Integrated Regional Mitigation Plan

INTRODUCTION

The Pikes Peak Area Council of Governments (PPACG) is the designated Metropolitan Planning Organization (MPO) for the Colorado Springs Urbanized Area, which consists of over 600,000 people and includes two counties and seven municipalities. PPACG's mission is to provide a forum for local governments to discuss issues that cross jurisdictional boundaries, identify shared opportunities and challenges, and develop collaborative strategies for action. As the MPO, PPACG must maintain a regional transportation plan and transportation improvement program to determine investment priorities for billions of dollars in federal, state, and local funds.

One goal of PPACG's transportation planning process is to better account for the needs and desires of agencies that impact, or are impacted by, transportation investments. Thus, as part of its Regional Transportation Plan for the Pikes Peak region, PPACG developed an Integrated Regional Mitigation Plan (IRMP). To assist in this effort, PPACG was awarded a grant from the Federal Highway Administration's Strategic Highway Research Program (SHRP2) Lead Adopter Incentive Implementation Assistance program. The objective of this funding program is to help local governments implement Eco-Logical (Brown 2006) and the subsequent technical guide expressed in the Integrated Ecological Framework (Crist et al. 2014), which was developed and tested under previous SHRP2 studies (SHRP C06 and C18, respectively, described below). It is hoped that this IRMP will create a paradigm shift away from the traditional planning process, in which transportation mitigation has not included cooperation with other agencies. The IRMP will help guide and support PPCAG's mitigation planning efforts by fostering cooperation and collaboration early in transportation improvements, and by providing more comprehensive information to aid decision-making.

The Colorado Natural Heritage Program (CNHP) and NatureServe supported PPACG in development of the IRMP by providing technical analysis and planning assistance, as described in the following sections of this report. Specifically, this work utilized Steps 1-5 of the Integrated Ecological Framework (Crist et al. 2014). All phases of the work were conducted in collaboration with PPACG's SHRP2 Advisory Committee.

Physical Context

The PPACG area is located at the juncture of Colorado's eastern plains and the Southern Rocky Mountains; the region is known for its cool summer weather, high number of clear, sunny days, and relatively dry climate. The area's meteorological classification is alpine desert, with about 250 days of sunshine per year. Physiographically, the Pikes Peak metropolitan planning area is characterized by gently sloping plains to the east and mountain ranges and basins to the west. The planning area lies entirely to the east of the Continental Divide. Fountain Creek on the west, and Black Squirrel

Creek to the east are tributaries of the Arkansas River, and form the primary watersheds of the area, while streams along the northern boundary drain towards the South Platte River. Although Precambrian Pikes Peak granite forms the core of the mountainous areas, bedrock throughout much of the planning area is overlain by more recent alluvial (carried by water) and aeolian (windblown) material. Mountain soils are normally rocky and shallow, except in areas where groundwater discharges or slope wetlands occur. Along drainages, both in the mountains and on the plains, wetland plant communities occur on alluvial soils. Of the nearly 200 soils found within the region, only two have been identified as hydric soils with the potential for floodplain mitigation. More information on the natural setting of the Pikes Peak region can be found in Chapter 2 of the Regional Transportation Plan.

Previous Planning Efforts

State Highway Research Project (SHRP) 2

The SHRP2 Capacity program was initiated by the National Academy of Science's Transportation Research Board (TRB) to develop approaches and tools for systematically integrating environmental, economic, and community requirements into the analysis, planning, and design of new highway capacity. As part of this work, specifically under the SHRP2 C06 project, NatureServe and its partners developed the nine-step Integrated Ecological Framework (IEF, Crist et al. 2014) for integrating transportation and conservation planning. The framework was designed to improve incorporation of regulated and non-regulated resources, such as wetlands, water quality, endangered species, wildlife, habitats, and cultural resources early in transportation planning processes. The ultimate goal of implementing the IEF is to obtain early agreement on resources to avoid conflicts and delays during transportation improvements, as well as more effective and sustainable mitigation strategies.

In 2011, PPACG published a revision of its 2035 Moving Forward Regional Transportation Plan. This revision process included an analysis of ecological impacts of various development scenarios within the PPACG planning region, using components of the SHRP2 C06 Integrated Ecological Framework. Supported by a second TRB grant under the SHRP2 C18 program, PPACG collaborated with the Colorado Natural Heritage Program and NatureServe to evaluate impacts to a select suite of species and ecological systems from various future land use scenarios. Results of the SHRP2 C18 analysis helped to guide development of PPACG's preferred future development scenario – the Small Area Forecast scenario (CNHP and NatureServe 2011).

Overview of Mitigation and the IRMP

Mitigation is generally understood as comprising the steps of avoidance of impacts by relocating or deferring impacting projects, minimizing impacts through project design and implementation measures, and compensating for unavoidable impacts through offsite actions (CEQ Sec. 1508.20). While the overall project products and decision support system can support all levels of mitigation, the IRMP is focused on compensating for unavoidable impacts to a resource by a variety of

methods, with the intent of ensuring that there is no overall loss of those resources in the area of interest. Compensatory mitigation may be accomplished by restoration, creation, enhancement, or protection of other occurrences of the impacted resource (Compensatory Mitigation for Losses of Aquatic Resources, 40 CFR Part 230 Subpart J and 33 CFR Part 332). Restoration may be defined as the process of returning a population or habitat to a condition (including composition, structure, and process) that is as good as, or better than, it was prior to the disturbance. For example, restoration of a burned forest may be appropriate mitigation for transportation impacts to an unburned forest nearby. Compensatory mitigation usually involves a requirement for more area to be mitigated than was impacted; mitigation ratios of 3:1 are typical (Huber et al. 2010). Further, in an IRMP (or RAMP—Regional Advanced Mitigation Plan as it is called in Huber et al. [2010]), it will be necessary to identify even more candidate areas than required for mitigation because not all areas will actually be available, cost effective, or contain the features of interest when further investigated. By developing the IRMP fewer areas will need to be investigated for each project's mitigation needs, potentially more effective and sustainable mitigation projects will be conducted, and local governments and other infrastructure developers will be aware of sites potentially needed for future mitigation so those sites can be preserved in the interim.

The IRMP is best understood as a spatial database, rather than a single map, that identifies mitigation opportunity areas capable of providing the type and quantity of mitigation anticipated through cumulative effects assessment of transportation projects identified in the regional transportation plan. It is not a fixed solution that aims to be implemented as-is (like a conservation plan), but rather provides a spatial database with attributes that are useful for developing advance mitigation projects linked to individual transportation projects as they are implemented. This is a key difference (between conservation and mitigation plans), in that conservation plans attempt to reach a set of conservation goals with minimum cost and/or area, while an IRMP seeks to identify ample opportunities and support the selection for mitigation sites as transportation projects are implemented. That said, IRMPs should complement conservation plans and direct mitigation projects to areas identified in conservation plans and give weight to such areas whenever possible. Coupling mitigation projects to conservation plans is what makes mitigation projects more effective and sustainable as well as attract implementation partners. Acquisition and implementation cost can be additional factors in identifying or ranking the suite of potential mitigation sites in an IRMP to help guide choices when multiple site options exist.

Developing an IRMP uses current, accepted, and best practices to direct mitigation opportunities to areas that can provide viable/sustainable mitigation and, where appropriate, incorporate other ecosystem services to maximize public benefits. Though not directly addressed in this IRMP, it can also support "out of kind" mitigation such that "needier" natural resources/biodiversity components (hereon called "conservation elements") such as ecosystems, habitats (inclusive of wetlands), species occurrences, etc., may be considered higher priority for receiving mitigation action when more common conservation elements are impacted by transportation projects. The IRMP provides a larger amount of compensation opportunity than calculated cumulative impacts from transportation projects in order to provide flexibility in locations owing to uncertainty about compensation ratios, ability to acquire any particular tract of land for mitigation, large differences in acquisition costs, and so on.

PARTNERS/STAKEHOLDERS

PPACG established an Advisory Committee of conservation and other experts to ensure that the data and methodology that would undergird the environmental impact analysis was sound and represented the diversity of thought that exists in the Pikes Peak region. PPACG invited more than 20 local, state, federal, and nonprofit entities to participate in the Advisory Committee. Ten of these organizations became regularly engaged in monthly meetings and webinars. Active federal stakeholders included the US Department of Transportation, the US Fish and Wildlife Service, the US Army Corps of Engineers, the Fort Carson Office of Sustainability, and the US Department of Housing and Urban Development. State and local stakeholders included the Colorado Department of Transportation, Colorado Parks and Wildlife, the Fountain Creek Watershed and Flood Control District, the Rocky Mountain Field Institute, and the Rocky Mountain Chapter of the Sierra Club.

METHODS

This section describes the methods used to generate the IRMP. Resources that are considered mitigation targets in this analysis are primarily biological (species, natural plant communities, conservation sites, etc.), but additional factors such as the presence of cultural sites, or inclusion in a regional conservation plan, are taken into account as well.

Region of Analysis

Two regions of analysis were used to develop the IRMP (Figure 1). For the purpose of identifying conservation elements and calculating transportation project impacts (i.e. mitigation needs), the PPACG MPO was used. To identify the suite of potential mitigation site represented by the IRMP, a larger regional boundary ("full study area" in Figure 1) was used to account for areas outside of the MPO boundary that could be more appropriate for receiving compensatory mitigation credits. "More appropriate" is defined as providing larger, more intact, and more sustainable occurrences of the mitigation targets. The regional boundary includes the entirety of the Fountain and Chico Creek watersheds, portions of adjacent Teller County, and northern Pueblo County to Highway 50.

Identification of Mitigation Needs

Conservation Elements & Mitigation Targets

In their land use planning efforts, PPACG strives to conserve or minimize impact to conservation elements (species, plant communities, and ecological systems) beyond those resources that they are required by law to protect (e.g., species listed as Threatened or Endangered under the Endangered Species Act; wetlands protected under the Clean Water Act). To identify conservation elements that could potentially be impacted by PPACG activities, a preliminary list was developed

through queries of CNHP's Element Occurrence[1] and Potential Conservation Areas (PCAs)[2] data for sensitive species and natural communities documented within the study area. Some species not tracked by CNHP but considered important by the SHRP2 Advisory Committee were added. These include big game species that are not only economically important species, but also significant highway safety issues.

Wetland and riparian areas mapped from the National Wetland Inventory (NWI) were also added at the suggestion of the SHRP2 Advisory Committee, with the understanding that there is no way to tell from the NWI data if any given area mapped as a wetland is a regulated wetland as defined by the Clean Water Act. For the purposes of this analysis, the NWI dataset was filtered so that only those polygons representing wetland and riparian areas that are not wholly artificial were used. This allowed us to include, for instance, some man-made or impounded wetlands, but not water treatment areas or evaporation ponds. NWI wetland and riparian areas are identified in this document and the supporting data by their classification code according to Cowardin et al. 1979.

To aid in determining which of the conservation elements warranted inclusion in the IRMP, the elements were sorted into five status classes (referred to as "bins"), reflecting their degree of conservation concern and other considerations (Table 1). The Advisory Committee recommended that PPACG commit to mitigating impacts to conservation elements in bins 1-3 (referred to hereafter as "mitigation targets;" Table 2). Documented occurrences of these elements were used to calculate potential impacts from transportation projects, and to map potential mitigation sites, as described in the following sections of this report. Conservation elements in bins 4 and 5 (Table 3), together with other factors, were considered additional values (i.e., extra credit) to be used in selecting from among multiple potential mitigation sites.

Table 1. Conservation element status bin definitions. See Attachment A1 for definitions of NatureServe/CNHP conservation status ranks and CNHP biodiversity status ranks.

Bin	Description
1	Federally Listed & Candidate Species
2	Species or natural communities ranked as Critically Imperiled range-wide (G1) by NatureServe and CNHP OR Tier 1 Species of Greatest Conservation Need (SCGN) as defined by Colorado Parks & Wildlife's State Wildlife Action Plan OR Potential Conservation Areas ranked as having outstanding biodiversity significance (B1) by CNHP
3	Species or natural communities ranked as Imperiled range-wide (G2) OR Tier 2 SGCN as defined by Colorado Parks & Wildlife OR Potential Conservation Areas ranked as having very high biodiversity significance (B2) OR Wetland/Riparian
4	Species or natural communities ranked as Vulnerable range-wide (G3) (100 or fewer known occurrences) AND/OR Critically Imperiled - Imperiled in Colorado (S1 or S2)
5	Remaining targets from original list, and any other areas considered to be important for mitigation or restoration

[1] A mapped occurrence of a species or ecological community (element) using standard mapping methods developed by NatureServe and the network of natural heritage member programs. http://www.natureserve.org/prodServices/heritagemethodology.jsp

[2] CNHP's best estimate of the primary area required to support the long-term survival of targeted species or natural communities. For additional detail, see http://www.cnhp.colostate.edu/download/gis/pca_reports.asp.