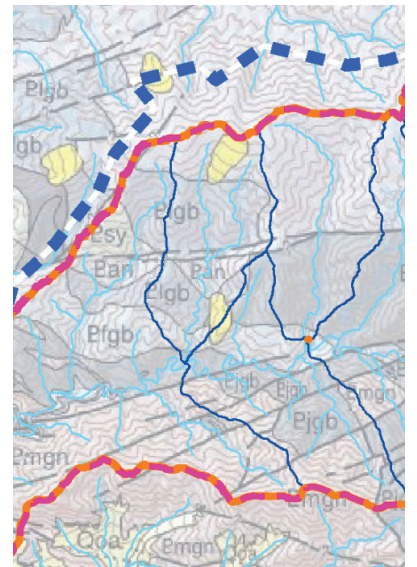
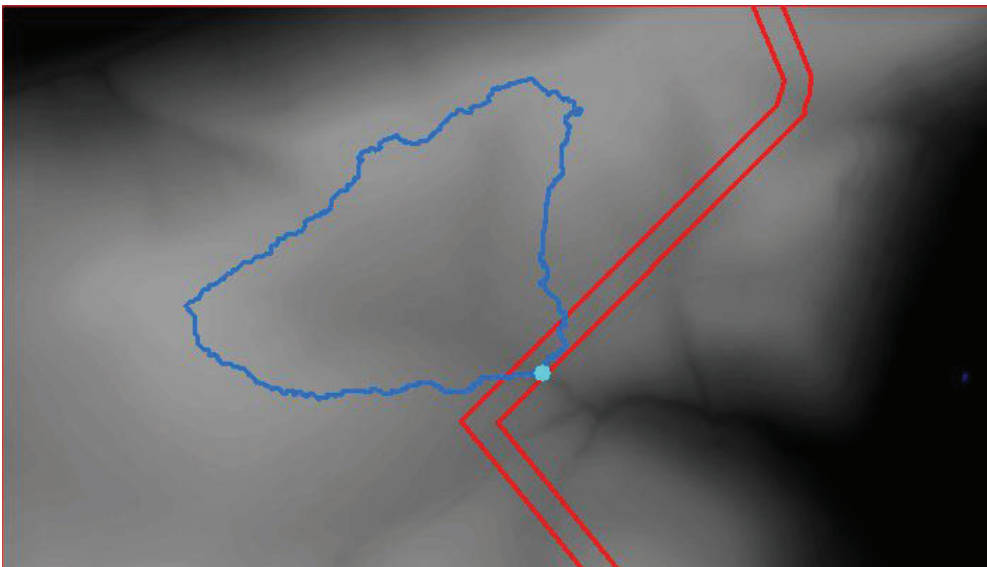


Langan uses Geographic Information Systems (GIS) software and associated tool sets along with a myriad of datasets to enhance vineyard operations as well as identify optimal sites for expansion. We offer our clients an array of services associated with vineyards that include, but are not limited to:

- Harvest status and yield
- Crop / soil suitability
- Soil probe monitoring and analysis
- Irrigation monitoring / tracking
- Sunlight / sunshade analysis
- Identification of optimal planting sites
- Drainage basin / watershed delineation
- Infiltration analysis

To support our analysis, Langan utilizes datasets available from federal, state and local agencies as well as those available from private data clearinghouses. This includes data provided by such agencies



as the U.S. Fish & Wildlife Service, FEMA, USDA Natural Resources Conservation Service, State environmental protection agencies and U.S. Geological Survey. Examples of typical data include, but are not limited to, parcels, land use zones, wetlands, flood zones, soils, surface water quality, sensitive natural species, habitat ranges and geologic formations.

Utilizing the data above, combined with a digital elevation model (DEM) of the area of interest, Langan can quickly identify areas of specific slope, determine water flow and direction and develop watershed drainage basins. Utilizing the DEM in conjunction with site location, topography and onsite structures also provides the ability to determine the amount of solar radiation for certain months or specific time periods throughout the day/year.

Our vineyard services also extend to the following areas of expertise:

- Data management
- Site operations and maintenance
- Site survey
- Real-time data collection with telemetry and mobile applications
- Development of web-information portals

