PNL-6450-33-HEDR
UC-707

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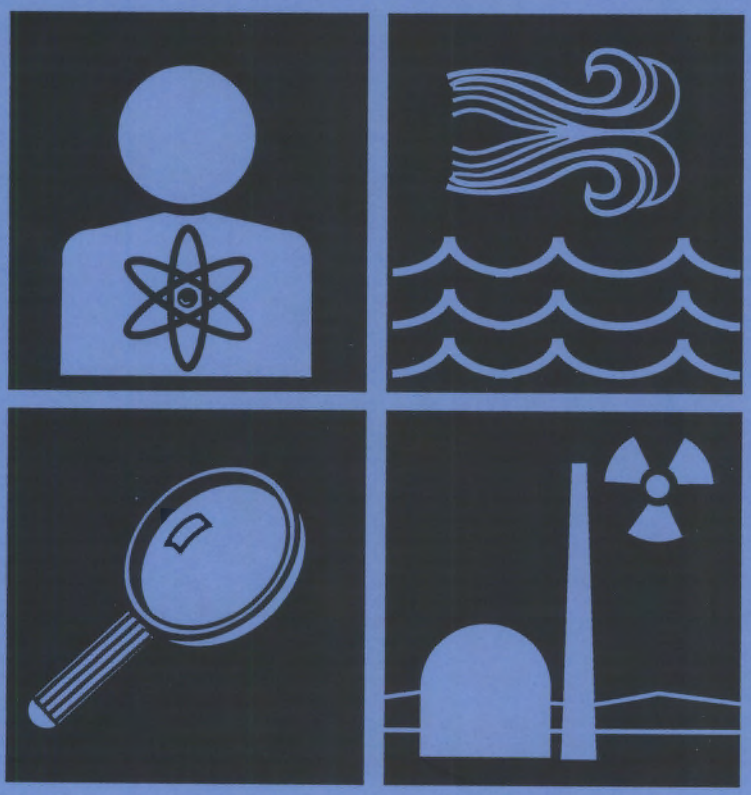
Hanford Environmental Dose Reconstruction Project

Monthly Report

July 1990



Prepared for the Technical Steering Panel

Battelle

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PNL-6450-33-HEDR
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HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

Monthly Report

July 1990

Prepared for the Technical Steering Panel

Pacific Northwest Laboratory
Richland, Washington 99352

HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT

Compiled By: _____
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Hanford Environmental Dose Reconstruction Project

Approved By: _____
W. L. Templeton, Manager
Office of Hanford Environment

Preface

This monthly report summarizes the technical progress and project status for the Hanford Environmental Dose Reconstruction (HEDR) Project being conducted at the Pacific Northwest Laboratory (PNL)[a] under the direction of a Technical Steering Panel (TSP). The TSP is composed of experts in numerous technical fields related to this project and represents the interests of the public. The U.S. Department of Energy (DOE) funds the project.

Figure 1 shows the PNL organizational structure of the HEDR Project. Table 1 shows the status of PNL work to comply with directives issued by the TSP.

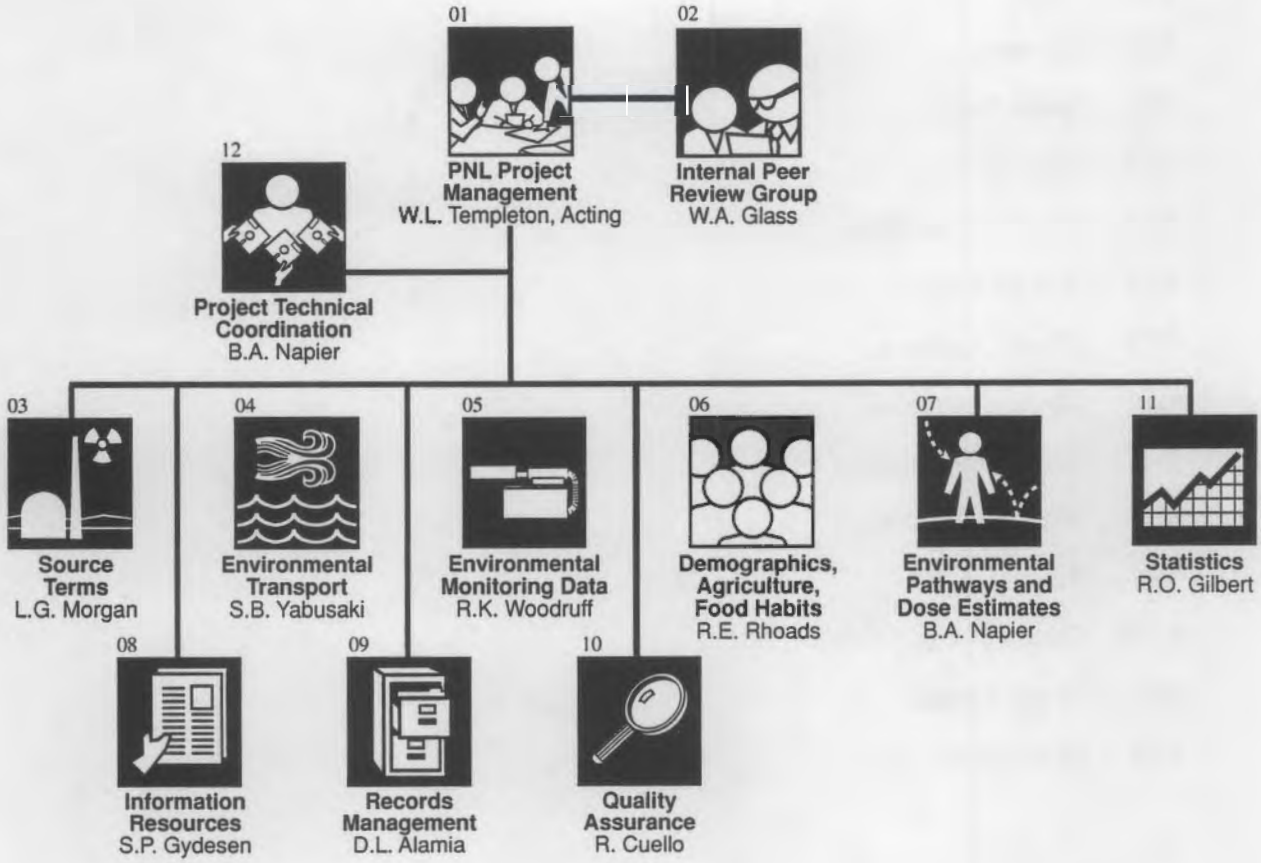


FIGURE 1. Organizational Structure of the Hanford Environmental Dose Reconstruction Project

[a]Battelle Memorial Institute operates the Pacific Northwest Laboratory.

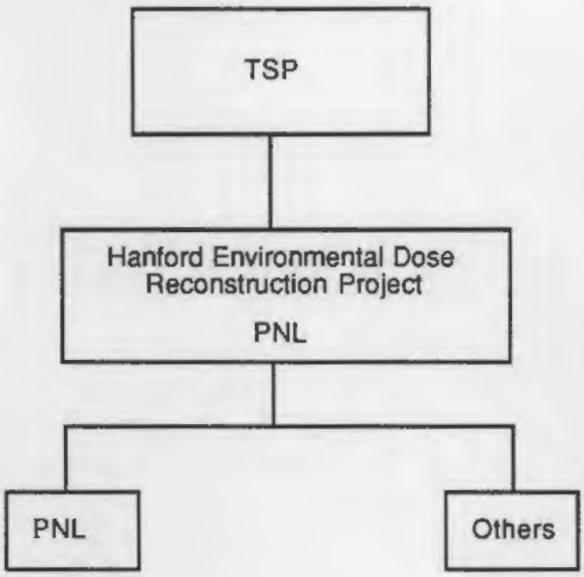
TABLE 1. Status of Directives[a]

		Complete	Ongoing	Phase I	Phase II
88-1	(a) Proposals		x		
	(b) Source Terms			x	
88-2	Vegetation			x	x
88-3	Status Reports		x		
88-4	Ground Water			x	x
88-5	Maps	x			
88-6	Resumes	x			
89-1	Indian Tribes			x	
89-2	Bioassay Data			x	x
89-3	Document Handling		x		
89-4	Reactor Purging			x	x
89-5	Phased Approach		x		
89-6	Meeting Materials		x		
89-7	Tech Communication			x	x
89-8	Phase II Planning			x	
89-9	Project QA Plan		x	x	
89-10	Contracts with Tribes			x	
90-1	Project Direction		x		
90-2	Dose Cut-Off Limit		x		

[a] Note: For simplicity, TSP directives are identified here using only key words. The complete directives are available from the TSP.

Executive Summary

The objective of the Hanford Environmental Dose Reconstruction Project is to estimate the radiation doses that populations could have received from nuclear operations at Hanford since 1944. The project is being managed and conducted by the Pacific Northwest Laboratory (PNL) under the direction of an independent Technical Steering Panel (TSP).



The TSP consists of experts in environmental pathways, epidemiology, surface-water transport, ground-water transport, statistics, demography, agriculture, meteorology, nuclear engineering, radiation dosimetry, and cultural anthropology. Included are appointed technical members representing the states of Oregon and Washington, cultural and technical experts nominated by the regional Native American tribes, and an individual representing the public.

The project is divided into the following technical tasks. These tasks correspond to the path radionuclides followed, from release to impact on humans (dose estimates):

- Source Terms
- Environmental Transport
- Environmental Monitoring Data
- Demographics, Agriculture, Food Habits
- Environmental Pathways and Dose Estimates.

The Source Terms Task develops estimates of radioactive emissions from Hanford facilities since 1944. These estimates are based on historical measurements and production information.

The Environmental Transport Task reconstructs the movement of radioactive materials from the areas of release to populations. Movement via the atmosphere, surface water (Columbia River), and ground water are studied.

The Environmental Monitoring Data Task assembles, evaluates, and reports historical environmental monitoring data. A major effort of this task is to separate Hanford as a source of radionuclide concentrations in the environment from concentrations caused by natural sources and nuclear testing fallout.

The Demographics, Agriculture, Food Habits Task develops the data needed to identify the populations that could have been affected by the releases. Population and demographic information are developed for the general population within the study area. This information will also be developed for several special population groups, including Native American tribes in the study area, Army personnel who were stationed at Hanford, Hanford construction workers, and migrant farm workers.

In addition to population and demographic data, the food and water sources and consumption patterns for these populations are estimated because they provide a primary pathway for the intake of radionuclides. Historical dairy farming practices and milk distribution systems are studied because milk is a significant pathway for iodine-131 to enter the human body. Cows could have eaten vegetation contaminated with this radionuclide.

The Environmental Pathways and Dose Estimates Task uses the information produced by the other tasks to estimate the radiation doses populations could have received from Hanford radiation.

Project reports and references used in the reports are made available to the public in a public reading room. Project progress is documented in this monthly report, which is available to the public.

Management Summary

Progress

Figure 2 shows the status of project milestone activities. The following major activities were conducted by HEDR staff in July 1990:

- submitted the three draft Phase I reports--Summary, Air Pathway, and Columbia River Pathway--to the TSP for review and public distribution
- helped TSP members prepare for the July 12 public meeting in which they announced the preliminary results of the draft Phase I reports
- attended several TSP subcommittee meetings in Richland on July 12-13
- verified the accuracy of previously published iodine-131 data transcribed from one laboratory record book to another
- placed Work Order No. 1 (developing a Work Plan) with the Umatilla Indian Reservation
- completed preliminary documentation of the dose calculation computer code; wrote draft user's manuals; placed the computer code under configuration management
- conducted a staff debriefing of the results of the PNL Quality Assurance (QA) Audit of the HEDR Project
- submitted to the TSP for review the report, "Initial Communication Survey Results for the HEDR Project"
- presented the invited paper, "Statistical Aspects of the Hanford Environmental Dose Reconstruction Project," at the American Statistical Association Conference on Radiation and Health, Copper Mountain, Colorado, July 8-12, 1990. The proceedings of the conference will be published in Radiation Research
- submitted the abstract, "Atmospheric Modeling for Dose Reconstruction at Hanford" to the American Nuclear Society for its 1990 Winter Meeting
- met with staff of the Fred Hutchinson Cancer Research Center to discuss coordination with the Hanford Thyroid Disease Study
- provided the DOE-RL Public Reading Room with 25 documents of potential interest/use in the HEDR Project.

Major Issues and Action Taken

None.

Planned Work for Subsequent Months

Work planned for subsequent months includes the following:

- continue working with the TSP to plan Phase II activities
- begin writing a report describing the methodology and sources of information used to calculated the quantities of iodine-131 released to the atmosphere during 1944-1947
- develop guidelines that set forth the minimum contents of the Phase II QA plan
- write a report on the results of the computer simulations conducted to quantify the effects of the modular construction of the Phase I Monte Carlo air-pathway dose model on the distributions of dose estimates
- develop statistical procedures for use with the recently acquired Geographical Information System.

Budget Status

Figures 2 and 3 show the budget status of the HEDR Project and TSP activities, respectively.

Projected HEDR expenditures through July 1990 were $2,520K. Actual expenditures through July 1990 were $2,517K.

Variance Explanation

The current cumulative variance between planned and actual costs is 0%. An additional $285K of funding was received during July, as anticipated and noted in the May monthly report. The planned expenditures were modified to reflect the receipt of the additional funding.

Capital Status

Capital equipment funding of $141K was approved and allocated for the purchase of a Geographic Information System. The computers and software were delivered and set up in April.

FIGURE 2. Project Summary Report - Hanford Environmental Dose Reconstruction Project

1. IDENTIFICATION NUMBER:	2. PROGRAM/PROJECT TITLE:	3. REPORTING PERIOD:
DE-AC06-76RLO 1830	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION	JULY 1990

4a. PARTICIPANT NAME AND ADDRESS:	4b. CLIENT NAME AND ADDRESS:	5. START DATE:
PACIFIC NORTHWEST LABORATORY P. O. BOX 999 RICHLAND, WA 99352	DOE/RL RICHLAND WA 99352	OCTOBER 1989
		6. COMPLETION DATE: SEPTEMBER 1990

7. FY 90 | 8. MONTHS: O N D J F M A M J J A S FY91

9. COST STATUS:

a. $ EXPRESSED IN THOUSANDS

b. BUDGET & REPORTING NO./SUB. ACCT NO.
12578
GF0525000

c. FIN. NO.

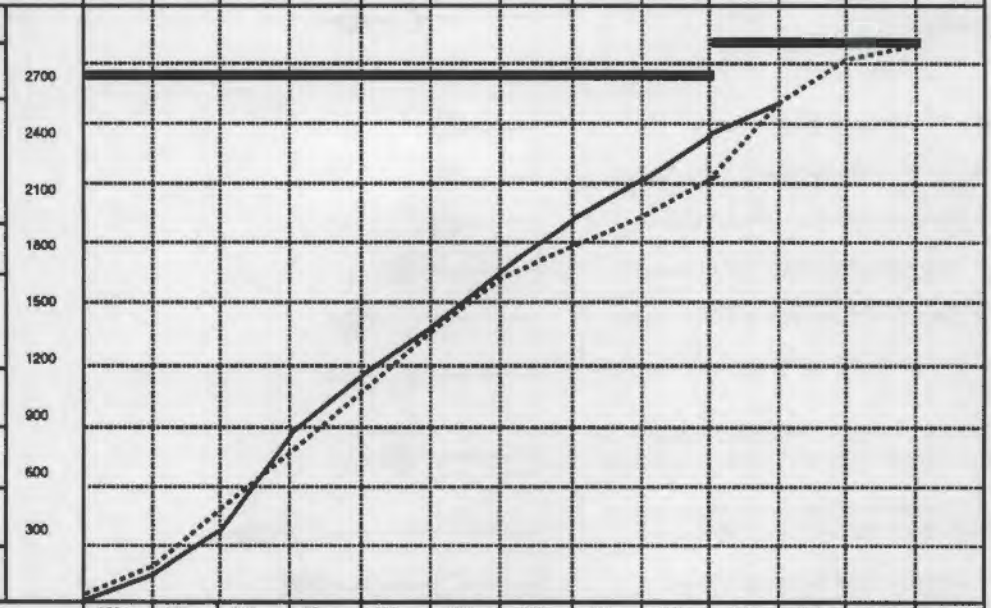
d. ACTUAL COSTS PRIOR YEARS
6332

e. FY BUDGET
2835 **

f. TOTAL BUDGET

g. FY FUNDS AUTH
3941 ***

h. TOTAL FUNDS AUTH
3941



COSTS	O	N	D	J	F	M	A	M	J	J	A	S	FY91
I. PLANNED	250	300	240	250	290	200	190	190	190	420	200	115	
J. ACTUAL	236	290	342	283	227	248	297	184	339	164			
K. VARIANCE	14	10	-102	-33	63	-46	-107	6	-39	256			
L. CUM PLANNED	250	550	790	1040	1330	1530	1720	1910	2100	2520	2720	2835	
M. CUM ACTUAL	236	527	870	1152	1397	1643	1940	2124	2353	2517			
N. CUM VARIANCE	14	23	-80	-112	-67	-113	-220	-214	-253	3			

10. LEGEND: PLANNED ------ ACTUAL ——— FUNDS AUTH. ▬▬ 90% FUNDS SPENT ▷
** projected FY budget does not include TSP budget ***FY funds authorized include TSP funding

11. MILESTONES

	O	N	D	J	F	M	A	M	J	J	A	S	FY91
01 Phase I Reports*										●			
03-A Hanford Site Operations and Facilities										Report to TSP 6/89			
03-B Radionuclide List Decay Schemes				●									
03-C Recommendation Regarding Development of Libraries Specific to Hanford for ORIGEN Code					●								
03-D Description of Chemical Form and Atmospheric Chemistry of Iodine Emissions					●								
03-E I-131 in Irradiated Fuel at time of Processing from 12-44 Through 12-47						●							
04-A Preliminary Response to Directive 88-4, Ground Water										Report to TSP 3/89			
04-B Atmospheric Modeling Approach					●								

LEGEND: SCHEDULED △ TO TSP ○ TIME LINE ——— DEVIATION - - - - - - - - TIME NOW:
COMPLETED ▲ ● DEVIATION ◇ PROGRESS ▬▬

12. NAME/SIGNATURE OF PARTICIPANTS PROG/PROJ MANAGER & DATE
WL Templeton, Acting Manager

* TSP rescheduled milestone to July

FIGURE 2. Project Summary Report - Hanford Environmental Dose Reconstruction Project (Contd.)

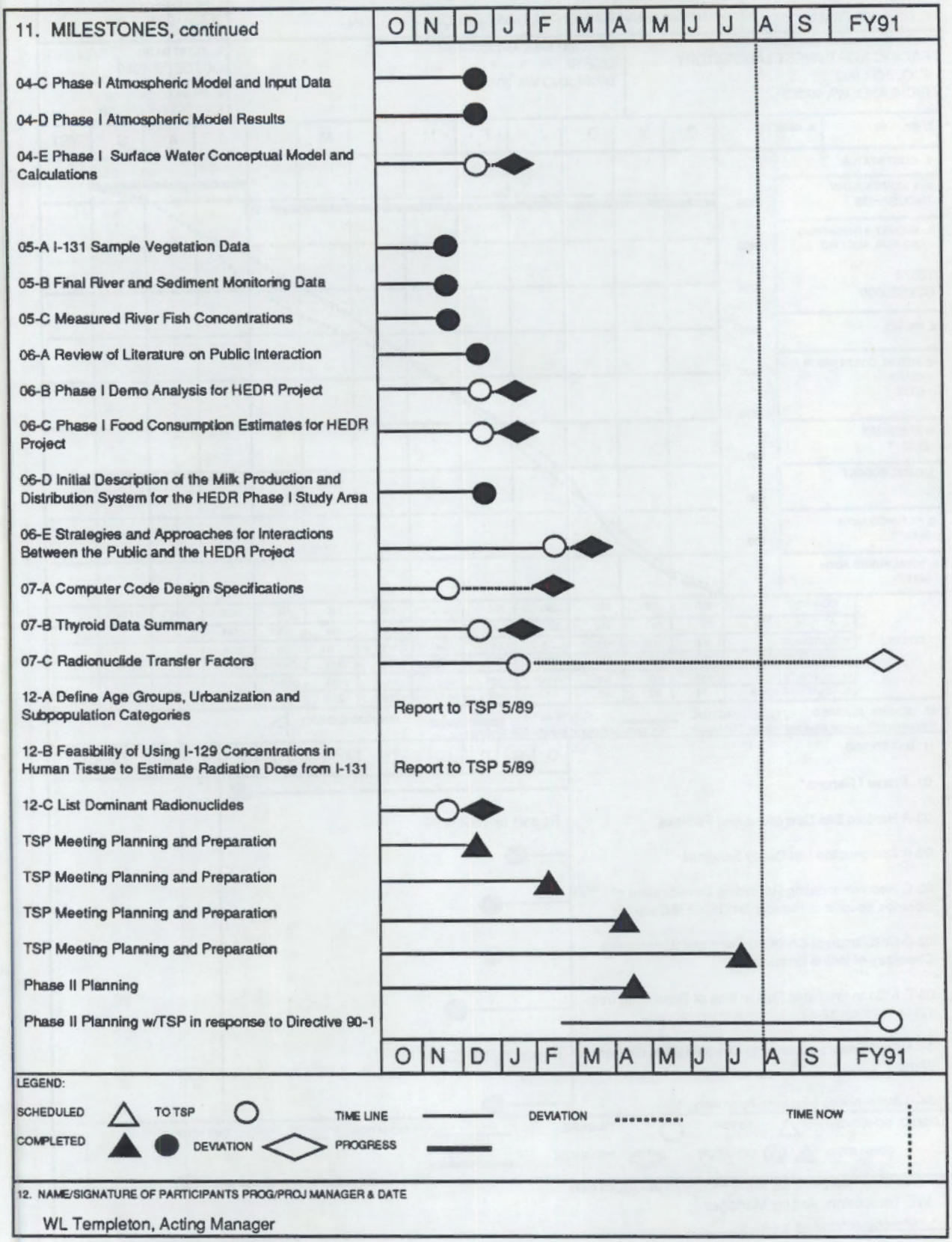


FIGURE 3. Project Summary Report - Technical Steering Panel

1. IDENTIFICATION NUMBER:	2. PROGRAM/PROJECT TITLE:	3. REPORTING PERIOD:
DE-AC06-76RLO 1830	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - TSP	JULY 1990

4a. PARTICIPANT NAME AND ADDRESS:	4b. CLIENT NAME AND ADDRESS:	5. START DATE:
PACIFIC NORTHWEST LABORATORY P. O. BOX 999 RICHLAND, WA 99352	DOE/RL RICHLAND WA 99352	OCTOBER 1989
		6. COMPLETION DATE: SEPTEMBER 1990

7. FY 90 | 8. MONTHS

9. COST STATUS:

a. $ EXPRESSED IN THOUSANDS

b. BUDGET & REPORTING NO./SUB. ACCT NO.
12578
GF0525000

c. FIN. NO.

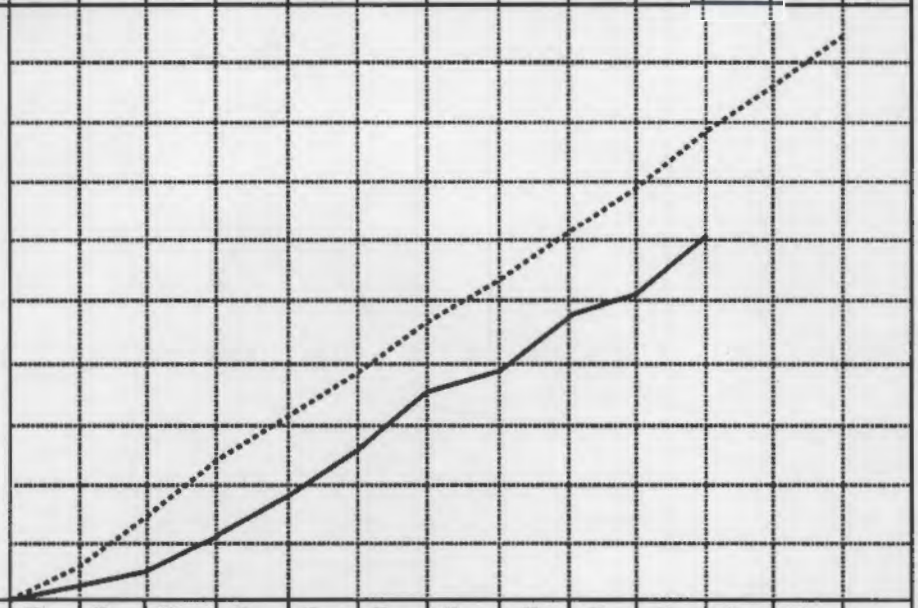
d. ACTUAL COSTS PRIOR YEARS

e. FY BUDGET 688

f. TOTAL BUDGET

g. FY FUNDS AUTH 688

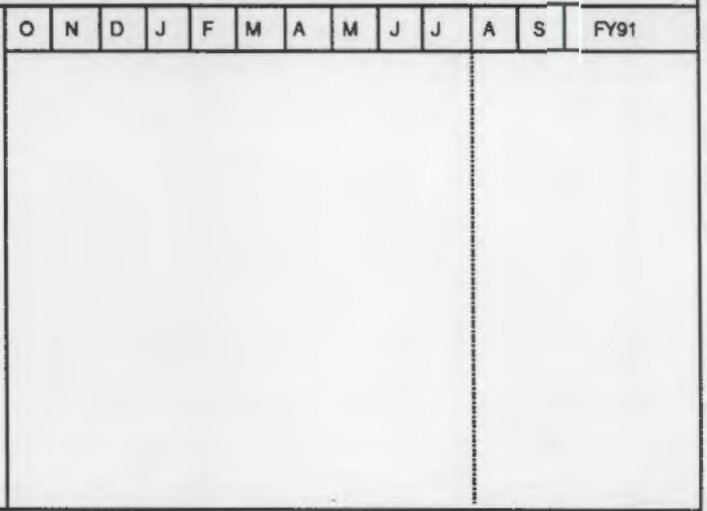
h. TOTAL FUNDS AUTH 688 (unburdened)



COSTS	O	N	D	J	F	M	A	M	J	J	A	S	FY91
I. PLANNED	57	57	57	57	57	57	57	57	58	58	58	58	
J. ACTUAL	17	21	30	60	46	39	81	84	27	69			
K. VARIANCE	40	36	27	-3	11	18	-24	-27	31	-11*			
L. CUM PLANNED	57	114	171	228	285	342	399	456	514	572	630	688	
M. CUM ACTUAL	17	38	68	128	174	213	277	361	388	457			
N. CUM VARIANCE	40	76	103	100	111	129	122	95	126	115*			

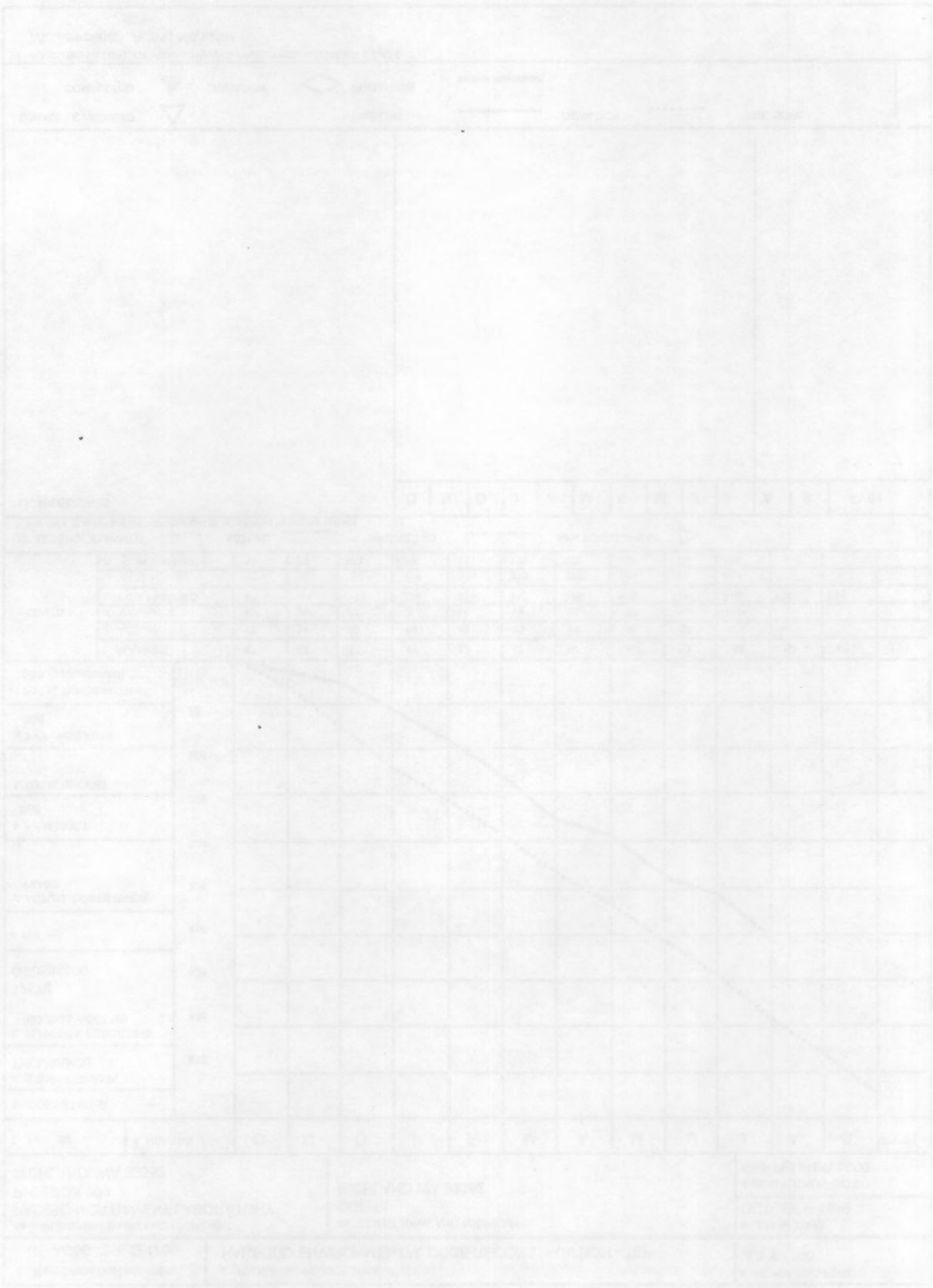
10. LEGEND: PLANNED ------ ACTUAL _____ PROJECTED ..... 90% FUNDS SPENT ▷
* Variance due to change from manual to automated reporting system

11. MILESTONES



LEGEND: SCHEDULED △ TIME LINE _____ DEVIATION ..... TIME NOW:
COMPLETED ▲ DEVIATION ◇ PROGRESS ▬

12. NAME/SIGNATURE OF PARTICIPANTS PROG/PROJ MANAGER & DATE
W. Templeton, Acting Manager



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Source Terms

Objective

Source terms are the amount and type of radioactive materials released to the environment. Members of the Source Terms Task develop estimates of radioactive emissions since 1944 from Hanford facilities based on historical measurements and production information. Source term estimates are used by Environmental Transport Task members to reconstruct the concentrations of radionuclides in the environment.

Uncertainty in calculated and measured data can result from many factors. Uncertainties in measured emissions may result from early measurement techniques. For calculated emissions, uncertainties may result from the differences in published variables that are used to perform calculations. By comparing the uncertainty in the available data, Source Term Task staff determine the most accurate method for developing source terms. For time periods where measured values do not exist, source terms are calculated from available information. The proposed methods and results of this task are reviewed, evaluated, and approved by the TSP.

Progress

Activities for this reporting period included the following:

- met with a TSP member and J. D. Anderson (Westinghouse Hanford Company) to verify that data transcribed from one laboratory record book to another contained no transcription errors. The data were used to calculate iodine-131 releases for the draft Phase I reports.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

Work planned for the subsequent months includes the following:

- begin preparing a summary report describing the methodology and sources of information used to calculate the quantities of iodine-131 released to the atmosphere during 1944-1947.

The following activity is proposed for subsequent months and will be performed if approved by the TSP:

- determine the need to conduct sensitivity calculations using ORIGEN2.[a]

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[a]A. G. Croff. 1980. "ORIGEN2: A Revised and Updated Version of ORIGEN." *Transactions of the American Nuclear Society*, Volume 34, pp 349-350, June 1980.

Environmental Transport

Objective

Members of the Environmental Transport Task reconstruct the movement of radioactive materials (the source term information) from the areas of release to the environment. Radionuclide movement via the atmosphere, Columbia River, and ground water are studied.

To track releases to the atmosphere from Hanford Site operations, meteorological data are needed, including wind speed, wind direction, and other data that affect the dispersion of the releases. Mathematical models are applied to these meteorological data and the source term data to calculate concentrations of radionuclides in the air and on the ground. The TSP reviews, evaluates, and provides direction concerning the proposed models.

Reconstruction of the transport of radionuclides in the Columbia River is based primarily on historical studies of the Columbia River and its tributaries. Computer models are used to reconstruct radionuclide concentrations in the river for time periods when previously published data are limited or unavailable.

The movement of radionuclides in the ground water is reconstructed initially by using ground-water monitoring data to estimate the contribution to the Columbia River exposure pathway. Modeling will be used where previously published data are lacking.

Progress

Activities for this reporting period included the following:

- attended a briefing on the June Atmospheric Transport and Diffusion Workshop at the TSP Environmental Transport Subcommittee meeting in July. The Subcommittee stated that the puff model approach used in the atmospheric transport model for dose calculation is reasonable, but recommended that several changes to the model be considered.
- discussed potential Phase II activities with the Environmental Transport Subcommittee of the TSP
- submitted the abstract, "Atmospheric Modeling for Dose Reconstruction at Hanford" to the American Nuclear Society for its 1990 Winter Meeting.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

The following activities are proposed for subsequent months and will be performed if approved by the TSP:

- atmospheric pathway
  - sensitivity studies for computer-model development

- surface-water pathway
  - conceptual model investigation
  - comparison of mass balance routing calculations to Phase I monitoring data
  - sensitivity study of Phase I results.

Environmental Monitoring Data

Objective

Members of the Environmental Monitoring Data Task assemble, evaluate, and summarize key historical measurements of the concentrations of radionuclides in the environment around the Hanford Site. Radionuclide concentrations have been measured at various times in air, drinking water, foods, fish, the Columbia River, soil, and in other materials. These measurements are evaluated to estimate their accuracies and then used by Environmental Pathways and Dose Estimates Task staff to estimate radiation doses and by Environmental Transport Task staff to calibrate computer models. Methods to attain this objective are proposed to the TSP for review, evaluation, and approval.

Progress

Activities this reporting period included the following:

None.

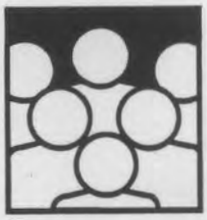
Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

The following activities are proposed for subsequent months and will be performed if approved by the TSP:

- examine the magnitude of the effect of Phase I assumptions on 1945-1947 measured concentrations of iodine-131 on vegetation
- evaluate sensitivity of dose calculations to accuracy and precision in previously published radionuclide measurements in fish and water from the Columbia River
- determine necessary extent of the database on radionuclides in terrestrial media
- determine the suitability of "green run" air data for use in later project phases.



Demographics, Agriculture, Food Habits

Objective

Task members develop the demographic, food consumption, and food production information needed to estimate doses.

Demographic information is developed for the general population and for several special population groups that are not adequately represented by the U.S. Census, including Native American tribes, Army personnel stationed at Hanford, some Hanford construction workers, and migrant workers.

In addition to demographic data, the sources and quantities of food and water consumed must be estimated, because food and water provide pathways for the intake of radionuclides.

Airborne radionuclides from the plant stacks may have been deposited on fruits and vegetables. Consumption of these foods provided a pathway for radionuclide transport to humans. The exposure pathways are studied. In addition, milk produced from cows represents a significant food pathway for iodine-131 if the cows ate vegetation contaminated with radionuclides. Dairy farming practices and milk distribution systems are studied to identify the populations that may have consumed potentially contaminated milk.

Consumption of contaminated fish and shellfish is also a food pathway for exposure to radioactive materials. Estimates of the amount of potentially contaminated fish and shellfish consumed from the Columbia River and ocean bays are developed through an extensive review of numerous past studies.

Treated Columbia River water was used by some community members downstream from Hanford. Drinking this water provided a pathway for exposure to radioactive materials. To estimate the doses from this pathway, it is necessary to know the communities using the water, the amount of water withdrawn, the treatment process, the travel time through the system, and the amount of water consumed. Irrigation water use downstream from Hanford is also studied because radioactive materials in the river water could have been deposited on crops consumed by people or animals. Recreational users of the river also could have been exposed to radiation from the river and shoreline. Food and lifestyle habits of Native Americans that differentiate them from the general population will also be considered. Methods to collect data and to estimate population densities and food consumption have been proposed to the TSP for review, evaluation, and approval.

Progress

Activities for this reporting period included the following:

- placed Work Order No. 1 (developing a Work Plan) with the Umatilla Indian Reservation
- presented a method to collect food consumption data from Native American tribes at a working session during the July 12-13 TSP meeting
- submitted to the TSP for review the report, "Initial Communication Survey Results for the HEDR Project." The results are from a Washington State University omnibus survey of Washington State residents. Results will be used in TSP communications planning and evaluation.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

Work planned for subsequent months includes the following:

- continue preparation for Phase II activities.

Environmental Pathways and Dose Estimates

Objective

Task members use calculated and measured concentrations of radionuclides provided by members of the Environmental Transport Task and the Environmental Monitoring Data Task to calculate doses to populations, typical individuals, and specific individuals. These calculations include doses via direct transfer of radionuclides from concentrations in air and water to people (via breathing, drinking, immersion, etc.). The calculations also include doses from radionuclide concentrations in air and water transferred through environmental pathways, such as soil, plants, animals, and fish, to people. All significant decisions on exposure models and input parameters are presented to the TSP for review, evaluation, and approval.

Progress

Activities for this reporting period included the following:

- completed preliminary documentation for the Phase I dose calculation computer code; wrote draft user manuals for the code; placed the code under configuration management.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

The following activities are proposed for subsequent months and will be performed if approved by the TSP:

- perform sensitivity analysis calculations
- evaluate sensitivity of dose estimates to changes in model structure
- evaluate the need for age-dependent dose factors
- calculate estimated doses for Native American tribes.

Information Resources

Objective

Members of the Information Resources Task work with the other task members to meet information needs, including ensuring that all data referenced in the reports are publicly available and establishing a microcomputer-based tracking system for ready retrieval of historical information.

Progress

Activities for this reporting period included the following:

- added new citations to the tracking system that now numbers more than 3,500
- provided the DOE-RL Public Reading Room with 25 documents of potential interest/use in the HEDR Project. The majority of these reports are relatively large and address daily or monthly activities primarily during the period 1944-1947. A title listing of these reports is attached in Appendix A
- filled information requests from the TSP and HEDR task members.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

Planned work for subsequent months includes the following:

- make necessary arrangements to determine the existence or non-existence of Hanford Site-originated documents that were transferred to the corporate headquarters of General Electric during the years 1946 through 1964
- continue to add input to the information resources tracking data base
- continue to provide documents to the DOE-RL Public Reading Room in an orderly, timely fashion
- develop a list of Hanford-originated raw data logs/notes of potential interest/use to the HEDR Project
- continue to identify and collect significant documents that address silver reactor capabilities, performance, and incidents
- watch for information that may explain in detail, and support data in, "green run" document HW-17381 DEL
- identify significant documents that address fuel element failures that occurred in now decommissioned Hanford Production Reactors
- continue to identify and collect documents and/or data of potential interest/use to the HEDR Project that address activities during the years from reactor startup through 1949.

Records Management

Objective

Members of the Records Management Task provide storage and control of completed project records, maintain an automated inventory of all project documentation, and provide a reference service to project staff and the TSP.

Progress

Activities for this reporting period included the following:

- received and processed project records
- transferred three record packages to the DOE-RL Public Reading Room.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

Work planned for subsequent months includes the following:

- continue processing incoming project records
- continue transferring processed project records to the DOE-RL Public Reading Room.

Quality Assurance

Objective

The objective of this task is to ensure continuous quality assurance (QA) support and coordination with all project tasks. This objective is met through the identification and documentation of QA requirements in the form of a QA Plan and periodic monitoring of project activities during the life of the project to ensure compliance with these requirements.

Progress

Activities for this reporting period included the following:

- conducted a staff debriefing of the results of the PNL QA Audit of the HEDR Project
- continued working on expanding the existing QA plan to include project-specific data quality objectives that will be included as part of Phase II planning.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

Work planned for subsequent months includes the following:

- issue remaining HEDR procedures: HEDR-TP-3, "HEDR Documentation of Critical Decisions" and "HEDR-TP-4, "HEDR Data Quality Objectives"
- develop guidelines that set forth the minimum contents of the Phase II QA plan.

Statistics

Objective

Task members provide statistical support to members of technical tasks and develop and apply sensitivity and uncertainty analyses. Sensitivity analyses will be used to identify parameters with the greatest influence on dose estimates. Using sensitivity analyses results, project staff can focus resources where the benefit in terms of accurate dose estimates is greatest. Uncertainty analyses enable task leaders to determine the extent to which the accuracy and precision of the dose estimates are influenced by accuracy and precision in the input parameters.

Progress

Activities this reporting period included the following:

- conducted computer simulations to determine confidence levels associated with preliminary dose distributions for reference individuals in specified census divisions in the Phase I study area
- completed quantifying the effects of the modular construction of the Phase I Monte Carlo air-pathway dose model on the distributions of dose estimates
- began QA documentation of the statistical analysis procedures and results that were developed/obtained for the Phase I reports
- presented the invited paper "Statistical Aspects of the Hanford Environmental Dose Reconstruction Project" at the American Statistical Association Conference on Radiation and Health, Copper Mountain, Colorado, July 8-12, 1990. The proceedings of the conference will be published in Radiation Research
- continued documenting the multiplicative lognormal dose reconstruction code development.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

Work planned for subsequent months includes the following:

- continue to integrate statistical ideas and methods into restructuring the Phase I dose estimation code as needed
- write a report on the results of the computer simulations conducted to quantify the effects of the modular construction of the Phase I Monte Carlo air-pathway dose model on the distributions of dose estimates
- revise for publication in Radiation Research the paper, "Statistical Aspects of the Hanford Environmental Dose Reconstruction Project"
- finish QA documentation of the statistical analysis procedures and results that were developed/obtained for the Phase I report
- conduct statistical analyses and summarizations of whole-body-counter data on schoolchildren and adults in the Richland-Pasco-Kennewick area that were obtained in

the 1960s to help validate the HEDR dose model. Conduct similar analyses for gross-beta thyroid counts of Hanford workers in the mid-1940s

- develop statistical procedures for use with the recently acquired Geographic Information System.

Project Technical Coordination

Objective

The objective of the Project Technical Coordination Task is to provide a general technical overview of the project to ensure that appropriate information is generated from the technical tasks for performing the final dose calculations.

Progress

Activities this reporting period included the following:

- helped brief TSP members on the contents and interpretation of the draft Phase I reports
- met with staff of the Fred Hutchinson Cancer Research Center July 13 to discuss coordination with the Hanford Thyroid Disease Study.

Major Problem Areas and Action Taken

None.

Planned Work for Subsequent Months

The following activities are proposed for subsequent months and will be performed if approved by the TSP:

- continue coordinating efforts with thyroid disease study personnel
- continue defining the overall structure of the needed HEDR database and the type of data needed for smooth project integration
- work with the International Atomic Energy Agency Coordinated Research Program on Validation of Model Predictions (VAMP) to validate portions of the HEDR model and to obtain independent estimates of certain doses
- supervise training and implementation of the HEDR Geographic Information System.

Appendix A

Hanford-Site-Originated Documents of Potential Interest/Use to the HEDR Project - Placed in the DOE-RL Public Reading Room During July 1990

Appendix A

Hanford-Site-Originated Documents of Potential Interest/Use to the HEDR Project - Placed in the DOE/RL Public Reading Room During July 1990

HAN-45763	200 Area Daily Logs 1-1-47 to 6-30-47. 166 p.	6/30/47
HAN-45804	100 Areas Monthly Reports for 1947. 170 p.	12/31/47
HW-3-2224	100-B Unit Purge, April 12, 1945. 9 p.	4/16/45
HW-7-1649-DEL	Hanford Engineer Works Monthly Report April 1945. 96 p.	5/14/45
HW-7-1793-DEL	Hanford Engineer Works Monthly Report May 1945. 106 p.	6/16/45
HW-7-1981-DEL	Hanford Engineer Works Monthly Report June 1945. 105 p.	7/14/45
HW-7-2361-DEL	Hanford Engineer Works Monthly Report August 1945. 100 p.	9/18/45
HW-7-2548-DEL	Hanford Engineer Works Monthly Report September 1945. 99 p.	10/17/45
HW-7-2706-DEL	Hanford Engineer Works Monthly Report October 1945. 88 p.	11/7/45
HW-7-2957-DEL	Hanford Engineer Works Monthly Report November 1945. 93 p.	12/11/45
HW-7-3378-DEL	Hanford Engineer Works Monthly Report January 1946. 97 p.	2/8/46
HW-7-3751-DEL	Hanford Engineer Works Monthly Report March 1946. 86 p.	4/5/46
HW-7-5944-DEL	Hanford Engineer Works Monthly Report February 1947. 153 p.	3/14/47
HW-11814	Ruptured Slug - Tube 0569-B. 7 p.	12/17/48
HW-21177	Determination of Radioiodine in Organic Material. 4 p.	5/16/51
HW-39966	Iodine-131 Gamma Scintillation Monitor. 8 p.	11/14/55
HW-66891	Automatic Columbia River Monitoring Station. 21 p.	10/6/60
HW-68751-REV	Control Limits for the Concentration of Radioactive Materials in Aqueous and Gaseous Effluents from the Plutonium Recycle Test Reactor. 9 p.	4/17/61
HW-69723	Existing and Proposed Studies at HAPO Relating to the Columbia River. 17 p.	5/24/61
HW-69988-REV2	Design Limits for Radioactive Waste Disposal from the Fuels Recycle Pilot Plant. 7 p.	9/14/62

HW-71718	Effect of High Alum Feed on the Release of P–32 to the Columbia River. 10 p.	11/9/61
HW-72042	Improved Facilities for the Removal of Iodine–131 from PUREX Process Vent Off–Gas. 29 p.	4/2/62
HW-76772	Radiological Aspects of Hanford Land Utilization. 20 p.	2/26/63
HW-78196	N Reactor Secondary Loop Contamination. 31 p.	8/23/63
NUREG/CR-3344 (PNL-4753)	MESOI Version 2.0: An Interactive Mesoscale Lagrangian Puff Dispersion Model with Deposition and Decay. 223 p.	11/30/83

Appendix B

HEDR Publications - To Date

Appendix B

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Hanford Environmental Dose Reconstruction Project Monthly Report	HEDR Project Office	Ongoing	PNL-6450 HEDR	Monthly report; cleared one time for documentation	Periodic report; TSP approval not necessary
Draft Summary Report	HEDR Staff	7/90	PNL-7410 HEDR	Available from TSP	Released 7/12/90 by the TSP (draft)
Draft Air Pathway Report	HEDR Staff	7/90	PNL-7412 HEDR	Available from TSP	Released 7/12/90 by the TSP (draft)
Draft Water Pathway Report	HEDR Staff	7/90	PNL-7411 HEDR	Available from TSP	Released 7/12/90 by the TSP (draft)
Initial Survey Results for the HEDR Project	Beck, DM	7/90	PNL-7423 HEDR	Results of WSU omnibus survey of WA State residents	To TSP for review 7/90
QA Audit Report of the HEDR Project-Data Traceability, A-90-15	Pratt, RC	7/90	PNL-7428 HEDR		To TSP for review 7/90
A Preliminary Examination of Audience-Related Communications Issues: Hanford Environmental Dose Reconstruction Project	Holmes, CW	4/90	PNL-7231 HEDR		PNL addressing TSP comments
MESOILT2, A Lagrangian Trajectory Climatological Dispersion Model	Ramsdell, JV	4/90	PNL-7340 HEDR		PNL addressing TSP comments
Population Estimates for Phase I	Beck, DM	2/90	PNL-7263 HEDR		PNL addressing TSP comments
Estimates of Food Consumption	Callaway	2/90	PNL-7260 HEDR		PNL addressing TSP comments

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Soil Ingestion by Dairy Cattle	Darwin, RF	2/90	PNL-SA-17918 HEDR		For possible use later in project; TSP approval not required
Computational Model Design Specification for Phase I of the Hanford Environmental Dose Reconstruction Project	Napier, BA	2/90	PNL-7274 HEDR		PNL addressing TSP comments
Estimates of Columbia River Radionuclide Concentrations: Data for Phase I Dose Calculations	Richmond, MC; Walters, WH	1/90	PNL-7248 HEDR		PNL addressing TSP comments
Evaluation of Thyroid Radioactivity Measurement Data From Hanford Workers, 1944-1946	Ikenberry, R	1/90	PNL-7254 HEDR		PNL addressing TSP comments
I-131 in Irradiated Fuel at Time of Processing from December 1944 Through December 1947	Morgan, LG	1/90	PNL-7253 HEDR		PNL addressing TSP comments
Work Plan for the Hanford Environmental Dose Reconstruction Project	Haerer, HA	12/89	PNL-6696 HEDR REV 1		TSP approved; published 12/89
Uncertainties in Source Term Calculations Generated by the ORIGEN2 Computer Code for Hanford Production Reactors	Heeb, CM	12/89	PNL-7223 HEDR		PNL addressing TSP comments
Selection of Dominant Radionuclides for Phase I of the HEDR Project	Napier, BA	12/89	PNL-7231 HEDR		PNL addressing TSP comments
Atmospheric Transport and Dispersion Modeling for the Hanford Environmental Dose Reconstruction Project	Ramsdell, JV	12/89	PNL-7198 HEDR		PNL addressing TSP comments

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Atmospheric Transport Modeling and Input Data for Phase I of the Hanford Environmental Dose Reconstruction Project	Ramsdell, JV; Burk, KW	12/89	PNL-7199 HEDR		PNL addressing TSP comments
Fission-Product Iodine During Early Hanford-Site Operations: Its Production and Behavior During Fuel Processing, Off-Gas Treatment, and Release to the Atmosphere	Burger, LL	12/89	PNL-7210 HEDR		PNL addressing TSP comments
The Hanford Environmental Dose Reconstruction Project: Background Information	Byram, SJ	12/89	PNL-SA-17658 HEDR	For use with focus groups	TSP approval not required
Summary of Literature Review of Risk Communication	Byram, SJ	12/89	PNL-7226 HEDR		PNL addressing TSP comments
Milk Cow Feed Intake and Milk Production and Distribution Estimates for Phase I	Beck, DM	12/89	PNL-7227 HEDR		PNL addressing TSP comments
Preliminary Summaries for Vegetation, River and Drinking Water and Fish Radionuclide Concentration Data (DRAFT)	Woodruff, RK	11/89	PNL-SA-17641 HEDR		To TSP for review 12/89
Radionuclide Sources and Radioactive Decay Figures Pertinent to the HEDR Project	Heeb, CM	10/89	PNL-7177 HEDR		PNL addressing TSP comments
Estimations of Traditional Native American Diets in the Columbia Plateau	Hunn, ES; Bruneau, CL	8/89	PNL-SA-17296		Reviewed by tribes
Summary of Workshop on Milk Production and Distribution, November 30, 1988-HEDR Project	Beck, DM, et al.	7/89	PNL-6975 HEDR		To TSP 8/89
A History of Major Hanford Operations Involving Radioactive Material	Ballinger, MY; Hall, RA	6/89	PNL-6964 HEDR		TSP reviewed; PNL addressing comments

HEDR Publications - To Date

Title	Author	Date Issued	Publication No.	Additional Information	Status
Feasibility of Using ^{129}I Concentrations in Human Tissue to Estimate Radiation Dose from ^{131}I	McCormack, WD	4/89	PNL-6889 HEDR		TSP approved 9/89; published 1989
Summary Report of HEDR Workshop on Sensitivity and Uncertainty Analysis	Sagar, B; Liebetrau, AM	3/89	PNL-SA-16804 HEDR	Summary of workshop held January 16-18, 1989	Sent to Till 3/89-no written response provided to PNL
Response to TSP Directive 88-4, Ground-Water Contamination Data	Freshley, MD	3/89	PNL-6847 HEDR		TSP received 3/89; no written response provided to PNL
Demographic, Agricultural, Food Consumption, and Lifestyle Research for the Hanford Environmental Dose Reconstruction Project	Beck, DM, et al.	2/89	PNL-6834 HEDR	Incorporates earlier TSP comments	TSP received 3/89; no written response provided to PNL
Proposed Approach for Developing Information on Population Food Consumption and Lifestyles of Native Americans in the HEDR Study Area	Rhoads, RE; Bruneau, CL	1/89	PNL-6803 HEDR	Working document	TSP comments were incorporated into PNL-6834 HEDR
Hanford Environmental Dose Reconstruction	Bruneau, CL	1/89	PNWD-1323 HEDR	Informational brochure used in PNL's work with Tribes	TSP approval not required
Hanford Environmental Dose Reconstruction Project - Work Plan	Haerer, HA	9/88	PNL-6696 HEDR	Superseded by new work plan	TSP approved

Appendix C

HEDR Presentation Handouts to the TSP - To Date

Appendix C

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Hanford Environmental Dose Reconstruction Project - Phase I Report	Haerer, HA	5/90	PNL-18304 S HEDR	Presented at the workshop, "Public Health Aspects of Hanford Health Studies, A Workshop for State, Local, and Tribal Health Officials," June 6, 1990
Detailed Example Calculations for HEDR, Phase I	Napier, BA	2/90	PNL-SA-17913 HEDR	Presented at the TSP mtg. Feb 15-17, 1990, Richland, WA
Communications Directive	Rhoads, RE	2/90	PNL-SA-17903 S HEDR	Presented at the TSP mtg, Feb 15-17, 1990, Richland, WA
HEDR Project Report to the TSP	Haerer, HA	2/90	PNL-SA-27904S HEDR	Presented at the TSP mtg, Feb 15-17, 1990, Richland, WA
Hanford Environmental Dose Reconstruction Project	Haerer, HA	12/89	PNL-SA-17661S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Communications Directive	Rhoads, RE	12/89	PNL-SA-17653 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Preliminary Evaluation of Thyroid Bioassay Data from Hanford Workers, 1944-1946	Ikenberry, T; Napier, BA	12/89	PNL-SA-17670 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Overview of Project Model - Air Pathway	Napier, BA	12/89	PNL-SA-17673 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Source Terms - Air Pathway Source Terms - Surface-Water Pathway	Morgan, LG	12/89	PNL-SA-17657 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Atmospheric Transport Model	Freshley, MD	12/89	PNL-SA-17662 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Environmental Monitoring Data: Vegetation, 1945-1947	Woodruff, RK	12/89	PNL-SA-17671 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Preliminary Calculated and Measured Concentrations of Iodine-131 in Vegetation for Phase I	Napier, BA	12/89	PNL-SA-17674 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Milk Production and Distribution	Beck, DM	12/89	PNL-SA-17649 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Overview of Project Model - Surface-Water Pathway	Napier, BA	12/89	PNL-SA-17672 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Surface-Water Pathway	Freshley, MD	12/89	PNL-SA-17660 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Environmental Measurements - Columbia River	Poston, TM; Dirkes, R	12/89	PNL-17669 HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Phase II Planning	Haerer, HA	12/89	PNL-17661 S HEDR	Presented at the TSP mtg, December 11-13, 1989, Richland, WA
Discussion with TSP Subcommittee on Communication Strategy	Rhoads, RE	10/89	PNL-SA-17475 HEDR	Presented at the TSP Subcommittee meeting on Communication Strategy, October 5, 1989, Portland, OR
Surface Water Exposure Pathways	Napier, BA; Poston, TM	10/89	PNL-SA-17502 S HEDR	Presented at the TSP meeting, October 12-14, 1989, Portland, OR
HEDR Project Report to the TSP	Haerer, HA	10/89	PNL-SA-17501 HEDR	Presented at the TSP mtg, Oct 12-14, 1989, Portland, OR
Methods for Presenting Results to the Public	Rhoads, RE	8/89	PNL-SA-17368 HEDR	Presented at the TSP meeting, September 6, 1989, Portland, OR
HEDR Project Report to the TSP July 21, 1989	Haerer, HA	7/89	PNL-SA-17218 HEDR	Presented at the TSP mtg, July 21, 1989, Richland, WA
Radionuclides Transported by the Columbia River	Freshley, MD	7/89	PNL-SA-17235 HEDR	Presented at the TSP mtg, July 21, 1989, Richland, WA

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Defining Demographic Categories for Phase I	Napier, BA; Beck, DM	5/89	PNL-SA-17035 HEDR	Presentation handout for the TSP mtg, May 18-20, 1989, Toppenish, WA
HEDR Project Report to the TSP for May 1989 Public Meeting	Haerer, HA	5/89	PNL-SA-17032 HEDR	Presented at the TSP mtg, May 18-20, 1989, Toppenish, WA
Task 6 - Population, Food Consumption and Lifestyles	Rhoads, RE	3/89	PNL-SA-16785 HEDR	Presented at the Native American Workshop, March 14-15, 1989, Richland, WA
HEDR Native American Population, Food Consumption and Lifestyle Study - Data Requirements	Bruneau, CL	3/89	PNL-SA-16784 HEDR	Presented at the Native American Workshop, March 14-15, 1989, Richland, WA
Hanford Environmental Dose Reconstruction Project - Report to the Technical Steering Panel	Haerer, HA	3/89 HEDR	PNL-SA-16794	Presented at the TSP meeting, March 17, 1989, Spokane, WA
Availability of I-131 Vegetation Data	Price, KR	1/89	PNL-SA-16573 HEDR	Presented at HEDR workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Atmospheric Pathway	Ramsdell, JV	1/89	PNL-SA-16565 HEDR	Presented at the HEDR workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
HEDR Demography, Agriculture, and Lifestyle Research	Beck, DM	1/89	PNL-SA-16568 HEDR	Presented at the HEDR workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Aspects of Sensitivity/Uncertainty Analysis in the HEDR Project	Sagar, B.	1/89	PNL-SA-16571 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
HEDR Demography, Agriculture, and Lifestyle Research	Beck, DM	1/89	PNL-SA-16568 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Surface Water Transport Uncertainty	Walters, W.	1/89	PNL-SA-16572 HEDR	Presented at the HEDR Workshop on Sensitivity and Analysis, January 16-18, 1989, Pasco, WA

HEDR Presentation Handouts to the TSP - to Date

Title	Author	Date Issued	Publication No.	Additional Information
Source Terms	Morgan, LG	1/89	PNL-SA-16566 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Experience with Gress and Swats	Piepho, MG	1/89	PNL-SA-16567 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Purpose of Workshop	Gilbert, D.	1/89	PNL-SA-16569 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Example of Sensitivity/Uncertainty Analysis	Strenge, DL	1/89	PNL-SA-16570 HEDR	Presented at the HEDR Workshop on Sensitivity and Uncertainty Analysis, January 16-18, 1989, Pasco, WA
Estimated Quantity of 131I Contained in Irradiated Fuel at Time of Fuel Processing, CY 1944-1945	Jackson, PO; Morgan, LG	11/88	PNL-SA-16398 HEDR	Presented at the TSP mtg, November 11-12, 1988, Olympia, WA

Appendix D

HEDR-Related Publications

Note: This appendix lists publications that present aspects of dose reconstruction in the open scientific literature; TSP approval is not required.

Appendix D

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
Planned Materials					
Demographic Forecasting Using Trends from Radio Correlation Variables	Beck and Pittinger			Demography (journal) or Journal of Rural Society	Planning for 1990
Reconstructing Historical Milk Prod/Dist Systems	Beck, DM			Journal of Health Physics	Planning for 1990
Reconstructing Food consumption Habits: The Backcasting Method	Callaway, M; Carr, D.			Journal of Health Physics	Planning for 1990
Experience in Collaborative Research with Native American Tribes*	Bruneau, CL; Rhoads, RE			Journal (not yet determined)	Planning for 1990
Uncertainty in 64-66 Data on Fish, Water, and Sediment	Poston, TM			Health Physics Society Mtg, Anaheim, CA	Planning for 1990
Communicating Radiation Dose Estimates to Affected Populations	HEDR Staff			Journal of the Society for Risk Analysis	Planning for 1990
Reconstructing Demography of Native Americans*	Beck, DM; Bruneau, CL			Journal of Rural Sociology	Planning for 1990
Fish Concentration Ratios	Poston, TM			Journal (not yet determined)	Planning for 1990
Using the Ratio-Correlation Methods for Backcasting	Beck, DM; Swanson	Spring/91		Chapter in applied demog book	To be published Spring 1991
Completed Materials					
Atmospheric Modeling for Dose Reconstruction at Hanford	Ramsdell, V	7/90		American Nuclear Society 1990 Winter Meeting	Abstract Submitted 7/90

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
Statistical Aspects of the Hanford Environmental Dose Reconstruction Project	Gilbert, RO et al.		PNL-SA-18396 S HEDR	American Statistical Association Conference on Radiation and Health, July 8-12, 1990, Copper Mountain, CO	Presented 7/90
Statistical Aspects of Reconstructing the I-131 Dose to the Thyroid of Individuals Living Near the Hanford Site in the mid-1940s	Gilbert, RO et al.	3/90	PNL-SA-17384	Workshop: Statistics of Human Radiation Exposure to Ionizing Radiation, April 2-4, 1990, Oxford, UK	Presented 4/90
Reconstruction of Hanford Vegetation Monitoring Data for Dose Reconstruction for 1945-1947	Woodruff, RK; Mart, E; Hanf, RW	1/90	PNL-SA-17760 A HEDR	1990 Health Physics Society Meeting, June 24-28, 1990, Anaheim, CA	Presented 6/90
Uncertainty Analysis of the Conversion Factor for Historic Iodine-131 Gross Beta Vegetation Measurements	Strenge, DL et al.	12/89	PNL-SA-17713 HEDR	1990 Health Physics Soc. Mtg, June 24-28, 1990, Anaheim, CA	Presented 6/90
Sensitivity and Uncertainty Analyses for Environmental Dose Reconstruction	Sagar et al.	11/89		Workshop on uncertainty, Nov 13-16, 1989, Santa Fe, NM	Presented 11/89
The Identification of Terrain-Induced Circulations Using Principal Components	Skyllingstad, ED and Schwartz, MN	10/89	PNL-SA-17164 HEDR	American Meteorological Society Conference on Probability and Statistics, October 1-5, 1989 Monterey, CA	Presented 10/89
Mathematical and Statistical Aspects of Reconstructing Doses to Individuals Living Near the Hanford Site Since the 1940s	Liebetrau, AM et al.	10/89	PNL-SA-17498 HEDR	SIAM Conference on Applied Probability in Science and Engineering, March 5-7, 1990, New Orleans, LA	Presented 3/90
Temporal Variations in Atmospheric Dispersion at Hanford	Ramsdell, JV	9/89	PNL-SA-17375 HEDR	Hanford Symposium on Health and the Environment, Oct 16-19, 1989, Richland, WA	Presented 10/89

HEDR-Related Publications

Title	Author	Date Issued	Publication No.	Audience	Status
The Hanford Environmental Dose Reconstruction Project: Overview	Haerer, HA et al.	9/89	PNL-SA-16859 HEDR	Hanford Symposium on Health and the Environment, Oct 16-19, 1989, Richland, WA	Presented 10/89
The Hanford Environmental Dose Reconstruction Project: Technical Approach	Napier, BA et al.	9/89	PNL-SA-16874 HEDR	Hanford Symposium on Health and the Environment, October 16-19, 1989 Richland, WA	Presented 10/89
The Hanford Environmental Dose Reconstruction Project: The Role of Applied Sociology	Beck, DM	4/89	PNL-SA-16880 HEDR	Pacific Sociological Association Meeting, April 13-16, 1989, Reno, NV	Presented 4/89
Potential Applications of Geographical Information Systems for Analyzing Hanford Environmental Dose Reconstruction Data	Stephan, JG, et al.	3/89	PNL-SA-16767 HEDR	Regional Symposium of the HPS Computer Applications in Health Physics, March 16-17, 1989 Richland, WA	Presented 3/89
Estimating Atmospheric Dispersion for Reconstruction of Doses from Hanford Operations	Ramsdell, JV	4/88	PNL-SA-15818 HEDR	69th Annual Meeting of the Pacific Division of the American Association for the Advancement of Science, June 19-23, 1988, Corvallis, OR	Presented 6/88

*All publications addressing Native American research will be reviewed and approved by the appropriate tribes.

Appendix E

Communications Log

Appendix E

Communications Log - July 1990

Initiated By/Affiliation	Contact/Affiliation	Type	Subject
W Templeton/PNL	J Till/TSP, Chairman	Phone	Ongoing discussions re: HEDR Project
W Templeton/PNL	B Shleien/TSP	Phone	Ongoing discussions re: HEDR Project
S Finch/PNL	J Stohr/TSP	Phone	Ongoing discussions re: meeting planning
S Finch/PNL	A Murphy/TSP	Phone	New phone number
S Finch/PNL	M Blazek/TSP	Phone	PNL security badge
B Schleien/TSP	S Finch/PNL	Phone	HEDR financial data
A Fossen/TSP Staff	S Finch/PNL	Phone	Per diem on invoices
A McMakin/PNL	M Blazek/TSP	Phone	Phase I reports
A Beers/TSP Staff	A McMakin/PNL	Phone	Phase I reports
A McMakin/PNL	A Beers/TSP Staff	Phone	Phase I reports
J Daer/PNL	J Stohr/TSP Staff	Phone	Request for TSP resumes
J Daer/PNL	J Stohr/TSP Staff	Phone	Request for 1989 TSP Annual Report
B Cook/Public	L Morgan/PNL	Phone	TSP meetings policy
M Robkin/TSP; C Heeb/PNL	J Anderson/WHC	Meeting	1944-1956 iodine-131 data
P Baker/IT Corp	D Schneider/PNL for L Morgan/PNL	Phone	Releases from 100H and 100D areas
C Bruneau/PNL	C Carroll/Colville Tribe	Phone	Protocol
C Bruneau/PNL	B Burke/Umatilla Tribe	Phone	Protocol
D Powaukee/Nez Perce Tribe	C Bruneau/PNL	Phone	7/12/90 TSP "working session"
C Bruneau/PNL	D Saluskin/Yakima Nation	Phone	Protocol
C Bruneau/PNL	M Queahpama/Warm Springs Tribe	Phone	7/12/90 TSP "working session" and contract progress

Communications Log - July 1990

Initiated By/Affiliation	Contact/Affiliation	Type	Subject
M Cardwell/Kalispel Tribe	C Bruneau/PNL	Phone	TSP meeting
D Barr/Coeur d'Alene Tribe	C Bruneau/PNL	Phone	Data collection working session
C Bruneau/PNL	M Queahpama/Warm Springs Tribe	Phone	HEDR contract
N Morin/Colorado Dept of Health	S Finch/PNL	Phone	Monthly report distribution
J Thomas/HEAL	S Gydesen/PNL	Phone	Two-person review for declassification
N Germond/TSP	S Gydesen/PNL	Phone	Declassification
C Burgess/General Electric	S Gydesen/PNL	Phone	Hanford-Site-originated reports held by GE

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