

SAVE STRAWBERRY CANYON

P.O. BOX 1234
BERKELEY, CALIFORNIA 94701

WWW.SAVESTRAWBERRYCANYON.ORG

July 27, 2010

Kim Abbott, NEPA Document Manager
Office of Science
Department of Energy
One Cyclotron Road
Berkeley, California 94720

Re: Inadequate Environmental Assessment (EA) for Seismic Life Safety, Modernization, and Replacement of General Purpose Buildings, Phase 2 Project (Phase 2 Project)

Dear Mr. Abbott:

Having reviewed the EA for the Lawrence Berkeley National Laboratory (LBNL) Phase 2 Project, Save Strawberry Canyon (SSC) urges the Office of Science to determine that an Environmental Impact Statement (EIS) is required in order to be in compliance with the National Environmental Policy Act (NEPA). SSC, a non-profit organization with some 400 members, believes that the Canyon lands are a significant environmental resource of unique geological character, deserving of protection and preservation.

As LBNL continues to proceed in its efforts to implement its 2006 Long Range Development Plan (Plan), intending to build major research facilities on the Canyon hillsides, defined by unstable soils and a complex watershed, our concerns continue. Without a Site-wide EIS, the EA for the Phase 2 Project fails to adequately describe the affected environment, to assess the existing and potential environmental impacts and risks, and to consider a range of alternative choices that could fulfill the project building(s) purposes.

Undertaking further federal action to implement the proposed Phase 2 Project, including the General Purpose Laboratory (Building 25) in Blackberry Canyon and the Hazardous Waste Handling Facility (Building 85 and 85A) in Strawberry Canyon, should not proceed without detailed analysis of the geological conditions of each site. In a glaring omission, the EA ignores the fact that the hill campus is encompassed by the western edge of a collapse caldera, formed after a volcanic eruption some 10

million years ago. The caldera presents geological dangers that deserve comprehensive assessment.

It is troubling, furthermore, that the EA relies solely upon the LBNL California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) and the Phase 2 Project EIR for background information and analysis regarding the geology of the area. (Please see attachments #1, Letter, March 15, 2010, #2, Letter, July 9, 2010) le this reliance has led incorrectly to a conclusion that no significant impacts are likely. It is critical to note that the EA conclusions neither stand on their own merit, nor are they substantiated by the incomplete information in the Phase 2 Project EIR. Based on the lack of geotechnical analysis in the EA alone, the EA is an insufficient agency action.

SSC refers to the Phase 2 Project EIR materials and in particular the Alan Kropp and Associates (AKA) reports:

- The AKA reports for Building 25 or the General Purpose Laboratory, cited in the Final EIR on disc and on the web, were only added to the web after their absence was reported to LBNL. As they were used in the "matrix" of the FEIR to contest points made by several individuals, they would appear to be important.
- AKA, May 29, 2009, a preliminary report, made in two weeks "to meet LBNL's objectives," lays out the problems and what additional work will be necessary to help solve them.
 - 1) AKA's preliminary investigation of old boring logs are consistent with the presence of a paleolandslide under B25.
 - 2) Orinda Formation under the Lawrence Road (south and downhill from 25) is potentially part of a paleolandslide rather than in-place bedrock.
 - 3) Offsets in the curbs are not sufficient to evaluate historic slides. [Evidently AKA was not given access to the files on historic landslides.]
 - 4) The borings suggest very low factors of safety, although these may be based upon conservative measures.
 - 5) **Additional trenching is needed** (to establish whether the paleolandslide has moved recently.)
- AKA, April 2, 2010.

Trenches 1 and 2 are mentioned but only T-1 (southwest of 25, 8' deep) appears on the map. There are no photos of the trench nor is it discussed. The "general sketch" at the end

of the report is indeed too general. Were there slickensides, indicative of movement?

Historical borings around B25 indicate Moraga volcanics that "break into rubble during drilling." Gravity has moved colluvium downslope. Moraga Formation is highly permeable (although is it called "bedrock," which in common or dictionary definition means hard rock. Neither Moraga Formation nor Orinda Formation fit that definition.

- AKA, May 29, 2010, supplemental report

Boring log #1 (north of 25) has 8' of fill. Clay to 11.5', and silty clay below.

Boring #2 (south of 25) Moraga volcanics with weak rhyolite, then andesite down to 90' where Orinda claystone and siltstone are found. (Muds and mudstones give rise to many problems in civil engineering because they are weak and shrink or swell on being dried or wetted." Mudstones are siltstone, mud-shale, or claystone. "Muds are very reactive to physical disturbances or differential loading, and they slump and flow easily when subjected to stress." (*Oxford Companion to the Earth*, 2000, p. 715) A three-story General Purpose Laboratory would indeed exert differential loading and stress.

Boring #3 (south of 2) Orinda Formation

Boring #5 & 6 "southern side of proposed central plant site" (not on map): Atterberg Limits;

Boring #5, (4-4.5' deep) Plasticity Index 56;

Boring #6, (6 - 6/5' deep), Plasticity Index 46.

"Onsite soils having a PI of 15 or less are generally considered to have a sufficiently low expansion potential to be used as non-expansive fill." 5 and 6 are marked "Fat Clay" and not to be used for fill. AKA says these must be removed.

In effect after all these reports AKA has not come to a conclusion that the Moraga volcanics are a paleolandslide or in-place "bedrock." AKA did not examine the trench for slickensides, nor did it dig a second trench. Moving or not, it is critical to ask whether building on "weak volcanics that break into rubble during drilling" is responsible. And, to ask whether spread footings will do the trick when the earthquake strikes. Or, what will be the affect of contact with Orinda mudstones.

Both Buildings 85 and 85A are shown in the EIR to straddle two paleolandslides, characterized in several earlier consulting reports as potentially liable to move in a major seismic event and at different rates. Slickensides were prevalent throughout the area. In earlier reports 60% of the HWHF buildings (the southwestern parts) overlie the Orinda Formation clays. In the EA, however, AKA's plans show only QLS2 (Moraga landslide) crossing all but a small part of 85 and no characterization of the leftover area (please see attachment #3: Figures 1 and 2). AKA had declared in an earlier report that 10 feet of Moraga Formation lies under the northeast corner of the buildings, and below that 25 feet of Orinda Formation. It is significant that what is under the area is unknown.

AKA proposes drilling 21 piers around two sides of B85 and 9 piers around two sides of B85A, these to be 5 feet in diameter and 40 to 50 feet deep, TO STOP THE LANDSLIDE, evidently the top one of Moraga Formation (hard but fractured volcanics). What will stop the building from being torn apart? Has anyone ever used piers to stop a landslide? Into what will those piers be drilled that is less expansionary and stronger than mudstones? (AKA 2006, a propos the nearby Animal Care Facility, suggested a mat under the building so that it might move integrally, a proposal AKA could not make, evidently, for 85, as it would entail rebuilding.)

Missing from the reports are 9 boring logs, AKA 7 - 16. Where are these and their interpretations? They will be needed to determine the quality of the Moraga volcanics, the Orinda mudstones, and whatever lies beneath.

What does lie not far below the surface is water! In the EIR there are tables recording water heights, taken from monitoring wells. The EA refers to them on p. 22. North of 85 the water measured from 16 to 12 feet below surface while south of 85 the range was from 40 to 35 feet. Accounting for the difference in elevations the water table seems to be level at that point. But east of 85A at the same elevation as the well south of 85, the difference is huge—the level according to AKA ranges between 24 and 0.3 feet. This means that there is a "perched water table" or reservoir and that the other two wells may have penetrated a separate reservoir.

This variance is just what one expects in the caldera of the volcano upon which LBNL has constructed its buildings. When such a reservoir breaks during a seismic event (the breaks in 1973 may have been caused by a series of small events), the landslides could be devastating as they were in 1973. The

unpredictable reservoirs, springs, and aquifers mean that contaminants may have spread all over. Monitoring wells are seldom left open for long. See the report *Contaminant Plumes of the Lawrence Berkeley National Laboratory...* (2007) <http://berkeleycitizen.org/lbnl/cmtw1.html>.

The EA notably has only a brief paragraph dealing with fire and concludes that there is no significant finding of an existing or potential hazardous fire impact. Again, in essence it says "trust us!" relying on the Plan EIR that has declared the site to be "not a high potential for wildland fires." This is an obvious oversight as LBNL is located in an area that already has a history of being threatened by the one of the most damaging California urban/wildland fires on record. The Oakland Firestorm of 1991, in fact, reached the south wall of the adjacent Claremont Canyon. At that time LBNL Director Charles Shank ordered all personnel to leave the LBNL site.

In particular, The Hazardous Waste Handling Facility site in Strawberry Canyon is in a heavily wooded location, with pines and eucalyptus, grasses and scotch broom, all flammable. Building 85 contains radioactive waste on the first floor and mixed solvents and volatile organic compounds on the second floor. There are a number of storage sheds for liquid and dry combustible compounds. How are these highly flammable and environmentally detrimental structures to be protected from a fire like that of the 1991 Firestorm (2000 degrees, destroying concrete, "fireproof" safes, metals, etc.)?

This is another oversight that has led incorrectly to a conclusion that no significant impacts are likely. It is, in fact, not congruent that a sizable Federal Emergency Management Agency grant has been proposed to rid the Canyons of trees because of potential urban/wildland fires and is currently under NEPA review. Please note p. 141 of the EA, "In 1994, UC LBNL published a Wildland Fire Evacuation/Relocation Plan. The plan, which would apply to the Proposed Action, is based on a wildland fire scenario that would require rapid mobilization of resources, quick decision making and well-coordinated execution by emergency responders during a wildland fire." The footnote sends one to a website that is no longer operating. Have the plans been abandoned? The 1994 plan was evidently motivated by the lack of a plan in 1991. At a "Community Advisory Group" meeting in June, someone asked about emergency plans. Evidently there were none!

In closing, for the above reasons and others not enumerated, SSC urges the Office of Science to determine that an EIS is required for the Phase 2 Project in order to be in compliance with NEPA.

Thank you for your attention given to these important matters.

Cordially,

Georgia Wright, for
Save Strawberry Canyon

Attachments:

- #1. [Letter](#) from Garniss Curtis, Georgia Wright, and John R, Shively to Jeff Philliber, LBNL, March 15, 2010, with attachments
- #2. [Letter](#) from SSC to Russell Gould, Chairman Board of Regents, July 9, 2010, with attachments
- #3. [Figure 1](#): From Alan Kropp & Assoc; Inc 2006A Geotechnical Investigation Report: Animal Care Facility, and [Figure 2](#): From Phase 2 Project EA, p. 20