RESOLUTION NO. 238 (AMENDED)

WHEREAS, The following conditions from the Site Certification Agreements (SCA) issued by the Washington State Energy Facility Site Evaluation Council (Council) for the Washington Public Power Supply System (Supply System) Nuclear Projects Nos. 1, 2 and 4 provide for the protection and mitigation of wildlife impacted by the projects:

Ecosystem Replacement

WNP-2 IV.D.1 "The Supply System agrees to provide replacement and/or compensation for any wildlife, fish and other aquatic life and ecosystem damage or loss caused by project construction and operation when such damage or loss is substantiated by the Council."

WNP-1/4 IV.D.1 "The Supply System agrees to provide replacement and/or compensation as found to be necessary by the Council for any wildlife, fish and other aquatic life and ecosystem damage or loss caused by the project construction and operation."

Additional Protective Measures

WNP-2 IV.E.1 "The Supply System agrees to provide such additional measures for the protection of wildlife, fish and other aquatic life and the ecology of the area environs, based upon analysis and results of the Monitoring Program, as found to be necessary by the Council."

WNP-1/4 IV.E.1 "The Supply agrees to provide such additional measures for the protection of wildlife, fish and other aquatic life and the ecology of the area environs, based upon analysis and results of the Monitoring Program, as found to be necessary by the Council"; and

WHEREAS, The Environmental Monitoring Program, including the terrestrial ecology monitoring program, is part of an integrated monitoring program for the pre-operational, construction and operational phases for all three of the Supply System's nuclear power plants (WNP-1, 2 and 4) located on the Hanford Site; and

WHEREAS, The Supply System and the Washington State Department of Wildlife (WDW) have conducted terrestrial wildlife monitoring studies at the Hanford Site to examine the impact of the Supply System facilities upon animal populations and it has been determined that construction of the plants resulted in the loss of wildlife and wildlife habitat; and

WHEREAS, In 1985 the WDW developed a wildlife compensation plan to look at mitigating (moderating the effects of the plants upon wildlife populations) the loss of wildlife habitat at the plant sites; the plan proposed to address the certification conditions by improving habitat, through the restoration of vegetation and ecosystem replacement either on or off the plant sites, such that the improved habitat could support additional wildlife; and

WHEREAS, In 1986 discussions were held between the Supply System, WDW and the Council concerning implementation of the wildlife compensation plan by developing six areas near the plant sites as good quality habitat; however, lack of suitable water sources prevented implementation of most provisions of the plan; and

WHEREAS, The Supply System and WDW continued to pursue methods that would compensate for wildlife losses, and in the fall of 1986, jointly developed a mitigation plan which would improve wildlife habitat on the near-by Sunnyside Habitat Management Area - Rattlesnake Hills Unit in lieu of habitat improvement on the Supply System sites; and

WHEREAS, WDW submitted for Council consideration, with a recommendation for full implementation, a proposed Wildlife Mitigation Plan (February 1987), detailing habitat improvements, to include shrub plantings and irrigation, that WDW considered to be an appropriate level of development for mitigation; and

WHEREAS, The WDW has a Permit (Contract No. R006-86PR10972.000) with the U.S. Department of Energy (USDOE) to use the Hodges Ranch Well and appurtenances on the Hanford Site as the source of water identified in the plan;

WHEREAS, The Certificate Compliance Committee met with both parties to review the size and scope of the habitat improvements being proposed under the plan and found the proposal to be adequate and reasonable mitigation for the loss of wildlife habitat associated with the construction and operation of the Supply System facilities on the Hanford Site;

NOW, THEREFORE, BE IT RESOLVED, That the Council hereby approves the Wildlife Mitigation Plan, dated April 1987, which is incorporated herein as Attachment 1, for Supply System Projects 1, 2 and 4, and directs the Supply System to work with WDW to implement provisions of the plan in accordance with the following conditions:

1. The Supply System is to provide funds for the development, operation, maintenance and component replacement costs to carry out the Wildlife Mitigation Plan for the life of the projects.

   WDW shall not now or in the future be held liable for improvements or operation and maintenance (O&M) costs for mitigation of these projects.

2. a. The total of development costs is $110,000; to be allocated by the Supply System between the WNP-2 and WNP-1 and 4 sites.

   b. In the event that any of the projects are unable to provide the specified amount of funding, the Council retains the right to consider alternative funding methods, to include setting aside or delaying an obligation until such time that funds, if ever, become available; developing an allocation formula based on project status, etc.; and

      In the event one or more of the projects are sold or ownership transferred, the Council shall pursue O&M funding for mitigation for each project for the life of the projects.

3. a. Development costs shall be funded by the Supply System, to the extent practical, from FY 1987 funds. The balance shall be appropriated from FY 1988 funds, as available. Any remaining funding obligations will be met in ensuing fiscal periods.

   b. The Council will request a deposit from the Supply System to cover anticipated FY 1987 development costs following adoption of this resolution. For ensuing fiscal periods, the normal quarterly deposit requests will include estimates for development costs.

4. An operation and maintenance fund will be established by the Supply System, consistent with the funding requirements identified in Attachment 1, to meet such expenses during the life of these projects. The arrangement to cover these expenses will be agreed to, in writing, by the Council, WDW and the Supply System. It is understood that unused system replacement funds shall be refunded to the Supply System at the end of the life of the projects; and

5. Implementation of the plan is contingent upon a Department of Ecology Groundwater Permit/Certificate being obtained by WDW; and

6. The WDW will operate and maintain the Hodges Ranch Well and its appurtenant facilities, to include providing electricity to the well site, pursuant to its permit with USDOE.

7. The plan will be implemented in a timely manner, generally following the implementation schedule in Attachment 1; and

BE IT FURTHER RESOLVED, It is intended that implementation of the plan will satisfy wildlife mitigation requirements; however, if there are unanticipated circumstances that prevent the plan from being completed and/or satisfactorily implemented, the Council may require the Supply System to undertake appropriate remedies to ensure wildlife mitigation.

Dated this 1st day of May 1987.

Washington State Energy Facility
Site Evaluation Council

BY /S/
Curtis Eschels
Chairman

ATTEST:

BY /S/
William L. Fitch
Executive Secretary

Amended this 25th day of April 1988.

Washington State Energy Facility Site
Evaluation Council

BY Curtis Eschels
Curtis Eschels
Chairman

ATTEST:

BY William L. Fitch
William L. Fitch
Executive Secretary

Final Report

Proposed Wildlife Mitigation for Washington Public Power Supply System Facilities WNP-1, 2 and 4

Submitted to

State of Washington
ENERGY FACILITY SITE EVALUATION COUNCIL
Olympia, WA

by

WASHINGTON DEPARTMENT OF GAME
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April, 1987

TABLE OF CONTENTS

1. Introduction

Washington Public Power Supply System (WPPSS) has leased 850 ha. (2,100 acres) of the Hanford Nuclear Reservation for construction and operation of three commercial nuclear power plants (WNP-1, 2 and 4) and adjunct facilities. Certification for WNP-2 was granted in May of 1972 and site preparation began in May of 1973. Site certification for WNP-1 and 4 was granted in June and August of 1975 respectively and site preparation commenced in 1976.

Site certification agreements for WNP 1, 2 and 4 include the stipulations that:

> "The Supply System agrees to provide replacement and/or compensation for any wildlife, fish and other aquatic life and ecosystem damage or loss caused by Project construction and operation when such damage or loss is substantiated by the Council.
>
> "The Supply System agrees to provide such additional measures for the protection of wildlife, fish and other aquatic life and the ecology of the area environs, based upon analysis and results of the Monitoring Program, as found to be necessary by the Council."

During the fall of 1986, WPPSS and WDG jointly developed a mitigation plan which would improve wildlife habitat on the near-by Sunnyside Habitat Management Area - Rattlesnake Hills Unit in lieu of habitat improvement on the WPPSS site. Habitat improvements would include shrub plantings and irrigation. Although WDG and WPPSS are in general agreement regarding the nature of the proposal, the two entities are not in agreement over how much of the proposal should be developed as mitigation and funded by WPPSS.

WPPSS maintains that it should fund only partial development of the proposal such that costs to WPPSS are comparable to those of the previously proposed on-site mitigation plan (refer to section 6, page 3). Partial development would consist of developing the mainline of the irrigation system and planting and irrigating 1.2 acres of shrubs (12 0.1-acre plots). The estimated development cost for this partial development is $40,000. WPPSS would also establish a small trust fund to be managed by WDG. Income from this fund would pay a portion of the operation and maintenance costs necessary to maintain this habitat improvement during the 40-year life of the WPPSS facilities. Upon completion of the habitat improvement and establishment of the trust fund, WPPSS would be relieved of any further wildlife mitigation responsibilities. Some operation and maintenance expenses and any additional habitat improvement would be the responsibility of WDG.

In contrast, WDG maintains the proposal should be developed in full with all development, operation and maintenance funds provided by WPPSS.

Development would consist of an irrigation system with a mainline and 10 lateral lines to service 6 acres of shrubs (60 0.1-acre plots). The estimated development cost is $81,253. WPPSS would provide operation and maintenance funds through a trust fund or cost reimbursement basis. WDG believes full implementation of this proposal is warranted as:

- To date no significant wildlife mitigation has been implemented during the more than 13 years of construction and operation of the WPPSS facilities.

- WPPSS is seeking release from any further wildlife mitigation responsibilities as a condition of the proposal.

- The proposed level of mitigation is actually well below that necessary to fully replace habitat lost from construction of facilities.

- The proposal requires less habitat development than the previous on-site proposal agreed to by WPPSS.

- The difference in cost between the current proposal and the previous on-site mitigation proposal is largely due to the cost of providing electricity and water to the Rattlesnake site and does not reflect an increase in the level of mitigation. (In the previous proposal WPPSS assumed costs of providing water, power, maintenance and operation. These costs were not included in the previous on-site proposal.)

- Full development of the proposal will provide visible benefits to wildlife and the public.

Full development of the proposal is described below so that the Energy Facility Site Evaluation Council (EFSEC) can review the components and make a decision regarding the level of development necessary for mitigation.

2. Description of WPPSS Site

The WPPSS site has been described by WPPSS (1980 and 1985). Soils are sandy and the vegetation of the site is best characterized as shrub-steppe (Daubenmire 1970). Primary shrub species are Artemesia tridentata, Pursha tridentata, and Chrysothamnus spp. Primary herbaceous species included Bromus tectorum, Stipa commata, Agropyron Spicata and introduced forbes. Much of the site was burned by wildfires in 1961, 1970 and 1984, which destroyed much shrub cover.

Resident wildlife is typical of shrub-steppe vegetation in the Columbia Basin and has been listed by WPPSS (1980). Wildlife use of the WPPSS site is influenced by the sites proximity to the Columbia River and the habitat provided by the surrounding Hanford Reservation which includes areas of sand dunes and stands of tall, dense shrubs. The Columbia River serves as a migration corridor for birds and the riparian habitat along the river's edge is critical for many of the site's wildlife species. During summer the river is the only source of free water available to most wildlife.

3. Review of Wildlife Monitoring on WPPSS Site

Monitoring of terrestrial wildlife was initiated in 1974 to determine the impact of cooling tower operations upon animal communities through pre and post operation field studies. Small mammal and bird populations were sampled from 1974-1979; mule deer were studied during 1975-76 (WPPSS 1981). These studies provided estimates of population densities of mule deer and small mammals, and the relative abundance of birds in the vicinity of WNP 1, 2 and 4. At the request of Washington Department of Game (WDG) WPPSS conducted additional terrestrial wildlife studies from 1981 to 1986 to provide more detailed information on mule deer, rabbits and birds. Descriptions and results of these studies are provided in WPPSS (1981 and 1986).

To monitor vegetation changes, aerial photographs of the WPPSS site were taken in 1975 and 1976. Battelle (1976) reported these photographs showed landscape changes due to construction and roadways, and noted that construction activities would account for the major loss of wildlife habitat.

4. Habitat Losses and Approach to Mitigation

Construction of nuclear power plants WNP-1, 2 and 4 resulted in the loss of 520 ha. (1,285 acres) of steppe habitat to placement of facilities, roads, borrow pits, pipeline and utility corridors, etc. Wildlife dependent upon this habitat was also lost.

This loss of wildlife habitat can be mitigated by improving a sufficient amount of low-quality habitat (either on or off the WPPSS site) such that the improved habitat can support additional wildlife. Ideally the improved habitat would support:

1) the same species as those which occurred on the pre-project WPPSS site.

2) an additional number of individuals of those species equal to the number that were lost to the WPPSS project.

If mitigation is 100% effective then all wildlife losses will be compensated for by the additional wildlife production and use on the improved habitat.

Because of special circumstances surrounding the WPPSS Hanford project, the current and previous mitigation proposals have not required complete mitigation but rather have sought to provide significant wildlife compensation at a cost affordable by WPPSS.

5. Previous Mitigation Efforts

In 1985 an agreement was reached between WPPSS, the Energy Facility Site Evaluation Council (EFSEC) and WDG, whereby WDG would assist WPPSS to develop and implement a wildlife compensation plan to mitigate impacts to

wildlife from construction and operation of the facilities. A plan was submitted to EFSEC and approved in 1986 which focused on converting small, disturbed areas on the WPPSS site to good quality habitat. Two sites totaling 31.5 acres would have been planted with containerized arid-land shrub seedlings, four sites totaling 10.5 acres would have been irrigated and planted with containerized riparian shrub seedlings and two half-acre sewage lagoons would have been converted to wetlands suitable for wildlife. These "islands" of good-quality habitat would have improved the overall wildlife value of the 850 ha. (2,100 acre) WPPSS site and provide partial compensation for habitat lost to facilities. The development cost of this mitigation was estimated as $34,000. (Water, electricity and operation and maintenance were to be provided by WPPSS and are not figured into the estimate.) Lack of suitable water sources prevented implementation of most provisions of this plan.

6. Proposed Mitigation

To compensate for wildlife losses from construction of WNP-1, 2 and 4, we propose that WPPSS, in cooperation with WDG, enhance habitat on the Sunnyside Habitat Management Area (HMA) - Rattlesnake Hills Unit (Figure 1). Enhancement would consist of establishing small, scattered plots of shrubs and constructing a drip irrigation system to provide water to these plantings (Figure 2). These irrigated plots would be located across the unit in a manner that would mimic natural riparian draws. The total area to be irrigated and planted would be 2.4 hectares (6 acres). These plots would provide a limited amount of water and riparian vegetation in an area where currently none exists, thereby providing large benefits for wildlife.

The importance of riparian plant communities to wildlife is well documented (Oliver 1969, Hubbard 1977, Carothers 1977, etc.). Riparian habitat is a complex plant community which offers more food, cover and habitat niches than any other plant community type in dryland areas of eastern Washington. Because of this a greater diversity of wildlife can exist within riparian habitat than in surrounding dryland habitats. Equally important is that the wildlife value of dryland habitats is greatly enhanced by the presence of adjacent riparian habitat. Thus creating riparian habitat on the Rattlesnake Hills Unit where currently none exists, would both add a new plant community which can support additional species of of wildlife, and increase the number of species and population levels that could be supported by the existing dryland habitat.

The habitat value of the Rattlesnake Hills Unit is presently low. Proper interspersion of cover requirements, food and water is necessary for wildlife to make maximum use of a site. The proposal, by increasing diversity of habitat and interspersion of water and cover with food, would greatly improve the habitat value for most game and nongame wildlife. Habitat plots would be spaced so as to maximize the benefit from the sphere of influence of each plot. Travel distances between plots would be such that water, thermal and escape cover would be favorably distributed across the area.

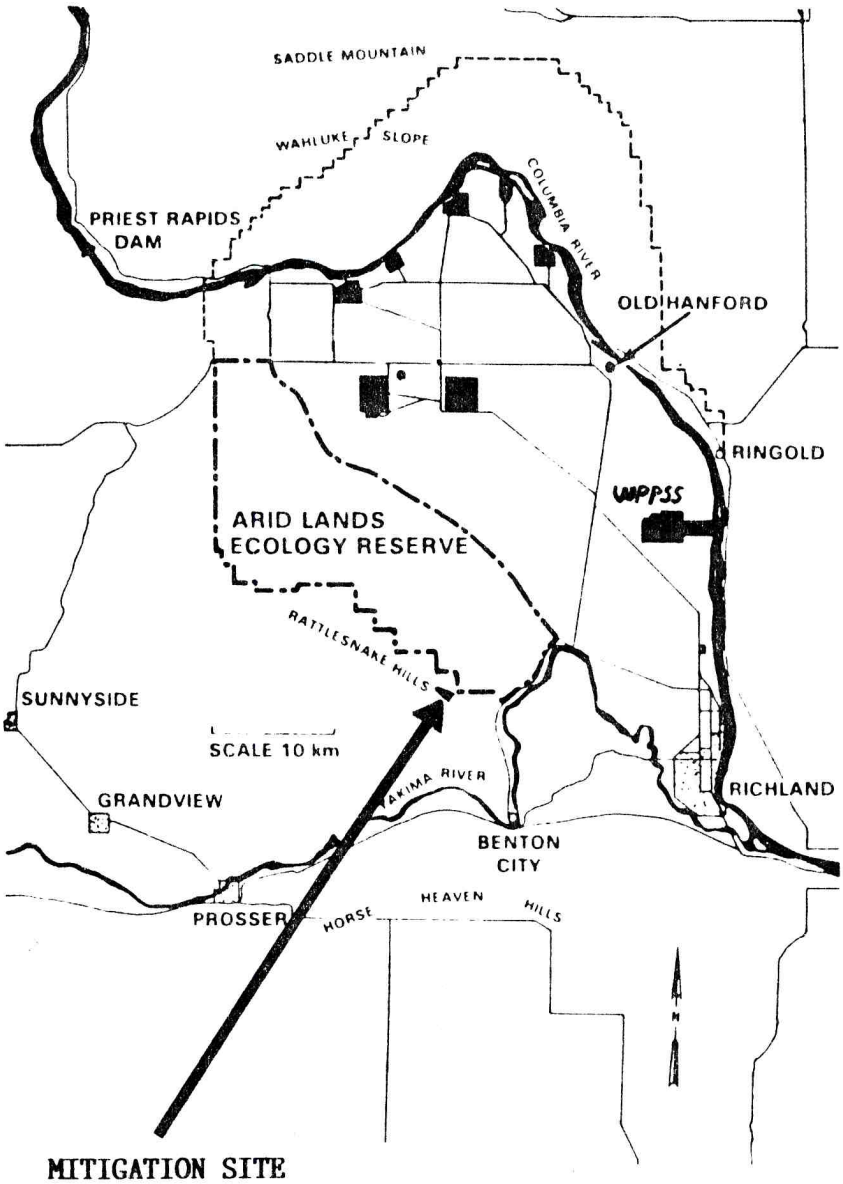
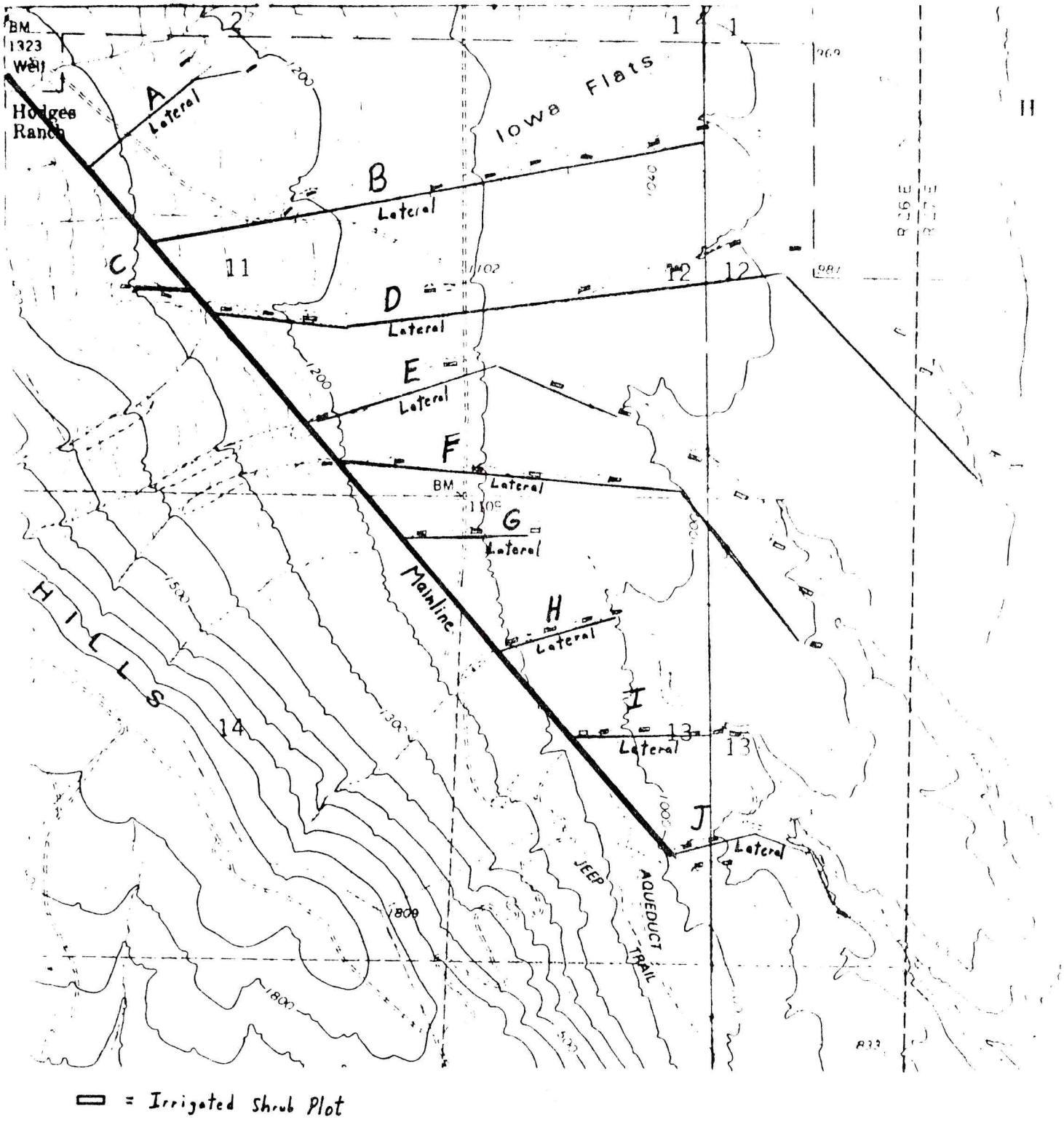


Figure 1. Location of proposed mitigation land



▭ = Irrigated Shrub Plot

Figure 2. Irrigation system design for Rattlesnake Hills Unit, Sunnyside Wildlife Area.

6.1 The Rattlesnake Hills Site

The Rattlesnake Hills Unit of the Sunnyside HMA is located approximately six miles north of Benton City. The property lies along the northeast slope of the Rattlesnake Hills and is immediately south of the Hanford Reservation's Arid Lands Ecological Reserve. The unit is an extensive area of steppe habitat dominated by plant communities of bunch grasses, cheatgrass and sagebrush. A wildfire in 1984 destroyed much of the sagebrush cover. The unit has very little vegetative diversity and no perennial natural water sources. Wildlife populations are typical of the driest parts of eastern Washington, with little species diversity and low densities. Resident game populations include small numbers of chukar, gray partridge, Nutall's cottontail, black-tailed jackrabbit, and mule deer. Mourning dove, pheasant, and California quail have also been observed on the site. Nongame species reported on the site include western meadowlark, horned lark, short-eared owl, burrowing owl, gyrfalcon, prairie falcon, goshawk, deer mouse, bushy-tailed woodrat and Great Basin pocket mouse.

6.2 Description of Facilities and Improvements

Implementation of the proposal requires bringing electricity to the site, developing a well, installing an irrigation system and planting of trees and shrubs. These developments are described below.

6.2.1 Electrical Power

The original power lines to the well were damaged by fire in 1984 and were subsequently removed. Therefore construction of approximately one and one half miles of new, single phase powerline is required. Funds necessary for construction would be provided by WPPSS. Since the well is in the Benton County PUD service area, actual construction and maintenance of the new powerlines would be the responsibility of the PUD.

6.2.2 Well and Pump

An agreement has been made with the U.S. Department of Energy (DOE) to use the Hodges Ranch Well on the Hanford Reservation as the source of irrigation water. The well is capable of producing 24 gallons of water per minute on a sustained basis. Currently the well is fitted with an antiquated, five horsepower reciprocating pump of limited capacity and which is in need of repair. This pump would be replaced with a new, five-horsepower submersible pump capable of producing 24 gallons of water per minute. To minimize maintenance requirements, the pump would be a high-quality, stainless steel impeller type, and the power cable servicing the pump motor would be enclosed in PVC pipe.

6.2.3 Irrigation System

The water distribution system would consist of the following components:

a) 10,000 gallon storage tank which is currently in place at the well site. DOE has granted permission to use this tank.

b) Mainline of PVC pipe, running approximately 11,000 feet southeast from the storage tank.

c) Ten PVC lateral lines running from the mainline. These lines would parallel draws leading from the Rattlesnake Hills.

The distribution system would include air relief and pressure relief valves, risers and drain valves where necessary. The mainline and lateral lines would be buried a minimum of 24 inches below the ground surface to protect them from frost and physical damage from vehicles, etc.

A drip-type water application system would be used for shrub plots located along each lateral line. The application system for each plot would consist of a series of lays of polyethylene tubing fitted with one-gallon per hour drip emitters at approximately four foot intervals. To prevent damage from ultra-violet light, rodents and coyotes, the polyethylene tubing would be buried a few inches below the surface in a shallow, hand-dug trench. Emitters would be left protruding above the ground. Each emitter would water a single tree or shrub. An ideal plot would be one tenth acre in size with 272 emitters on an approximately 4 ft. x 4 ft. spacing. A small wildlife watering basin would be included in each plot and would be supplied with water by three emitters. A pressure regulator and shut-off and drain valves would be needed at each plot.

The operation of the irrigation system would be as follows:

- The well would run continuously from the spring irrigation start-up date to the fall shut-off date. This would produce the maximum amount of water for wildlife benefits and save wear and tear on the pump motor (continuous operation puts less strain on the pump motor and switches than does repeated cycling on and off). Circuit breakers, pressure relief and check valves would protect the pump in the event of system failure.

- Pump output would be regulated to fill the 10,000 gallon storage tank three times each day.

- The storage tank provides enough water to irrigate 20 plots at a time with each plant receiving approximately 2 gallons of water. The irrigation system would be divided into three units of 20 plots each, with each unit controlled by electric timers and valves where the lateral lines join the mainline. Valves to each unit would be electrically opened for two hours each day. Thus each 20-plot unit would receive one tankfull of water per day.