

## **Arizona Water Protection Fund Guidelines For Monitoring Plan Development**

All monitoring efforts should demonstrate whether or not the goal of the project has been attained. Please complete a narrative description of your monitoring plan that incorporates all of the elements listed below (section 4, select the appropriate method or combination of methods). Be sure that the objectives section explains what you hope to accomplish in the context of riparian restoration, maintenance and enhancement. Be as detailed as possible.

1) Describe the objectives of project - brief declarative statement of biologic, hydrologic or physical changes that will result from your project.

2) Describe the monitoring objective - brief statement identifying the specific site to be monitored, duration of monitoring and attribute or parameter monitored. *Example: We want to detect a 20% increase in density of mesquite trees at Site Y between 1998 and 2002.*

If your project includes long-term monitoring, differentiate between the short term, contract objective (maximum contract period three years) and the long-term monitoring objective.

3) Describe your monitoring strategy - it may be necessary to address each of the above listed objectives (from #2) separately.

A) Describe the appropriate attributes or parameters that you will use to measure whether you have obtained your objectives. *Examples: 1) biologic - abundance, condition, structure, age class, cover, density, frequency, utilization; 2) hydrologic - water quality (list specific parameters for analysis), quantity, streamflow, isotopic composition, direction of groundwater flow, stream type.*

B) Describe on or off-site features that may influence the monitoring design or data collection? *Examples: seasonal variation, edge effects, grazed vs. nongrazed, fire impacts, dams, diversion structures, stream crossings.*

C) Discuss how you will establish baseline conditions for the site. Baseline conditions characterize the pre-project site and are used for future comparisons. Therefore, measures and methods need to be replicable and should allow for determination of trend or change.

D) What information will be generated and how will it help you quantify if you have achieved your objectives?

4) Describe data collection methods and/or sampling plan - include a map that notes the location of monitoring or sampling sites, and individual identifiers.

Note: If you are collecting data for an Instream Flow Application contact ADWR staff before developing methodology for assistance with guidelines, data requirements and methodology.

#### A) QUANTITATIVE MONITORING

- 1) Specify methods you will use to collect data.
- 2) List equipment you will use to collect data.
- 3) Describe how sampling sites will be selected.
- 4) List the number of sampling sites needed and how you have determined the appropriate number of sites.
- 5) Specify when you will collect data, how often you will collect data and how long you will collect data. *Is data collection period sufficient to be able to determine desired trend or changes?*
- 6) Describe how data will be analyzed. *If using statistical analysis, include acceptable level of false change error rate, acceptable level of power and magnitude of change you want to detect.*

#### B) QUALITATIVE MONITORING

- 1) Photo point monitoring - see photo monitoring procedures.
- 2) Describe type of qualitative monitoring to be conducted and procedures to be employed.