by the DOE, EPA, and Ecology which established interim milestone dates for submittal of the feasibility study reports for phase 1, 2 and 3 and the remedial investigation report phase 2.

THE 100-HR-1 AND 100-HR-3 OPERABLE UNIT. The 100-HR-1 and 100-HR-3 operable units are located in the 100 Area of the Hanford Site (see Figure 1), adjacent to the Columbia River. The 100-HR-1 operable unit is situated within the 100-H Area of the Hanford Site and is composed of 10 waste units that include percolation cribs and trenches, burial grounds, and evaporation basins. Present in these waste units are process liquid wastes, reactor exhaust stack emissions, radioactive solid wastes, sanitary liquid wastes, and reactor fuel fabrication wastes.

The 100-HR-3 unit is a 'groundwater only' operable unit (a geographic area representing the potential extent of groundwater contamination and addressing only the groundwater contaminants) that addresses the groundwater plume(s) associated with the 100-HR-1, 100-HR-2, 100-DR-1, 100-DR-2, 100-DR-3, and 100-IU-4 operable units. Both the 100-HR-1 and 100-HR-3 operable units are being addressed under RCRA corrective action authority.

Initial nonintrusive investigation work began during the last quarter in the 100-HR-1 operable unit.

Comments, on the submitted work plans for 100-HR-1 and 100-HR-3, were received from Ecology during the last quarter. Numerous meetings have been held between the DOE, EPA, and Ecology to resolve technical and programmatic issues. Many of the issues being discussed have site-wide applicability to other operable units. As a result the due date for submittal of a revised 100-HR-1 work plan has been extended from June 30, 1990 to August 30, 1990 to allow resolution of the issues and to coincide with resubmittal of the 100-HR-3 work plan.

THE 100-DR-1 OPERABLE UNIT. The 100-DR-1 operable unit is in the 100-D/DR Area of the Hanford Site, 30 miles north of Richland and adjacent to the Columbia River (see Figure 1 for location of the 100-DR-1 operable unit). The 100-D/DR Area contains two of the old reactors that are awaiting

decommissioning along with their support facilities. There are also numerous waste units within the 100-D/DR Area that were used in past operations. These include cribs, trenches, retention basins, and septic tanks. The 100-DR-1 operable unit covers the northern section of the 100-D/DR Area, where most of the liquid disposal sites are located. There are 19 waste units identified in the 100-DR-1 operable unit, including the 100-D Ponds that currently receive liquid. The ponds are regulated as RCRA treatment, storage and/or disposal units as a result of prior discharges. The 100-DR-1 operable unit is being addressed under RCRA corrective action authority. Ecology is the lead regulatory agency.

Comments on the *Resource Conservation and Recovery Act Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington* (DOE-RL 1989c) from the EPA and Ecology were received on May 1, 1990. Resolution of the comments has begun in conjunction with reviews of the 100-HR-1 and 100-HR-3 operable unit work plans. Resubmittal of a revised work plan to the EPA and Ecology has been rescheduled for August 30, 1990.

LOW-LEVEL MIXED WASTE LABORATORY. The cleanup effort at the Hanford Site will require the performance of extensive sampling and analysis to determine the nature and extent of radioactive and chemical constituents present in facilities, waste streams and waste sites. To deal with the rapidly increasing need for laboratory capacity a new analytical laboratory called the Waste Sampling and Characterization Facility has been planned. This new facility will include a shielded counting room and wings devoted to organic and inorganic analysis, low-level radionuclide separations and sample receiving and preparation.

Ground breaking for the new Waste Sampling and Characterization Facility took place on May 24, 1990, officially beginning construction of the facility required by Milestone M-14-00. Definitive design of the facility continued on schedule for completion on September 30, 1990 to meet Milestone M-14-01.

2.3 PERMITTING AND CLOSURE OF TREATMENT, STORAGE, AND DISPOSAL UNITS

THE 183-H SOLAR EVAPORATION BASINS CLOSURE. The 183-H Solar Evaporation Basins are located in the 100-H Area, near the northern end of the Hanford Site. Four of the 100-H Area deactivated concrete basins (formerly used for water treatment) were designated for use as solar evaporation basins in 1973. The basins were used for the storage/treatment of radioactive mixed wastes generated at the N Reactor fuel-fabrication facilities. The last shipment of wastes to the 183-H Basins took place in November 1985.

Revisions were completed and the *183 Solar Evaporation Basins Closure/Post-Closure Plan, Rev. 2* (DOE-RL 1990h), was submitted to the EPA and Ecology on April 13, 1990 for final approval. Final approval is expected next quarter.

Removal of the crystallized solid material and the liner from basin 3 was completed on April 13, 1990. Solidification of the remaining liquid in basin 2 began on April 17, 1990 and was completed on May 4, 1990. Removal of the remaining crystallized material in basin 2 began on May 17, 1990 and was in progress at the end of the quarter.

THE GROUT DISPOSAL PERMIT APPLICATION. (See Grout Disposal Program in Section 2.1 for a description of the Grout Treatment Facility.)

Responses to the EPA and Ecology comments in the second notice of deficiency, received on March 16, 1990, for Revision 1 of the *Grout Treatment Facility Dangerous Waste Permit Application* (DOE-RL 1989d) were incorporated into a response table and resubmitted to the EPA and Ecology on June 29, 1990.

HANFORD WASTE VITRIFICATION PLANT PERMIT APPLICATION. The Hanford Waste Vitrification Plant will immobilize pretreated high-level and transuranic waste currently stored in underground double-shell tanks at the Hanford Site. The facility will process the waste into a borosilicate glass waste form in stainless steel canisters for temporary storage in the facility until shipment to an offsite federal geologic repository.

The second set of notice-of-deficiency comments on the *Hanford Waste Vitrification Plant Dangerous Waste Permit Application* (DOE-RL 1989e) was received from Ecology on May 25, 1990. Responses to the comments are being developed.

A proposed permitting strategy was reviewed with Ecology on May 25, 1990 which would allow a permit based on a combination of preliminary and final design. This permit will authorize start of construction and will also contain "hold points;" specific times in the design/construction schedule where approval from Ecology will be required before DOE can proceed.

NONRADIOACTIVE DANGEROUS WASTE STORAGE FACILITY PERMIT APPLICATION. The 616 Nonradioactive Dangerous Waste Storage Facility is located in the 600 Area of the Hanford Site between the 200 East and 200 West Areas. This facility was designed and constructed in accordance with the requirements for hazardous waste container storage units.

Ecology has reviewed final notice-of-deficiency responses on the *616 Nonradioactive Dangerous Waste Storage Facility Dangerous Waste Permit Application* (DOE-RL 1989f) which were transmitted to Ecology on February 19, 1990. Ecology's comments were incorporated and a revision of the permit application was submitted to EPA and Ecology on June 22, 1990.

SINGLE-SHELL TANK CLOSURE/CORRECTIVE ACTION. The *Single-Shell Tank System Closure/Corrective Action Work Plan* (DOE-RL 1989g) addresses activities associated with the final disposition of the single-shell tank system operable units. This plan will serve as the basis for the more detailed documentation that will be prepared as work proceeds.

The first notice of deficiency was received from Ecology on March 12, 1990 on the closure/corrective action work plan submitted in calendar year 1989. A partial response table for the deficiencies was prepared and forwarded to Ecology on May 29, 1990 with responses to 17 remaining deficiencies expected to be forwarded to Ecology by July 29, 1990. However, comments requesting a vadose zone monitoring plan by June 29, 1990, represent a change in scope of activities and will not be accomplished within the time frame requested.

THE 2101-M POND CLOSURE. The 2101-M Pond is a U-shaped earthen pond located in the 200 East Area of the Hanford Site. It was constructed in 1953 to receive nondangerous waste water from the 2101-M Building.

Ecology submitted responses, on May 2, 1990, to the first notice-of-deficiency response table provided by DOE. A majority of the responses made by DOE to the notice of deficiency were acceptable to Ecology. However, several key issues remain to be resolved. These issues involve the clean closure standard for the site and determination of soil and groundwater background levels. A schedule for resolution of the remaining issues was discussed at a unit managers' meeting on June 8, 1990. A unit managers' meeting was held on July 11, 1990 to discuss soil and groundwater background issues and statistics for data interpretation.

Revision of the *2101-M Pond Interim Status Closure Plan Rev. 2* (DOE-RL 1989h) has also begun based on the notice-of-deficiency responses accepted by Ecology.

LOW-LEVEL BURIAL GROUNDS PERMIT APPLICATION. The low-level burial grounds are constructed to receive solid low-level radioactive mixed wastes. These wastes are generated from many different operations both on and off the Hanford Site. The wastes are packaged in steel, concrete, or wooden containers and then placed into disposal trenches. Past practices placed radioactive mixed-waste throughout the facility. Future radioactive mixed-waste will be placed in specific areas meeting RCRA requirements.

The *Low-Level Burial Grounds Dangerous Waste Permit Application Rev. 0* (DOE-RL 1989i) is in the first review cycle with Ecology and EPA. Notice-of-deficiency comments were received from Ecology on May 25, 1990. These comments address regulatory aspects of the permit application. Work on responses to Ecology's comments has begun with responses to be submitted on August 25, 1990.

A waiver to dispose of submarine reactor compartments in trench 94 is planned to be submitted on July 25, 1990.

THE 305-B STORAGE FACILITY PERMIT APPLICATION. The 305-B Chemical Waste Storage Facility is a waste assembly area that primarily services research and development operations in the 300 Area. Wastes are brought into the facility for storage, repackaging, and/or consolidation of wastes, generally into 55-gallon drums.

The *305-B Storage Facility Dangerous Waste Permit Application* (DOE-RL 1990i) was submitted to the EPA and Ecology for review on January 31, 1990. The first notice-of-deficiency comments from Ecology were received by the DOE on April 26, 1990. Responses to the notice-of-deficiency comments are being developed and will be provided to Ecology and the EPA by July 27, 1990.

THE 216-B-3 POND CLOSURE. The 216-B-3 Pond has served as a disposal facility at the 200 East Area on the Hanford Site. The pond has received process and cooling waters from the Plutonium/Uranium Extraction (PUREX) Plant, B Plant, and other 200 Area facilities. The 216-B-3 Pond has also received potentially corrosive dangerous wastes from the regeneration of demineralizer columns in PUREX. These wastes were neutralized before reaching the pond by successive additions of acidic and caustic wastes.

The *216-B-3 Pond System Closure/Post-Closure Plan* (DOE-RL 1990j) was submitted to the EPA and Ecology on March 29, 1990. The closure plan under went review by Ecology and EPA during the last quarter with the first notice-of-deficiency comments scheduled to be received from Ecology by July 5, 1990.

Field activities, which consist of the Phase III sampling (vadose zone), were placed on hold due to the Notice of Suspension issued by the EPA against U.S. Testing. A substitute laboratory is being located and the sampling will be rescheduled.

THE SIMULATED HIGH-LEVEL WASTE SLURRY TREATMENT AND STORAGE UNIT CLOSURE. The Simulated High-Level Waste Slurry Treatment/Storage Unit in the 1100 Area of the Hanford Site is an area used to store containerized, simulated, commercial power reactor metal nitrate slurries representing two PUREX wastestreams. The unit was also used to treat the stored slurry, using in-place grouting techniques, in November 1988.

Notification was received from Ecology on April 17, 1990 that the grouted material should no longer be regulated as a dangerous waste. Options for disposal of this material prior to closure of the facility are under review. Also, on April 17 and 25, 1990, comments from Ecology on the DOEs responses to the closure plan notice-of-deficiency were received. A 45-day extension on the time to submit a revised closure plan has been requested by DOE. The additional time is required to modify the sampling and analysis plan and to prepare the closure plan package for final review.

PETITIONS TO WITHDRAW PART A AND PART B PERMIT APPLICATIONS. Pursuant to Milestone M-20-45, petitions for withdrawal of Part A and Part B permit applications for five Hanford Site facilities were originally submitted to Ecology in June 1989. These facilities were never used for the treatment, storage, or disposal of hazardous or mixed waste.

One of the five facilities, the 1706-KE Waste Treatment Facility, is a laboratory that is used to conduct water quality, filtration, and corrosion studies in support of N Reactor systems. The facility was not used for treatment of dangerous or mixed waste and there are no longer plans to do so. Plans have been developed to sample and analyze the residual materials remaining in the system as well as waste by products from its earlier operation. Results from the sampling and analyses along with other information will provide a comprehensive assessment of the system procurement, anticipated use, actual use and characterization of material that was treated. This assessment will provide a response to comments provided by Ecology on the petition to withdraw the Part A permit originally submitted per Milestone M-20-45.

M-23 INTERIM STATUS COMPLIANCE ACTIVITIES. The following describes technical progress achieved over the last quarter in the area of interim status corrective actions.

- The Treatment-By-Generator requests for the 222-S Treatment Tank, PUREX Plant Treatment Tanks, and 204-AR Waste Unloading Station were resubmitted on schedule to meet the Milestone M-23-01 date of June 30, 1990. Due to the variety of potential contaminants from past and present operations, it was felt that analytical data was needed to verify the process knowledge designation presented in the T-Plant Treatment-by-Generator request. Because of unforseen delays in obtaining sample analyses and plant equipment difficulties, analysis results were not available in time to be incorporated into the T-Plant Treatment-by-Generator request supporting Interim Milestone M-23-01. As a result, an extension of the interim milestone to September 30, 1990 was negotiated with Ecology.

- Waste analysis plans for the 4843 Storage Facility and Single-Shell Tanks were completed on schedule in June 1990, to meet the Milestone M-23-04 date of June 30, 1990.

- Contingency Plans for the Low-Level Burial Grounds, 4843 Storage Facility, Central Waste Complex, T-Plant, Transuranic Storage and Assay Facility, and 616 Facility were completed in May and June 1990, to meet the Milestone M-23-05 date of June 30, 1990.

- Interim Status Corrective Actions for the 4843 Storage Facility were completed on schedule in June 1990, to meet the Milestone M-23-08 date of June 30, 1990.

- Interim Status Corrective Actions for the Transuranic Storage and Assay Facility were completed in May 1990 to meet the Milestone M-23-15 date of June 30, 1990.

- Interim Status Corrective Actions for the 616 Facility were completed in May 1990 to meet the Milestone M-23-16 date of June 30, 1990.

- Interim Status Corrective Actions for the Central Waste Complex were completed in May 1990 to meet the Milestone M-23-17 date of June 30, 1990.

THE 300 AREA PROCESS TRENCHES. The 300 Area Process Trenches are located at the north end of the 300 Area of the Hanford Site. These two trenches currently receive nonregulated process and cooling waters from operations in the 300 Area and have historically received mixed wastes from several research and development laboratories and from the fuels fabrication process. These wastes were discharged to the 300 Area Process Trenches and allowed to percolate into the soil column underlying the trenches. These trenches will be closed under the *State of Washington Hazardous Waste Management Act, 1976*. A proposed option and a schedule to cease discharge to the 300 Area Process Trenches were developed and submitted to Ecology and EPA on March 30, 1990 fulfilling the requirements of Milestone M-17-05. The proposed option and schedule include possible facility minimization actions that would reduce effluents to the process trenches by approximately 80 percent by May 1993.

Work continued last quarter on efforts to end discharges to the 300 Area Process Trenches. Revised conceptual design incorporating the reduced volumes from minimization efforts was completed and was presented to DOE-HQ for validation.

LIQUID EFFLUENT TREATMENT AND DISPOSAL (MILESTONE M-17-00). The current status of liquid effluent treatment and disposal activities, as compared to the plan included in the Tri-Party Agreement (Milestone M-17-00), is displayed in Appendix A.

The following describes technical progress achieved over the last quarter in liquid effluent and disposal activities.

- The PUREX ammonia scrubber distillate and process condensate treatment systems were presented for validation for funding and authority to proceed under a plan which will allow completion and operation in advance of the 1995 Milestone M-17-02.

- The schedule for an evaluation of best-available-technology for the PUREX steam condensate system was used to develop a schedule to execute the project. A Tri-Party Agreement change request, implementing the schedule, has been prepared for submittal to Ecology. Completion and operation are expected to be compatible with the June 1995 overall milestone (M-17-00).

- An evaluation of best-available-technology for the UO3 Plant process condensate treatment system was completed by April 30, 1990. A Tri-Party Agreement change request, implementing the schedule to execute the project, has been prepared for submittal to Ecology. Completion and operation are expected to be compatible with the June 1995 overall guiding milestone (M-17-00).

- Completion of definitive design for the Plutonium Finishing Plant wastewater treatment system will be approximately four months late. Delays in safety analysis work and an increase in the amount of design work required are the basis of the delay. No impact on scheduled completion of construction and operation is anticipated.

- The definitive design of the B Plant Process Condensate Treatment Facility started approximately three months late. Incorporation of additional design and construction requirements account for the additional delay with design completion now expected in January 1991 and an anticipated ten month delay in construction completion currently scheduled for June 1993. The schedule delay is not considered recoverable.

- The B Plant chemical sewer neutralization system, the environmental compliance upgrade and the aqueous makeup area upgrade support interim Milestone M-17-04, due July 31, 1992. Completion of the chemical sewer neutralization system is expected in January 1991, four months late. Safety documentation issues and completion of the contracting process with offsite architect/engineer are being resolved. Further delays in definitive design and construction could affect the milestone. Definitive design of the environmental compliance upgrades started in March 1990, more than two months late. A requested delay in completion of design to January 15, 1991 could impact timely completion of construction and operation of this facility and the associated milestone. Definitive design activities for the aqueous makeup area upgrade are also impacted by the completion of the contracting process with the architect/ engineer. Impact on the interim Milestone M-17-04 is being evaluated.

- Conceptual design for the 300 Area process sewer treatment system was completed and submitted to DOE-HQ and reflects early completion of interim Milestone M-17-09. The change request for Milestone M-17-06 for ceasing discharge to the 300 Area Process Trenches to accommodate this completion date and a substantial interim reduction of flow to the trenches is being considered by the EPA and Ecology.

- The 242-A Evaporator process condensate treatment system has been accelerated to enable restart of the evaporator while maintaining available storage space in the double-shell tanks. Conceptual design has been combined with the PUREX ammonia scrubber distillate and PUREX process condensate treatment system conceptual designs.

- The change request to establish target dates for the 222-S Laboratory chemical sewer upgrades was prepared for submittal to the EPA and Ecology for consideration. Completion of construction and startup is scheduled for August, 1993.

- A prefabricated filter which is a long lead time item for construction of the 2724-W Laundry Effluent Wastewater Treatment Facility was returned to the vendor for rework of unacceptable construction. Completion of the facility is expected in September 1990, four months later than the target date.

RCRA GROUNDWATER MONITORING WELLS. The RCRA groundwater monitoring wells are being installed at various locations on the Hanford Site to comply with RCRA groundwater monitoring requirements. Locations and installation of groundwater monitoring networks for Hanford Site facilities are prioritized based on regulatory requirements and monitoring needs. Determining well locations and priorities is accomplished during each annual update to the Tri-Party Agreement Work Schedule.

The Tri-Party Agreement requires the installation of 30 RCRA groundwater monitoring wells in 1990. Progress on the 1990 RCRA well program continues, with the following RCRA well installation milestones completed during the quarter ending June 30, 1990:

M-24-06: 'Install 6 Additional Wells Around the Low-Level Burial Grounds for a Total of 51 RCRA Monitoring Wells'

M-24-08: 'Install 4 Wells Around the B-63 Trench for a Total of 4 RCRA Monitoring Wells'

M-24-10: 'Install Four Wells Around the U-12 Crib for a Total of Four RCRA Monitoring Wells'

Remaining calendar year 1990 wells to be completed include one well at the grout facility, three wells around the S-10 ditch and pond and 11 wells at the single-shell tanks. Ecology has not given approval to proceed with drilling at the single-shell tanks (M-24-07). Drilling of the grout and single-shell tanks wells must begin by September 1, 1990 to insure that the remaining interim milestones and the major milestone can be met. Delays in the RCRA groundwater monitoring activities may occur due to the 1990 budget shortfall (see Section 2.4 for details of the funding situation).

As a result of stringent efforts to minimize purgewater volumes additional facilities to store purgewater until treatment is available may not be necessary.

2.4 OTHER TRI-PARTY AGREEMENT ACTIVITIES AND ISSUES

LABORATORY SUPPORT. The current cleanup effort as well as ongoing environmental monitoring programs at the Hanford Site require extensive sampling and analysis to determine the nature and extent of radiochemical contamination present. These sampling results are ultimately used to determine the most appropriate remedial actions, permitting requirements, and regulatory requirements to be implemented. At the Hanford Site, U.S. Testing has performed much of the radiochemical analyses of environmental samples.

On April 24, 1990 the EPA notified U.S. Testing that it was barred from receiving any new contracts from the federal government pending the outcome of an ongoing EPA investigation. While the Federal government-wide suspension did not directly affect existing U.S. Testing contracts, government suspension regulations do encourage Federal agencies to review their existing contracts with suspended companies. The DOE then directed Pacific Northwest Laboratory to determine whether the alleged practices complained of by the EPA extended to or compromised analytical work performed by U.S. Testing for Pacific Northwest Laboratory and whether Pacific Northwest Laboratory subcontract requirements were being met. On June 1, 1990 Pacific Northwest Laboratory terminated the total contract with U.S. Testing. This action taken with the concurrence of the DOE, was based in the lack of compliance with subcontract quality assurance requirements at U.S. Testing's Hoboken laboratory, where dioxin and total petroleum hydrocarbon analyses were performed.

Alternate laboratories have been identified for all required analyses and agreements are being developed but, the full impact of the termination of the contract with U.S. Testing on Tri-Party Agreement activities is not certain. Sampling efforts have been delayed until contracts are in place with the alternate laboratories.

FISCAL YEAR 1990 BUDGET. In December 1989, DOE identified the need for $12 million to cover costs associated with dealing with the 242-A Evaporator effluent storage and treatment necessary to operate the facility. The importance of the operation of the 242-A Evaporator to the achievement of Tri-Party Agreement Milestones is discussed later in this section. The DOE-RL indicated to DOE-HQ that the additional funding must be received by July 1, 1990, or other Tri-Party Agreement activities would be impacted. It now appears that the incremental funding will not be received until at least September 1990. Hanford Site officials, therefore, have no choice except to curtail some operations in order to prevent budget overruns.

The activities which have been tentatively identified to be halted or curtailed include grout, groundwater well installation and monitoring, and preparations for FY 1991 single-shell tank stabilization. This could result in a 10-month delay to the grout schedule, with resulting impacts to all of

the Tri-Party Agreement grout milestones, including the 1994 major milestone (M-01-00). The FY 1990 groundwater sampling and analyses could be reduced and the 11 groundwater monitoring wells to be placed around single-shell tanks may not be installed by December 1990 as required under interim Milestone M-24-07. The lack of funding to support fiscal year 1991 single-shell tank stabilization activities could also impact Interim Milestone M-05-03.

In addition to the $12 million needed for liquid effluent storage and treatment, additional funding is needed to cover waste tank safety and plant maintenance issues resulting from the waste storage tank ferrocyanide and hydrogen investigations. These costs are expected to reach between $6 and $7 million. Tri-Party Agreement activities which could be impacted if this additional funding is not provided include Waste Receiving and Processing Facility design activities, laboratory upgrade design activities, and tank waste treatability studies. All of these activities support Tri-Party Agreement milestones.

FISCAL YEAR 1991 BUDGET. President Bush's proposed 1991 Budget is consistent with the DOE 1991 budget request which was prepared and submitted about the same time the Tri-Party Agreement was signed in May 1989. However, as detailed planning and execution of the Tri-Party Agreement has progressed it has become apparent that some of the planned actions will cost significantly more than anticipated. Also, additional work has been identified to meet regulatory requirements (RCRA groundwater monitoring well purge water containment and disposal and 242-A Evaporator effluent issues are two examples).

The original budget submittal identified a need for $623 million for all Hanford environmental restoration and waste management activities. Currently identified needs equal $902 million resulting in an estimated $279 million shortfall in the 1991 budget. It should be noted that the $902 million estimate has not been officially adopted by DOE or the regulators. Efforts are currently underway to validate this estimate. The DOE is required to take appropriate steps to obtain timely funding to meet its obligations under the Tri-Party Agreement. The Tri-Party Agreement also provides for Ecology and EPA to assist the DOE in determining the funding levels required to support the negotiated work schedule for each fiscal year.

The Tri-Party Agreement states that if appropriate funds are not available to fulfill DOEs obligations the three parties shall attempt to agree upon appropriate adjustments to the dates which require obligation of such funds. Also under the agreement, the EPA and Ecology reserves the right to initiate any other action they deem appropriate. Currently impacts to Tri-Party Agreement Milestones are being assessed in light of the above budget considerations. Discussion of the FY 1991 budget impacts are now beginning with the EPA and Ecology.

THE 242-A EVAPORATOR/LIQUID EFFLUENT RETENTION FACILITY. Process waste stored in Hanford Site underground tanks was routinely evaporated to allow for more storage volume in the double-shell tanks and to reduce the volume of waste that must be disposed of eventually. The 242-A Evaporator-Crystallizer located in the 200 East Area of the Hanford Site is currently used for this task.

The evaporator was shut down on April 12, 1989, when it was determined that the evaporator waste feed may contain low levels of RCRA hazardous constituents. In this case, continued discharge of condensate to a crib is precluded by RCRA statutory prohibitions against placement of liquids into hazardous waste landfills.

Operation of the evaporator is important to several Tri-Party Agreement Milestones, including (1) completion of 14 grout campaigns by September 1994 (Milestone M-01-00) and (2) completion of single-shell tank interim stabilization by September 1995. These milestones are dependent on the availability of double-shell tank space.

A liquid effluent retention facility is planned to deal with the interim storage of the 242-A Evaporator process condensate. This project is aimed at enabling the restart of the 242-A Evaporator in order to relieve some of the impacts on the above-mentioned milestones. The facility will consist of retention basins that will be lined and covered to prevent the effluent from reaching the environment.

Current projections show a lack of double-shell tank space beginning in December 1990. Preliminary work in permitting of the facility has begun in anticipation of the use of the facility. Design of the basin liner and cover are running approximately 60 days behind schedule though actual completion dates will not be available until equipment vendors have been established. Overall completion schedules are being evaluated with vendors to attempt to achieve startup of the facility by December 1990 (see previous section for discussion of funding issues regarding the 242-A Liquid Effluent Retention Facility).

LIQUID EFFLUENT STUDY. The *Draft Liquid Effluent Study Project Plan* (WHC 1989) was submitted for final approval after the draft plan was conditionally approved by the EPA and Ecology with specific concerns which were addressed by DOE. The plan provides for a 14-month study to characterize Hanford Site liquid effluents, to assess waste disposal sites and groundwater contamination in area wells, and to evaluate the potential for contaminant migration within receiving soil sites.

Two bi-monthly reports delineating progress on the study for the periods of February-March and April-May were submitted during the quarter, thus fulfilling the obligation for periodic status reports in the project plan. Frequent progress review meetings have been instituted as the study enters its final stages.

The 33 preliminary stream-specific reports (WHC 1990) were submitted to Ecology and the EPA on May 21, 1990. Comments from Ecology and the EPA on the reports and supporting documents are expected early next quarter. Prompt resolution of comments and issues will be essential to completion of the final stream-specific reports and the final report by the August 31, 1990 due date for the liquid effluent study.

REVISIONS TO THE TRI-PARTY AGREEMENT. Since the signing of the Tri-Party Agreement on May 15, 1989, several areas requiring changes became apparent. These changes ranged from administrative changes such as updating the Richland address for the administrative record to incorporation of a significant work scope such as land disposal restriction compliance actions.

The proposed changes to the Tri-Party Agreement underwent a public comment period which ended May 31, 1990.

TRI-PARTY AGREEMENT QUARTERLY PUBLIC MEETINGS. Quarterly public meetings were held on April 17, 1990 in Yakima, Washington and on April 18, 1990 in Kennewick, Washington. These meetings are a chance to involve the public through question and answer sessions with the three Hanford Site project managers and to present and discuss progress on the cleanup and other Hanford Site issues such as the hydrogen buildup in waste storage tanks, investigation of the Wahluke Slope and cleanup research at Pacific Northwest Laboratory.

The next Tri-Party Agreement Quarterly Public Meetings are scheduled for July 24, 1990 in Richland and July 25, 1990 in Seattle. Announcements will be made via newspaper, radio and direct mail regarding exact times and locations of the meetings.

3.0 ACTIVITIES PLANNED FOR THE QUARTER ENDING SEPTEMBER 30, 1990

3.1 DISPOSAL OF TANK WASTES

SINGLE-SHELL TANK WASTE RETRIEVAL TECHNOLOGY. Definitive design activities will begin on the retrieval test facility.

SINGLE-SHELL TANK INTERIM STABILIZATION. Pumping of liquid from single-shell tanks 107-BX and 110-BX will continue.

B-PLANT PREPARATION FOR PRETREATMENT OF TANK WASTES.

- Complete approvals of conceptual design for ventilation upgrades which adds scope (the installation of a third exhaust fan) to the original design. Cost is an issue with the increased scope and is being evaluated.
- Finalize and award architect/engineer contract to initiate definitive design activities on the aqueous makeup unit.
- Evaluate methods to recover the construction schedule for the Process Condensate Treatment Facility.
- Initiate negotiations between the DOE, EPA and Ecology regarding impacts to Milestone M-02-00.

3.2 CLEANUP OF PAST-PRACTICE UNITS

THE 1100-EM-1 OPERABLE UNIT. Preparations will continue on the phase I remedial investigation report for submittal to the EPA and Ecology by the target date of August 31, 1990.

THE 200-BP-1 OPERABLE UNIT. Work will proceed on resolving issues related to restarting the groundwater well drilling in the 200-BP-1 operable unit.

THE 300-FF-1 OPERABLE UNIT. Efforts will continue to identify appropriate laboratory capacity so that work can be initiated on cleanup activities associated with two surface contamination areas within the 300-FF-1 operable unit.

THE 100-HR-1 AND 100-HR-3 OPERABLE UNITS. The integration of these two work plans has been completed. The 100-HR-1 and 100-HR-3 work plans are expected to be revised and resubmitted to the EPA and Ecology next quarter.

THE 100-DR-1 OPERABLE UNIT. The schedule for resubmittal of the 100-DR-1 work plan has been extended to August 30, 1990, to allow time for negotiation of comment resolutions. Resubmittal of the work plan is expected to take place within this time frame.

THE 100-BC-1 AND 100-BC-5 OPERABLE UNITS. Comments are expected from the EPA on the 100-BC-5 work plan. Comment resolution on both 100-BC-1 and 100-BC-5 work plans will continue during the next quarter.

THE 100-KR-1 AND 100-KR-4 OPERABLE UNITS. Reviews of the 100-KR-1 and 100-KR-4 work plans by the EPA and Ecology will continue next quarter with comments currently expected by August 3, 1990. Comment resolution will begin at that time.

THE 100-NR-1 AND 100-NR-3 OPERABLE UNITS. Draft work plans are expected to be issued during the next quarter.

3.3 PERMITTING AND CLOSURE OF TREATMENT, STORAGE, AND DISPOSAL UNITS

Work will begin on responses to notice-of-deficiency comments for the following facility permits or closure plans:

- The 216-B-3 Pond
- The 304 Concretion Facility
- The 303-K Storage Facility
- The 2101-M Pond.

Responses to notice-of-deficiency comments will be provided to Ecology and EPA on the following facility permits or closure plans

- The 305-B Storage Facility
- The Hanford Waste Vitrification Plant
- The Single-Shell Tank System
- The Low-Level Burial Grounds.

Work will continue on revising the following facility permits or closure plans:

- The Hanford Waste Vitrification Plant.

The following closure plans/permit applications will be completed and submitted to the EPA and Ecology for review in fulfillment of Tri-Party Agreement Milestones:

- The Nonradioactive Dangerous Waste Landfill
- The Purex Tunnels
- The 105-DR Sodium Fire Facility.

Notice-of-deficiency comments are expected from Ecology on the following facility permits or closure plans:

- The 304 Concretion Facility
- The 303-K Storage Facility
- The Grout Treatment Facility.

4.0 WORK SCHEDULE STATUS THROUGH JUNE 30, 1990

The status of many of the Tri-Party Agreement activities was discussed in the Highlights and Technical Status sections of this report. As of June 30, 1990, all major and interim milestones were completed on or ahead of schedule. Appendix A contains the Tri-Party Agreement work schedule, which is marked with a vertical dashed line to indicate progress on milestones. Notes are provided on the work schedule to explain significant deviations.

Note that the first annual update to the Tri-Party Agreement work schedule revised the previous work schedule by deleting calendar year 1989, providing monthly activity detail for calendar year 1990, and providing quarterly detail for calendar year 1991. A new calendar year, 1996, was added to the end of the work schedule. The new work schedule is in the same format as the original work schedule, with the addition and adjustment of target dates and incorporation of approved milestone additions in accordance with Section 12 of the Tri-Party Agreement Action Plan. None of the changes made during the annual update resulted in delayed dates for the original milestones.

Table D-4 has been removed from the quarterly progress report because the remaining interim status compliance actions were incorporated into the new work schedule as interim milestones under Milestone M-23-00.

5.0 REFERENCES

Atomic Energy Act of 1954, as amended, Public Law 83-703, 66 Stat. 919 42 USC 2011.

Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, Public Law 96-510, 94 Stat. 2767, 42 USC 9601 et seq.

DOE-RL, 1989a, *Draft Remedial Investigation/Feasibility Study Work Plan for the 300-FF-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 88-31, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989b, *Draft Remedial Investigation/Feasibility Study Work Plan for the 300-FF-5 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 89-14, Draft A, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989c, *Resource Conservation Recovery Act Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 89-09, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989d, *Grout Treatment Facility Dangerous Waste Permit Application*, DOE/RL 88-27, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989e, *Hanford Waste Vitrification Plant Dangerous Waste Permit Application*, DOE/RL 89-02, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989f, *616 Nonradioactive Dangerous Waste Storage Facility Dangerous Waste Permit Application*, DOE/RL 89-03, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989g, *Single-Shell Tank System Closure/Corrective Action Work Plan*, DOE/RL 89-16, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989h, *2101-M Pond Interim Status Closure Plan Rev. 2*, DOE/RL 88-41, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1989i, *Low-Level Burial Grounds Dangerous Waste Permit Application Rev. 0*, DOE/RL 88-20, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990a, *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-BC-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 90-07, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990b, *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-BC-5 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 90-08, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990c, *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-KR-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 90-20, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990d, *Draft Remedial Investigation/Feasibility Study Work Plan for the 100-KR-4 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL 90-21, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990e, *The 300 Area Waste Acid Treatment System Closure Plan*, DOE/RL 90-11, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990f, *303-K Radioactive Mixed-Waste Storage Facility Closure Plan*, DOE/RL 90-0004, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990g, *304 Concretion Facility Closure Plan*, DOE/RL 90-0003, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990h, *183 Solar Evaporation Basins Closure/Post-Closure Plan Rev. 2*, DOE/RL 88-04, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990i, *305-B Storage Facility Dangerous Waste Permit Application*, DOE/RL 90-1, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL, 1990j, *216-B-3 Pond System Closure/Post-Closure Plan*, DOE/RL 89-28, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

Resource Conservation and Recovery Act of 1976, Public Law 94-580, 90 Stat. 2795, 42 USCG 901 et seq.

State of Washington Hazardous Waste Management Act, 1976, as amended, Revised Code of Washington 70.105, Olympia, Washington.

WHC, 1989, *Draft Liquid Effluent Study Project Plan*, WHC-EP-0275-1, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990, *Hanford Site Preliminary Stream-Specific Reports*, WHC-EP-0342, Westinghouse Hanford Company, Richland, Washington.

Winters, W. I., L. Jensen, L. M. Sasaki, R. L. Weiss, J. F. Keller, A. J. Schmidt, M. G. Woodruff, 1989, *Waste Characterization Plan for the Hanford Site Single-Shell Tanks*, WHC-EP-0210, Westinghouse Hanford Company, Richland, Washington.

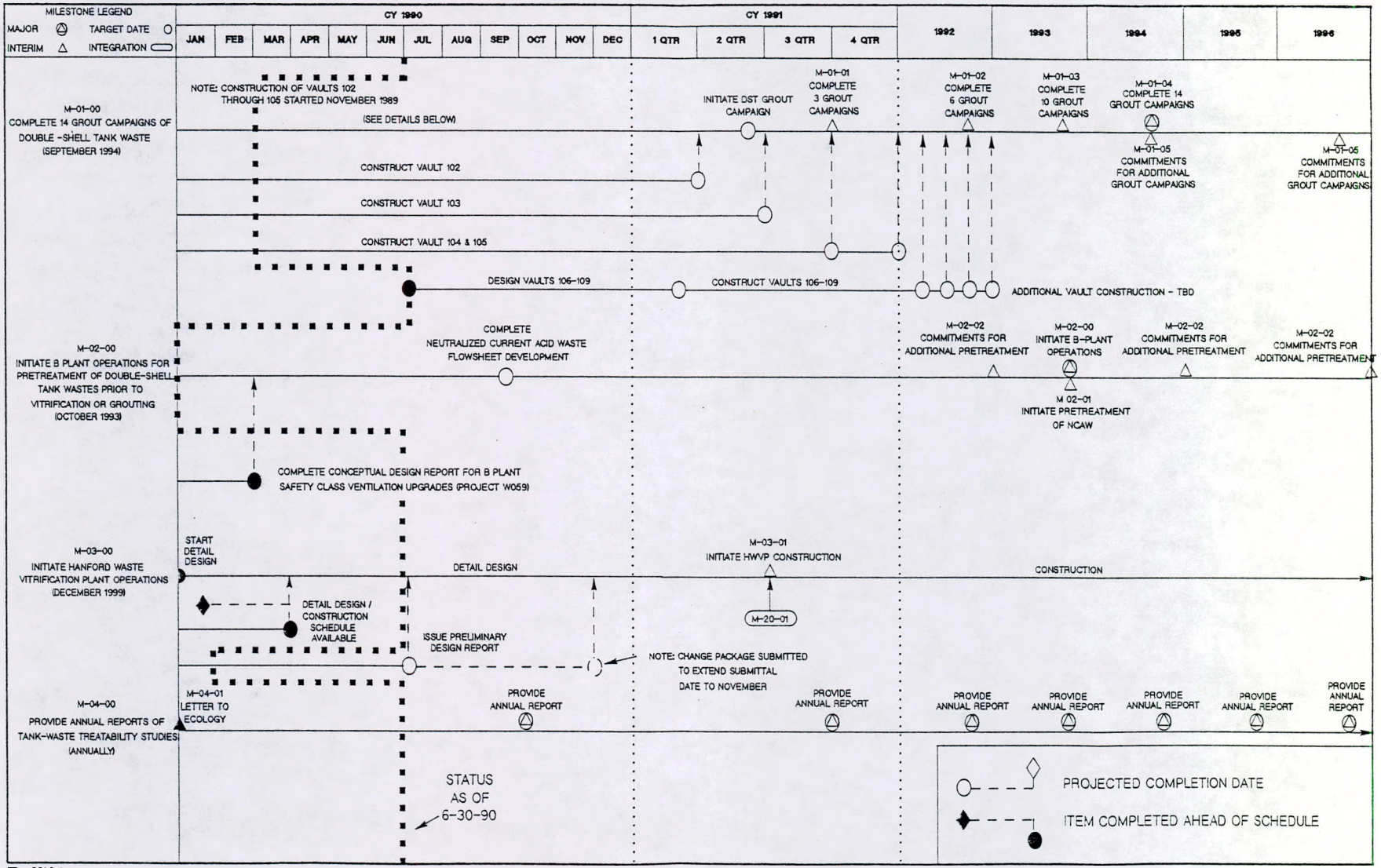
APPENDIX A

THE HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER ACTION PLAN WORK SCHEDULES

The following schedules include status lines to show the progress of activities toward the respective milestone or target date. The vertical status lines show actual progress as of June 30, 1990. Movement of the line to the left indicates work behind schedule, and movement to the right indicates work ahead of schedule. Notes have been included in some cases to explain a particular status.

FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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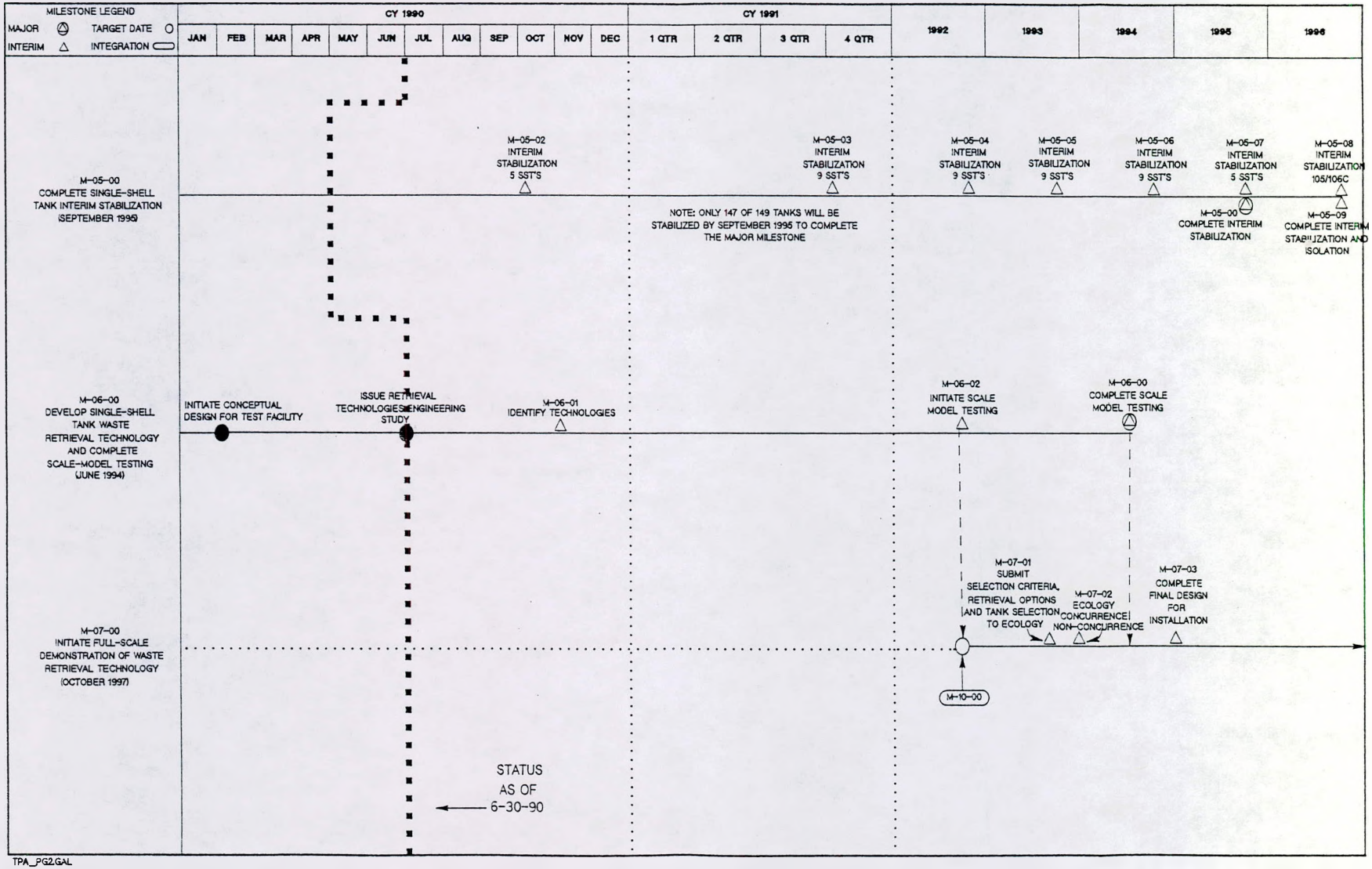
ACTION PLAN WORK SCHEDULE



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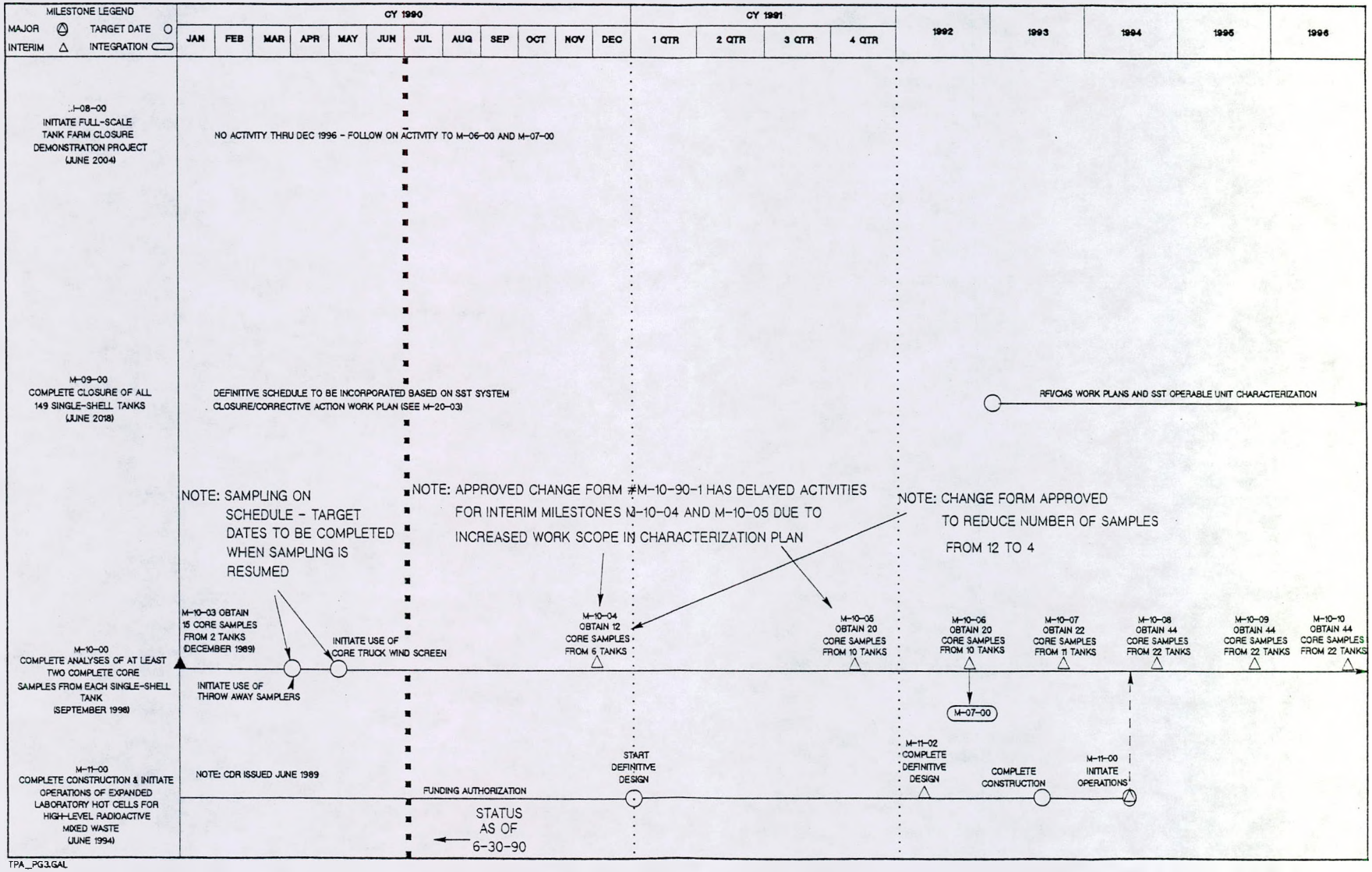
ACTION PLAN WORK SCHEDULE



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FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

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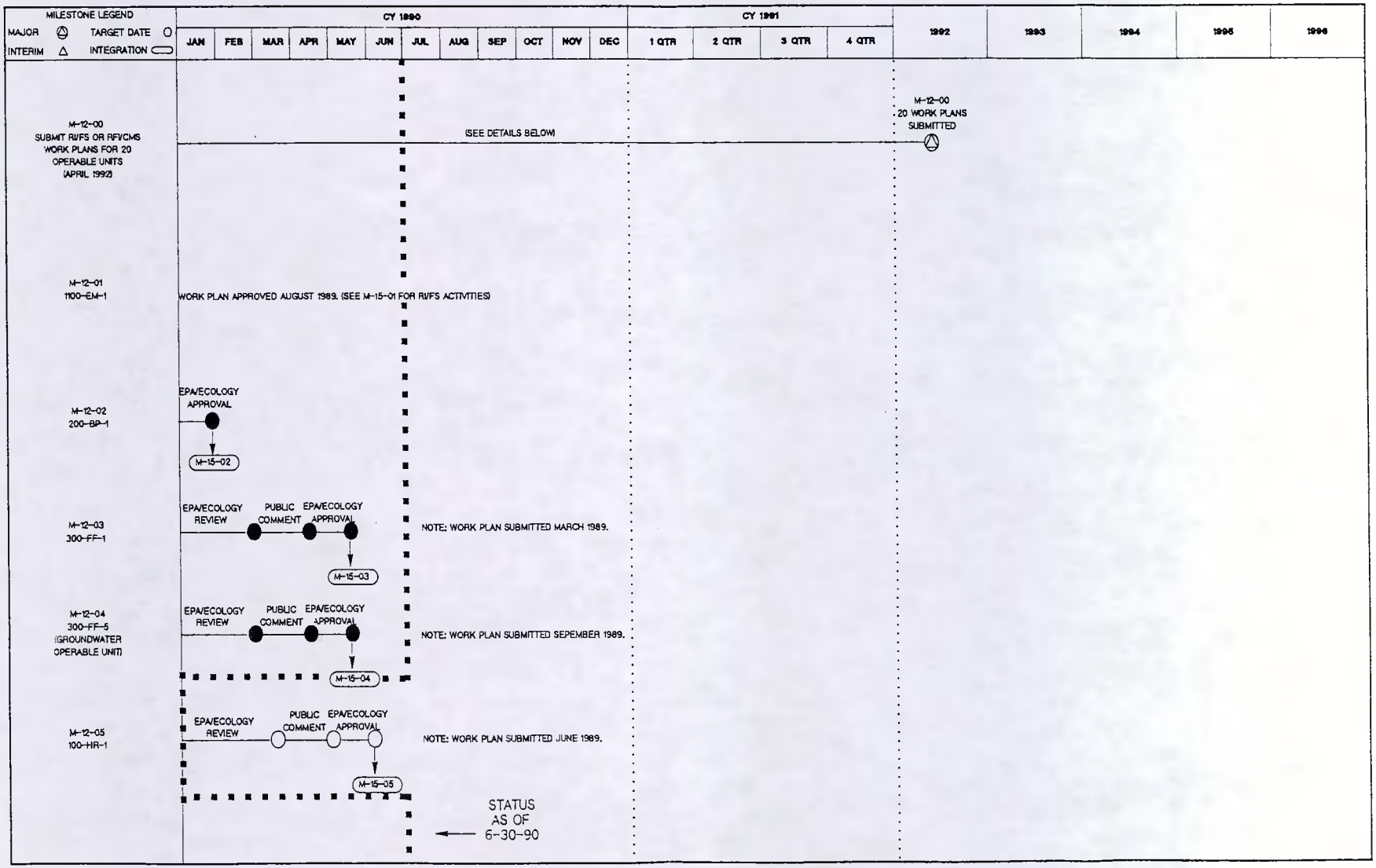

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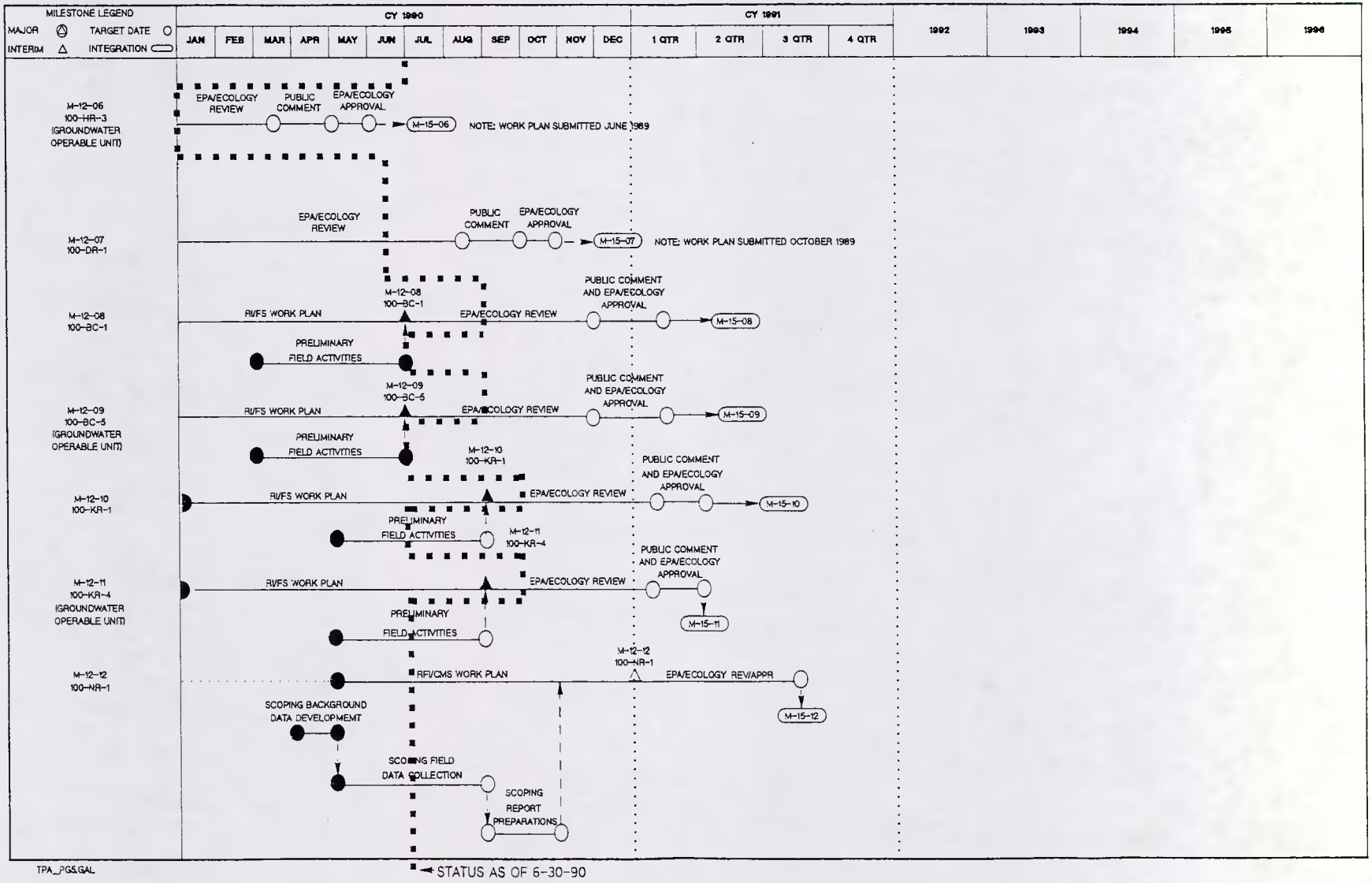

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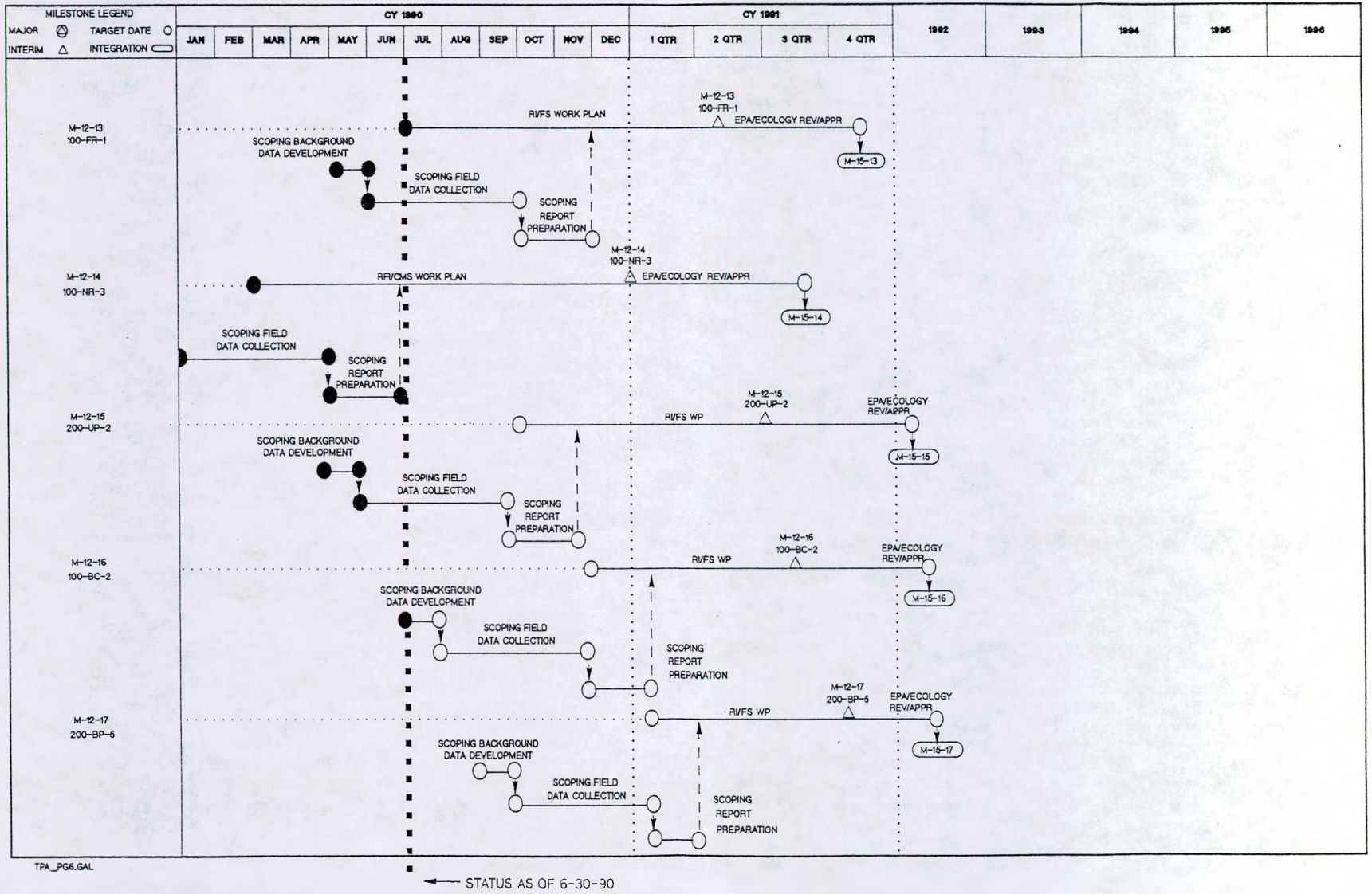
ACTION PLAN WORK SCHEDULE



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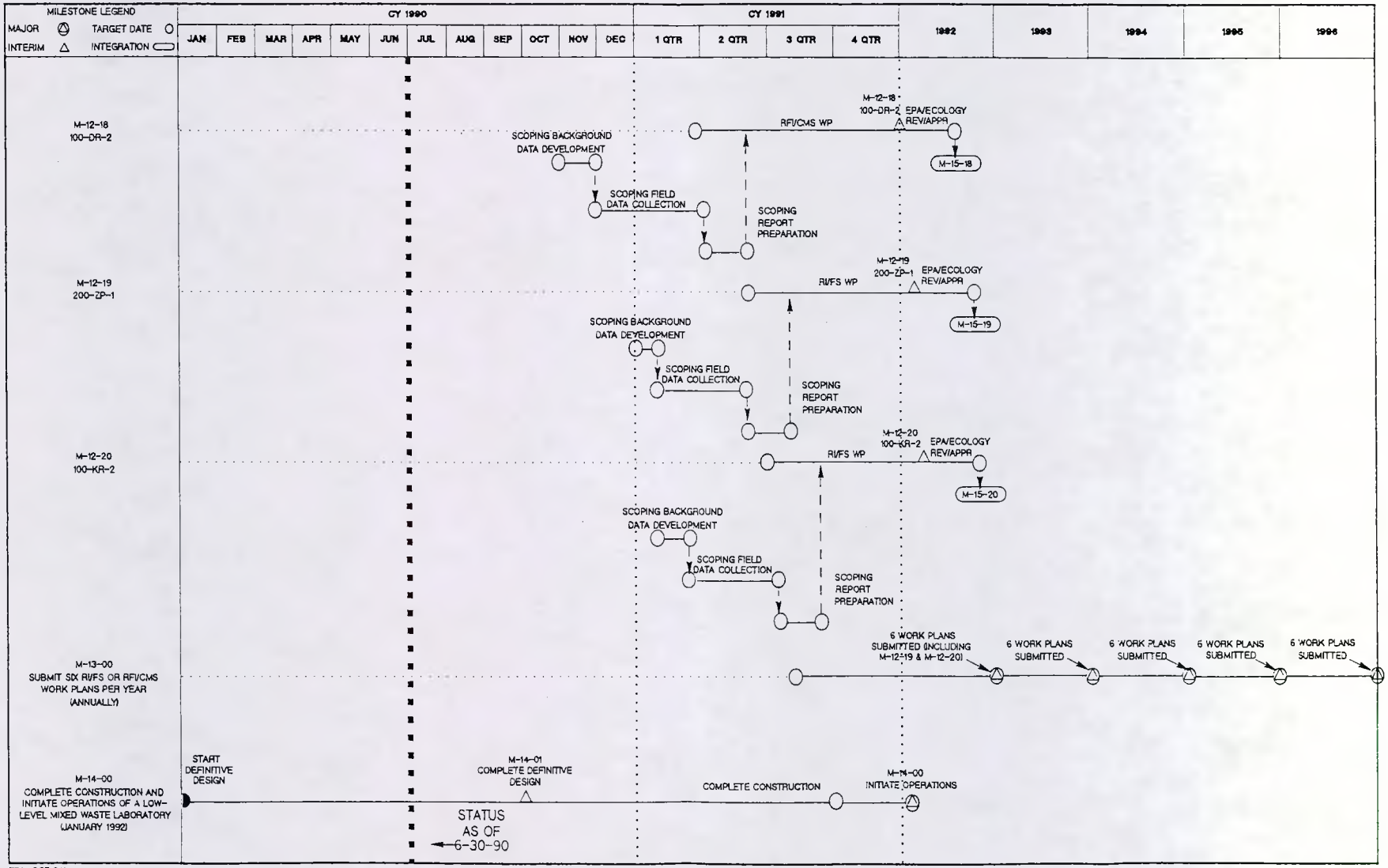
ACTION PLAN WORK SCHEDULE



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ACTION PLAN WORK SCHEDULE

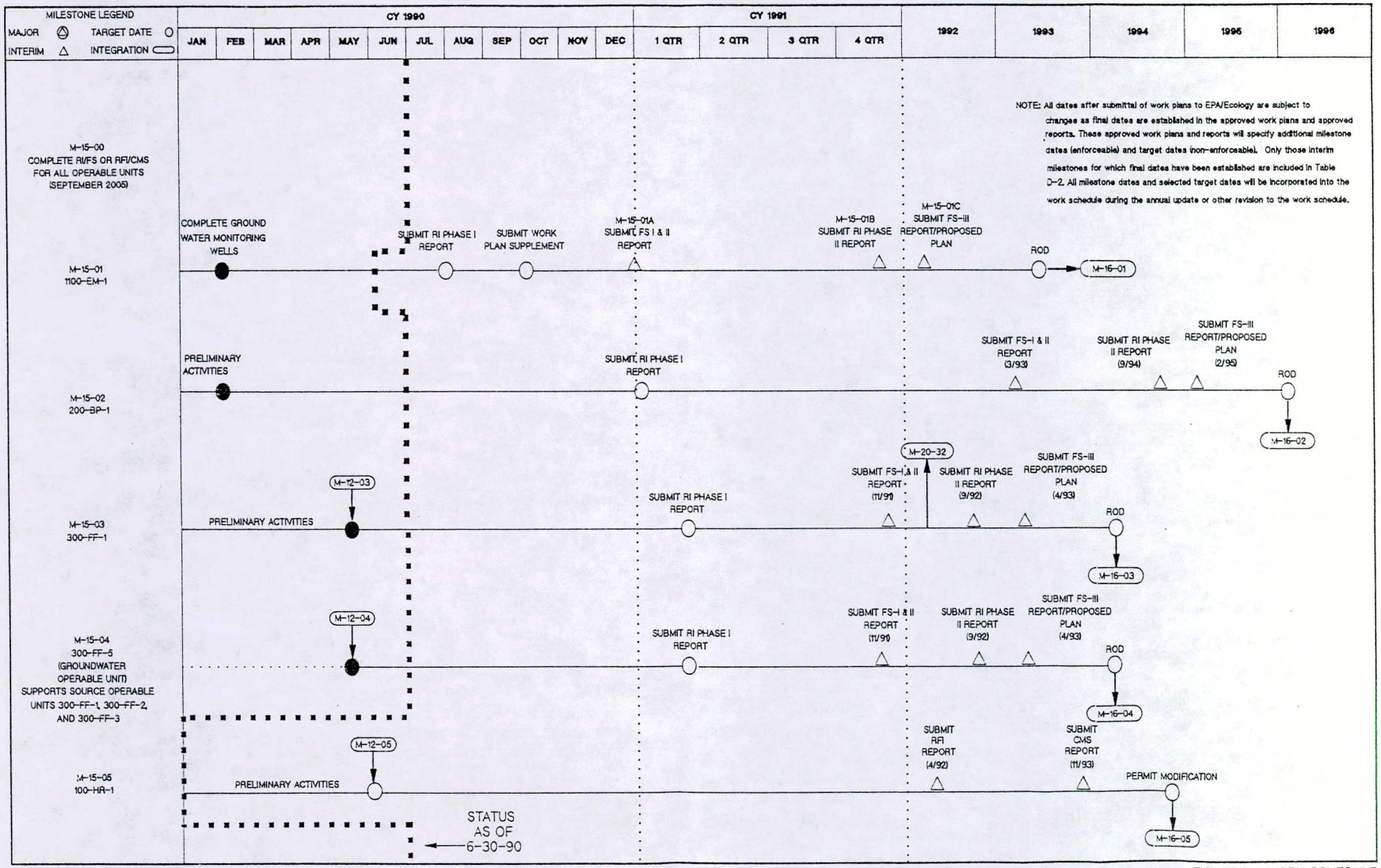

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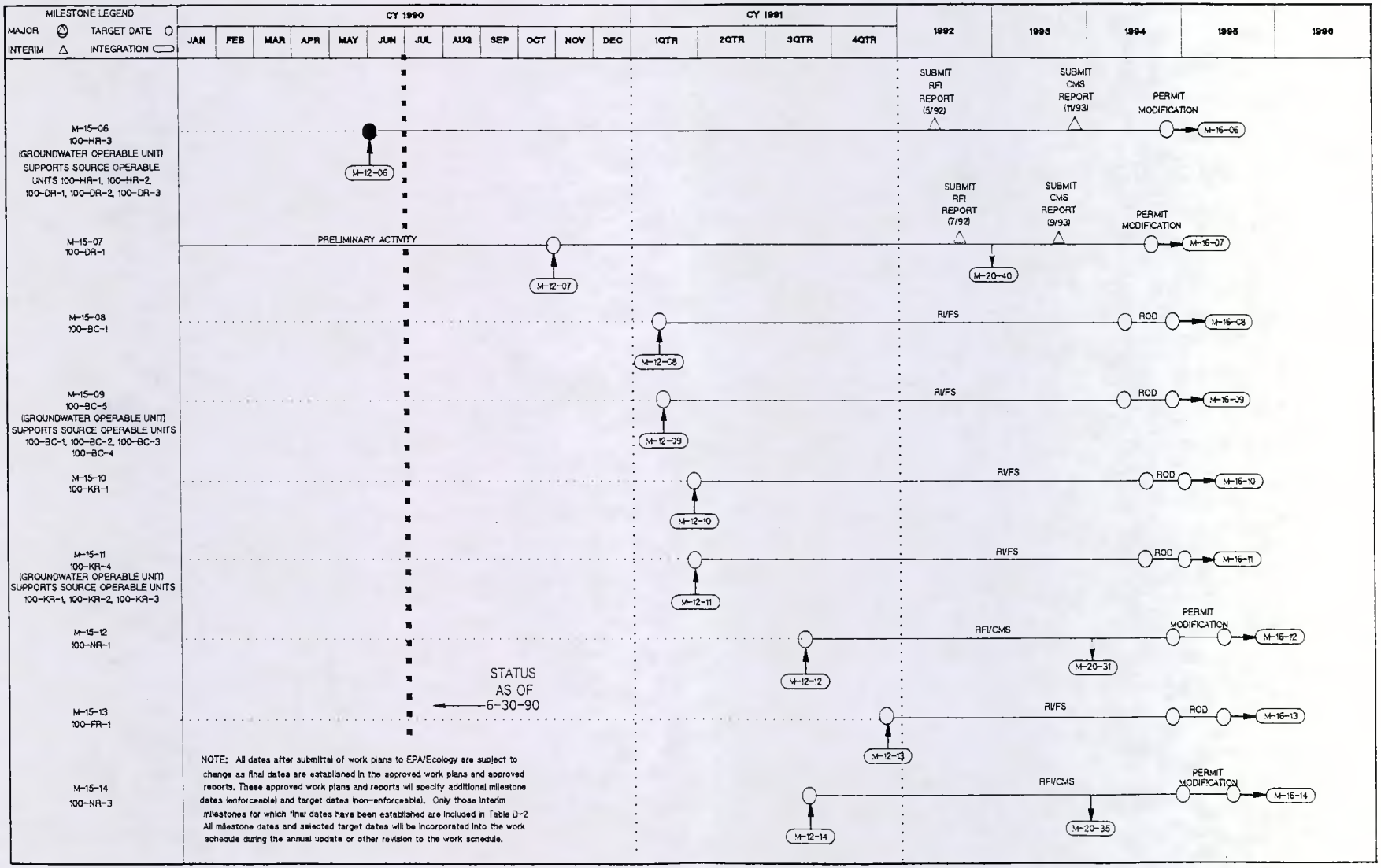
FIGURE D-1 WORK SCHEDULE

FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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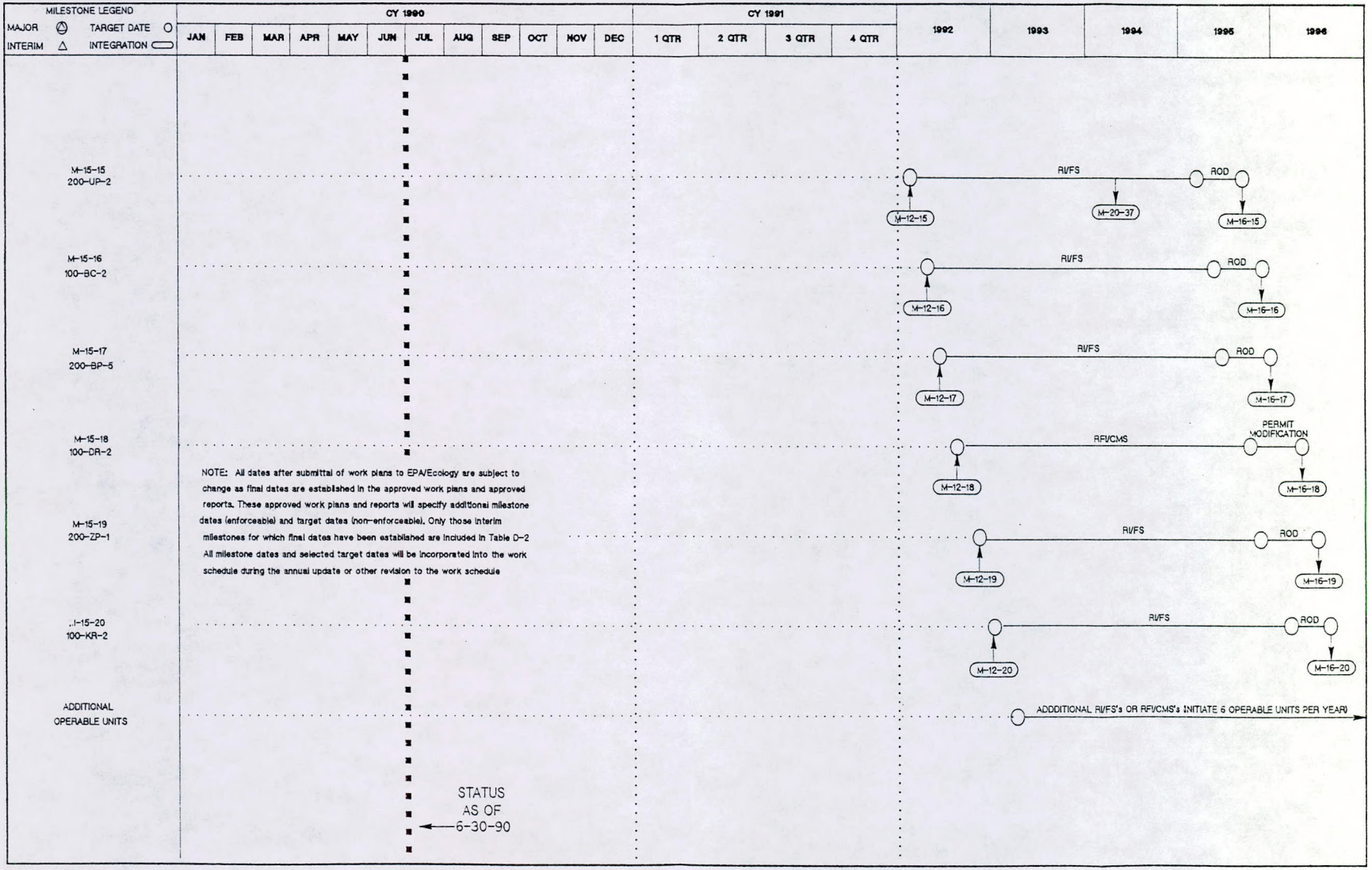
FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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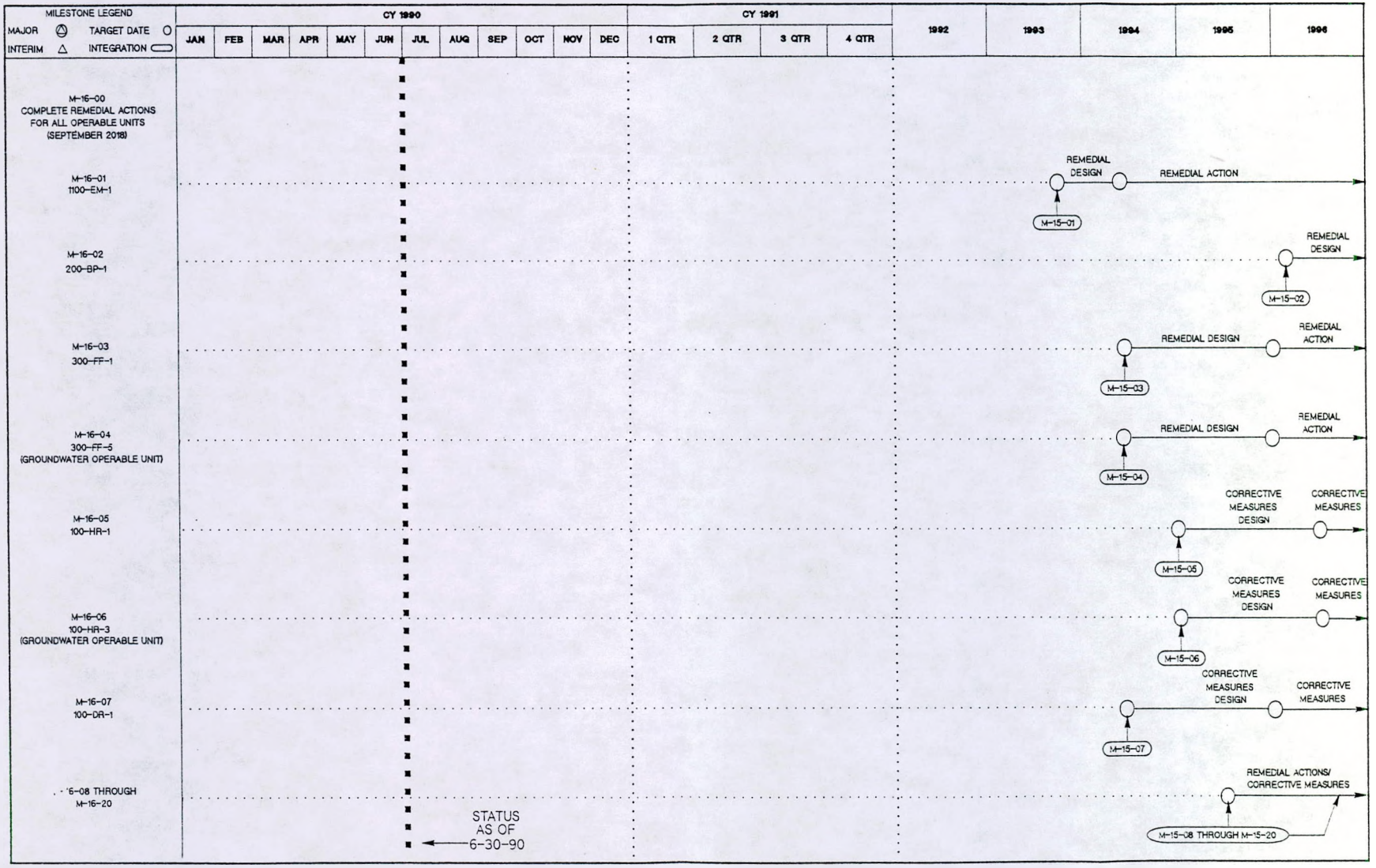
FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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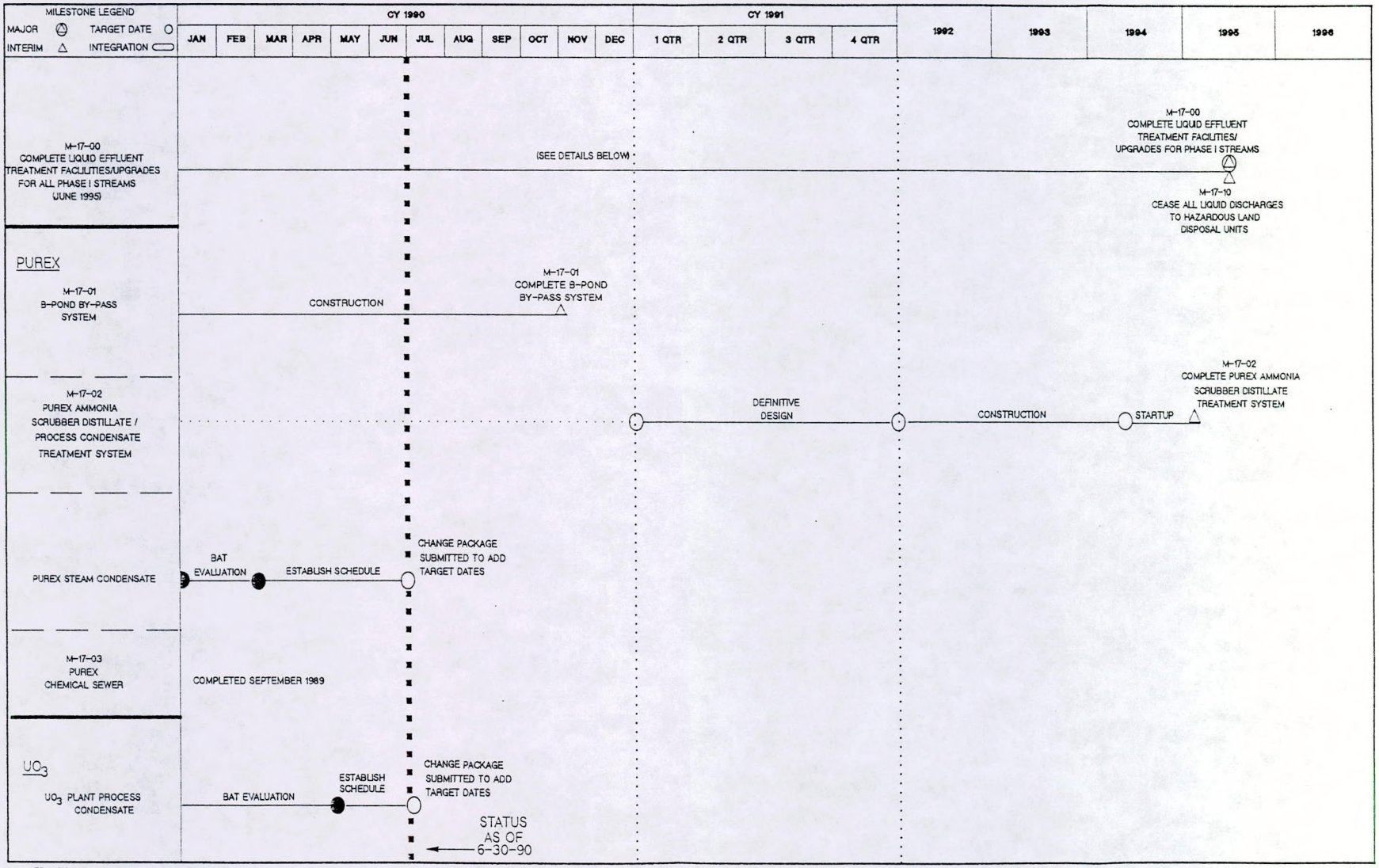
FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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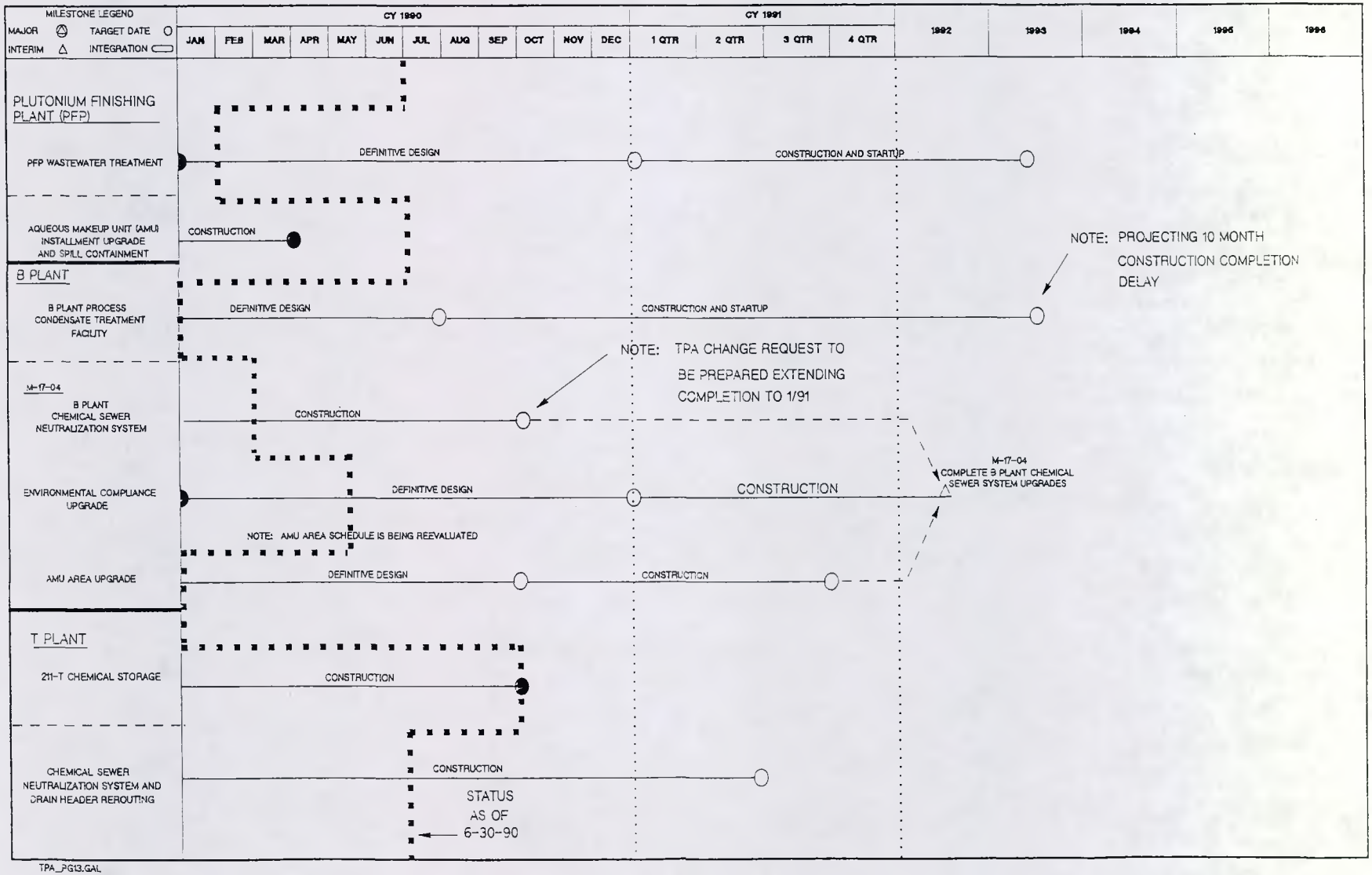
FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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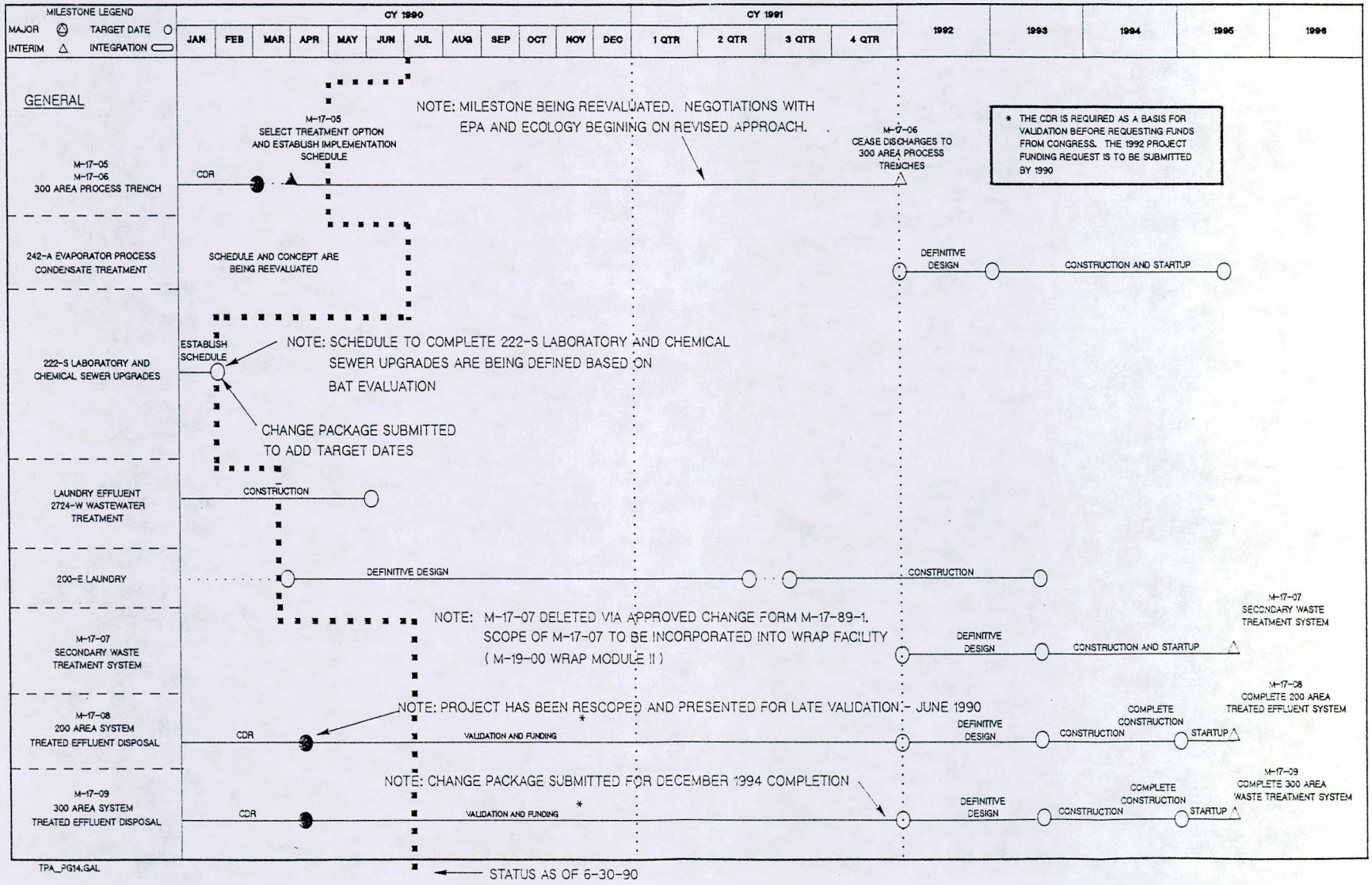
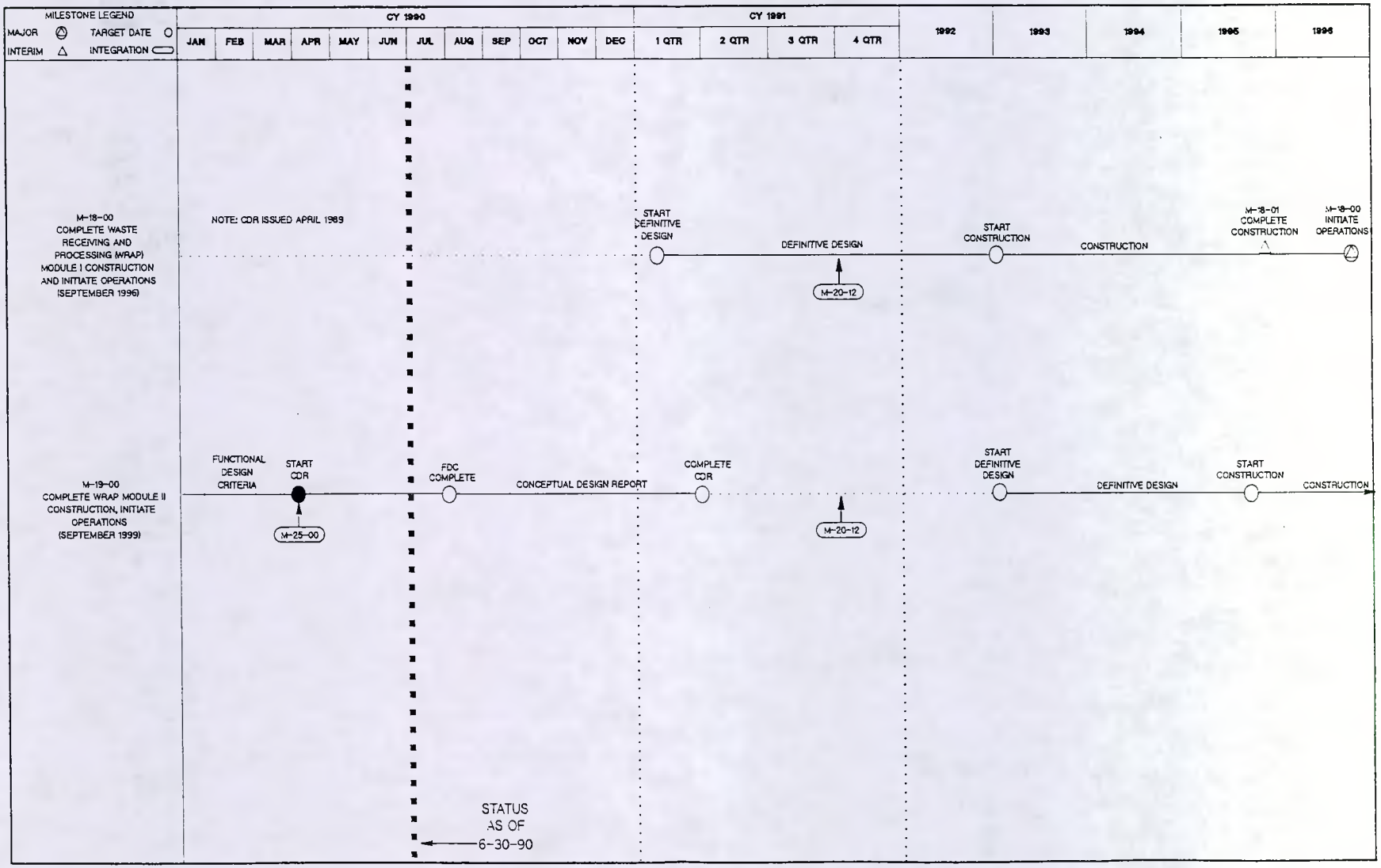
ACTION PLAN WORK SCHEDULE



FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

ACTION PLAN WORK SCHEDULE



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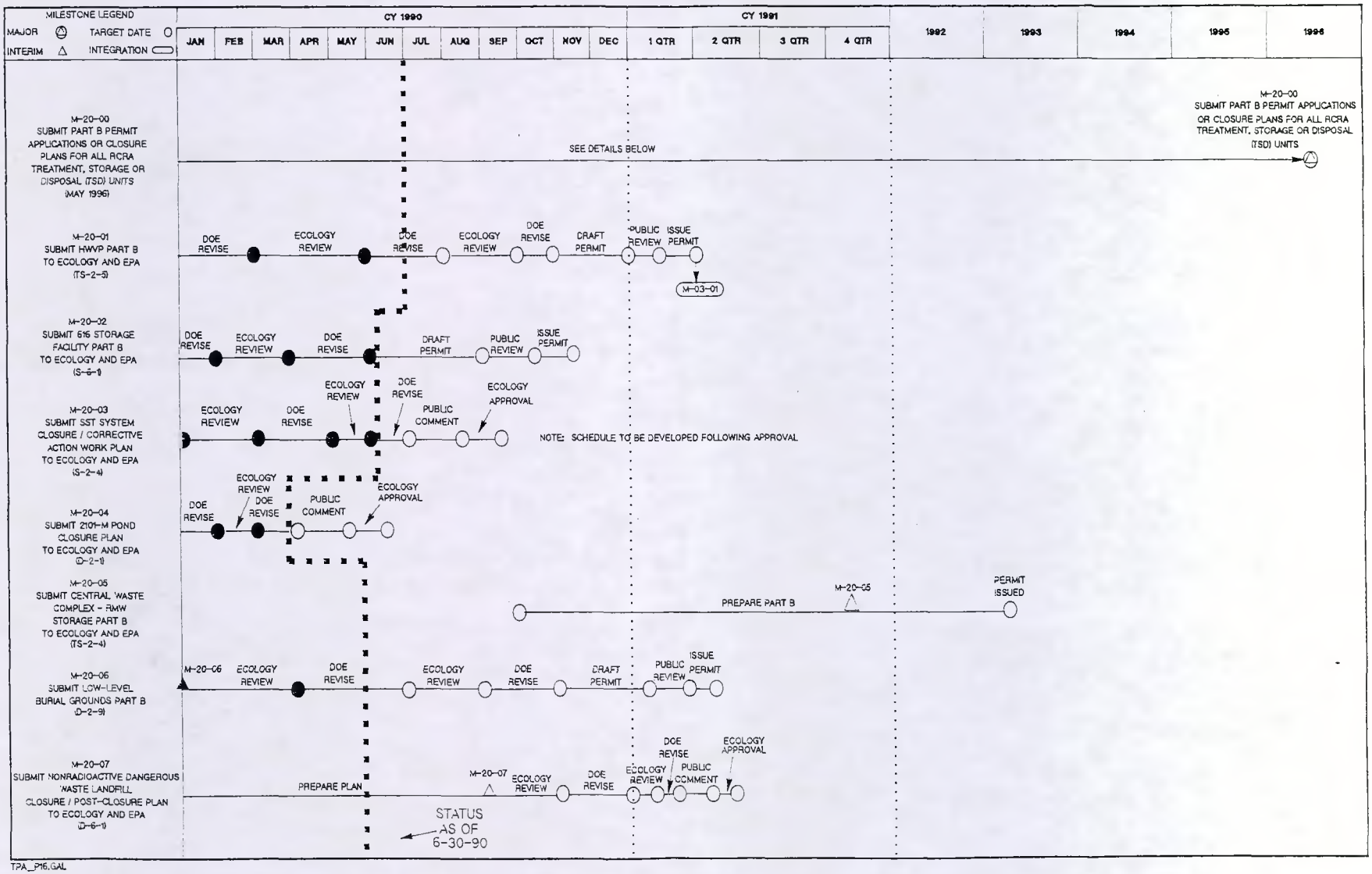
ACTION PLAN WORK SCHEDULE



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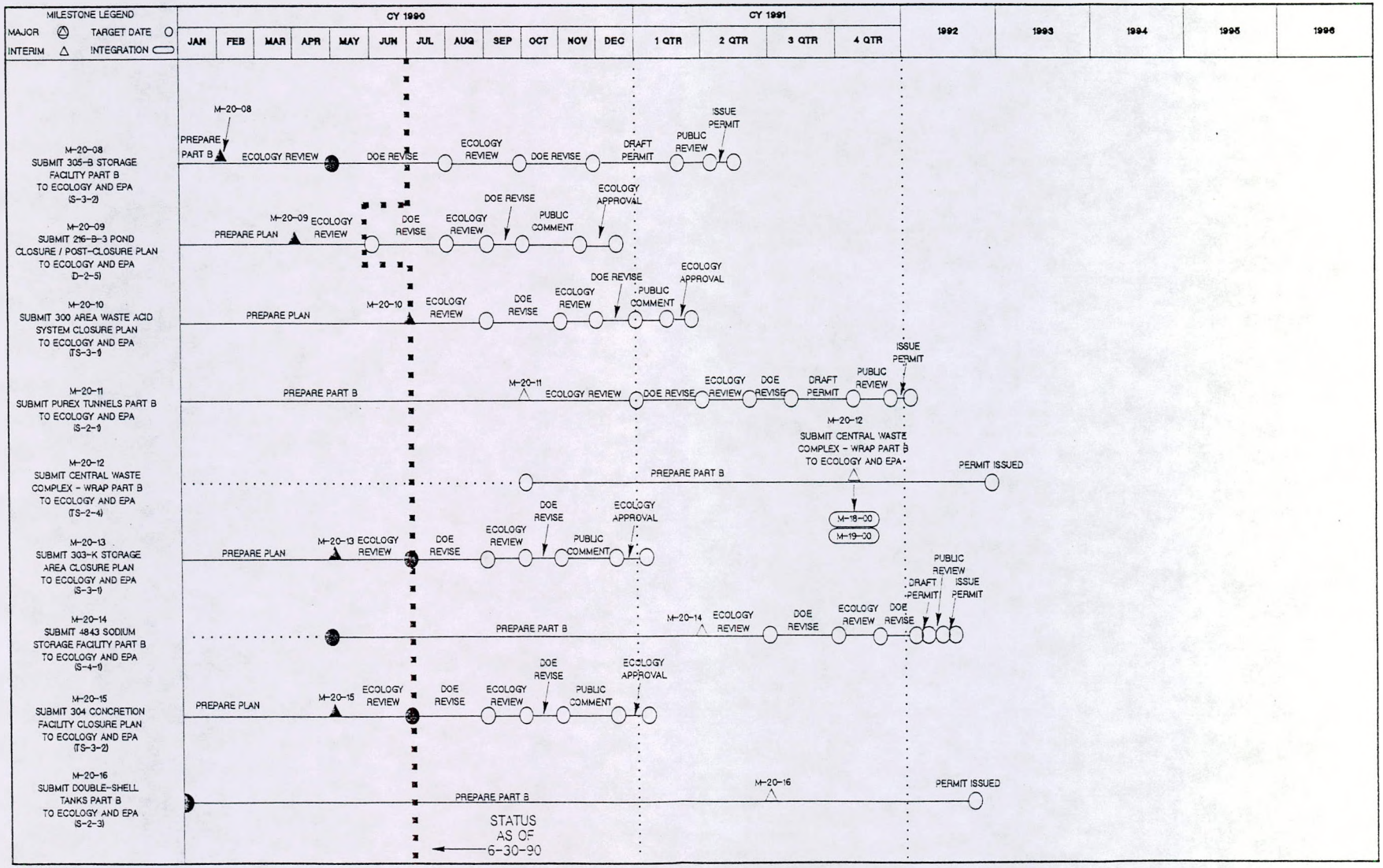

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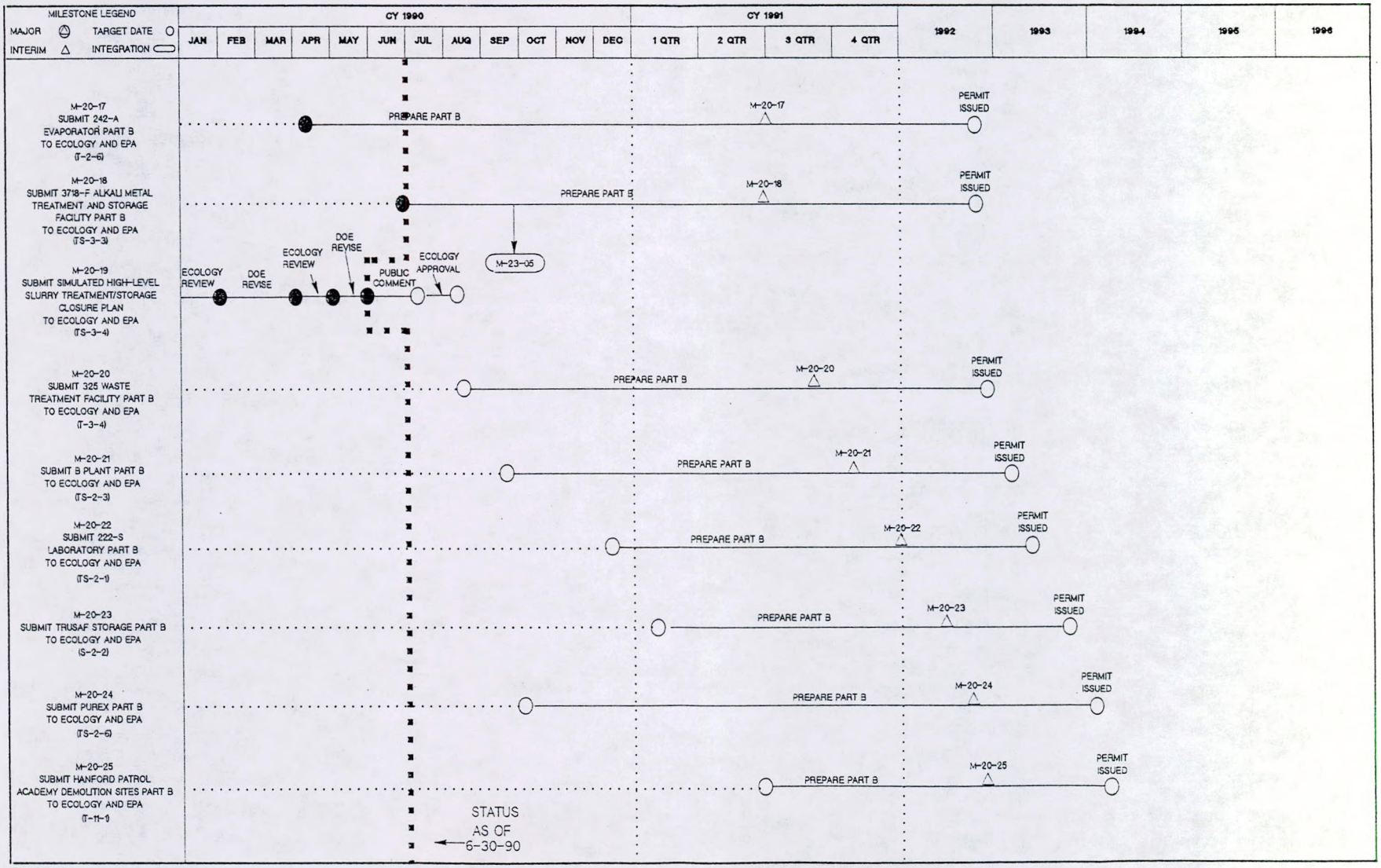

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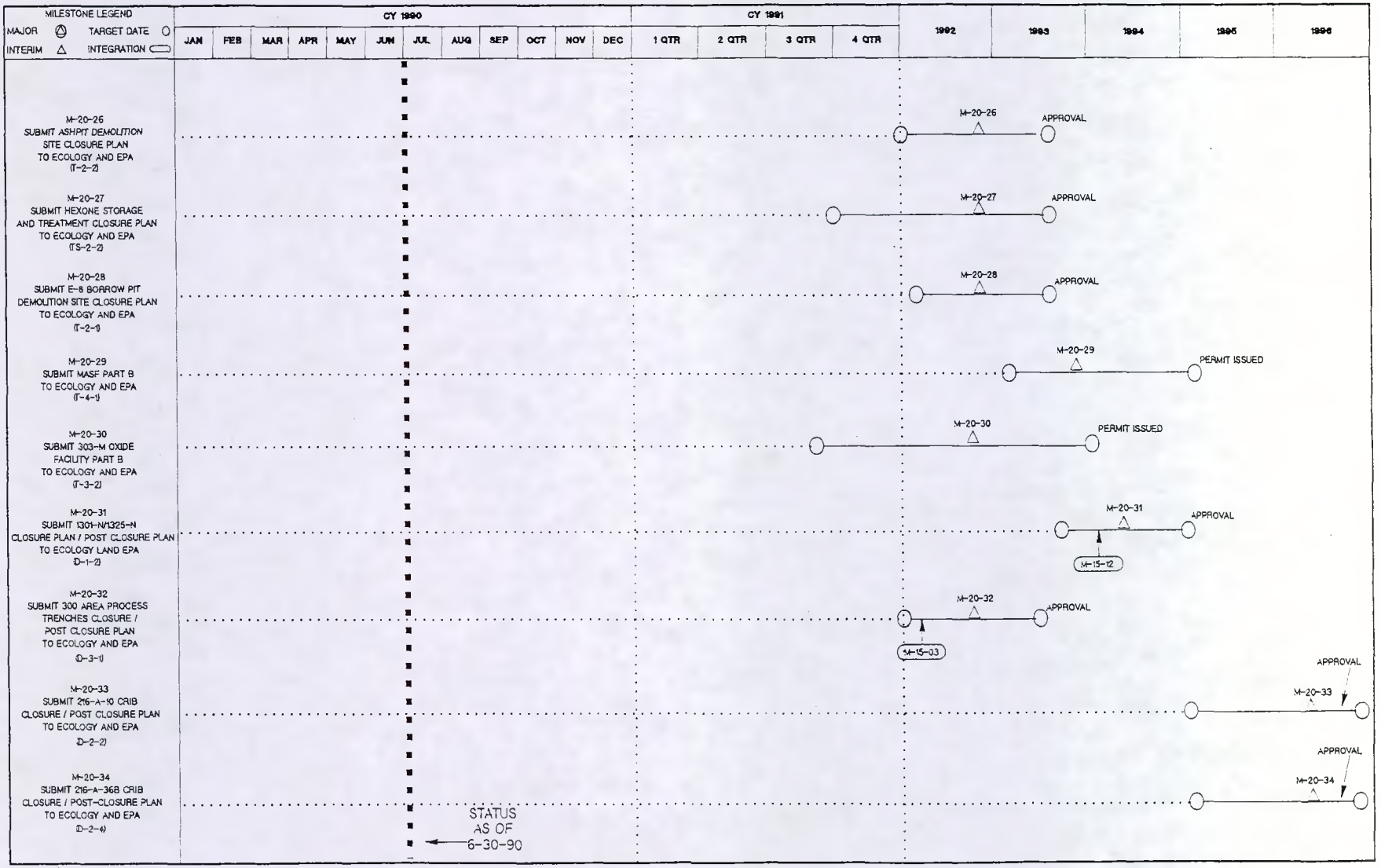

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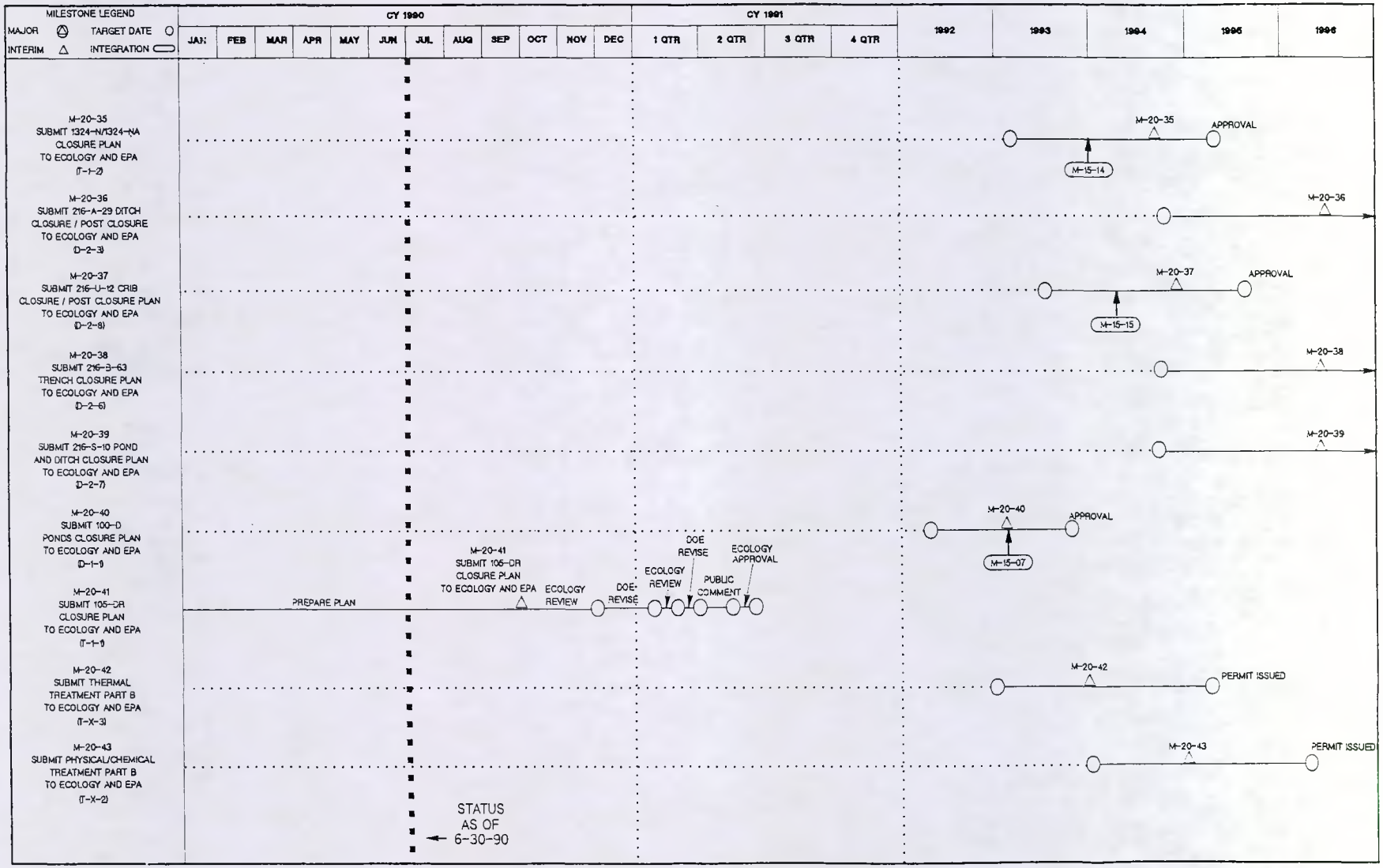

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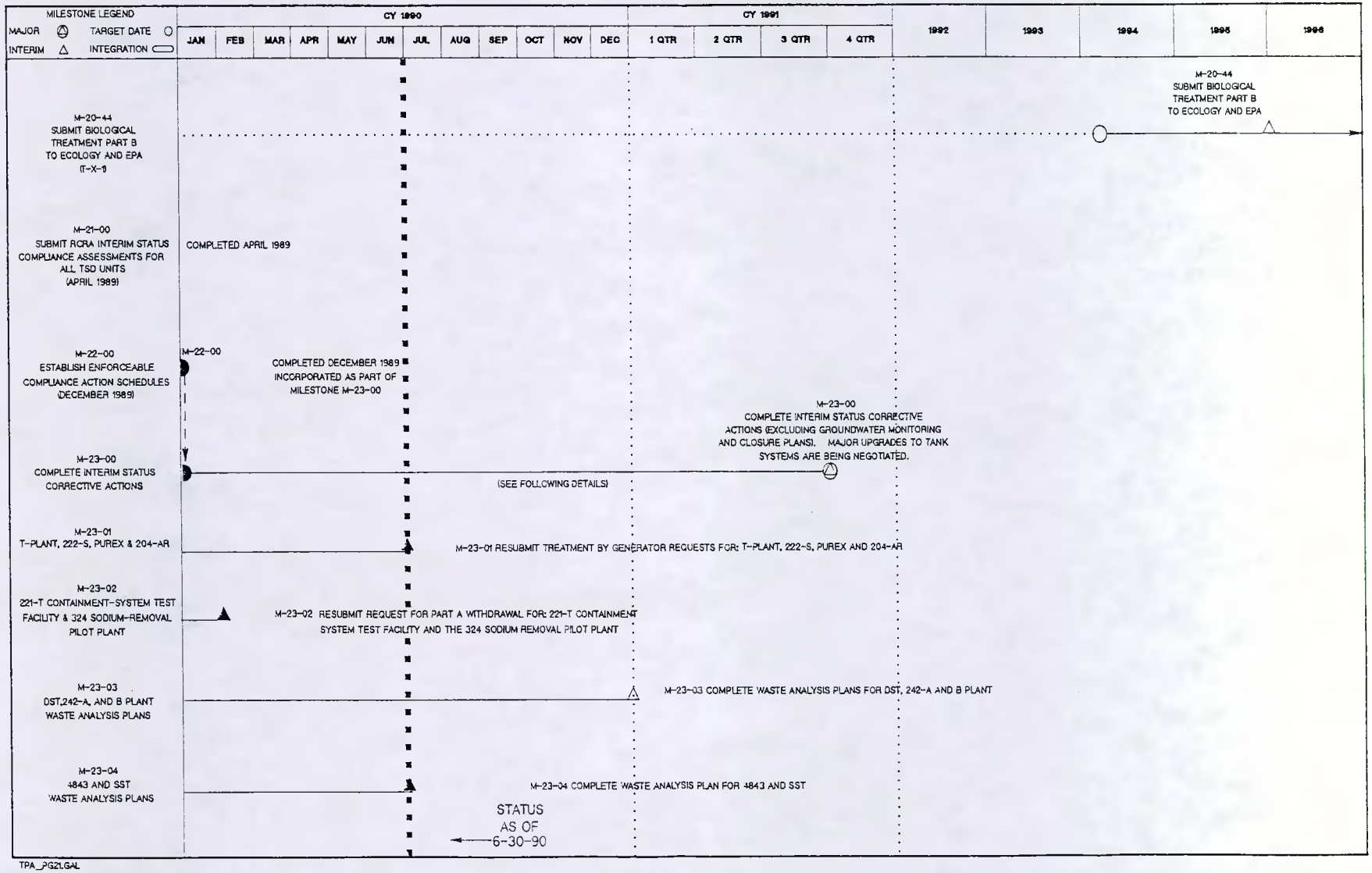

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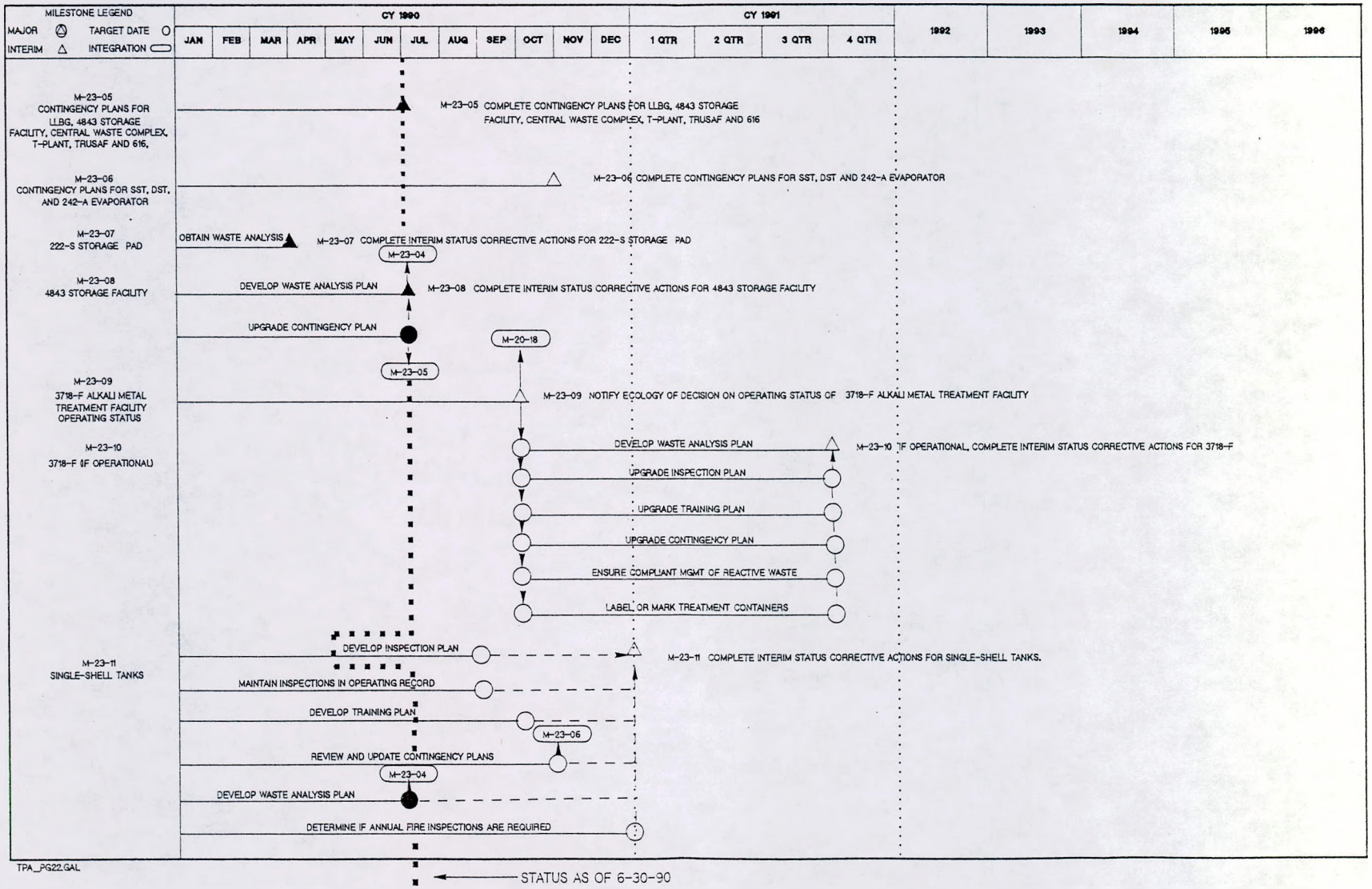

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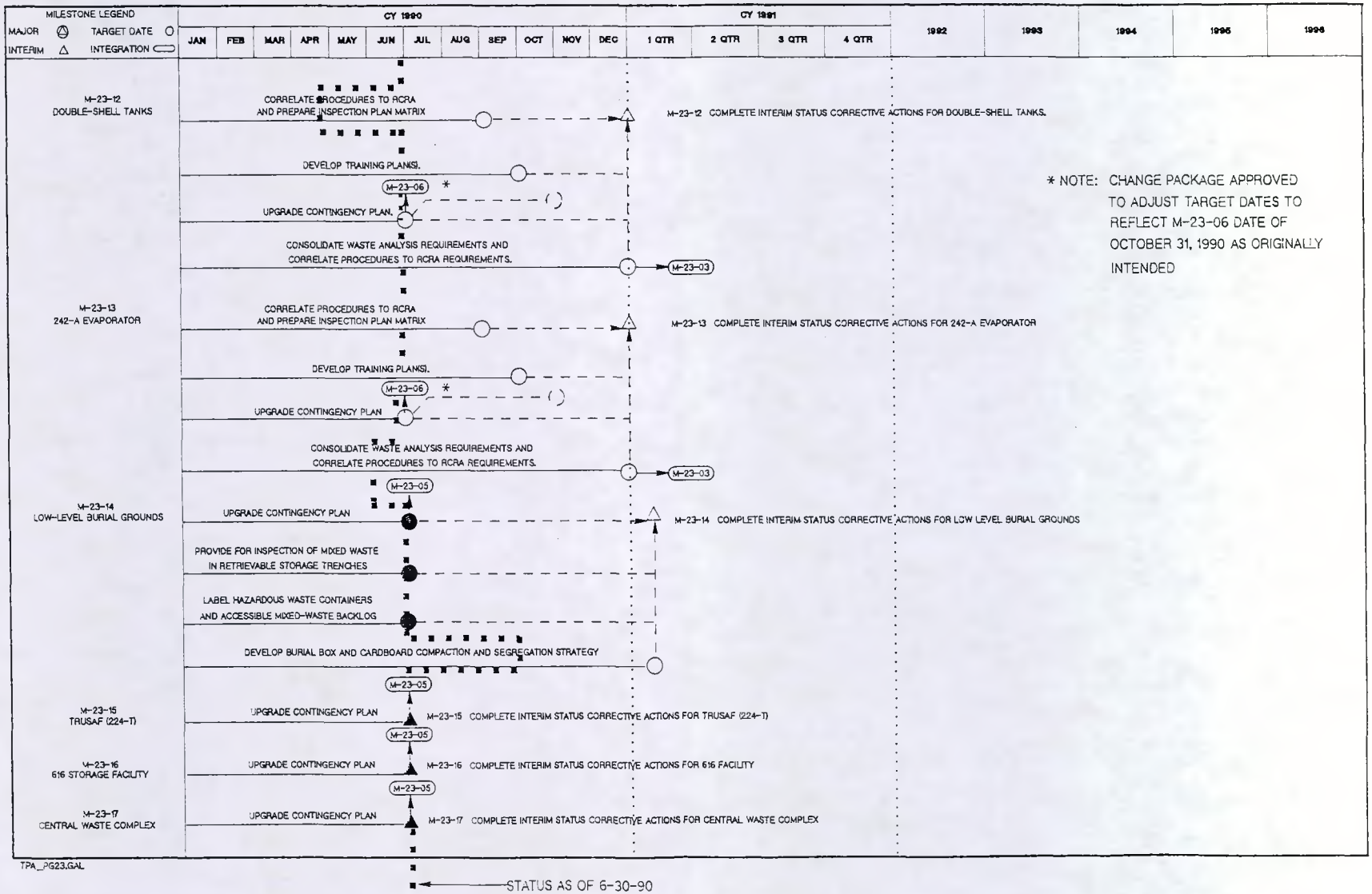

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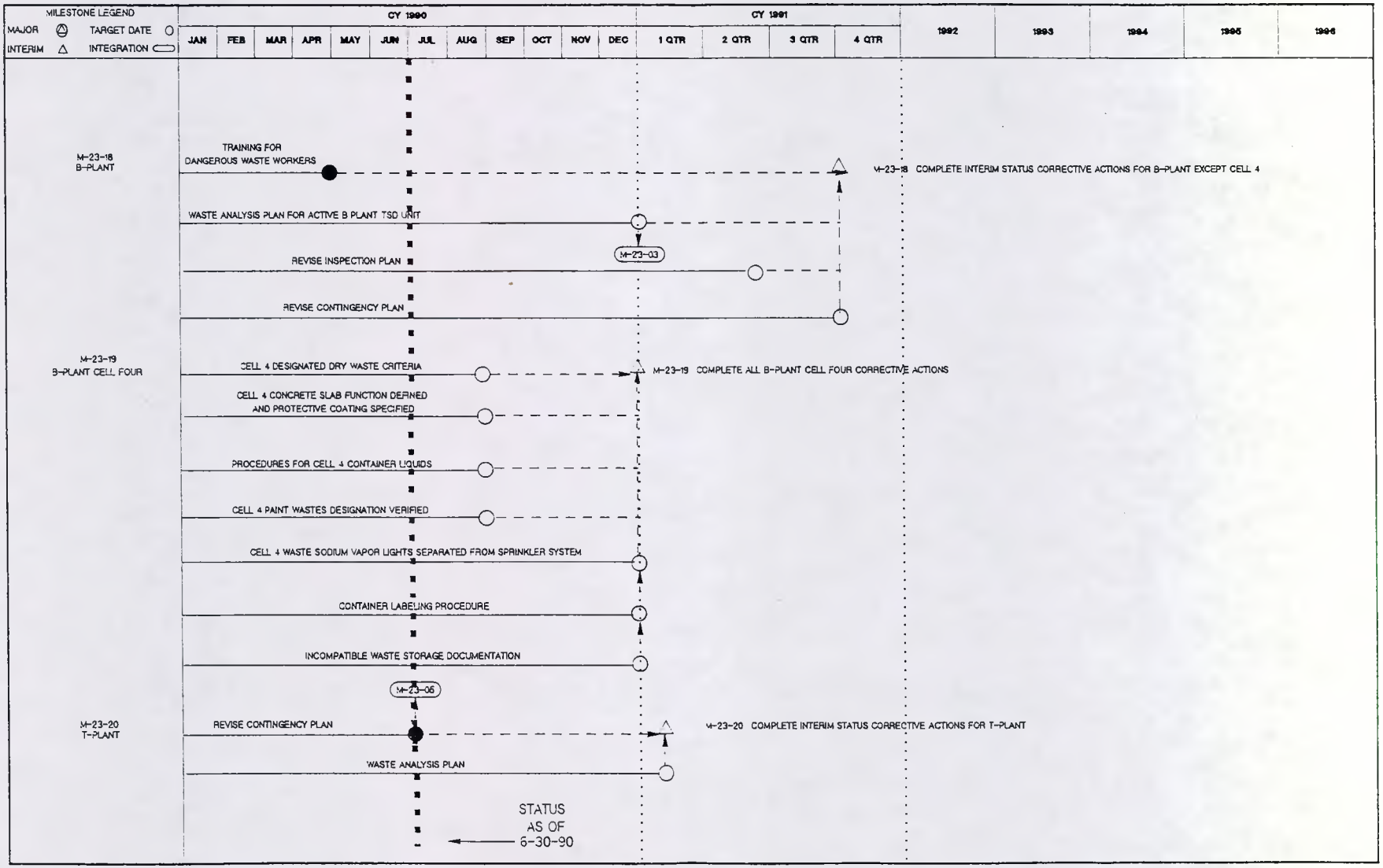
ACTION PLAN WORK SCHEDULE



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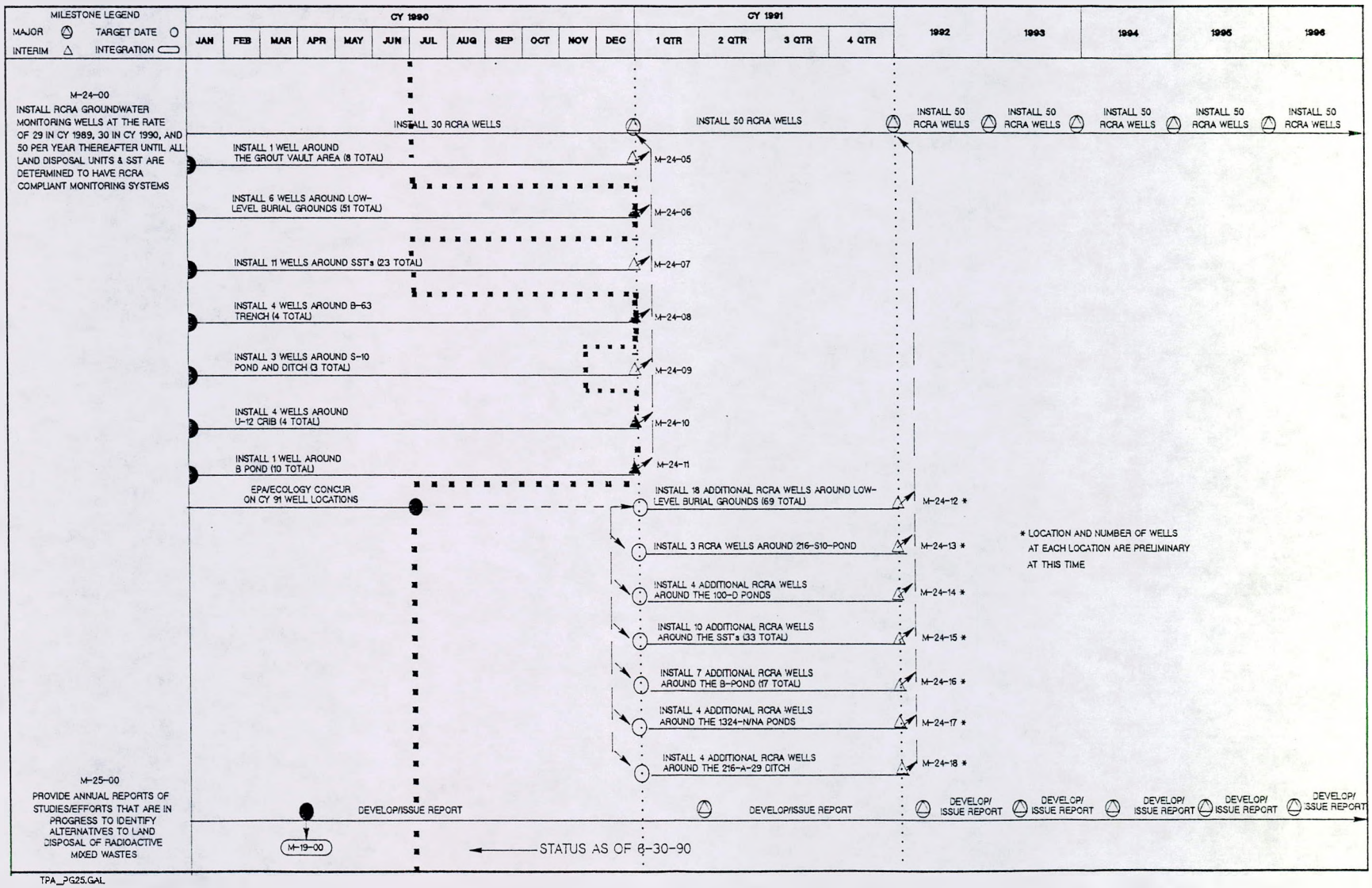

APPENDIX B

ACRONYMS

The following acronyms are used in the Quarterly Progress Report and are defined here for reference.

DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy-Headquarters
DOE-RL	U.S. Department of Energy-Richland Operations Office
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
PUREX	Plutonium/Uranium Extraction
RCRA	Resource Conservation and Recovery Act of 1976
RI/FS	remedial investigation/feasibility study

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