**Appendix 3-5. Downstream Dilution Tool Results**

The Downstream Dilution Tool is a GIS-based algorithm designed to determine the downstream extent of exposure in flowing streams and rivers where direct/indirect effects and/or habitat modification may occur. In Step 1 of the ESA process, the aquatic exposure estimates derived from the downstream dilution tool and AgDRIFT are compared to toxicity thresholds to define the action area which includes the initial area of concern (*i.e.*, immediate area where pesticides are applied) and additional areas that may be affected directly or indirectly by the pesticide application due to offsite transport. The downstream extent of the action area includes the area where the predicted levels of the cumulative percent use area exceed the highest “estimated exposure concentration (EEC) to threshold ratio” (*i.e.*, the ratio of the highest EEC to lowest toxicity threshold). In essence this provides an estimate of streams where estimated environmental concentrations have the potential to exceed a toxicity threshold. In Step 2 of the ESA process, the tool is used to assess the impact downstream from specified use sites, specific to the label, using taxa-specific thresholds in order to support the weight of evidence and effects determinations. For Step 3, a process is being developed to generate a text delimited file which will list the stream reaches and estimated exposure concentrations EECs in upstream reaches as well as for the streams in the species ranges and critical habitat.

Because of the widespread use of malathion and the uncertainty with where the adulticide and non-agricultural uses could occur, the entire United States is considered the action area for malathion for Step 1. For Step 2, again due to the uncertainty with where the adulticide and non-agricultural uses could occur, any of these uses could potentially occur in any watershed, including the watershed encompassing the species range and/or critical habitat, resulting in pesticide contribution to a receiving stream, negating the need to assess downstream dilution for Step 2. As mentioned above, a process is being developed to evaluate EECs in upstream reaches, as well as for the streams in the species ranges and critical habitat, for Step 3 in order to address the contribution of the upstream sources to the existing EECs.