

establishing flows adheres to the following step-wise outline: 1) Estimate population maintenance flows, 2) Provide population maintenance flows, 3) Evaluate population maintenance flows, 4) Finalize flows required, and 5) Protect flows.

Estimate Population Maintenance Flows

Population maintenance flows currently occur in approximately 15 occupied stream reaches (Table 3). These flows were estimated by comparing Virgin spinedace population numbers, stream flows, and habitat characteristics throughout the drainage for empirical relationships (Addley and Hardy, 1993; Valdez et al, 1991). A total of 10 reaches have been identified as potential sites for population maintenance flow re-establishment to reach the goal of 80% of historic habitat (Tables 3 and 4). These reaches were selected because they were identified as areas that are dewatered or experience significant depletions (Table 1). Two reaches have been designated as priority areas toward attaining the goal. The first encompasses approximately 31 km (19 mi) of the Santa Clara River between Gunlock Reservoir and the confluence with the Virgin River. The second encompasses approximately 5 km (3 mi) of the Virgin River between Quail Creek Diversion and Pah Tempe Springs. Historically, these areas supported common to abundant populations of Virgin spinedace. Additional reaches of Virgin spinedace habitat to have flows restored will include one or a combination of the other reaches listed in Tables 1 and 4.

Evaluate Population Maintenance Flows

The response of Virgin spinedace populations and habitat to population maintenance flows will be evaluated over a five year period. A detailed study plan will be developed for each stream reach. The study plan will include, but not be limited to, estimations of population abundance, recruitment, habitat utilization and availability. A progress report will be provided annually. A completion report will be provided at the end of the five year period.

Finalize Population Maintenance Flows Required

A final recommendation for re-establishing population maintenance flows in specific reaches will be developed after completion of the population maintenance flow evaluations. Information obtained from other instream flow studies will be considered in making those recommendations. In the Santa Clara River, the maximum amount of flow provided will not exceed 3 cfs at the point of release.

Protect Population Maintenance Flows

Flow protection measures will be implemented that are consistent with state laws. These measures may include: river operating