Appendix 4.1 Aquatic health and ecobasin condition: Methodology

Data Sources:

Stream reaches layer- NHD (National Hydrography Dataset) from NRCS (National Resource Conservation Science)

Roads layer- TIGER (Topologically Integrated Geographic Encoding and Referencing system)

Dams Data- EPA Basin CD

Riparian Zones- A polygon layer derived by buffering 100 meters on each side of the stream reach

Land use/Land cover Raster- NLCD (National Land Cover Data) from USGS

Measurement Concepts and Units:-

Dam Density- Number of dams per ecobasin (sq. miles)
Methodology- Dams (point layer) were intersected with the Ecobasins layer (polygon) and summed the number of dams for respective ecobasins based upon their spatial locations. Units were expressed as the number of dams per square mile of Ecobasin.

Road Density- Length of roads (miles) per ecobasin (sq. miles)
Methodology- Roads (line layer) were intersected with the Ecobasins layer (polygon) and measured the lengths of road segments for respective ecobasins based upon their spatial locations. Units were expressed as the miles of roads per square mile of Ecobasin.

Riparian Road Density- Length of roads (miles) in riparian zone per ecobasin (sq. miles)
Methodology- Same methodology as measuring the road density except the measurement was taken inside the riparian zones in each ecobasin. Units were expressed as the total number of miles of roads within the total square miles of riparian area for each Ecobasin.

Crossing Density - Number of stream-roads intersections (points) per ecobasin (sq. miles)
Methodology- Stream layer (line features) was intersected to the road layer (line features); at every intersection of a stream and a road line feature, programmatically generated a point. Such intersection points were counted for each ecobasin as number of stream-road intersections. Units were expressed as the total number of crossings per square mile of Ecobasin.

Ecobasin Forested- Percent forest present inside each ecobasin
Methodology- Classified NLCD dataset was used; based upon the ecobasins spatial location land cover was mapped in percentage. 'Tabulate Areas' function was used in ESRI ArcView software. As a result the function returned % contribution of each class from the NLCD dataset for each ecobasin.

Percent forest in Riparian zone- Percent forest present inside the riparian zone in each ecobasin
Methodology- Same methodology as measuring Forested- % forest present inside each ecobasin except the forest cover was mapped inside the riparian zones (100 meters).