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**ECOLOGICAL COMPLIANCE ASSESSMENT PROJECT
1994 SUMMARY REPORT**

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Pacific Northwest Laboratory
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SUMMARY

The Ecological Compliance Assessment Project (ECAP) began full operation on March 1, 1994. The project is designed around a baseline environmental data concept that includes intensive biological field surveys of key areas of the Hanford Site where the majority of Site activities occur. These surveys are conducted at biologically appropriate times of year to ensure that the data gathered are current and accurate. The data are entered into the ECAP database, which serves as a reference for the evaluation of review requests coming in to the project. This methodology provided the basis for over 90 percent of the review requests received.

Field surveys conducted under ECAP are performed to document occurrence information for species of concern and to obtain habitat descriptions. There are over 200 species of concern on the Hanford Site, including plants, birds, mammals, reptiles, amphibians, fish, and invertebrates. In addition, Washington State has designated mature sagebrush-steppe habitat as a Priority Habitat meriting special protective measures.

The ECAP completed all major tasks on schedule. The proposed winter baseline survey was deleted from the scope in fiscal year 1994 (FY 94) due to lack of funding. Completion of the final Ecological Compliance Assessment Management Plan was delayed because comments were received late from the U.S. Department of Energy, Richland Operations Office. The summer baseline surveys of the 100, 200, and 300 Areas, and the draft Ecological Compliance Assessment Management Plan were completed on schedule. The changes to the scope resulted in less spending than projected.

Between March 1 and September 30, 1994, 566 Ecological Compliance Review (ECR) requests were received by the project. Of these, 419 required field data to complete the review. More than half the requests were from Westinghouse Hanford Company, and more than half were for projects within the 200 Areas. Most of the requests (76 percent) were on land included in the summer baseline survey. The remainder of the requests, except for 14, were costed to routine review funding, since they required less than 2 hours to complete. This approach resulted in an estimated sitewide savings exceeding \$1000K.

Of the projects reviewed, 17 resulted or will result in impacts to species or habitats of concern on the Hanford Site. The greatest impact has been (or will be, if all the projects are completed as planned) on big sagebrush habitat (exceeding 150 ha). Most of the impact has been or will be within the 600 Area of the Site.

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1.0 BACKGROUND

1.1 Establishment of the Ecological Compliance Assessment Project

Analyses of the ecological effects of major federal actions have a long history at the Hanford Site, particularly as implemented through compliance with the National Environmental Policy Act (NEPA). To ensure that operations at Hanford are conducted with full knowledge of their impacts on biological resources, the U.S. Department of Energy's (DOE) Richland Operations Office (RL) issued direction to all Hanford Site contractors that all actions with the potential for impacting the biological environment must obtain an evaluation of the potential effects on ecological resources prior to initiating any action.^a

Until November 7, 1993, Ecological Compliance Reviews (ECRs) were conducted by various entities on the Hanford Site, including Westinghouse Hanford Company (WHC) and the Pacific Northwest Laboratory (PNL).^b On November 7, 1993, DOE-RL assigned responsibility for ECRs to PNL. Partial funding to implement this responsibility was provided within PNL's ADS 8400-00-CA; however, funding for this project was not completed until March, 1994, through a consolidated work order from WHC. Consequently, ECRs were not performed for groups other than PNL until March 1, 1994.

1.2 Scope of the Ecological Compliance Assessment Project

The U.S. Department of Energy is required by federal laws, regulations, and DOE Orders to protect significant ecological resources, to evaluate the potential for such resources to be adversely affected by DOE activities, and to conduct such activities in a manner that ensures the long-term maintenance and enhancement of such resources. Pertinent laws identifying species and habitats warranting such protection include NEPA; the Endangered Species Act (ESA); the Migratory Bird Treaty Act (MBTA); the Bald and Golden Eagle Protection Act; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Sikes Act; and the Clean Water Act (CWA).

Under DOE's NEPA Implementation Procedures (10 CFR 1021), DOE is required to assess impacts on, at a minimum, species identified for protection under the ESA, candidates for such protection, and species listed as endangered or threatened by the state of Washington. This list has been expanded by RL to include species listed as "Monitor" or "Candidate" by the state. The state's protected plant listing does not have a "Candidate" category; "Sensitive" is the equivalent term used for plants by the Washington Department of Natural Resources.

Of the species known at the time of this report to use the Hanford Site or its near vicinity, 18 are listed under the ESA (50 CFR 17, 1991) as endangered, threatened, or

^a Letter: John D. Wagoner to Contractors, April 9, 1993.

^b PNL is operated for the U.S. Department of Energy by Battelle Memorial Institute under Contract DE-ACO6-76-RLO 1830.

candidate (Figure 1). Additionally, 173 species of birds that occur on the Hanford Site are protected under the MBTA from killing or nest destruction (50 CFR 10.13). Forty species on or near the Hanford Site are classified by Washington State (WNHP 1994, WDW 1993a) as endangered, threatened, candidate, or sensitive (Figure 2). Fifty species are classified as monitor (Figure 2). Most of the protected species on both the federal and state lists are birds.

The state has designated mature sagebrush steppe as Priority Habitat because of its relative scarcity in the state and its value to many wildlife species (WDW 1993b). This habitat is fairly extensive over the Hanford Site, although approximately half of the habitat has been burned (Downs et al. 1993). This habitat is used for nesting and foraging by such species as loggerhead shrikes (*Lanius ludovicianus* - federal and state candidate), sage sparrows (*Amphispiza belli* - state candidate), and ferruginous hawks (*Buteo calurus* - federal candidate and state threatened).

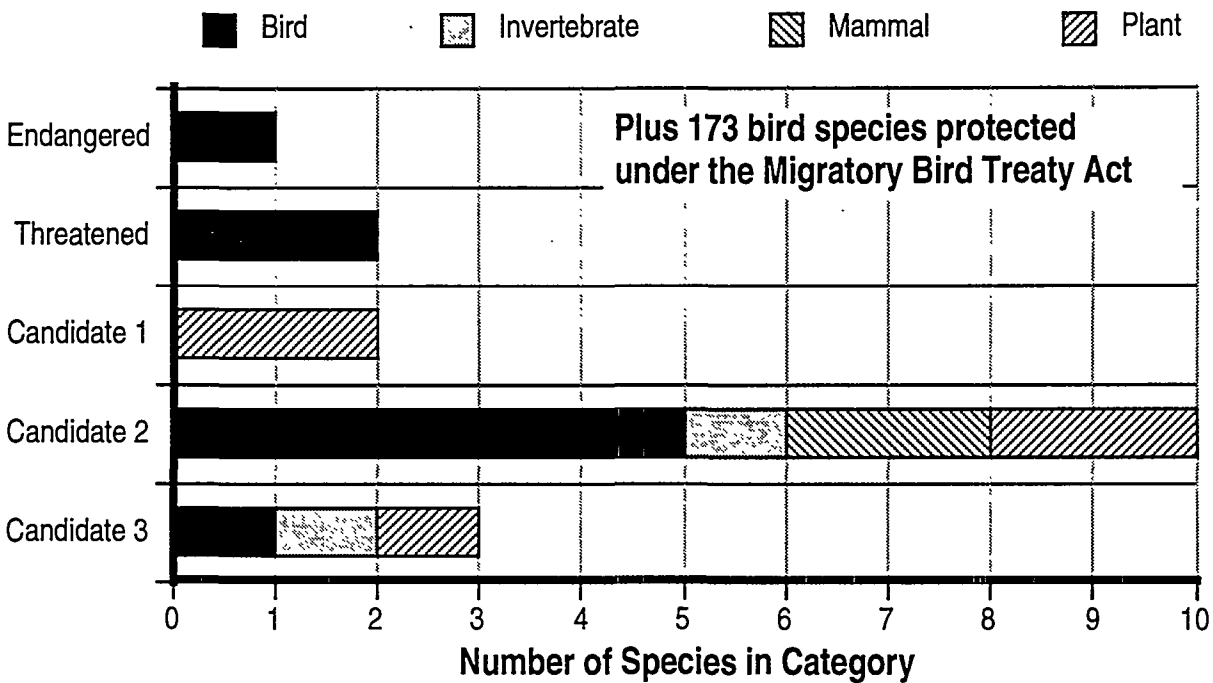


Figure 1. Federally Protected Species on or near the Hanford Site

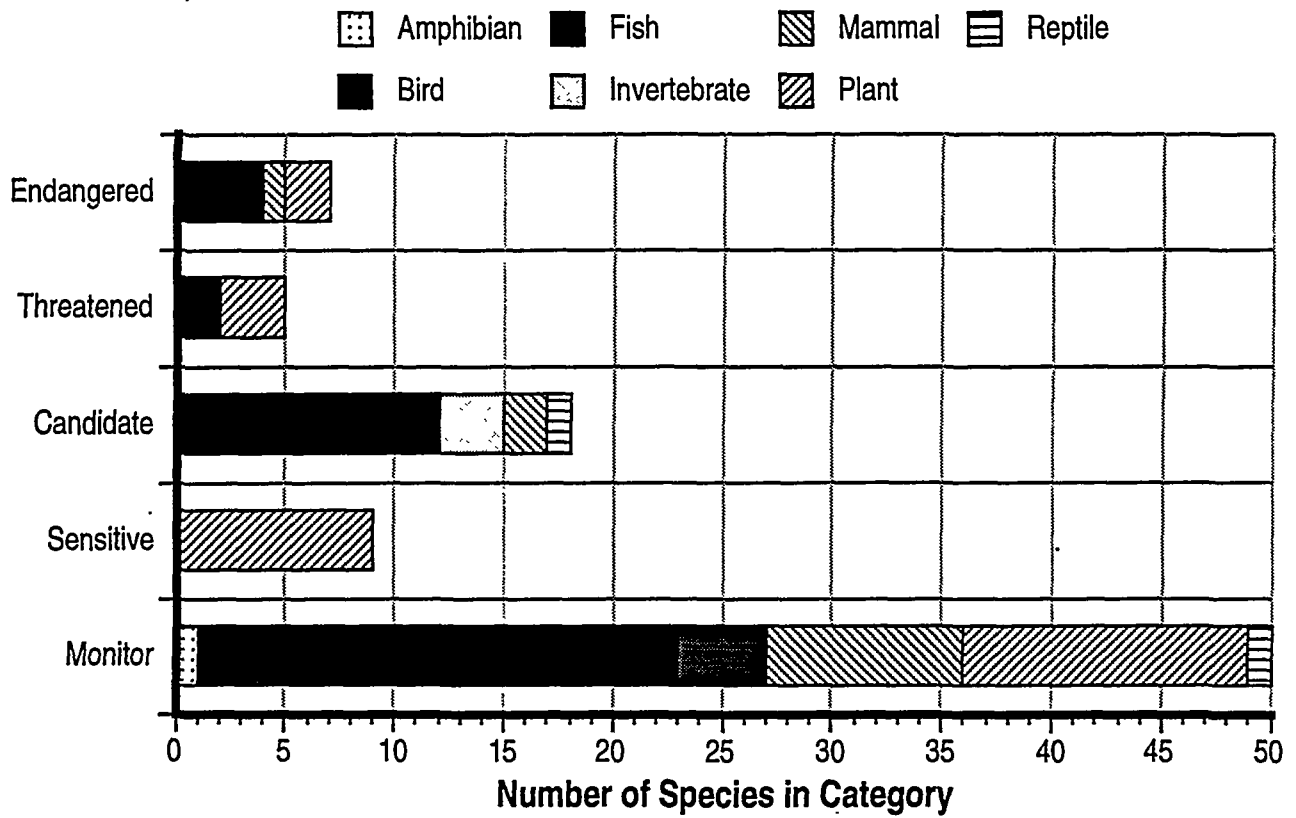


Figure 2. Washington state Listed Species on or near the Hanford Site

2.0 THE ECOLOGICAL COMPLIANCE REVIEW PROCESS

Baseline ecological surveys, a key component of the Ecological Compliance Review Process (Figure 3), are conducted at times of year when species of concern may be present and are identifiable. Baseline ecological surveys were performed in the areas where the majority of activities were expected to occur, i.e., the 100, 200, and 300 Areas. Because complete funding was not received until March, the winter portion of the baseline ecological survey was not completed this year. All biological and ecological information from the surveys was entered into the ECAP database.

The actions involved in the ECR Process are shown in Figure 3. In this process, ECR requests are received by the project, given a unique identification number, and logged in the ECAP database. To simplify and streamline the information exchange, request forms for combined ecological and cultural resource reviews were made available on the local area network as a WordPerfect Macro (GEF271). After receiving the request, any additional information to support the review is obtained from the requester. For each request, the project database is queried to determine whether a

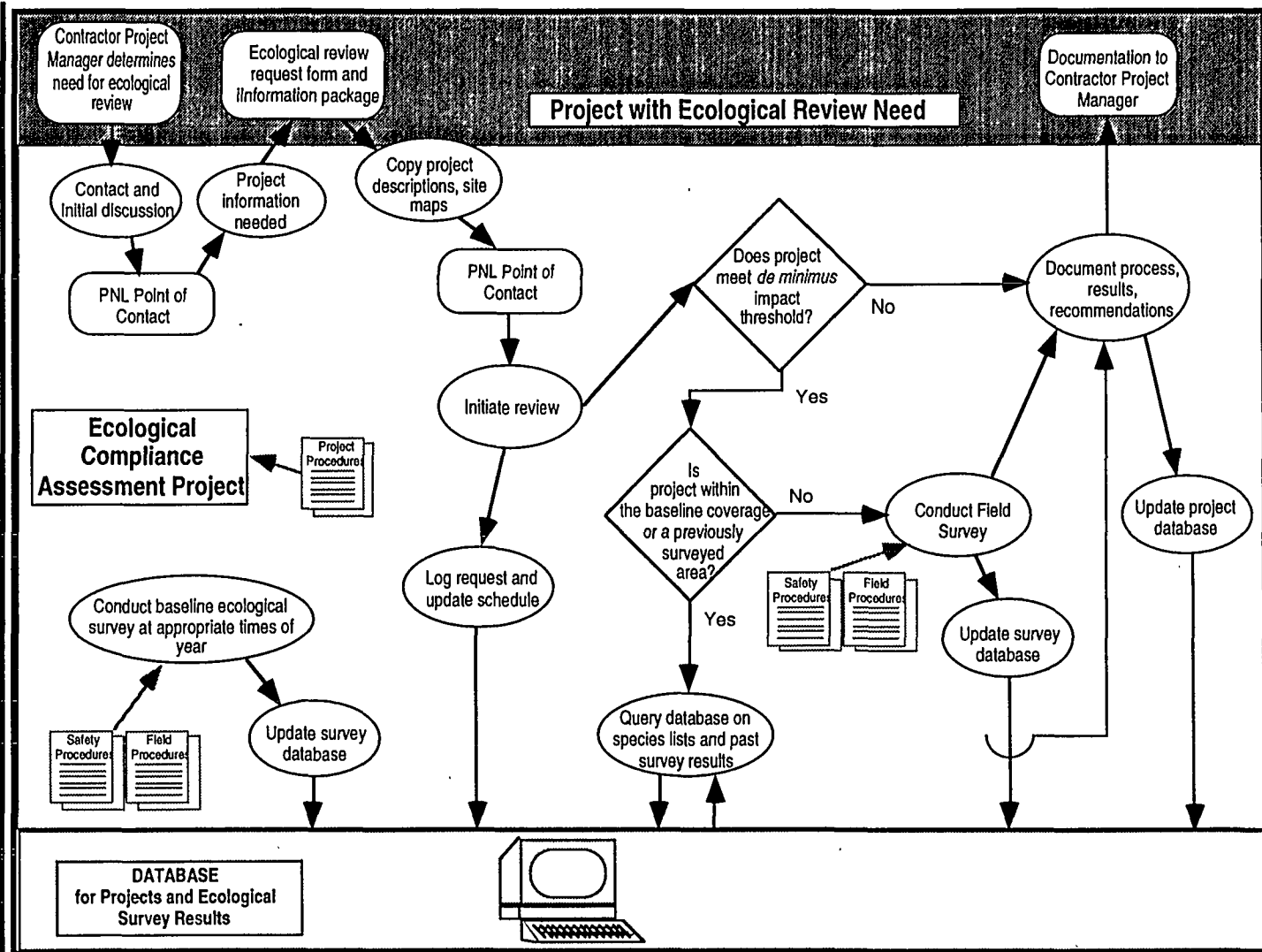


Figure 3. The Ecological Compliance Review Process

field survey has been performed for the area within the past year (surveys are valid from April 1 to April 1 of the following year). Where such information exists, the ECR letter is based on this information. Where additional field data are required (i.e., the area to be disturbed is outside of the baseline area), the requester is contacted for funding if the survey will require more than 2 hours to complete. Otherwise, the survey is performed as part of the routine review task of the project. After the survey or database query, the necessary ECR letter is sent to complete the process.

The objectives of the ECR are to

1. assess the potential for proposed Hanford projects to adversely impact biological resources of concern, including migratory birds, using methods that ensure that such resources in a potentially affected area are detected
2. document the assessment and the basis for the assessment for the requester and DOE
3. retain the documentation in a format that can be reviewed by DOE.

A common decision methodology is used to determine whether a proposed action requires an ECR. The fundamental decision criteria are whether the project will occur outside buildings, whether biota occur on the area to be affected, and whether an excavation permit is required for the action. Some actions that will occur inside buildings may require an ECR if the building has been previously abandoned and could, therefore, comprise nesting or roosting habitat for migratory birds or bat species of concern. Other actions that will produce effluents of hazardous materials beyond those permitted should receive an ECR. Excavation permits require an ECR even when the excavation is performed on areas without vegetation to evaluate the potential for affecting bird species of concern that may be nesting nearby.

3.0 PROJECT SUMMARY

Baseline surveys were originally planned to encompass two time periods of importance to the biological resources of the Hanford Site: winter and spring/summer. Winter surveys were planned for the 100 and 300 Areas to provide a baseline of information on use of these areas by birds overwintering on the Hanford Site. Spring/summer surveys were required in the 100, 200, and 300 Areas for identifying breeding birds, resident nonavian wildlife, protected plants, and habitat. Because funding for the surveys was not finalized until March 1994, the winter surveys were not performed in FY94.

Spring/summer baseline surveys of the 100, 200, and 300 Areas (Figure 4) were completed on June 20, 1994, 10 days earlier than planned. A number of ECRs were received before completion of the baseline that involved projects within the baseline area. So as not to delay the schedules for these projects, the field survey teams were

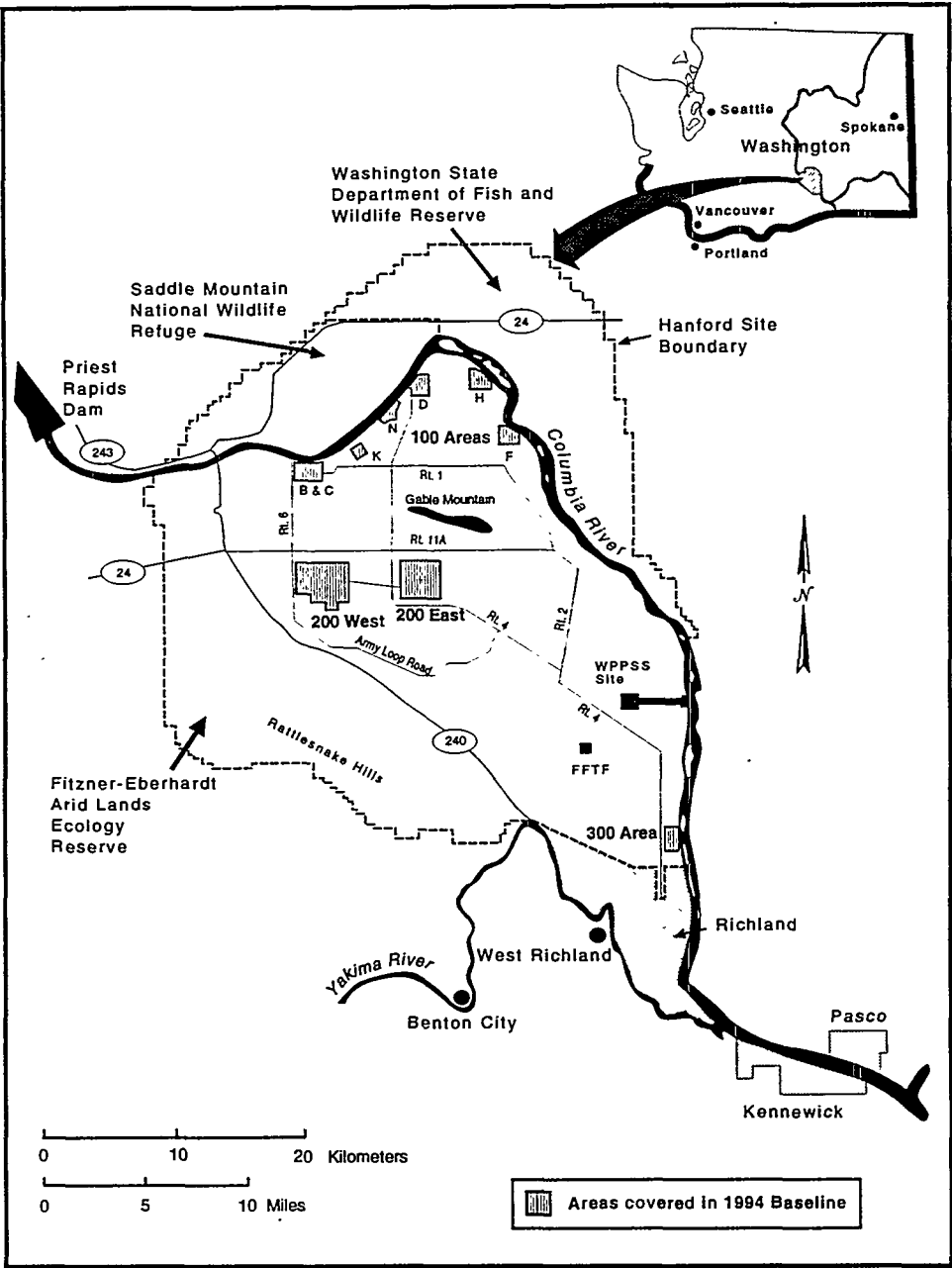


Figure 4. Areas of the Hanford Site Covered in the FY94 Baseline Survey

redirected to complete those portions of the baseline encompassing the proposed projects. Consequently, the baseline work did not proceed in the manner originally planned, i.e., areas along the Columbia River first and the 200 Areas last. However, this did not affect the schedule for completion of the baseline survey.

Baseline survey results were compiled into the ECAP database. The database began operation July 1, 1994. The system operates on a Power PC 7100 server using 4th Dimension as the database software and MapGrafix for Geographic Information System (GIS) display. Digital maps based on Universal Transverse Mercator (UTM) coordinates of all areas of the Hanford Site are available to the ECAP via MapGrafix for map generation.

Loading of previous requests into the database, along with related survey information and baseline survey information, was completed. Proofing and cleanup of these records was also completed. The information contained within the database includes the coordinates and maps of the areas surveyed, a comprehensive listing of species found in each area, and requester information. For those species listed in the State Special Animal Species list and/or by the ESA, coordinate locations have been entered to facilitate spatial identification for ECRs.

The budget for the ECAP was originally set at \$826,000 for FY94, with the breakdown of funding sources shown in Table 1. Funding from the Environmental Restoration (ER) end function of WHC was not received in FY94. However, because of the decrease in the baseline survey coverage necessitated by the timing of funds, the ER funding was not required to meet the remaining milestones (Figure 5).

Table 1. Base Funding Sources for the ECAP in FY94

<i>Funding Source</i>	<i>FY94 Amount (\$K)</i>
PNL ADS 8400-00-CA	200
WHC non-ER	527
WHC ER	99
TOTAL	826

The task breakdown, with budgeted and actual costs, for the ECAP is shown in Table 2. The primary differences between budgeted and actual are underruns in the Baseline Survey, Compliance Reviews, and Impact Management tasks, and the Ecological Compliance Assessment Management Plan task. The underrun in the Compliance Assessment task is due to the deletion of the winter survey from the baseline, and the elimination of review requests from WHC before March 1 from the baseline. These changes were due to the failure to receive project funding from WHC until March. The underrun for the Management Plan task was largely due to a delay in the draft plan review cycle, which will push completion of the final Plan into FY95 (see Figure 5). Project management was also accordingly less than anticipated, because of the delay in full implementation of project funding and associated scope.

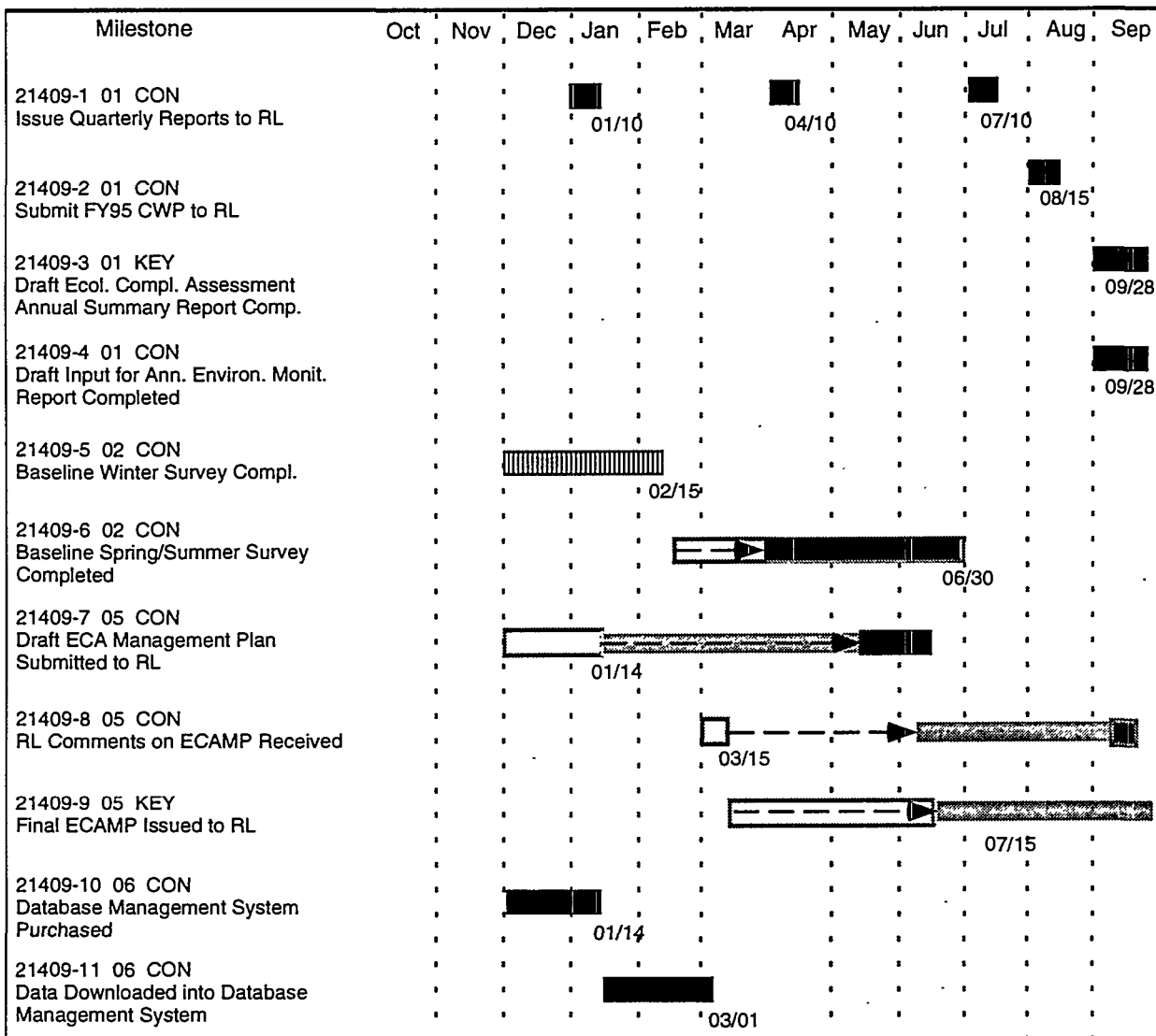


Figure 5. FY94 ECAP Milestone Schedule and Performance

Table 2. Budgeted and Actual Costs for FY94 ECAP Tasks

FY94 WBS No.	WBS Task Element	FY94 Budget (\$K)	FY94 Actual (\$K)
01	Project Management	106	92
02	Baseline Environmental Surveys	278	224
03	Ecological Compliance Reviews	110	92
04	Impact Management	60	45
05	Ecological Compliance Assessment Management Plan	125	80
06	Database management	145	145
	TOTAL	826	688

4.0 REVIEW HISTORY

4.1 Requests Received in Fiscal Year 1994

Between March 1 and September 30, 1994, 566 ECR requests were received by the project. Of these, 419 required field survey data to complete the review; the remainder were ECRs for projects that did not meet the threshold criteria (e.g., were conducted entirely within buildings) or were for projects that had completed construction and were applying for a review after the fact.

A total of eight agencies or contractors filed ECR requests that required field data (Figure 6). Almost half of the requests were from WHC, 30 percent were from ICF-Kaiser, 12 percent from PNL, with the remainder from DOE, other contractors, including the Environmental Restoration Contractor (ERC), the U.S. Army Corps of Engineers (USACOE), Boeing Computer Services (BCSR), and the University of Washington (UW).

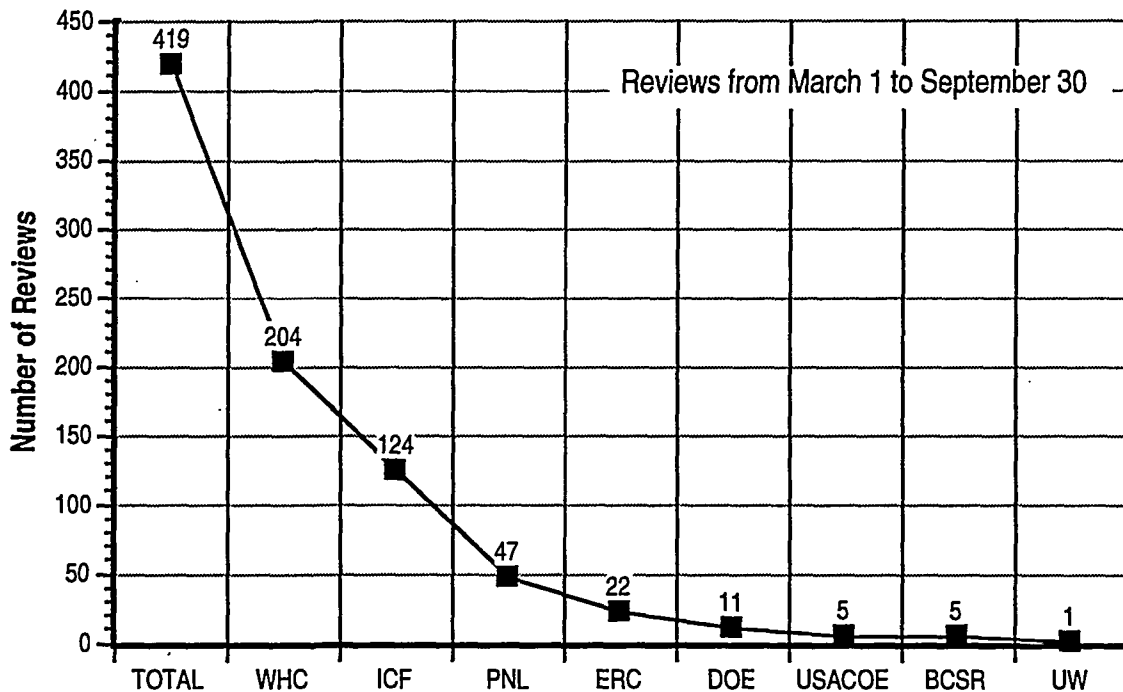


Figure 6. Number of ECR Requests Needing Field Data, By Requester Affiliation

Review requests were received for all areas except the 3000 Area (Figure 7). Approximately half of the ECR requests were from within or adjacent to the 200 Areas, with the remainder divided approximately equally among the 100 Areas, 300 Area, 600 Area, and all other areas. A more detailed breakdown is shown in Figure 8. Most ECR requests were from 200-West, followed by 200-East, 300 Area, and the 600 Area. Of the 100 Areas, the majority of requests were from N, B/C, and K Areas.

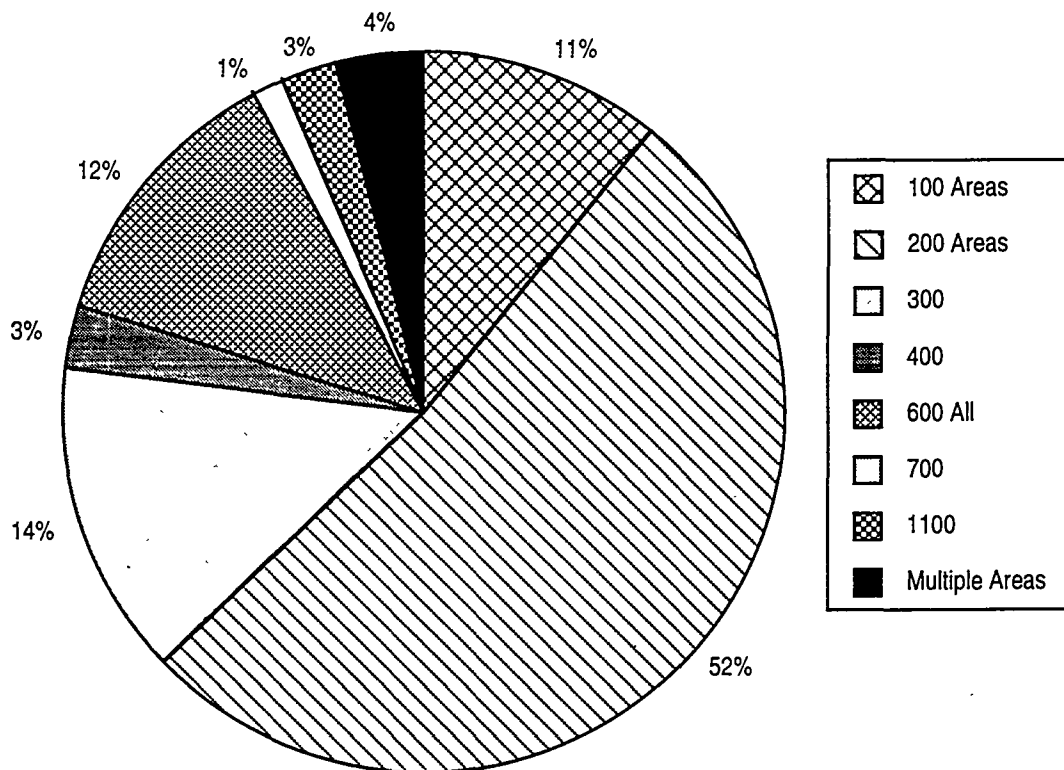


Figure 7. Percentages of ECR Requests by Area of the Hanford Site in FY94

Fourteen ECR requests were not covered by baseline funding and required separate funding. The major projects in this category were those supporting environmental impact statements or related analyses. These projects included the Environmental Restoration Disposal Facility (ERDF), the Multifunction Waste Treatment Facility (MWTF) and associated Cross-Site Transfer Line (CSTL), the Spent Nuclear Fuels (SNF) project, cleanup projects on the Fitzner-Eberhardt Arid Lands Ecology Reserve and North Slope, and the Export Water Line upgrade and valve replacement.

Based on the average cost of field reviews in FY93 using the reactive, work-ordered method (data from the Cultural Resources Management Project and the PNL project), the baseline survey approach saved a significant amount of funds across all agencies and contractors (Figure 9). The least savings were for those contractors that had significant work outside the baseline, which included the USACOE and the ERC. The FY95 baseline survey will be expanded to include more of the areas needed to support the ERC.

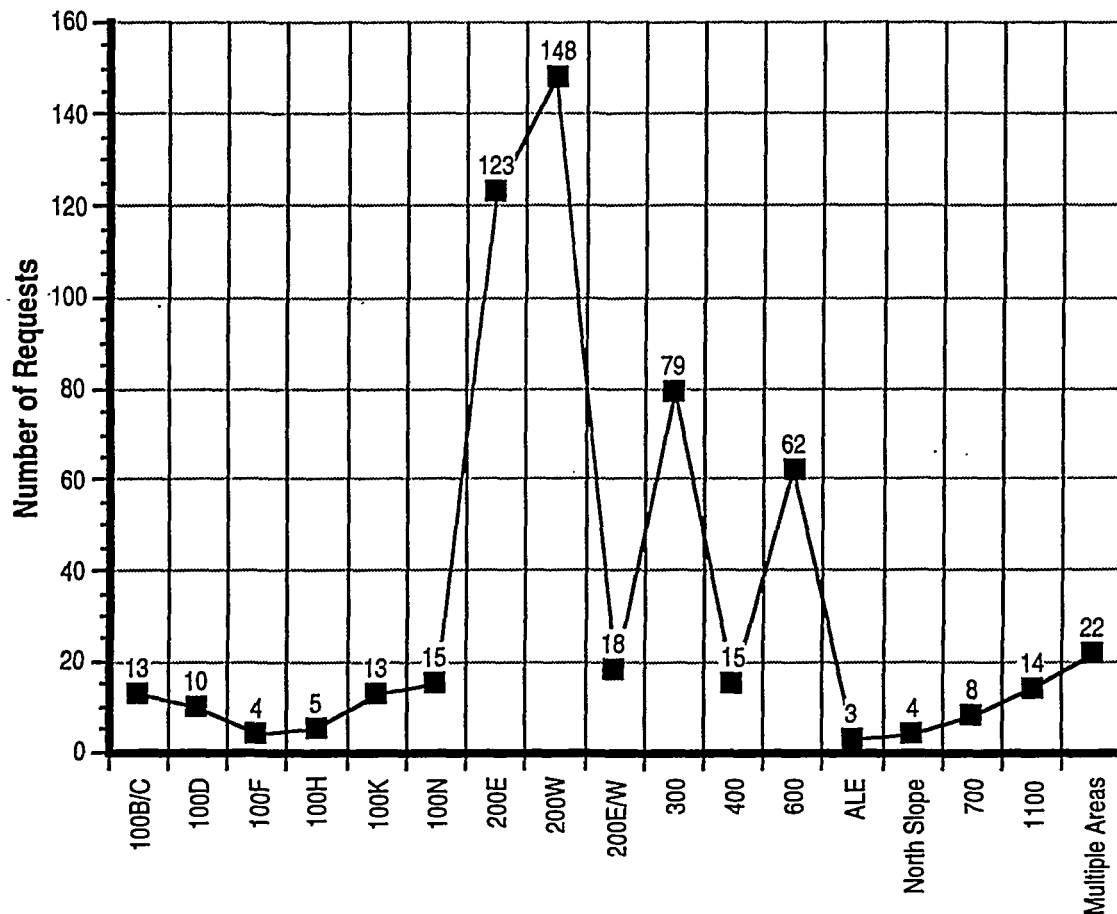


Figure 8. Number of ECR Requests by Area of the Hanford Site

4.2 Impact Management

Under the Impact Management task, the ECAP supported numerous projects in refining their siting or timing to eliminate or minimize impacts to species and/or habitats of concern. Approximately one third of the 419 field review ECRs identified temporal constraints on the proposed work that would eliminate impacts to nesting birds or identified changes in access routes or excavation locations to minimize impacts to plant species and habitats of concern. The ECAP provided direct assistance to the Tank Waste Remediation System (TWRS) in defining siting criteria protecting biological resources and natural resource values and in evaluating alternative siting locations for the TWRS facilities.

An initiative was undertaken this year to develop the analytical tools to quantify shrub-steppe habitat quality using key indicator species. This initiative is being conducted jointly with the U.S. Fish and Wildlife Service and the Washington Department of Fish and Wildlife. The current focus is on loggerhead shrikes, sage sparrows, and ferruginous hawks as potential indicator species.

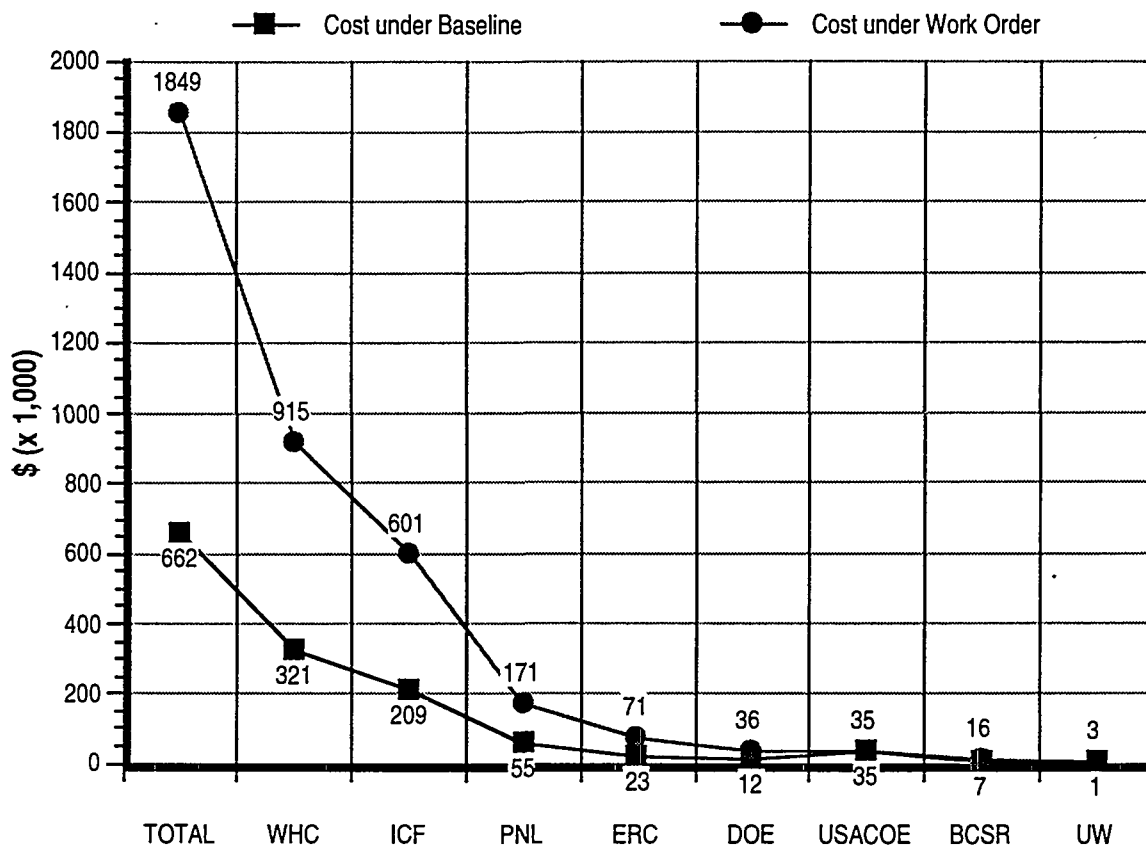


Figure 9. Per-Contractor/Agency Costs of the ECAP, Based on Field-Based ECR Request Rate, for Baseline (actual) and Work Ordered (alternative) Scenarios

The ECAP is also supporting impact quantification and mitigation efforts at the ERDF. Because the necessary quantification models will not be completed for several years, and because ERDF will begin vegetation removal in the coming fiscal year, the quantification process cannot be done on ERDF proper. Therefore, the approach being taken at ERDF is to first define surrogate sites that closely resemble the habitats at ERDF, but that can be protected from development until quantification is completed. Mitigation support is being provided by specific recommendations to the project on action timing, plant salvage, and revegetation, and by general recommendations that will derive from completion of the sitewide Mitigation/Habitat Improvement Plan.

4.3 Cumulative Impacts

Of the 419 projects reviewed that had the potential for affecting biological resources, 17 resulted or will result in impacts to species or habitats of concern on the Hanford Site (Appendix A). The greatest impact has been (or will be, if all the projects are completed as planned) on big sagebrush (*Artemisia tridentata*) habitat. Most of the impact has been or will be within the 600 Area of the Site (Figure 10), as would be expected because the majority of this habitat lies within the 600 Area. However, some losses are within the 200 and 300 Areas of the Site. In all cases, mitigation through

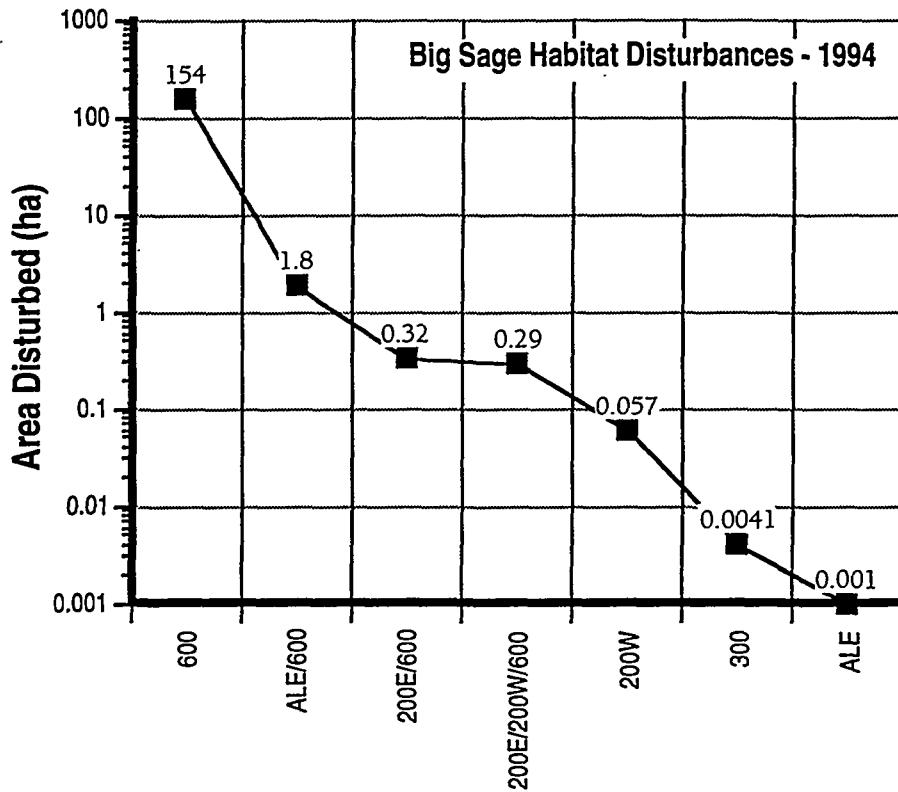


Figure 10. Total Area of Big Sagebrush Habitat Lost or Changed by FY94 Hanford Site Projects

habitat restoration was identified as a requirement for these projects. Guidance on mitigation is being developed for RL and will be incorporated in future recommendations where warranted by level of impact.

Losses of habitat containing loggerhead shrikes (Figure 11) or sage sparrows (Figure 12) roughly parallels the losses of big sagebrush habitat, although there was one portion of habitat within the 300 Area where sage sparrows were found but not shrikes.

A total of 16 projects have or will be conducted where plant species of concern are found. Most of these projects involved stalked-pod milk vetch (*Astragalus sclerocarpus*) and/or crouching milk vetch (*A. succumbens*). These species are listed as Monitor by Washington State. Three projects (two on ALE and one at Pit 30) will affect groups of Piper's daisy (*Erigeron piperianus*), a species listed as Sensitive by the state. Specific mitigation for these species is being included in the sitewide Mitigation/Habitat Improvement Plan.

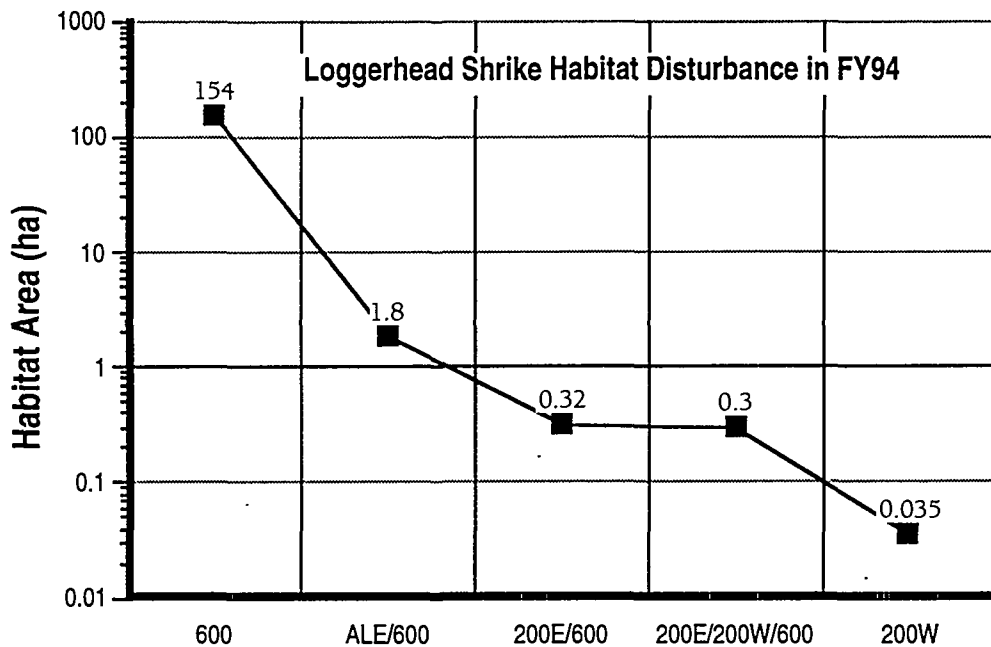


Figure 11. Total Area of Loggerhead Shrike Habitat Lost or Changed by FY94 Hanford Site Projects

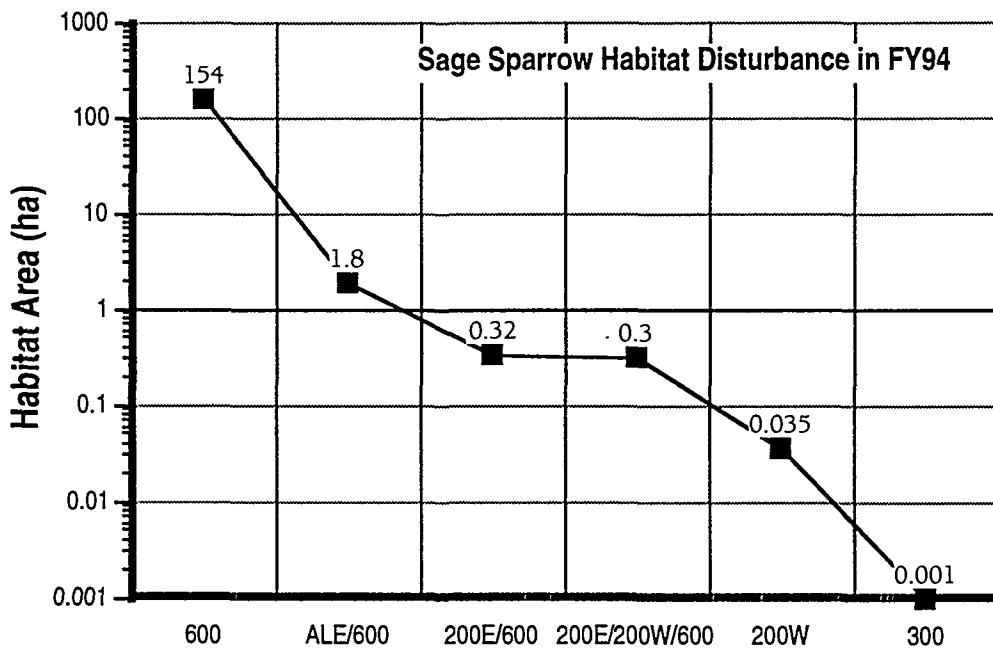


Figure 12. Total Area of Sage Sparrow Habitat Lost or Changed by FY94 Hanford Site Projects

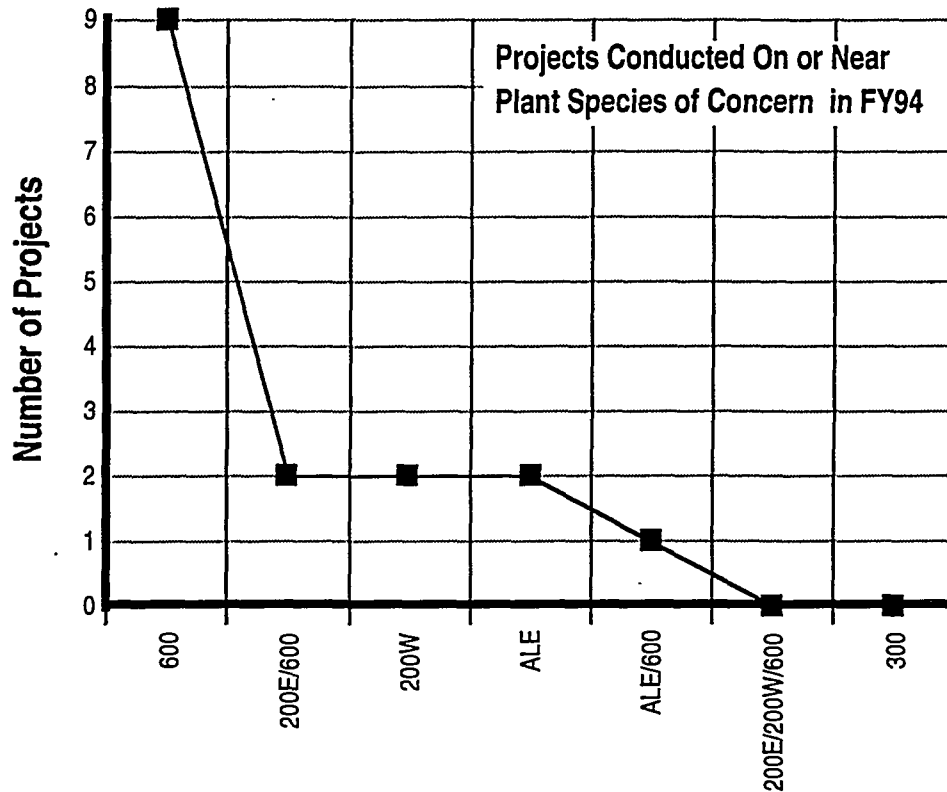


Figure 13. Number of FY94 Hanford Site Projects Disturbing Plant Species of Concern

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Appendix A

FY 1994 Projects Impacting Species or Habitat of Concern

Projects whose activities disturbed priority habitats and/or species of concern on Hanford in 1994.

<u>Project Case Number</u>	<u>Project Name</u>
94-BHI-001	200 BP5 Pump & Treatment
94-DOE-003	Placement of Rip-Rap Material Around Rattlesnake Radio facility
94-DOE-008	GTE/United Telephone Easements
94-KEH-022	Install Storage Shed behind 2713-W Bldg
94-KEH-095	Environmental Restoration Disposal Site (ERDF)
94-KEH-118	Excavate trench, 506BA Building
94-KEH-127	V-784 Sewer Line
94-KEH-142	Horn Rapids Road EMSL Trench
94-KEH-158	B-604 Water System Upgrade-Reservoir
94-KEH-160	Install Placement Gravity Drain, 224-UA Facility
94-KEH-169	Installation of Electrical Service to 219-S, M0-037, 2704-S & M0-924
94-KEH-184	L-251 Hanford Emergency Alarm Dispatch System
94-PNL-024	Borehole Drilling for the Subsurface Science Program
94-PNL-036	Excavations at 45BN471, 45BN462, 45BN463, 600 Area
94-WHC-016	Pipeyard, Wash Station
94-WHC-056	Decommissioning of Wells
94-WHC-079	Cross Site Transfer Line
94-WHC-093	LO-Power AM Radio Broadcast System
94-WHC-155	Special Case Waste Near Storage Modules (W-272)
94-WHC-160	Proposed 200-BP-5, 600 Area, Well Drilling And Road Access
94-WHC-181	Geophysical Studies Proposed For The Fitzner/Eberhardt ALE
94-WHC-199	Hanford Infrastructure Fiber Loop
94-WHC-207	Storage of Long Length Radioactive Mixed Waste

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