

LTADS WORKSHOP DISCUSSION NOTES:

At the conclusion of the LTADS Workshop held at the TRPA offices on 14 Dec. 2005, the discussion panel was asked for the 6 most critical research items for the Tahoe Basin.

My notes list the following items. Please read these over and let me know if this fairly represents the group's consensus.

1. **Pollutant Transport into Lake Tahoe Basin** - Many Tahoe stakeholders believe that the air pollution in the basin is largely due to transport from upwind urban and agricultural regions. The evidence from LTADS and other work in the basin indicates that local sources are a far greater threat to Tahoe air and water quality than long range transport. Unfortunately, past transport assessments have been largely inferential, relying on chemical and meteorological evidence from within the Basin or from monitoring at upwind sites; direct observations of transport frequency and pollutant concentrations in transit are lacking. Convincing local stakeholders to take the steps necessary to protect the lake will require better and more direct quantification of transport to finally dispel the notion that transport makes local efforts meaningless.

This problem can be solved by a spring-to-fall or all-year transport study using a chain of sites from the west slope of the Sierra, across the crest, and into the basin, ideally including measurements on the lake. The data will provide direct quantification of the frequency and intensity of transport over the Sierra crest, and statistical analyses will yield generalized source characterization (urban, industrial, agricultural, and intercontinental). Monitoring will include continuous collection of size- and time resolved aerosols at all sites, with ozone, nitrogen gaseous species, and meteorology at sites where power and access permit. In addition to transport characterization, this study will also provide a baseline for assessing future changes in the transport situation.

2. **On-Lake Air Quality Measurements** – The LTADS study and other air quality work in the basin have focused on measurements on land, with only limited monitoring on the lake. Historical deposition monitoring by the Tahoe Research Group has been limited to long-term integrated collection at a few sites. Exploratory work during LTADS has shown that air quality over the lake is highly variable in space and time. More refined understanding of spatial, temporal, and chemical variation of air quality over the lake is needed to better understand how control measures will impact lake deposition

A coordinated field study is needed to characterize air quality and transport patterns over the lake. The core of this project will include size-and-time resolved aerosol characterization and surface

meteorological data at fixed (buoy/barge) sites on both the northern and southern portions of the lake, ideally supported by gaseous measurements if appropriate monitoring platforms can be obtained. The core project will be coordinated with a program of strategically planned mobile monitoring to characterize pollutant transport over the lake with sufficient detail to support development of a lake-surface air circulation and pollutant transport model.

3. **Tahoe-specific Emission Inventory and Activity Database** – The LTADS study and other air quality work in the basin have shown that emission patterns at Lake Tahoe are not like those in other areas of either California or Nevada. The development of emission control programs for the basin requires a detailed and purpose-driven emission inventory. “Business as usual” inventories such as those currently in existence do not address the specific needs of the Tahoe Basin.

A detailed emission inventory focused on pollutants of interest for visibility and water quality should be compiled for the Tahoe Basin. Some attendees at the 14 Dec. 2005 meeting suggested that other socio-economic and demographic data should also be developed since the Basin is atypical in these areas as well.

In addition to the emission inventory, a parallel effort should create a data repository for capturing and expanding existing data collection in the Basin, such as traffic counts, fire activity, etc.

4. **Tahoe Basin Air Quality Monitoring Network** – Historical data from the Basin shows an unfortunate instability of monitoring sites. Since the goals of maintaining visibility and improving lake clarity require sensitivity to long term trends in air quality, it is essential that the managers in the basin establish permanent monitoring sites.

The responsible agencies in the Basin should cooperate to establish long-term sites that cannot be displaced. It is suggested that sites be established by formal, binding agreements with land owners or placed on land owned by government or non-profit institutions, with the express understanding that they can remain as long as they are needed.

5. **Tahoe Basin Meteorology Monitoring and Analysis** – Recent work by UC Davis using pier-end and buoy meteorological monitoring has provided an invaluable perspective on surface air flow on Lake Tahoe. The upper air measurements taken as part of the LTADS program are a first for the Basin. Effective air quality management will need ongoing meteorological support, both in maintaining measurement programs and in committing adequate resources to analysis and utilization of meteorological data.

The responsible agencies in the Basin should cooperate to preserve and extend the capabilities developed during these recent studies. The present temporary networks should be re-considered as the core of a permanent meteorological program. Just like with air quality sites, it is suggested that, to the extent feasible, meteorological sites should be established by formal and binding agreements with land owners or placed on land owned by government or non-profit institutions, with the express understanding that they can remain as long as they are needed.

6. **Tahoe Basin Dust and Sediment Control Demonstration Projects –**
Since the Tahoe Basin is unique in its need for controlling emissions not only for public health and visibility protection, but also to protect lake clarity, it is unclear how much benefit can be expected from various control measures.

Taking their cue from existing water quality efforts for storm water runoff and erosion control, stakeholders and management agencies in the Basin should cooperatively establish pilot or demonstration programs to evaluate the effectiveness of various air pollution control measures, so that future basin-wide programs can be selected that maximize benefits in the Tahoe Basin setting.

This can be done in parallel with the identification and implementation of so-called “no regrets” controls, which can be implemented immediately based on findings that they will advance the causes of visibility and lake clarity protection with minimal risk of deleterious effects on Basin residents or visitors. Such controls may also be the subject of these studies to better quantify their benefits.