

CORRES. CONTROL  
OUTGOING LTR NO.

DOE ORDER #  
05-RF-00910



DIST.	LTR	ENC
DEL VECCHIO, D.		
FERRERA, D.W.		
GIACOMINI, J. J.		
GILPIN, H.E.		
LINDSAY, D. C.		
LONG, J. W.		
CROCKETT, G.		
SHELTON, D.C.	X	X
TUOR, N.R.		

September 29, 2005

05-RF-00910

BERARDINI, J.		
WARD, DAVID	X	X
NELSON, JODY	X	X
SCHLAGEL, DOUG		
DECK, CAROL	X	X
NININGER, R.		
NESTA, STEVE		

Mr. Cliff Franklin  
MV72  
DOE, RFPO

TRANSMITTAL OF ROCKY FLATS ADAPTIVE MANAGEMENT PLAN -  
DAW-039-05

Dear Cliff:

Enclosed is the Adaptive Management Plan (Plan) as required by the United States Fish and Wildlife Surface (USFWS) Rocky Flats Programmatic Biological Assessment Part II, Biological Opinion (PBA Part II) Terms and Conditions 4.f and 5., dated April 5, 2004. The Plan has incorporated the comments from the USFWS meeting on May 25, 2005. As required by the PBA Part II, the Department of Energy is to transmit the Plan to the USFWS.

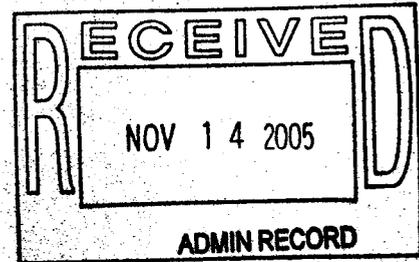
If you have any questions concerning the Plan please call me at 303-966-5938 or Jody Nelson at 303-966-2231.

Sincerely,

David Ward  
Environmental Stewardship

DAW/plh

Enclosure  
As Stated



COR. CONTROL	X	X
ADMN. RECORD	X	X
WASTE REC.		
TRAFFIC		
PATS/130		
CLASSIFICATION		
UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER  
Exempt from class  
per CEX-105-01

Date  
IN REPLY TO RFP CC  
NO:  
N/A

ACTION ITEM STATUS

- PARTIAL/OPEN
- CLOSED

LTR APPROVALS:

ORIG & TYPIST  
INITIALS  
DAW/PLH

## PROGRAMMATIC BIOLOGICAL ASSESSMENT PART II

### ROCKY FLATS ADAPTIVE MANAGEMENT PLAN

#### 1. Introduction and Purpose

Rocky Flats Environmental Technology Site (Site, RFETS) is an U.S. Department of Energy (DOE) nuclear industrial facility that has been part of the nationwide nuclear weapons complex since 1951. The Site is located in rural Jefferson County, Colorado, approximately 16 miles northwest of Denver, and 5 miles southeast of Boulder. The Site covers approximately 6,300 acres, of which approximately 5,900 acres forms an undeveloped Buffer Zone (BZ) around the central industrialized portion (Industrial Area; IA). The original mission of this DOE facility was the manufacture of nuclear weapons components. After the end of the Cold War, nuclear weapons production was stopped. In 1996, the U.S. Department of Energy, Rocky Flats Field Office (DOE), the Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) executed the Rocky Flats Cleanup Agreement (RFCA). RFCA is the Federal Facility Compliance Agreement and Consent Order negotiated pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and Colorado Hazardous Waste Act (CHWA). RFCA provides the regulatory framework for attaining the goal to achieve accelerated cleanup and Site closure in a manner that is safe to workers and the public, and protective of the environment. At this time the Site is undergoing cleanup and closure. After Site cleanup and closure is completed, portions of the Site will become the Rocky Flats National Wildlife Refuge (RFNWR) to be managed by the U.S. Fish and Wildlife Service (USFWS).

As a result of the decision to close Rocky Flats and remove and remediate the infrastructure in the IA, the need for imported domestic water at the Site has been eliminated. Additionally, the removal of buildings, parking lots, and roads (all impervious surfaces), will return the IA to natural grasslands which will absorb and/or evapotranspire much of the precipitation water that previously flowed overland and into either the Walnut or Woman Creek drainages at the Site. As a result, a substantial reduction in the amount of surface water flow is anticipated in Walnut Creek, with lesser reductions in the Woman Creek drainage. This reduction in water flow has the potential to impact the habitat of the federally protected Preble's meadow jumping mouse (Preble's mouse, *Zapus hudsonius preblei*) including wetlands in the Walnut and Woman Creek drainages downstream of the IA.

A Section 7 Consultation was conducted with the USFWS to address potential impacts to the Preble's mouse resulting from Site cleanup and closure activities. A Programmatic Biological Assessment PBA (Parts I and II) was submitted to the

USFWS (DOE 2004a, 2004b). A Programmatic Biological Opinion (PBO) was received from the USFWS for Part I and II, giving the Site permission to conduct selected activities within Preble's mouse habitat (USFWS 2004a, 2004b). As part of the agreement with the USFWS, DOE agreed (Part II of the PBA; PBO) to develop an adaptive management plan for the Walnut and Woman Creek drainages to address potential changes in Preble's mouse habitat as a result of water depletions from the elimination of imported water and removal of impervious surfaces in the IA. The adaptive management strategy is to describe how habitat, including wetlands will be measured, how loss will be determined, and the steps that will be taken to compensate for that habitat loss, should it occur. This document serves to meet this requirement of the PBA.

This Adaptive Management Plan also fulfills the requirement of the Environmental Assessment for Pond and Land Configuration (DOE 2004c) to provide an environmental analysis for the depletion of available water to the North and South Walnut Creek drainages. Therefore, in addition to addressing the impacts to the Preble's mouse habitat it describes how wetlands downstream of the IA in Walnut Creek will be measured and how impacts will be determined. There is no requirement under The Clean Water Act to mitigate wetland loss for activities which do not discharge into wetlands and since the action of cessation of water does not discharge into a wetland there is no mitigation requirement. DOE does have a commitment to minimize wetland loss and to preserve the values of wetlands, the Stanley Lake Wetland Mitigation Bank and the Site's Best Management Practices for activities in wetlands fulfills this obligation. Therefore wetland mitigation will not be further addressed in this Plan. The elimination of imported water and removal of the impervious surfaces will affect downstream surface water flows that may affect habitat, including wetlands downstream of the IA in Walnut Creek Drainage

## 2. Mitigation Efforts To Date

The Site has mitigated both habitat and wetland disturbances by avoidance and minimizing disturbances. The design teams were aware of where the habitat and wetlands were in relations to the actions they were designing. The Site's ecology group provided input during design and construction. Several construction crews provided ways to minimize disturbances in the sensitive areas while at the same time improving efficiencies and therefore reducing the time of the activity in the sensitive area. These efforts include but are limited to the following: moving a geoprobe to the pond bottoms for sampling with a crane setting outside the habitat; use of large equipment stationed outside of the habitat to reach and remove manmade items from the habitat; combining several projects together for a one time disturbance; routing equipment the long way around the habitat instead of through it; use of hand tools and foot traffic when work could be safely done.

The avoidance and minimization mitigation provided substantial reduction in the estimated disturbances to the habitat and wetlands. In April 2004 both Site and USFWS estimated there would be approximately 57 acres of Preble's mouse habitat

disturbed and in October 2004 the Site had estimated approximately 12 acres of wetland would be impacted. With cleanup and closure activities in habitat areas completed it is an estimated 37 acres of habitat and 8 acres of wetlands have been distributed. It is estimated that approximately 20 acres of habitat and 4 acres of wetlands will mitigated in-situ. The recovery was initiated by preparing and reseeding of the disturbed areas with the appropriate seed mixture for dry, wetland, and transition areas. Then the appropriate erosion controls were put in place and monitored. In addition, during the spring of 2005 a very successful planting of willows from areas being disturbed and willow cuttings from various locations on site were planted in areas that had already been remediated.

At one location in the Walnut Creek Drainage, the B-pond remediation project, where open water existed before the remediation, an emergent wetland was designed and built. The B-pond remediation project included ponds B-1, B-2 and B-3, all downstream of the IA and with B-3 also being downstream of the National Pollution Discharge Elimination System Permit discharge point. After the ponds were remediated the designed wetlands were constructed and rainwater was diverted into the ponds in July of 2005 and, as September of 2005, all three ponds were still retaining their appropriate water levels.

To offset the remaining impacts three new wetlands are developing in existing drainages, one in South Walnut Creek and two in North Walnut Creek. Two of the wetlands were designed and built during reconfiguration of the Industrial Area drainages. Initially these two areas were designed as typical storm water channels but were modified to accommodate the wetland design. The third wetland was created from an area used to provide clean fill for the various cleanup projects on Site. The area was excavated down to where groundwater daylights and planted with wetland seed mixture. Willow cuttings will be planted in the upper reaches of this drainage channel. Together these three wetland areas are estimated to provide between 15 to 20 acres of Preble's habitat and approximately 11.5 acres of wetlands. All three areas have had water all summer long.

The IA drainage reconfiguration has also reconnected several potential habitat areas with already existing habitat areas thereby increasing the connectivity of the Preble's mouse habitat at the Site. Isolated wetlands have also been reconnected to the main drainages.

The appropriate approved weed controls measures have been used in Preble's mouse habitat to help the native species to establish.

### 3. Water Depletion

#### A. Background

A Site-Wide Water Balance (SWWB) modeling study (K-H 2002a) showed substantial changes in the hydrology of Walnut Creek. Walnut Creek discharges

decreased for the following three reasons: (1) Waste Water Treatment Plant contributions to Walnut Creek were eliminated; (2) impervious surfaces in the IA were removed, thereby eliminating fast runoff; and (3) building drain discharges to Industrial Area streams were eliminated.

Based on the Site Wide Water Balance Study, under the No Imported Water Scenario, off-Site surface discharge in Walnut Creek decreased from about 800,000 m<sup>3</sup>/year to 510,000 m<sup>3</sup>/year in wet years, and from 450,000 m<sup>3</sup>/year to 190,000 m<sup>3</sup>/year in dry years. Under the Land Configuration Scenario, off-site surface discharge in Walnut Creek decrease from about 800,000 m<sup>3</sup>/year to 180,000m<sup>3</sup>/year in wet years. In dry years the modeling showed a decrease from 450,000 m<sup>3</sup>/year to 20,000 m<sup>3</sup>/year. The Land Configuration Scenario described the combined effect of the no imported water in addition to the reduced water from surface water flows in the IA. Overall reductions of water flow at the site boundary in Walnut Creek are estimated to range from about 78 percent in wet years to about 96 percent in dry years.

#### B. Potential Impacts

The amount and type of impacts to Preble's mouse habitat and wetlands onsite in the Walnut Creek Drainage resulting from water depletion and closure of the Site is difficult to estimate for several reasons. The amount of wetland reduction, resulting from the water loss discussed in Section 3.a, for the B-series ponds, South Walnut Creek, and the A-series ponds, North Walnut Creek was estimated in the Environmental Assessment – DOE/EA 1492 for Pond and Land Configuration (K-H 2004c) to be 2.21 and 1.46 acres respectively, which totals 3.67 acres. The 3.67 acres of possible loss, which includes 2.24 acres of open water and 1.43 acres of wetlands, represents about 19 percent of the wetlands in this stretch of Walnut Creek. Assuming approximately a 1.5 ratio between wetland acres converted to Preble's mouse habitat, there would be approximately 2.2 acres of habitat loss for this portion of the Walnut Creek Drainage (1.43 acres X 1.5 = 2.2 acres. Open water does not count as Preble's habitat).

The Walnut Creek Drainage between Pond B-5 and Indiana Street is approximately a mile of steam channel and 3.2 acres of wetlands. The impact to this area will largely depend on when and how frequently water is released from the terminal ponds. The greatest impact will result if water is only released once or twice a year, for short periods and during the wet portion of the year. A more constant or staggered flow throughout the growing season in this stretch of stream length will minimize the impacts. A worst case estimate is the wetlands would be reduced by the same percentage of wet years flow, 78 percent or 2.5 acres. Again using the 1.5 ratio between habitat and wetland there may be a habitat loss of 3.75 acres (2.5 acres X 1.5 = 3.75). This would still leave enough of a habitat and wetland to connect the Site with downstream wetlands and habitat.

Therefore a possible loss of about six acres of habitat (approximately 5.95 acres) and six acres of wetlands (approximately 6.17 acres) may occur in the Walnut Creek Drainage. The IA reconfiguration, and the B-pond remediation projects along with the Section 17 Conservation Easement and the Standley Lake Wetland Mitigation Bank will more than offset these losses. The IA reconfiguration has connected several isolated habitat units and wetlands to provide a more contiguous and less fragmented riparian corridor for wildlife in the Walnut Creek Drainage than existed before.

Water depletion impacts appear to be localized to specific stretches of the Walnut Creek Drainage and wildlife will be able to migrate to other nearby areas in Walnut Creek Drainage and Big Dry Creek Drainage. The areas impacted may only change the category of habitat or wetland.

#### **4. Definition of Adaptive Management**

The term adaptive management has been used to mean various things. As used in this document, it is defined as an approach to resource management in which management goals remain constant, but management objectives and techniques may be modified in response to feedback (such as monitoring results) from the system being managed. This Adaptive Management is not an accounting system for tracking acre for acre but a method to provide for the Preble's mouse survival, which could mean fewer higher quality acres. A key component of adaptive management is the recognition that our knowledge of biological and physical systems is limited and that these systems may not always behave as expected. There is typically some uncertainty regarding the response of the ecosystem to particular actions, when a management or restoration project is implemented. An adaptive management approach provides a way for management actions to respond to feedback from the system being managed (Jones and Stokes 1998). There are six steps common to adaptive management plans: problem assessment, design, implementation, monitoring, evaluation, and adjustment (BC Forest Service 1999).

#### **5. Preble's Mouse and Wetland Adaptive Management Plan**

##### **A. Management Goal**

Provide viable and sustainable Preble's mouse habitat including wetlands in the Walnut Creek and Woman Creek drainages.

##### **B. Question**

How will the riparian vegetation and the wetlands in the drainage respond over time to the loss of surface water flow?

##### **C. Objectives**

Monitor existing and post-closure vegetation and wetlands in the Walnut and Woman Creek drainages on-Site to determine if changes result from baseline conditions. Baseline conditions are defined as pre-water depletion conditions that existed prior to the water shut-off that occurred in October 2004.

#### **D. Monitoring**

The use of current baseline vegetation and wetland information in the form of photographs (both ground and aerial), and vegetation and wetland mapping data will be used for comparison with post-closure conditions. Repeat photography will be taken during the third (2008) and fifth year (2010) post-closure. Comparisons of new photographs to baseline photographs will be made to evaluate whether changes in the plant community have occurred. Vegetation and wetland delineation mapping data will be collected during the fifth year (2010) post-closure. The mapping data will be incorporated into a GIS database for comparison to baseline data. At the end of five years, the need for continued monitoring will be re-evaluated. Annual and monthly summaries of hydrologic data for surface water flows and pond releases through selected surface water monitoring flumes in Walnut and Woman Creeks will be reported in the reports for each year post-closure throughout the duration when vegetation and wetland data is collected.

#### **E. Reporting**

A report summarizing the monitoring results will be prepared by DOE to summarize the data collected in 2008 and 2010.

#### **F. Adaptive Management Measures**

Using monitoring photographs and mapping data, the DOE and the USFWS will evaluate whether changes have occurred to the vegetation and wetlands in the Walnut and Woman Creek drainages. Evaluations will take place after data have been collected and analyzed in 2008 and 2010. Should changes be observed, the DOE and USFWS will discuss potential actions that could reasonably be expected to achieve the desired goal.

#### **6. Conclusion**

The closure and cleanup of Site has changed the Preble's habitat and wetlands in the Walnut Creek Drainage on Site. It will take years for this system to stabilize. Monitoring, weed control and management of the area will be required to determine how much of the current habitat and wetlands will be viable under the changed conditions.

#### **7. References**

BC Forest Service. 1999. An Introductory Guide to Adaptive Management for Project Leaders and Participants. Prepared by: Forest Practices Branch, BC Forest Service, Victoria, BC, Canada. January 1999. Available on WWW at: <http://www.for.gov.bc.ca/hfp/amhome/Pubs/Introductory-Guide-AM.pdf> (accessed 9/28/05).

DOE. 2004a. Programmatic Biological Assessment for Department of Energy Activities at the Rocky Flats Environmental Technology Site. Part I. Revision 10. U.S. Department of Energy, Rocky Flats Field Office, Golden, CO. January 2004.

DOE. 2004b. Programmatic Biological Assessment for Department of Energy Activities at the Rocky Flats Environmental Technology Site. Part II. Revision 7. U.S. Department of Energy, Rocky Flats Field Office, Golden, CO. April 2004.

DOE. 2004c. Environmental Assessment Comment Response, and Finding of No Significant Impact. Pond and Land Configuration. DOE/EA – 1492. U.S. Department of Energy, Rocky Flats Field Office, Golden, CO. October 2004.

Jones and Stokes. 1998. Draft Conceptual Maintenance, Monitoring, and Adaptive Management Plan. In: Hamilton Wetland Restoration Plan. Volume II: Final EIR/EIS. Prepared by: Jones & Stokes Associates, Inc., Sacramento, CA. Available on WWW at: <http://www.spn.usace.army.mil/hamilton/> (accessed 9/28/05).

K-H. 2002a. Site-Wide Water Balance Model Report for the Rocky Flats Environmental Technology Site. Kaiser-Hill Company, L.L.C., Golden, CO. May 2002.

USFWS. 2004a. Biological Opinion Letter for PBA Part I Activities. ES/CO: Rocky Flats, MS65412 LK. U.S. Fish and Wildlife Service, Ecological Services, Lakewood, CO. January 20, 2004.

USFWS. 2004b. Biological Opinion for PBA Part II Activities. ES/CO: ES/LK-6-CO-04-F-012, Mail Stop 65412. U.S. Fish and Wildlife Service, Ecological Services, Lakewood, CO. January 20, 2004.