

# Stormwater and Sediment Field Day

Auckland Botanic Gardens 2008

## Stream Ecological Valuation (SEV)

The SEV has been adopted by ARC as the best practice method for assessing stream values within the Auckland region since October 2007. Since that date, the method has been successfully implemented through a number of developments within the region. The purpose of the SEV demonstration at this year's field day is to highlight the method to the wider industry and reflect on the first 12 months of use.

### Background to SEV

The SEV (Stream Ecological Valuation) is a method for scoring the ecological performance of streams, developed on behalf of the ARC by an expert panel of freshwater ecologists.

After 3 years of research and development the SEV methodology was published in 2006 and updated in January 2008. The SEV approach provides a robust, empirical assessment of the ecological value of streams using a descriptive methodology that is comparable and repeatable, both spatially and temporally.

### How and Why SEV?

The SEV is the best practice method advocated by ARC for assessing the value of streams within the Auckland region. It provides a comparable and quantifiable assessment of the current and potential value of an effected stream reach, and provides a method for calculating a suitable ratio for required environmental compensation works. The SEV method is relatively straight forward, however should be undertaken by a trained ecologist.

### Features of SEV

The SEV assesses the performance of 16 stream functions that were determined by the expert panel to be important in Auckland streams and that could be easily derived from field or desk based measurements. The SEV scores each of these functions on a scale of 0 to 1; the overall SEV score is the mean of these 16 function scores.

The 16 functions used to calculate the SEV score fall into four categories;

#### Hydraulic functions

- Natural flow regimes
- Connectivity to the natural flood-plain
- Connectivity for species migration
- Connectivity to groundwater

#### Biogeochemical functions

- Water temperature
- Dissolved oxygen levels
- Organic matter inputs

- In-stream particle retention
- De-contamination of pollutants
- Flood-plain particle retention

#### **Habitat provision functions**

- Fish spawning habitat
- Habitat for aquatic fauna

#### **Biotic functions**

- Fish fauna
- Invertebrate fauna
- Aquatic biodiversity
- Riparian vegetation

The SEV was developed using test data from streams in the Albany area of Auckland. The method has been widely used since its publication and its applicability to a wider range of stream types has been demonstrated in the Auckland region and elsewhere in New Zealand.

### **Environmental Compensation Ratio (ECR) Method**

Environmental compensation (previously referred to as 'offset mitigation') should be considered a last resort after all attempts to avoid adverse effects have been exhausted. Nevertheless, the requirement to provide environmental compensation by a consent holder for the adverse effects associated with an activity is well established internationally. However the methodology for undertaking this is far from straightforward and has up until now generally relied on a 'best professional judgement' approach.

Environmental compensation is usually an "offsite" environmental benefit that compensates for the unavoidable but necessary environmental loss resulting from a consented activity which cannot be avoided – such as the permanent culverting of a watercourse. In that way, it differs from mitigation, which is a means of reducing or minimising the adverse effects arising from an activity.

A number of technical difficulties have arisen with the application of environmental compensation. Sites for environmental compensation usually differ in ecological character from the site to be impacted, making it difficult to determine an appropriate amount to ensure that there is no net loss in ecological value. Setting the appropriate amount of compensation involves a judgement about relative ecological values and the setting of an environmental compensation ratio. The SEV approach provides a standard methodology to provide this ecological assessment and the scores produced can be used to generate an environmental compensation ratio.