

6.6.2.1 INM Input Data

The INM input data was used to compare the potential effect of the proposed replacement airport on noise-sensitive 4(f)/303(c) park, refuge, or wilderness properties within the St. George region with the effect of the existing airport. Results were evaluated for forecast operational levels in 2010 and 2020. Additionally, noise information for each of the metrics detailed in the previous section was determined for 2003 current conditions. The INM model input used to determine effects at these properties is the same as was used to develop airport area noise information described in **Section 6.2, Airport Noise**.

The area of interest and assessment, however, is the 42 identified national monuments, wilderness areas, wildlife refuges, historic sites, and other similar properties within an area roughly centered on St. George and extending 80 miles from north to south and 88 miles from east to west. Noise level assessments, to be discussed in a subsequent section, were conducted within gateway corridors along the east, south, and west borders of the area. These gateway areas were developed to test for the presence of any change between No-Action and Proposed Replacement Airport conditions. The tests found that virtually no difference in the noise levels of the two airport locations, or where there was more than a difference of tenths of a dBA, the noise level computed was less than the assumed ambient noise level for the area. These similarities are likely because by the time the aircraft using the St. George Airport, whether in its existing or proposed replacement location, reached the boundaries of the area, the flight tracks and altitudes flown were essentially the same, and any difference would be attributable only to fleet changes along the flight tracks.

Ambient Noise Level Development

Unlike the data available for Zion National Park, measurement programs have not been conducted at any of the 42 identified Federal or state 4(f)/303(c) properties within the region. While FAA Order 1050.1E recognizes the appropriateness of supplemental metrics to describe noise effects in such properties, no national impact standards have been established to assure comparability between the evaluation of impacts in different areas. Without local measurements, ambient noise levels were not available for each property. Therefore, owing to the similarity between physical conditions in Zion National Park for which measurements are available and physical conditions in the other 4(f) properties (weather, vegetation, topography, soils, etc.), an average noise level was drawn from the L50_(existing) levels measured at Zion National Park and applied as an average ambient noise level for each 4(f)/303(c) property. The average L50_(existing) ambient level derived from the Zion measurements was 29 dBA. This level was used for the calculation of the time above ambient noise levels throughout the area. An exception to this rule was made at Little Black Mountain Petroglyph Site, located immediately south of the proposed replacement airport, for reasons to be discussed in **Section 6.6.3**. Greater detail is provided in **Appendix B** regarding the ambient noise levels used in assessing the 4(f)/303(c) properties within the region.

Operations and Fleet Mix

The flight tracks and fleet mix used to evaluate the existing and proposed replacement airport noise levels for 2010 and 2020 are those described in

Section 6.2, Airport Noise. Chapter Seven, Cumulative Impacts, includes an evaluation of the noise impacts related to the airport, combined with the many hundreds of additional operations that fly over the region to and from airports both within and beyond the area.

Distribution of Operations by Time of Day

The distribution of operations by time of day presented in **Section 6.2, Airport Noise**, was used to model aircraft noise levels of operations over the region.

Runway Usage

The runway usage presented in **Section 6.2, Airport Noise**, was unchanged to model aircraft noise levels of operations over the region.

Flight Tracks Definition, Location, and Usage

Flight tracks developed for the modeling of airport noise in **Section 6.2, Aircraft Noise**, were used in the modeling of aircraft noise throughout the region. Exhibits of flight paths in that section, however, were limited to the immediate airport environs. Every flight track developed to model activity between either the existing or the proposed replacement airport was extended to pass well beyond the area of any expected noise effect related to the proposed Federal action. **Exhibit 6.21 through Exhibit 6.24** in the Draft EIS presents the flight tracks to and from either St. George Airport location that pass over the various 4(f)/303(c) properties within the region.

On the two departure exhibits (**Exhibits 6.21 and 6.22** in the Draft EIS), gold tracks are associated with the existing airport, and blue tracks are associated with the proposed replacement airport. Where blue is visible, the track locations are different from those of the existing airport because they are displaced with the construction of the proposed runway, but where they join to the gold tracks as they leave the airport environs, the same path is assumed from either airport. Therefore, at locations within 10 to 15 miles from the two airports, the paths are generally different, but beyond that distance, they generally overlay each other. Comparable relationships hold true for the arrival tracks presented on the arrival exhibits (**Exhibit 6.23 and Exhibit 6.24** in the Draft EIS), where red tracks are associated with the existing airport, and yellow tracks are related to the proposed replacement airport.

Climb and Descent Profiles

Climb and descent profiles presented in **Section 6.2, Airport Noise**, were used in the modeling of aircraft noise levels in Zion National Park. By the time small general aviation propeller aircraft or helicopters departing either St. George airport location reach the most of the 4(f)/303(c) properties, they have had adequate time to reach cruising altitude and are expected to be in a level flight mode as they pass over them. Larger turboprop and jet aircraft are likely still climbing to their en route altitudes as they pass over or near the properties in the region. Profiles were extended above 10,000 feet for departures and above 6,000 feet for approaches to model the noise associated with these operations.