

# **Marin Community College District**

## **Bolinas Marine Biology Lab Facility Conditions Report**

This is a summary report of assessments to date for the Bolinas Marine Biology Lab Facility. Included are individual findings from the District's Geotechnical Engineer, Structural Engineer and the Industrial Hygienist.

### **Geotechnical Summary**

The College of Marin's Marine Biology Laboratory Facility, due to its topographic position, local geomorphology and seismic setting, is vulnerable to a number of geologic hazards that are of critical concern to the Division of the State Architect (DSA), the California Geological Survey (CGS) and the College of Marin. Three of the most critical geologic hazards were identified by the project team, and are the focus of this report. Those hazards consist of the potential for ground surface fault-rupture, inundation due to a tsunami or seiche, and slope stability.

The Lab Facility is located within a Fault-Rupture Hazard Zone for the San Andreas fault as established by the State of California under the Alquist-Priolo Earthquake Fault Zoning Act (Act). Since the property is within a "zone", to satisfy the requirements of the Act, in addition to CGS and DSA requirements, it is the burden of the property owner to demonstrate that there are no active, or potentially active, fault traces passing beneath or within 50 feet of either side of any structure intended for human occupancy. Performing this task would require that an exploratory trench be excavated for a distance of about 255 feet adjacent to the Lab Facility along Wharf Road. The purpose of excavating the trench would be to observe and log a continuous exposure of undisturbed native terrace deposits in order to determine if fault traces associated with the San Andreas fault zone extend beneath the property. Based on current knowledge and assumptions regarding earth materials beneath Wharf Road, it is our opinion that results from such a subsurface investigation could be inconclusive, and it may not be possible to present defensible data stating the Lab Facility is not underlain by active or potentially active splays of the San Andreas fault.

An alternative approach for the fault-rupture hazard study would be to excavate a continuous trench along the base of the slope at the back of the Lab Facility property that would also extend into the neighboring properties. This approach is presented, but is not recommended.

The Lab Facility, at Elevation 9 Feet, is located very near the channel access connecting Bolinas Lagoon to Bolinas Bay and the Pacific Ocean. It is highly likely that

a tsunami with potential to impact the Pacific Coast, would also present a significant threat to the wharf area at Bolinas, including the Lab Facility property. A seismic event occurring regionally could also generate the appropriate seismic energy to initiate a seiche within the closed basin that constitutes Bolinas Lagoon. Sloshing of water within the closed basin could inundate the property.

Steep and unstable slopes of marine terrace deposits dominate the landscape in the Bolinas area, including the slope immediately behind the Lab Facility. The poorly consolidated materials are susceptible to erosion, sloughing, and rotational and translational landsliding. At the Lab Facility, the slopes are steep, unstable and display substantial evidence of ongoing sloughing and landsliding that has impacted a number of retaining structures, as well as the structural wall for a building. The presence of the slope along the southern property boundary is considered a geologic hazard, and mitigation of this hazard would be required to satisfy requirements of the DSA and CGS. Numerous challenges for mitigating this problem are present, and many mitigation options typically considered are not feasible due to site constraints and property limits.

### **Structural Summary**

The house, laboratory and the shed have structural and non-structural seismic deficiencies and pose a life-safety threat in a major earthquake

The structures are subject to collapse if there is surface fault rupture, landslide or liquefaction as a result of a major earthquake.

The extent of corrosion of the rebar of the concrete water tank is unknown since the inside of the tank was not inspected. Continued corrosion may weaken the tank.

The dock requires study to confirm the life-safety performance objective.

The site retaining wall is failing.

### **Industrial Hygienist Summary**

Asbestos roofing, siding and flooring throughout facility requires removal

Lead-based paint expected throughout facility requires removal

Elevated mold spore counts require removal of interior walls of main house structure

Chemicals stored in portable containers require relocation to approved containers