(e.g., RMRS 2000a; Safe Sites 2001, 2002; K-H 2004b), the report on U in various media at Rocky Flats (K-H 2004c), and the summary report by Janecky (2006) that tabulates all such data collected from 1998 through 2005.

Because groundwater samples from several locations had not been characterized for U isotopic signature before, no comparison with previous results at these locations is possible. However, other locations listed in Table 3–96 have been so characterized before. For these locations, results from 2008 are consistent with those reported previously. Most notably, two separate samples collected in 2008 from the SPP DG, with results of 41.6 and 41.4 percent natural U (Appendix E), confirmed the single post-closure result (reported in 2007; see DOE 2008g) of 42.9 percent natural U. These three post-closure results suggest that the amount of natural U reaching the SPP DG has decreased since before closure, based on the fact that a sample collected in 2002 provided a result of 67.2 percent natural U. Possible reasons for such a change —including the possibility that temporal variability in the isotopic character, as has been indicated in results from Ryan's Pit well 07391, may be a factor—were discussed in the 2007 Annual Report (DOE 2008g).

Also notable is the minor to negligible difference in the isotopic distribution of U between samples collected during relatively lower-flow conditions vs. relatively higher-flow conditions. The largest difference is reported at location GS13, but this difference is less than 5 percent. However, the total concentration of U in the lower-flow sample is more than double that in the higher-flow sample. This is because the lower-flow sample contains a higher proportion of groundwater discharge (baseflow) than does the higher-flow sample, which contains this baseflow plus runoff related to recent precipitation events. As has been discussed in previous annual reports, since closure, the relatively higher-U concentrations typical of groundwater at Rocky Flats are causing the U content of the surface water to increase.

3.2 Air Monitoring

3.2.1 Introduction

Air monitoring and emissions assessments have been performed at the Site since the Site began operations in the early 1950s. The Site has historically been subject to 40 CFR 61, Subpart H which specifies radionuclide air emissions limitations and monitoring requirements for DOE facilities. However, following decommissioning and environmental restoration activities pursuant to RFCA (CDPHE et al 1996), completed in fall 2005, the remaining DOE-retained lands are no longer a "facility" as defined in 40 CFR 61.91(b). Consequently, 40 CFR 61, Subpart H, no longer applies.

Air monitoring is not required as part of the CERCLA remedy; however, it was performed for a period of time so that data could be available if needed during the early post-closure period. The air monitoring program at the Rocky Flats Plant and RFETS included ambient (Radioactive Ambient Air Monitoring Program), effluent, and meteorological monitoring activities. As of September 2005, only ambient monitoring was voluntarily performed at two locations along Indiana Street to confirm low emissions. LM ceased ambient air monitoring at the end of September 2008.

Representative meteorological data continue to be gathered adjacent to the Site from the National Wind Technology Center (NWTC) M2 tower, located approximately 1.5 miles northwest of the COU. The NWTC M2 tower data are queried by Site staff as needed.

3.3 Ecological Monitoring

3.3.1 Introduction

The Ecology Group conducts ecological monitoring of the Site's ecological resources to ensure regulatory compliance and to preserve, protect, and manage those resources. Ecological monitoring is an integral aspect of determining whether the management objectives and goals for the natural resources at the Site are being achieved. This report summarizes the results of the ecological monitoring that was conducted at the Site during 2008. It does not include monitoring conducted for Preble's meadow jumping mouse mitigation and wetland mitigation activities. Those data are summarized in separate regulatory reports provided to the appropriate agencies.

At an elevation of approximately 6,000 feet, the Site contains a unique ecotonal mixture of mountain and prairie plant species resulting from the topography of the area and its proximity to the mountain front. The POU, the area surrounding the COU (the general area where the former IA was once located), is one of the largest remaining undeveloped tracts of its kind along the Colorado Piedmont. A number of plant communities present in the COU and POU have been identified as increasingly rare and unique by the Colorado Natural Heritage Program (CNHP 1994, 1995). These communities include the xeric tallgrass prairie, tall upland shrubland, wetlands, and Great Plains riparian woodland communities. Small inclusions of a number of other increasingly rare plant communities are also found on the Site. Many of these communities support populations of increasingly rare animals as well, including the federally protected Preble's meadow jumping mouse, and other uncommon species such as the grasshopper sparrow, loggerhead shrike, Merriam's shrew, black crowned night heron, hops blue butterfly, and Arogos skipper.

During 2007, transfer of the POU was made to USFWS to create the Rocky Flats National Wildlife Refuge. As a result, the total acreage managed by LM is now approximately 1,308 acres in the COU. A summary of the highlights from the 2008 field season is provided in the following sections. Full, detailed summaries, methodology, and analyses for each field monitoring effort are presented as stand-alone reports on the accompanying Ecology DVD.

3.3.2 Vegetation Monitoring

Vegetation monitoring reported here is conducted at the Site to provide information necessary for management of the natural resources. Objectives of the vegetation monitoring in 2008 were to:

- Identify any new plant species records for the Site;
- Identify and document infestations of select noxious weeds at the Site to assist with planning of noxious weed control applications;
- Document and track the locations where herbicide applications were conducted in 2008;
- Document where revegetation activities were conducted in 2008;