

2.2.1 Master Responses

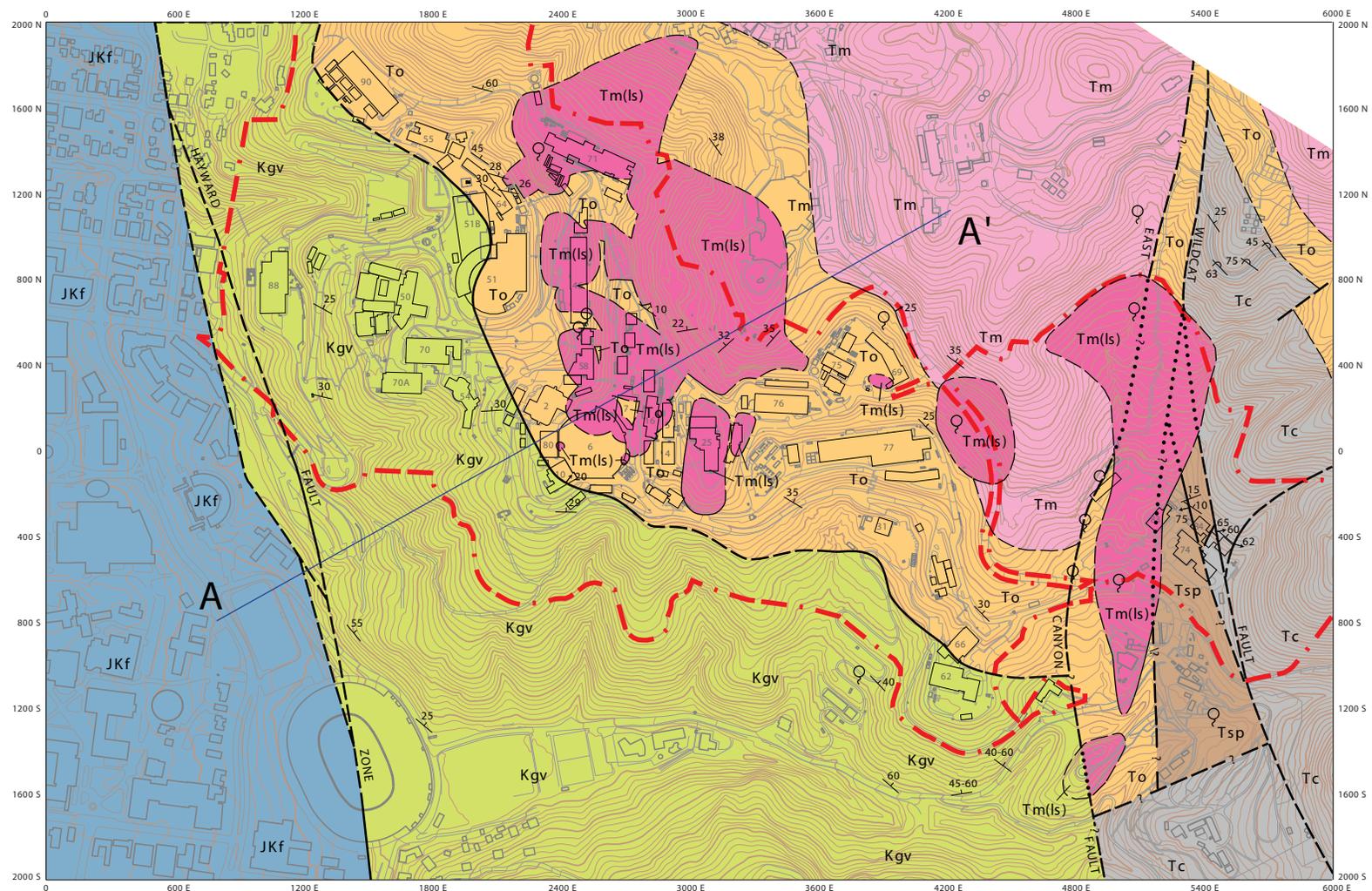
Master Response No. 1, Geological Conditions Underlying the LBNL Hill Site

Many public comments on the SERC Draft EIR state or suggest that no more buildings should be constructed at Lawrence Berkeley National Laboratory (LBNL) due to unstable geological conditions of the main hill site. Comments largely reiterate or mirror the hypotheses put forward by University of California Berkeley (UCB) Professor Emeritus Garniss Curtis in an article published in the Berkeley Daily Planet in the autumn of 2008. This master response has been developed to address comments from the public regarding the geology of the main hill site and to correct factual errors and misrepresentations presented in those public comments.

In his 2008 article, Professor Emeritus Curtis argued that LBNL is underlain by two geologic structures of concern: (1) a volcanic caldera containing material with low strength, and (2) west-dipping Cretaceous strata sub-parallel to the slope above Foothill student housing. He alleged that both these features make the site particularly unstable.

In January 2010, the organization Save Strawberry Canyon and one of its representatives sent a letter to UC LBNL, posted a video to the web featuring Professor Emeritus Curtis, and published a commentary in the Berkeley Daily Planet reiterating these concerns. The letter and video presented a geologic cross-section of the LBNL main hill campus, and the video also presented a geologic map of LBNL. These figures portray most of the LBNL site as underlain by volcanic rock filling a caldera, portray this caldera fill as hundreds of feet thick, and indicate this fill is in direct contact with Cretaceous strata to the west. The volcanic rock filling the caldera is portrayed as having cavern-sized voids filled with water. Public comments on the SERC Draft EIR make repeated reference to these submissions and to Professor Emeritus Curtis' hypotheses of 2008.

Figure 1 shows the most recent and comprehensive bedrock geology map of the entire LBNL site, which was prepared by Parsons Engineering Science, Inc. (PES) and UC LBNL. This mapping data was drawn from hundreds of borings as well as from trenches, outcrops, construction excavations, and road cuts (PES and UC LBNL 2000). This map indicates that, contrary to the assertions by some commenters, volcanic rocks do not underlie most of the LBNL site, but rather occur in various isolated to semi-isolated masses. Calculations from this map indicate that 46 acres of the 202-acre site, or 23 percent of the LBNL property, is underlain by volcanic rock, sedimentary rock intercalated with volcanic rock, and sedimentary rock including volcanoclastics. The majority of these 43 acres are currently not developed, and the LBNL 2006 Long Range Development Plan (LRDP) and EIR do not anticipate further development in these areas.



- Tm Moraga Formation
ls designates probable landslide deposits
- To Orinda Formation
- Tsp San Pablo Group
- Tc Claremont Formation
- Kgv Great Valley Group
- JKf Franciscan Complex
tinted box indicates unit appears on map

75

Contact, showing dip
dashed where approximately
located; dotted where concealed

35
-----?
Fault, showing dip
dashed where approximately
located; dotted where concealed;
queried where probable

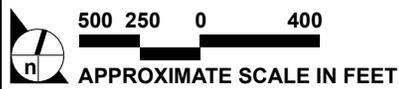
60

Strike and dip of beds

Strike and dip of overturned beds

♀
Historic springs
(modified from Soule, 1875)

Boundary of Lawrence
Berkeley National Laboratory



SOURCE: Parsons Engineering Science, Inc, and UC LBNL – 2000

FIGURE 1

Bedrock Geologic Map of LBNL

The theory that volcanic rocks at LBNL originated in a caldera collapse alluded to by some commenters is not borne out in the geologic observations of the LBNL site. **Figure 2** shows a geologic section through the LBNL site from PES and UC LBNL (2000), again based on data collected over many years from borings, outcrops, road cuts and construction excavations. The thickest volcanic masses at the site, shown on **Figure 2**, are less than 100 feet thick rather than hundreds of feet thick, as portrayed in the Save Strawberry Canyon video featuring Professor Emeritus Curtis. Further, none of these masses is in contact with Cretaceous strata as portrayed in the video, but rather are underlain by the Tertiary Orinda Formation. Strata in this formation dip moderately to the northeast across all but the very eastern portion of the site indicating structural continuity that does not accord with these strata being blocks within a collapsed caldera

Volcanic masses at LBNL do not contain the high proportion of tuff (consolidated volcanic ash) indicative of collapse synchronous with eruption that is a defining feature of collapsed calderas. Furthermore, none of the volcanic breccias (aggregates of angular volcanic fragments) observed at LBNL exhibit the welding expected to occur in at least some of them had they been formed in a caldera coincident to eruption. In short, the geometry and character of the volcanic rock masses and surrounding rocks at LBNL do not accord with a caldera collapse origin.

Another part of the caldera hypothesis is the contention that caldera-filling rock masses are weak. For instance in the video by Save Strawberry Canyon, Professor Emeritus Curtis characterizes these materials as “mud with essentially no rigidity,” which describes a fluid. On this basis, some public comments characterize the volcanic rocks at LBNL as having little to no strength and thus unsuitable to support structures. Setting aside that there is not a scientific consensus that caldera-filling rock masses are particularly weak, and setting aside that the evidence does not indicate there is a collapsed caldera fill at LBNL, the geomorphology developed on the volcanic rocks at and in the vicinity of LBNL is not consonant with supposing these rocks are essentially a fluid, or even relatively weaker than the surrounding rocks. On the contrary these rocks underlie promontories, such as that occupied by the Lawrence Hall of Science, as well as the ridge above the Lawrence Hall of Science and the naturally occurring sidehill bench upon which the first cyclotron building was constructed at LBNL. These geomorphic features indicate the volcanic rock at and in the vicinity of LBNL generally has higher

strength and erosion resistance than the surrounding materials rather than lower strength, as presumed by some commenters.¹

Some public comments suggest that there are aquifers and/or perched bodies of subsurface water, particularly in the volcanic rock, that pose a threat to on-site or off-site facilities because they increase the likelihood of slope instability. Hydrogeologic conditions at LBNL have been extensively investigated as part of LBNL's Environmental Restoration Program. These investigations have found that as is typical throughout the San Francisco Bay Area, groundwater exists at LBNL within pores between sediment particles, such as between the grains of sand in sandstone, and rock fractures that are generally smaller to much smaller than a millimeter across. The investigations have also determined that the volcanic rock at LBNL is among the rock units with the highest permeability at the site, but well within the range of permeabilities for geologic materials in general. In addition, high permeability is not recognized by engineering geologists and geotechnical engineers as correlating significantly with slope instability. For instance, drainage of groundwater relieves the water pressure that contributes to slope instability, and groundwater drains more quickly from higher permeability materials. While groundwater conditions at LBNL can contribute to slope instability, particularly during and after intense precipitation events, no particularly adverse groundwater conditions relative to other hilly locations in the Bay Area have been encountered.

Professor Emeritus Curtis' second contention in the video by Save Strawberry Canyon is that west-dipping Cretaceous strata sub-parallel to the western slope of LBNL would cause this slope to collapse in a Hayward fault earthquake. In the 2008 Berkeley Daily Planet article he stated such a slide could destroy all the buildings up to Doe Library on the UC Berkeley campus and potentially beyond. This library is over 1,000 feet from the base of this slope.

¹ This is corroborated by strength test data on the three main bedrock units at LBNL contained in a sampling of the available geotechnical reports primarily for the Old Town area and the vicinity to the west. The Old Town area is bounded by Buildings 17, 25A, 25 and 6. High-blow counts recorded during sampling indicate that these underlying materials act more like rock than soil. These tests were conducted using a 2-inch diameter split spoon sampler driven with a 140-pound hammer dropped 30 inches. A wireline was used, as required, and samples were taken typically in excess of 50 blows per foot. Measurements from samples of these materials also indicate the breccias have an unconfined, undrained shear strength well in excess of 1,000 pounds per square foot, the threshold below which soils are considered "soft."

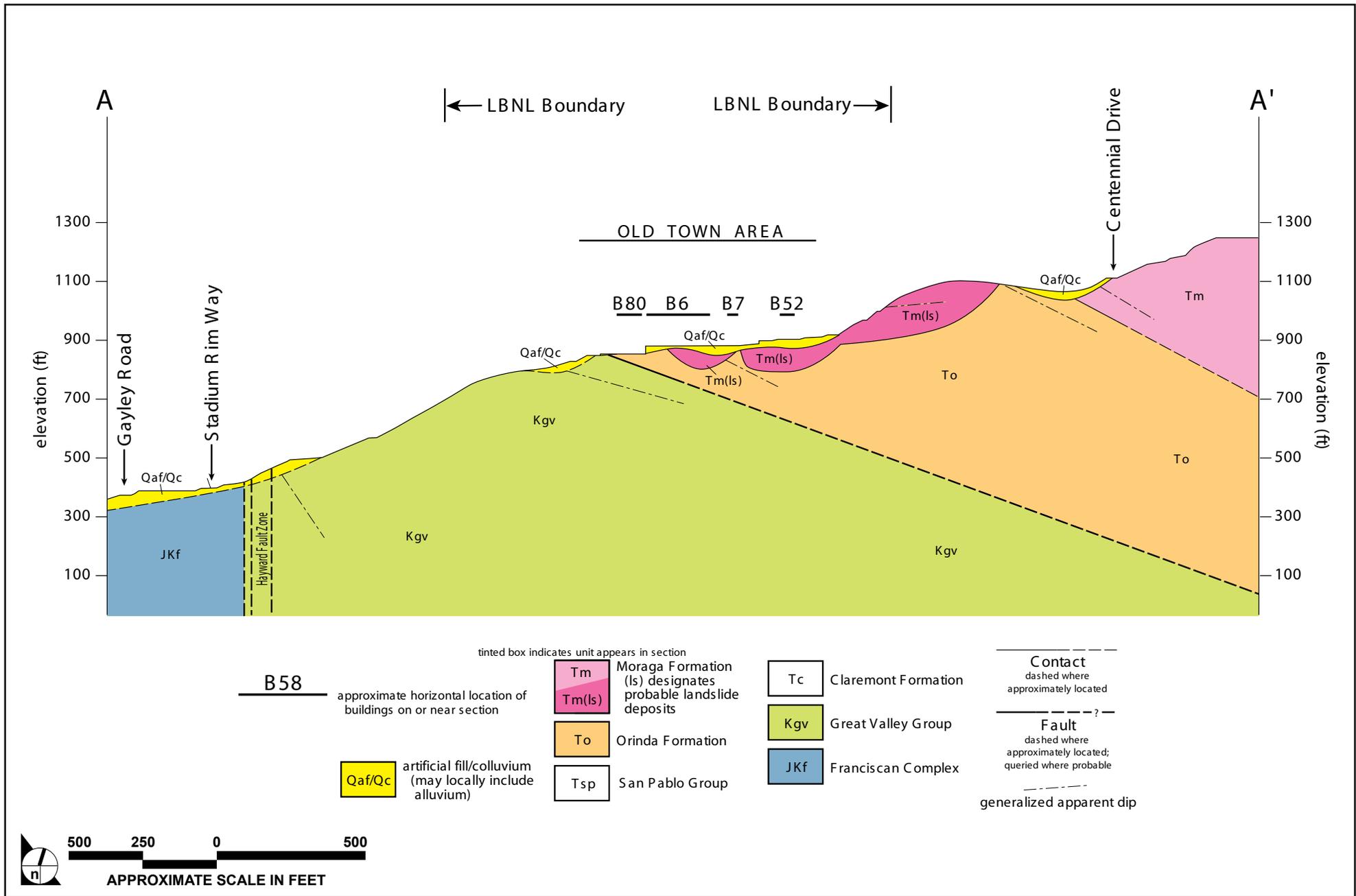


FIGURE 2

Geologic Cross Section Through the LBNL Site

Studies undertaken by PES and UC LBNL (2000), Fugro (2002), and Kleinfelder (2006) on the western slope of LBNL did not find west-dipping Cretaceous strata on this slope. Rather, these successive studies found these strata generally dip north between 20 and 50 degrees. The mischaracterization of the attitude of these Cretaceous strata aside, the larger concern raised by public comments regards potential failure of this slope and damage to areas of the campus to the west during a strong-to-major earthquake (magnitude 6 to 8) on the Hayward fault. The generally accepted upper limit uplift rate of 1 millimeter per year in the bay area indicates this slope has existed for at least tens of thousands of years, during which it has experienced at least tens of Hayward fault earthquakes based on current understanding of this fault. Bedrock failure of this slope during any of these earthquakes would have deposited material derived from the Cretaceous strata at the toe of the slope, which is occupied by the Hayward fault.

Fault and geotechnical investigations for Foothill Student Housing in this location did not encounter such landslide deposits. Rather, soil containing rhyolite, a volcanic rock, was encountered west of the Hayward fault. Neither this rock, nor any volcanic rock, exists on the slope above. This rock was likely translated north by the movement of the block east of the fault from the mouth of Strawberry Creek, which does have volcanic rock in its watershed. In addition, an inactive shear zone located generally along Gayley Road to the west (the "Louderback trace") was overlain by only a few feet of natural soil deposits. The last movement on this shear zone was dated as at least 11,000 years ago, indicating that any landslide deposits in this location are at least that old. Consequently the geologic record indicates the western slope of LBNL is stable with regard to potential bedrock landslides impinging on areas beyond the toe of the slope posited in the public comments.

Master Response No. 2, Site-Specific Geotechnical/Geologic Considerations

Some of the public comments on the Draft EIR pertain directly to the geotechnical and/or geologic conditions at the SERC site itself. Excluding the LBNL campus-wide issues addressed in **Master Response 1**, these comments typically center upon one or more of the following assertions: (1) the geotechnical and geologic reports prepared for the SERC project are inadequate; (2) additional investigations are needed to adequately characterize subsurface conditions; (3) the SERC building may be adversely affected by subsurface water or “heave;” and/or (4) the SERC site is geologically unstable. This master response has been developed to address these types of site-specific comments from the public.

The Geotechnical Investigation report for the SERC project was prepared by a geotechnical consulting firm (Alan Kropp & Associates, Inc.; AKA) under the direction of a California-licensed Geotechnical Engineer. A geologic study report was also prepared for the site by an engineering geologic consulting firm (William Lettis & Associates, Inc.; WLA) under the direction of a California-licensed Certified Engineering Geologist. The professionals who prepared the relevant project and site reports have many years of prior experience working on similar types of projects at LBNL as well on other projects throughout the Bay Area. Their work was performed in accordance with professional standards. UC LBNL therefore disagrees with the public comments that assert or suggest that the reports prepared for the SERC project or that pertain to the geologic stability of the SERC site are not adequate.

Some of the public comments assert or suggest that the SERC building site is geologically unstable. The SERC and adjacent General Purpose Laboratory (GPL) sites are situated along a subtle topographic ridge that divides the Strawberry Canyon and Blackberry Canyon watersheds. This geomorphology suggested the site is stable. The California Geological Survey did not include the SERC site when it defined the earthquake-induced landslide zones at LBNL. Aerial photographs taken in the 1930s show the natural topography of the site before the area was developed. These photographs provide no evidence of past geologic instability at the SERC site. However, the final subsurface environmental site characterization report (“Final RFI Report”; LBNL/Parsons, 2000) postulated the existence of a “paleolandslide deposit composed of Moraga formation rocks” coincident with the subtle ridgeline on which LBNL Buildings 25 and 25A now sit and upon which the SERC building would be constructed. Consequently LBNL contracted for an investigation of the stability and activity of the postulated paleolandslide.

The investigation conducted by WLA (2009) included two exploratory trenches excavated at the postulated “paleolandslide” margins. One trench (WLA T-1) revealed soil deposits that were several thousand years old overlying shear zones in the underlying rock. These deposits were undisrupted and lacked any evidence of past landslide-related movement(s). A second trench (WLA T-2) encountered volcanic rock in depositional contact with an underlying older geologic unit (Orinda Formation) and a

shear zone in the older underlying geologic unit. The several thousand year old soil deposits overlying these features were undisrupted. WLA concluded from these data that the site is geologically stable, consistent with the geomorphic and historic photographic evidence, and further refuting the previously postulated “paleolandslide” model.

Some of the public comments assert or suggest that additional subsurface investigations (e.g., borings or trenches) are needed to adequately characterize the subsurface conditions at the SERC site. The number and types of investigations needed to appropriately characterize the site was determined by AKA based on the quantity and reliability of the existing data as well as project requirements involving the layout and depth of the planned building.

The SERC building is designed to be supported entirely upon rock. The site having been determined geologically stable, the most significant remaining geotechnical consideration for the SERC building foundation design was the elevation of the rock surface. The geotechnical investigation report for the SERC project includes data from one boring by AKA (AKA-1), five borings by previous geotechnical consultants, and eight borings by LBNL’s environmental geologists. Fourteen borings provides a larger than typical data set for a building of the size and type as SERC. AKA used the data from these borings to develop an elevation contour map of the rock surface, which is presented in Figure 5 of the design-level geotechnical investigation report for the SERC project (AKA, 2010). UC LBNL and the qualified geotechnical experts consulted by UC LBNL disagree that additional investigations are needed to investigate subsurface conditions of significance to the project.

Some of the public comments assert or suggest that the SERC building may be adversely affected by subsurface water and/or that portions of the building may “heave.” The SERC building would be constructed within an excavation that extends below the level of the current site grades and the depth of the excavation is such that rock would be exposed over most of the excavation bottom. The geotechnical and structural design of the building involves footings that bear directly upon rock. Because groundwater may be intermittently present at this depth, as described in EIR Section 3.0, Project Description, the lower level building floor slab would be underlain by a gravel layer that would drain away water and prevent the buildup of hydrostatic pressure. The retaining walls that surround the below-grade portions of the building would be similarly drained.

The footings for the SERC building would not be underlain by soil but by rock. Because the footings would be founded below what is essentially a partial basement, the rock materials that underlie them would generally be unaffected by seasonal cycles of wetting and drying. Consequently “heaving” of the SERC building foundations or lower level floor slab due to hydrostatic uplift and/or expansive soil pressures caused by seasonal wetting drying is not a concern.

Master Response No. 3, Fire Hazards

Several commenters expressed concerns about the risks of wildland fires at the LBNL hill site in general and at the proposed SERC site in particular. The risks associated with wildland fires are evaluated in Draft EIR Section 4.5, Hazards and Hazardous Materials.

The LBNL hill site is situated in the lower East Bay hills and is thus in an urban/wildland interface area where wildland fires are a concern. However, due to intensive, proactive efforts undertaken by the Department of Energy and UC LBNL, the site stands as a bulwark against wildland fire risk both to its own population and assets as well as to those of its surrounding neighbors.

After careful planning and analysis of fuel loads and potential fire patterns following the East Bay Hills fire of 1991, the 200-acre LBNL site has undergone a major vegetation management program to transform the site into a natural fire break. Hundreds of Eucalyptus trees and flammable understory were removed and scaled back. Annual vegetation management is ongoing to this day and includes limbing up and removal of problematic (such as sick or dying) trees, and the mowing and removal of brush and grasses by hand gardening and goats. Vegetation management is carefully undertaken to ensure that flame heights and temperatures would not be sufficient to consume buildings and large trees throughout the site, nor to create fire brands that spread fire across the site and to adjacent properties.

LBNL funds and maintains on site a fully staffed (24-hour) Alameda County fire station with engines, equipment, and firefighters trained in fighting wildland fires. In fact, this fire station provides primary fire protection services to many surrounding neighbors in Berkeley and Oakland.

The LBNL hill site includes three 200,000-gallon water tanks to maintain constant pressure and ample supplies of fire-suppressive water in the event of fire and/or earthquake. If East Bay Municipal Utility District water lines servicing LBNL and its neighbors are damaged during an earthquake, this gravity-pressurized water will be accessible to fight resulting fires in the surrounding East Bay hills and to resupply pumper trucks.

Newer gas lines at the LBNL site include automated shut-off valves that would be activated if lines were severed during an earthquake or similar event. Newer buildings at the LBNL site, including the proposed SERC building, are or will be constructed to the latest fire codes (e.g., are or will be sprinklerized) and therefore should be safer than older buildings, including most of those buildings in surrounding neighborhoods and properties.

Master Response No. 4, Nanomaterials

Several commenters raised concerns about the use, handling, and potential public health effects related to the proposed use of nanomaterials at the SERC facility. While many of these issues were addressed in the SERC Draft EIR (Section 4.5, Hazards and Hazardous Materials), several inquiries seek further information. This master response is intended to address those inquiries for additional information related to proposed nanomaterials use at SERC.

Below is an overview of what nanomaterials are, how they would be used in the SERC facility, and why they would not be expected to cause a health impact to either the public or to the researchers using them. A further section provides responses to specific issues raised by commenters.

Overview

Nanomaterials are those structures – particles, materials, or devices – sized between 1 and 100 nanometers in at least one dimension (e.g., width, depth, or length). A nanometer is 1-billionth, or 10^{-9} , meters. A human hair is approximately 60,000 nanometers in diameter. While naturally occurring and man-made nanoparticles are ubiquitous in the ambient environment (e.g., typically about 5,000 nanoparticles per cubic centimeter of ambient air), the type of nanomaterials used in the SERC facility would be man-made, or “engineered” nanomaterials.

In the SERC facility, engineered nanoparticles would be used to help develop artificial photosynthesis. Semiconducting nanorods – the main type of nanomaterials expected to be used in SERC – would be fixed into flat test membranes for the purpose of efficiently converting sunlight into other forms of energy. These test membranes would be exposed to sunlight, water, and ambient carbon dioxide in order for the photosynthetic process to occur. Resulting energy products, ranging from methanol to butanol, would be fully contained and stored in small containers. The entire process, from devising and testing photosynthetic membranes to the production of fuel, would take place at a very limited scale. The scope of SERC is to facilitate laboratory-based pilot testing of artificial photosynthesis; SERC would not involve the manufacture or large scale production of nanoparticles or nanoparticle bearing membranes. Only about one gram per year of nanomaterial would be produced by and handled at SERC. None of the nanomaterials produced or used at SERC would be carbon nanotubes.

The SERC facility and operation are designed to prevent public exposure to engineered nanomaterials. As noted above, only very limited quantities of nanomaterials would be created. These nanomaterials would be initially produced in a liquid medium (at a test-tube or beaker scale) or upon a substrate. Much of this nanomaterial would then be fixed into the test membranes, where they would be stable and contained in

a non-releasable form. Any membranes containing nanomaterials to be discarded would be carefully packaged, treated, and disposed of as nanomaterial-bearing hazardous waste.

In liquid suspension or as fixed to a substrate or test membrane, nanoparticles would not be in releasable form. On occasion, a fraction of these nanoparticles would be handled in a dry or “loose” form in SERC laboratory rooms. This would mainly be for the purpose of inspecting, measuring, or weighing samples of this material. It is only during such times that any nanomaterials could potentially become airborne. A variety of equipment, protocols, and engineering control techniques would be used under these circumstances to avoid or minimize any such airborne releases or exposures to personnel. Handling of airborne nanomaterials would take place strictly within designated fume hoods, glove boxes, or other ventilated enclosures. All researchers handling airborne nanomaterials would be provided with appropriate personal protection equipment (PPEs) such as chemically resistant gloves, lab coats, and protective eyewear. Laboratory areas where such work would be done would be under negative pressure to control and contain potential airborne pathways. Cleaning and wiping down of work surfaces would be conducted after performing work and/or as appropriate. Damp cleaning wipes, and HEPA filter-equipped vacuums are among the tools that would be used for cleaning dry materials, while absorbent products and liquid traps would be used for cleaning wet materials. Any wipes, disposable cleaning devices, filters, liquids, or disposable PPEs used in such operations would be carefully packaged, and disposed of as nanomaterial bearing hazardous waste after use. As with nanomaterials in dry form, nanomaterials in liquid or solution would not be disposed of in the sanitary sewer system. Recent testing conducted at similar laboratories at LBNL has demonstrated that these practices are effective in controlling airborne releases and personnel exposures to nanoparticles (source: LBNL EH&S master database for exposure monitoring).

Although minute amounts of dry or “loose” form nanomaterials may be incidentally drawn into work area fume hoods, any such amounts would be exceedingly small. Each fume hood exhausting areas designated for dry or “loose” form nanomaterial handling would be equipped with HEPA filtration. HEPA filtration is proven to be highly effective in filtering nanoparticles of the type that would be used in SERC (see further details in Specific Issues discussion, below). Administrative laboratory controls would be employed to ensure that dry or “loose” form nanomaterials are used only under such fume hoods. As a result, there would be no release of nanoparticles into the outside air by the SERC ventilation system.

Nanoparticles at SERC would be created in minute amounts in liquid suspension or substrate form; a fraction of these would be converted to dry or “loose” form and handled under carefully controlled conditions. Because these nanomaterials would not be released either inside of the laboratory environment, outside to the atmosphere, or into the drainage or sanitary sewer system, the operations of

the SERC facility would not result in a nanomaterial-related health impact to the public, laboratory personnel, or the environment.

Specific Issues

What is known about the potential health impacts of engineered nanomaterials? Can exposures to humans be fatal? What are long-term effects? What kind of treatment is effective? Would neighbors need to be evacuated during an "incident" at the SERC facility?

For reasons described above (see **Overview**), SERC operations would not result in exposures of Lab personnel or neighbors to engineered nanoparticles. A detailed discussion about speculative nanomaterial related exposures, health impacts, and treatment is therefore outside the scope of this analysis. Nevertheless, information is provided here and elsewhere in this master response in response to the health-impact related comments, summarized above, received on the Draft EIR.

No link has been established between occupational exposure to engineered nanoparticles and adverse health effects (Interim Guidance for Medical Screening and Hazard Surveillance for Workers Potentially Exposed to Engineered Nanoparticles, CDC, NIOSH, 2009). Environmental health and safety specialists at LBNL have expended considerable effort in examining this issue – including holding meetings and consultations with researchers and other experts, and reviewing current studies and literature – to ensure that appropriate, up-to-date information is provided to the CEQA Lead Agency decision makers and the public.

It is not expected that off-site neighbors would ever have to evacuate or take other precautions resulting from an airborne nanomaterial release from the SERC facility, primarily because it is not reasonably foreseeable that airborne nanomaterials would be released from the SERC facility. Furthermore, under the speculative proposition that airborne nanomaterials were released to the outside atmosphere, public evacuations or other precautions would not be expected for several reasons, including: the small volumes/amount of dry or "loose" form of the airborne SERC nanomaterials that would be in use and available for release; the absence of nanomaterials such as carbon nanotubes (with known toxicity levels) in the SERC inventory; the procedures and engineering controls that would minimize the amount of airborne nanomaterials released; and the profound atmospheric dilution and dispersion that would occur should any airborne nanomaterials be emitted from the SERC facility.

What is the current safety and regulatory framework regarding nanomaterials? Are there separate guidelines for children and adults? What about the City of Berkeley's Manufactured Nanoscale Materials Health & Safety Disclosure ordinance?

Please see **Overview**, above. Also, as reported in SERC Draft EIR Section 4.5:

Engineered nanomaterials research and development is an emerging field and at the present time, there are no federal or state regulations controlling engineered nanomaterials research – either for children or adults. Nanomaterial handling and research at UC LBNL follows the available, applicable guidance and information currently available from regulatory agencies, including NSRC Approach for Nanomaterials EH&S (Version 3a), and DOE N 456.1 – The Safe Handling of Unbound Engineered Nanomaterials.

As further toxicity and epidemiological research is conducted, regulatory standards for environmental health and safety will likely be established. UC LBNL staff monitors the development of nanotechnology guidelines from all regulatory agencies to ensure safe and legally compliant research involving engineered nanomaterials.

As a precautionary measure, all nanomaterials at LBNL are treated as hazardous materials, whether it is currently required or not. Any hazardous materials used in the processing or research effort at SERC would be handled in accordance with applicable federal, state, and local laws and regulations.

As described in SERC Draft EIR Section 4.5, and consistent with LRDP EIR Mitigation Measures HAZ-3a through HAZ-3f, UC LBNL would implement the same health and safety plans, programs, practices, and procedures related to the use, storage, disposal, or transportation of hazardous materials and wastes at the SERC project that are implemented at other UC LBNL laboratories with similar types of research activities. UC LBNL employs sound general laboratory safety practices found in the Lab's Chemical Hygiene and Safety Plan (CHSP) as required by OSHA Laboratory and Respiratory Protection standards. These practices are addressed in the CHSP training class required for any employee working with hazardous materials in a laboratory environment. Emergency procedures, including spill clean-up measures, are also covered in the Lab's CHSP. As necessary, waste materials are disposed of and transported according to LBNL hazardous chemicals waste guidelines. UC LBNL has procedures that take into account the toxicity, process, and controls during evaluation of the work performed, in consultation with health and safety specialists as necessary.

The City of Berkeley's Manufactured Nanoscale Materials Health & Safety Disclosure ordinance is codified at Section 15.12.050 of the Berkeley Municipal Code. Although not subject to this Municipal Code, UC LBNL voluntarily provides the City of Berkeley with hazardous materials planning and inventory information in accordance with state thresholds and inventory reporting requirements

described in regulations implementing the Hazardous Materials Release Response Plans and Inventory Law (the Business Plan Act). Although the types and amounts of nanomaterials at LBNL do not meet the definition of hazardous materials in the state law and/or do not exceed state thresholds for reporting, UC LBNL has voluntarily provided the City of Berkeley information on its management of nanomaterials.

What methods are effective in preventing nanoparticulate release into the atmosphere, and for protecting the nearby public? Is HEPA filtration effective?

Please see **Overview**, above, which explains why nanomaterials would not be released into the atmosphere and why the public would not be exposed, due to the minute amounts created, the handling methods, procedural and engineering controls, disposal methods, and HEPA filtration. Also, as reported in SERC Draft EIR Section 4.5:

“All lab areas would be appropriately designed and constructed for the types of materials that would be handled in each laboratory. All wet chemistry laboratories would be fitted with fume hoods ... which are designed to reduce worker exposure to hazardous chemicals. An appropriate number of air changes would be implemented for worker safety. All lab facilities would maintain negative pressure which would control the release of any airborne materials to non-lab areas via doors and other openings.” And,

“All nanoscale research that could generate engineered nanomaterials is (to be) conducted in negative-pressure or isolations enclosures such as gloveboxes, fume hoods, or local capture hoods with High Efficiency Particulate (HEPA) filters ...”

According to the Centers for Disease Control (CDC), for most processes and job tasks, the control of airborne exposure to nano-aerosols (airborne, dispersed nanoparticles) can be accomplished using a variety of engineering control techniques similar to those used in reducing exposure to general aerosols (Approaches to Safe Nanotechnology, CDC, NIOSH, 2009 pg. vii).

Furthermore, while earlier studies suggested that HEPA filtration might not be fully effective in capturing nanoparticles, more recent studies have superseded those earlier findings. As reported in Occupational Medicine Implications of Engineered Nanoscale Particulate Matter (Journal of Chemical Health & Safety, Jan/Feb 2009), “overwhelming data are now available from numerous investigators showing filters work as expected for (nano) particles as small as 2 nm,” which are smaller than what would be used in SERC. And, “the earlier negative reports (on HEPA filtration) suffered from methodological problems that resulted in erroneous conclusions.” This finding is also supported by the CDE report: Approaches to Safe Nanotechnology, CDC, NIOSH, 2009, pp. vii – viii.

The CDC report also discusses the effectiveness of Personal Protective Equipment for laboratory workers: "...limited studies to date indicate that latex and nitrile rubber gloves form a reliable barrier to nanoparticles under test conditions."

At the nearby Molecular Foundry, are nanomaterials produced at a rate of approximately one pound per year? Describe the total surface area of one pound of such material. What proportion of those nanomaterials have been vented into the atmosphere, and how is this measured?

Please see **Overview**, above, which identifies that no SERC-related nanomaterials would be vented into the atmosphere. While the SERC Draft EIR identifies that less than one pound of a particular nanomaterial is produced annually at the Molecular Foundry, the SERC Draft EIR additionally describes that Molecular Foundry nanomaterial as being "in solution or attached to hard surfaces or in closed systems." In other words, it is not in a form that can become airborne or that is releasable to the atmosphere. Nanomaterials in solution are not disposed of in the sanitary sewer drain but are carefully packaged and disposed of as nanomaterial-bearing hazardous waste. In addition, because the proposed SERC project would not result in the release of nanomaterials into the atmosphere, it is not reasonably foreseeable that it could contribute to any cumulative release of nanomaterials from other facilities in the region.

It is not possible to quantify the "total surface area" of an undefined nanomaterial as posed by a commenter, as different nanomaterials can have very different surface areas in ratio to size, weight, or volume. In general, nanomaterials do have a much greater surface area by ratio to size, weight, or volume than materials occurring in larger solid forms, even when composed of the same basic constituents.

Will a Safety Analysis Document (SAD) or human health and/or ecological risk assessment be prepared for the SERC project?

A SAD will not be prepared for this project; as such documents are not required for facilities such as SERC. Title 10 Code of Federal Regulations (CFR) Part 830, Subpart B, "Safety Basis Requirements," requires contractors responsible for Department of Energy (DOE) nuclear facilities to analyze the facility, the work to be performed, and the associated hazards, and to identify the conditions, safe boundaries, and hazard controls necessary to protect workers, the public, and the environment from adverse consequences.

Human health risk associated with chemical use at SERC is described in the SERC Draft EIR, Section 4.2, Air Quality. A new human health risk assessment and/or ecological risk assessment will not be prepared for SERC, because expected laboratory chemical emissions would fall within the already established parameters of LBNL's current Sitewide Air Quality Human Health Risk Assessment, As discussed above

nanoparticles would not be emitted from the facility into the outside air or water. Therefore the operations of the SERC facility would not result in any nanomaterial-related health impact to the public, laboratory personnel, or the environment.

Master Response No. 5, Off-Site Alternatives

Some members of the public commented that the proposed project should not be located at the LBNL hill site, stating among other concerns that the project site is geologically unstable, that more growth should not be accommodated in the vicinity of Strawberry Canyon, and that wildland fires and landslides pose particular hazards in that location. Some commenters argued that project objectives identified in the Draft EIR, including consolidation of similar research in order to promote collaboration and interaction among researchers and minimization of travel could be achieved via other means. Some suggested alternate locations such as the Alameda Naval Station, Mare Island, and the “genomics site” in Walnut Creek.

As discussed in the Project Need and Objectives section of Draft EIR Chapter 3.0, UC LBNL is proposing the new facility to consolidate related energy research programs currently being undertaken at multiple locations dispersed throughout the UC Berkeley campus and LBNL hill site. As stated in the Draft EIR, the project is proposed at the LBNL hill site to allow SERC researchers to draw upon the intellectual, technological, and material resources of the Department of Energy LBNL energy research programs and facilities; provide the researchers convenient access to unique scientific facilities at the LBNL hill site; facilitate collaboration with other researchers at LBNL and UC Berkeley; and minimize travel time between SERC, UC Berkeley, and other LBNL locations.

LBNL’s major user facilities are highly specialized, advanced facilities that support cutting-edge research. The experimental capabilities of the current and future soft x-ray based facilities of the Advanced Light Source (ALS), the specialized nanomaterials synthesis and characterization capabilities of the Molecular Foundry, and the unique microscopic visualization and imaging capabilities of the National Center for Electron Microscopy (NCEM) are not available in other research centers in the Bay Area.

Researchers in the current SERC program frequently use the ALS, the NCEM, the Molecular Foundry, the photovoltaic (PV) and photoelectrochemical (PEC) testing equipment in Building 2, and the materials fabrication lab in Building 62. Many of these researchers use the Molecular Foundry daily for nanosynthesis, scanning electron microscopy characterization, and x-ray photoelectron spectroscopy (XPS), as well as the “Foundry Inter-group collaborations.” SERC researchers also use the PV and PEC testing equipment in LBNL Building 2 and materials fabrication lab in Building 62 on a daily basis and the Rutherford backscattering spectrometry (RBS) facility in Building 53 on a weekly basis. SERC’s nanomaterials synthesis groups rely on the NCEM to monitor and characterize the nanostructures that they grow. Theorists in the SERC program are major users of the National Energy Research Scientific Computing Center (NERSC) (Ager 2010).

Being physically close to these facilities would be beneficial for SERC program scientific collaboration and access. Consolidation of the researchers and close location to these services would result in better communication and partnering and fewer researcher trips up and down from UC Berkeley campus for meetings and facility use. The SERC researchers would also partner with staff from NCEM, ALS, and Molecular Foundry to conduct advanced research.

A top priority for the SERC program is to foster the education of the next generation of scientists solving energy problems, which is not achievable at off-site locations away from the unique user facilities at the LBNL hill site and UC Berkeley. Physical collocation of scientists of multiple disciplines working towards a common research goal is essential for daily/hourly interaction and transmission of a constant flow of ideas and learning experiences. Physical collocation is particularly important for student-to-student contacts, as it allows younger scientists to develop their own ideas through encounters with peers from other disciplines. Post-doctorate and graduate student researchers in SERC research groups work at these facilities, meet, discuss, and visit the labs of other groups. Aside from accelerating research progress through frequent interactions made possible by physical collocation, the educational benefit of creating multidisciplinary environments rather than isolated environments is critical for generating new research ideas, broadening and deepening the students' research education, and facilitating collaborative research efforts (Frei 2010). These beneficial interactions cannot simply be limited to e-mails and video conferences among group leaders and principal investigators. There is ample evidence and experience worldwide that geographically splitting research institutions, especially those with graduate students and post-doctorate researchers as the main workforce, has a detrimental effect on the productivity and educational value of the institutions. In UC LBNL's 2005–2006 Annual Report, the former Lab Director Steven Chu described the importance of collaborative and interdisciplinary approach to science in the history of the Lab. This report was cited in the court case *Jones v. Regents of University of California*, 183 Cal.App.4th 818, 829, in which the Court found that there is substantial evidence supporting the assertion that “fostering physical proximity among research areas is a tried and true method for the Lab” and that an off-site alternative would not achieve the Lab's collaboration objectives.

The principal investigators in the SERC research programs are anticipated to hold joint appointments as UC LBNL researchers and UC Berkeley professors. As a result, they need to be at a location that allows them to fulfill their responsibilities in an efficient manner without loss of excessive amounts of time traveling between their work locations.

Alternative sites (both within and outside of LBNL), including a site in Richmond and two sites in Berkeley, are analyzed in Chapter 5.0 of the Draft EIR. An off-site alternative would not realize the overall objective of the proposed project which is to enhance collaboration by collocating SERC programs, and increase productivity and improve efficiency by reducing researcher travel time between the SERC

program, UC Berkeley facilities, and the facilities at LBNL. Other locations, such as NUMMI in Fremont, were considered but not carried forth for full analysis as they would not meet the key project objectives of providing access to LBNL user facilities and fostering scientific and academic collaboration and interaction. Any site in Alameda, Walnut Creek, or Mare Island would similarly not meet the project's objectives. A potential secondary or satellite LBNL campus is currently in the preliminary planning stages. It is anticipated that a second campus would house new life sciences facilities and would not replicate the unique user facilities at the LBNL hill site. It is anticipated that construction of the first facilities at the second LBNL campus would not commence until 2015 or later. Extensive financial plans and environmental reviews would require approval prior to construction and operations and are currently only speculative. This timeline – and the tentativeness of funding and approvals – would not accommodate the proposed SERC project, which is planned to be constructed and operational by 2013. Furthermore, a second campus would not contain the types of user facilities that are necessary for SERC research. For these reasons, location of the proposed project at a second campus is not a feasible alternative (CEQA defines feasible as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors”).

Regarding seismic safety concerns at the LBNL hill site, any alternative project location in the San Francisco Bay Area would also be subject to seismic groundshaking over the life of the project. The University of California enforces a stringent seismic safety policy to which the proposed project, like all University undertakings, would be subject. The Seismic Safety Policy requires that all new University buildings comply with the current provisions of the California Building Code, or local seismic requirements, whichever is more stringent. The Seismic Safety Policy also prohibits the construction of University facilities on the trace of an active fault. As discussed under SERC Impact GEO-2 on pages 4.3-13 and 4.3-14 of the Draft EIR, implementation of the Seismic Safety Policy would reduce impacts related to seismic groundshaking to a less than significant level. Although it is impossible to provide complete assurance against damage in any location, the building codes are designed to prevent major structural damage and loss of life.

2.2.2 Responses to Individual Comments

**Table 2.0-2
Responses to Comments**

Comment Code	Comment Text	Response
EBMUD-1	<p>East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Draft Environmental Impact Report (EIR) for the Solar Energy Research Center at the Lawrence Berkeley National Laboratory. EBMUD provided written comments on the Notice of Preparation of a Draft EIR for the project on June 4, 2010 and these comments (see enclosure) still apply regarding water service, water conservation, water recycling and wastewater planning.</p>	The comment is noted.
EBMUD-2	<p>WATER SERVICE</p> <p>EBMUD's Shasta and Berkeley View Pressure Zones currently serve the existing LBNL facilities. If additional water service is needed, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing additional water service to the existing parcels. Engineering and installation of water services requires substantial lead-time, which should be provided for in the project sponsor's development schedule.</p> <p>The project sponsor should be <i>aware that</i> EBMUD will not inspect, install or maintain pipeline in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may pose a health and safety risk to construction or maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping in areas where groundwater contaminant concentrations exceed specified limits for discharge to sanitary sewer systems or sewage treatment plants.</p>	The comment is noted.

2.0 Comments on the Draft EIR and Responses to Comments

Comment Code	Comment Text	Response
EBMUD-2 (continued)	<p>Applicants for EBMUD services requiring excavation in contaminated areas must submit copies of existing information regarding soil and groundwater quality within or adjacent to the project boundary. In addition, the applicant must provide a legally sufficient, complete and specific written remedial plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of all identified contaminated soil and/or groundwater. EBMUD will not design the installation of pipelines until such time as soil and groundwater quality data and remediation plans are received and reviewed and will not install pipelines until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed, If no soil or groundwater quality data exists or the information supplied by the applicant is insufficient EBMUD may require the applicant to perform sampling and analysis to characterize the soil being excavated and groundwater that may be encountered during excavation or perform <i>such</i> sampling and analysis itself at the applicant's expense.</p>	

2.0 Comments on the Draft EIR and Responses to Comments

Comment Code	Comment Text	Response
EBMUD-3	<p>WASTEWATER</p> <p>EBMUD's Main Wastewater Treatment Plant (MWWTP) and interceptor system are anticipated to have adequate dry weather capacity to treat the proposed wastewater flows from this project, provided that the project and the wastewater generated by the project meet the requirements of the current EBMUD Wastewater Control Ordinance. However, wet weather flows are a concern. EBMUD has historically operated three Wet Weather Facilities to provide treatment for high wet weather flows that exceed <i>the</i> treatment capacity of the MWWTP. On January 14, 2009, due to the Environmental Protection Agency's (EPA) and the State Water Resources Control Board's (SWRCB) re-interpretation of applicable law, the Regional Water Quality Control Board (RWQCB) issued an order prohibiting further discharges from EBMUD's Wet Weather Facilities. Additionally, on July 22, 2009 a Stipulated Order for Preliminary Relief issued by EPA, SWRCB, and RWQCB became effective. This order requires EBMUD to begin work that will identify problem infiltration/inflow areas, begin to reduce infiltration/inflow through private sewer lateral improvements, and lay the groundwork for future efforts to eliminate discharges from the Wet Weather Facilities.</p>	<p>The comments concern the issue of infiltration and inflow (I/I) of storm water into the sanitary sewer system, Inflow refers to storm water directly entering the sanitary sewer line due to connections between the storm drain and sanitary sewer systems. Infiltration refers to groundwater that enters sanitary sewer systems through cracks and/or leaks in the sanitary sewer pipes. Cracks or leaks in sanitary sewer pipes or manholes may be caused by age related deterioration, loose joints, poor design, installation or maintenance errors, damage or root infiltration. Groundwater can enter these cracks or leaks wherever sanitary sewer systems lie beneath water tables or the soil above the sewer systems becomes saturated.</p> <p>The proposed project would involve the installation of new sanitary sewer laterals made of cast iron that would be properly designed and installed, and the project's storm drain would not be connected to the sanitary sewer line. Therefore, the proposed project would not cause any increase in I/I. The issue of I/I and inadequate wet weather capacity is discussed in the Draft EIR on page 4.9-2.</p> <p>Furthermore, UC LBNL has made substantial progress in the past 20 years in addressing sitewide I/I issues as well as reducing overall sanitary sewer flows. As of 2006, a concerted sewer infrastructure upgrade program had reduced LBNL's wet weather I/I rate to approximately 10 percent of that found in the EBMUD service district on average. At the same time, sitewide plumbing upgrades and water-saving systems also reduced LBNL's average sewer flows by over half.</p> <p>UC LBNL is working to further minimize I/I at the LBNL hill site. On September 30, 2009, UC LBNL issued a Sanitary Sewer System Management Plan (SSSMP) which guides the Facilities Division and the Environmental Health and Safety Division of LBNL in identifying, prioritizing, and continuously renewing and replacing sewer system facilities so as to maintain reliable service, and in cost-effectively minimizing infiltration and inflow. As described in the SSSMP, UC LBNL has established procedures for monitoring and evaluating I/I, including guidelines for taking action to limit I/I. Groundwater infiltration and inflow (GWI/I) and rain-dependent infiltration and inflow (RDI/I) are quantified and monitored to ensure that the hydraulic capacity of the sanitary sewer collection system is not exceeded and to determine if I/I reduction projects should be initiated. UC LBNL also maintains design and construction standards, specifications, and details which ensure that new and rehabilitated sanitary sewer collection system infrastructure is designed and installed in compliance with the latest federal and State regulations, in line with general industry standards, and in a manner which prevents I/I.</p>

Comment Code	Comment Text	Response
EBMUD-3 (continued)	<p>Currently, there is insufficient information to forecast how these changes will impact allowable wet weather flows in the individual collection system subbasins contributing to the EBMUD wastewater system, including the subbasin in which the proposed project is located. As required by the Stipulated Order, EBMUD is conducting extensive flow monitoring and hydraulic modeling to determine the level of flow reductions that will be needed in order to comply with the new zero-discharge requirement at the Wet Weather Facilities. It is reasonable to assume that a new regional wet weather flow allocation process may occur in the East Bay, but the schedule for implementation of any new flow allocations has not yet been determined. In the meantime, it would be prudent for the lead agency to require the project applicant to incorporate the following measures into the proposed project: (1) replace or rehabilitate any existing sanitary sewer collection systems, including sewer lateral lines, to reduce infiltration/inflow and (2) ensure any new wastewater collection systems, including sewer lateral lines, for the project are constructed to prevent infiltration/inflow to the maximum extent feasible. Please include such provisions in the environmental documentation and other appropriate approvals for this project.</p>	
EBMUD-4	<p>WATER RECYCLING</p> <p>EBMUD's Policy 8.01 requires that customers use non-potable water for non-domestic purposes when it is of adequate quality and quantity, available at reasonable cost, not detrimental to public health and not injurious to plant life, fish and wildlife to offset demand on EBMUD's limited potable water supply. EBMUD requests that the EW include an estimate of potential recycled water demand, and investigate the feasibility of recycled water for the project. EBMUD also requests the project team to coordinate and consult with EBMUD as appropriate for assistance with water recycling opportunities during project development.</p>	<p>The proposed project would not use recycled water because the infrastructure for providing recycled water to the project site does not exist at the LBNL hill site. Although the landscaped areas would not be irrigated with recycled water, the project site would be vegetated with native, drought-resistant plants, consistent with UC LBNL's revegetation policies, and the project would achieve 50 percent water flow reduction for landscaping in accordance with Leadership in Energy and Environmental Design (LEED) Credit WE 1.1.</p>

2.0 Comments on the Draft EIR and Responses to Comments

Comment Code	Comment Text	Response
EBMUD-5	<p>WATER CONSERVATION</p> <p>The proposed project presents an opportunity to incorporate water conservation measures. EBMUD would request that LBNL include a requirement that the project comply with Assembly Bill 325, Model Water Efficient Landscape Ordinance (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsors' expense.</p>	<p>The proposed project would not use recycled water because the infrastructure for providing recycled water to the project site does not exist at the LBNL hill site. Although the landscaped areas would not be irrigated with recycled water, the project site would be vegetated with native, drought-resistant plants, consistent with UC LBNL's revegetation policies, and the project would achieve 50 percent water flow reduction for landscaping in accordance with Leadership in Energy and Environmental Design (LEED) Credit WE 1.1.</p>
CMTW-1	<p>Committee to Minimize Toxic Waste: The geographic location of the above referenced project, SERC, is virtually the same as the proposed General Purpose Laboratory (GPL) in LBNL's most contaminated site, the Old Town. We are therefore including our comments on the GPL (and Seismic Safety Phase 2) Draft EIR and Draft EA (Environmental Assessment) as comments on the SERC DEIR, since both projects share the same natural and man-made hazards, inflicting the site on which they are proposed to be built. So we ask that our GPL comments submitted herein be considered and responded to. (See Attachments 1 and 2)</p>	<p>The comments have been reviewed and noted. As the commenter has indicated, those comments were submitted earlier and were specifically intended for separate NEPA and CEQA documents for the Seismic Phase 2 project. The Seismic Phase 2 project included various components (demolitions, seismic shoring, and construction of a General Purpose Laboratory) taking place in several locations throughout the LBNL main hill site. While the General Purpose Laboratory site is adjacent to the proposed SERC building site, the various other Seismic Phase 2 components are neither nearby to SERC nor similar to its proposed scope.</p> <p>Responses to all of the commenter's Seismic Phase 2 comments were appropriately responded to in the Seismic Phase 2 Final EIR (SCH# 2008122030, June 2010) and Final EA (DOE/EA # 1634, August 2010). These responses were published – along with the commenter's reproduced letters – in those documents and were provided directly to the commenter. They were also reproduced on UC LBNL's Community Relations website, posted in the Berkeley main public library, and mailed out to several members of the public (including anyone who requested them). They were also submitted to and considered by the UC Regents prior to the Regents' Seismic Phase 2 EIR certification and project approval. Similarly, they were submitted to and considered by the U.S. Department of Energy prior to its issuance of a Finding of No Significant Impact for that project.</p> <p>UC LBNL has nothing to add to those Seismic Phase 2 EIR and EA comment responses to what was already provided by UC LBNL and DOE. The SERC Draft EIR has already fully considered the Seismic Phase 2 project and the earlier CEQA process conducted for that project; therefore the previous Seismic Phase 2 EIR comments provide no new information that would affect the content of the SERC Final EIR. While neither those previous comments nor those previous responses will be reprinted in this SERC Final EIR, they will be admitted into the SERC EIR administrative record.</p>

2.0 Comments on the Draft EIR and Responses to Comments

Comment Code	Comment Text	Response
CMTW-2	The DEIR is totally deficient and inadequate/incomplete in describing/analyzing the true impacts of the presence of the Old Town Groundwater Solvent/VOC Plume at the B25A i.e., proposed SERC site. According to the DEIR some 13,000 cubic yards of soil will be excavated and hauled away involving some 2200 truck trips. Is it possible that most of the 13,000 cubic yards of soil will be contaminated with solvents and have to be disposed of as hazardous waste? Where will this waste be hauled to? What are the costs of dealing with this waste?	As described in Draft EIR Section 4.5, "soil remediation will be completed as part of the Old Town Demolition and Environmental Restoration project prior to the start of construction of the SERC project." It is expected that a small fraction of the 13,000 cubic yards of excavated soil may be contaminated. The contaminated soil would likely meet the criteria for disposal at a class II landfill. It is very unlikely that any of the excavated soil would meet the criteria of a hazardous waste.
CMTW-3	After the excavation, will solvents still be present at the site? Will in-situ soil flushing continue? Where exactly, in reference to the SERC building? Will there be a pump-and-treat operation going on in the SERC basement? According to the DEIR the basement of the SERC building will be <i>below the water</i> table. What is being done to prevent contaminated, solvent laden water from entering the basement? Will <i>there</i> be sump-pumps operating as was the case with the Bevatron basement?	As discussed on pages 3.0-22 through 3.0-24 of the Draft EIR, construction of the SERC facility would require relocation of some elements of the in-situ soil flushing system. Low levels of solvents may exist in the groundwater after building excavation. In-situ flushing would continue once system modifications are completed. The final design of the modified system will depend upon results of below ground investigation results and DTSC approval. Replacement wells are anticipated to be located in the basement. All modifications would require approval from DTSC. As described on page 3.0-16 of the Draft EIR, a subdrain system will intercept the groundwater, and not allow it to enter the basement. It is expected that the subdrain collection system would need to be pumped utilizing a small submersible pump contained within a 20-foot-deep manhole/vault. Groundwater that is collected would be tested for contamination, if required, treated if necessary, and appropriately disposed. Disposal options include, but are not limited to, injection into the ground water treatment system at the project site and disposal to storm drain system if the water is clean.
CMTW-4	How is the plinth being prevented from heaving, especially during heavy rain periods i.e., recurring EL Nino events? Heaving of building floors has been a recurring problem at LBNL, due to the site's unstable soil and the CALDERA's aquifers, areas of perched water - especially during heavy storms.	The SERC building would be founded on rock that is not expansive and will be underlain and surrounded by a gravity system that will drain water and prevent the buildup of water pressure. Heave due to water pressure or expansive soil is not a significant concern (see Master Response 2). UC LBNL has determined that the hypothesized caldera does not exist (see Master Response 1).

2.0 Comments on the Draft EIR and Responses to Comments

Comment Code	Comment Text	Response
CMTW-5	<p>Has LBNL's Site Restoration Program mapped the Old Town's hydrostratigraphic units (HSUs)? If not, why? Mapping of HSU's is critical to show the hydraulic connection between various permeable layers of the HSUs sedimentary sequences. Please show a cross-section of the various layers of soil and water at the Old Town/SERC site, and the predicted paths of the groundwater expansions along faults etc. (See Attachments 3, 4 and 5) Furthermore, it is our understanding that, if for some reason all pump-and-treat operations stop, the contaminant levels would return to earlier, pre-treatment concentrations unless and until all soil contaminated with solvents has been removed. What is the plan to address the soil contamination in the Old Town? Please provide the plan as part of the Final EIR. Will soil contamination be cleaned up to residential standards, now that LBNL operates a hotel in the general OLD TOWN area. (See Attachment 6, "Book any Standard room for only \$ 129")</p>	<p>Berkeley Lab's RCRA Facility Investigation Report (RFI) provides a detailed description of hydrogeologic units and how they impact groundwater flow. The RFI Report is available on line at http://www.lbl.gov/ehs/erp/html/documents.shtml and in the Berkeley Public Library. The complex geology at the Berkeley Lab includes both volcanic and sedimentary rock units and groundwater contamination is generally limited to relatively shallow horizons. Several geologic cross sections through Berkeley Lab's Old Town are provided in the RFI Report. Cross sections C-C' (Figure B2.3-4) and H-H' (Figure B2.3.9) include the Building 25A area of the SERC site. There are no known faults at the SERC site.</p> <p>It is not correct that if all "all pump-and-treat operations stop, the contaminant levels would return to earlier, pretreatment concentrations unless and until all soil contaminated with solvents has been removed." Although there may be some rebound in concentrations after a soil flushing operation is halted, contaminant levels will not likely return to earlier, pretreatment concentrations. Berkeley Lab is required to continue to monitor groundwater after the required cleanup levels have been achieved and a system is turned off for four consecutive quarters to assure that the required cleanup levels will be maintained.</p> <p>As buildings in the Old Town area are demolished, the potential presence of soil contamination underlying the buildings will be assessed, and if necessary addressed under the oversight of the DTSC. The last statement in Comment CMTW-5 appears to refer to the Berkeley Lab Guest House, a University of California building constructed to provide short-term accommodations to individuals and groups having business at LBNL or UC Berkeley, including researchers conducting work at the Advanced Light Source and other national user facilities at LBNL. The Guest House does not overlie any area of known soil or groundwater contamination.</p>
CMTW-6	<p>We also ask that none of the existing monitoring wells be closed, since they are the only eyes to the groundwater. Due to the <i>LBNL</i> site's complex hydrogeology, many earthquake faults, contacts, areas of landslides, creeks etc. and due to the lack of clear understanding (and the will to understand) what the plume expansion routes are, it is critical that all monitoring wells stay open and that more are installed in the Old Town area. As long as there are solvents in the soil, they continue leaching into the groundwater, every time it rains!</p>	<p>As discussed on page 3.0-24 of the Draft EIR, proper destruction of monitoring wells within the footprint of the SERC building would be required and new monitoring wells would be installed to continue monitoring cleanup progress. All modifications to the soil flushing system would be made with DTSC approval.</p>

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Comment Code	Comment Text	Response
CMTW-7	<p>Our report: <u>Contaminant Plumes of the Lawrence Berkeley National Laboratory and Their Interrelation to Faults, Landslides, and Streams in Strawberry Canyon, Berkeley and Oakland, California</u>, expresses these many concerns, and offers recommendations on page 50., which we ask that you respond to in the FEIR. (See Attachment 7.)</p>	<p>UC LBNL has reviewed the materials in Attachment 7, referred to herein as the commenter’s report. The commenter’s report includes the assertion that LBNL hill site geologic conditions have been overly simplified by UC LBNL, and that wells monitoring contaminant plumes have not been placed in the right locations along faults, landslides, and old creek beds. The commenter’s report concludes that the extent of migration of on-site contaminants will continue to be underestimated. The commenter’s report recommends that a conservative approach should be taken by LBNL to resolve these issues. This approach should include, among other things: an outside scientific technical review group to oversee UC LBNL plume monitoring strategy; factors present in Attachment 7 that influence groundwater flows should be mapped in a three dimensional model; and, further investigation of faults, geology, and landslides in Strawberry Canyon should be conducted.</p> <p>UC LBNL disagrees with the commenter’s report in regard to its characterization of UC LBNL’s management and monitoring of on-site conditions. All areas of the LBNL hill site where groundwater and soil contamination is present have been evaluated, the contamination characterized, and remedial systems installed to remediate those conditions as appropriate. UC LBNL has followed a very rigorous State-mandated process to investigate and remediate soil and groundwater contamination wherever present. That process involves a detailed analysis of the geology in the area of suspected contamination. The detailed analysis includes investigation for the presence of faults, landslides, bedrock contact surfaces, historic creek beds, or any other condition that would influence the rate and direction of contaminant migration. Further, the analysis includes development of three-dimensional models to characterize pathways for contaminants that may potentially move under various probable scenarios. This information was also used to determine the location of monitoring wells. The process was performed under the direction and approval of soil and groundwater cleanup experts from DTSC, RWQCB, and City of Berkeley. The results of monitoring are reported to these agencies on an annual basis. If the monitoring results show the need for further evaluation of site conditions, UC LBNL will conduct such an evaluation, with oversight provided by the DTSC, RWQCB, and the City of Berkeley.</p> <p>See Response to Comments CMTW 2, 3, 5, and 6 above regarding the SERC project and why it would not adversely affect the ongoing remedial program for the Old Town contaminant plume. See Master Comment 1 for additional information on geological conditions of the LBNL hill site.</p>

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Comment Code	Comment Text	Response
CMTW-8	<p>Landslides have created havoc at the LBNL site since the inception of the University of California Radiation Laboratory (UC Rad Lab) in the 1940s. A 1984 <u>Chronology of the Campus Hill Area Development and Slope Instability</u>, shows how major slides started occurring <u>immediately after and as a result of construction on the hill</u>. (See Attachment 8.) The SERC site is a known landslide area (See Attachment 9.) and many earthquake faults intersect the site (See Attachment 10.). None of this received adequate analysis in the DEIR, and we ask that the site's geologic hazards be adequately addressed in the FEIR—especially since vibration-sensitive laboratories are proposed to be located at SERC.</p>	<p>As discussed under SERC Impact GEO-2, impacts related to the potential for seismically induced landslides and other types of landslides are expected to be less than significant. No landslides have occurred at the proposed project site in the historic past (since the LBNL hill site was developed) and the site is not transected by any known active faults. Please see Master Response 2 for further discussion of the stability of the site.</p>
CMTW-9	<p>The underlying reason for LBNL's chronic slope stability problems is the lab's location inside the collapsed caldera of an old volcano. Garniss H. Curtis, Professor Emeritus, Department of Earth and Planetary Science, UC Berkeley, has advised <u>against</u> any more construction in the caldera in his letter to the UC Office of the President (May 11, 2008), and we ask that you carefully consider his comments and respond to them in the FEIR. (See Attachment 11.)</p>	<p>Please see Master Response 1 for more information about the caldera hypothesis.</p>
CMTW-10	<p>There are other problems related to LBNL's location at the active Hayward Earthquake Fault Zone, which were not adequately addressed in the DEIR. For instance the DEIR states: "The natural gas supply is provided by the Defense Fuel Supply Center in Oregon and delivered by PG&E system. The point of delivery is a meter vault in the hillside above Cyclotron Road and below Building 88. A gas line distributes high pressure natural gas from PG&E's metering vault to the buildings throughout the LBNL hill site." In view of the recent catastrophic natural gas pipeline explosion in San Bruno, CA, we ask the following: Does the natural gas pipeline serving the proposed SERC site/area cross the Hayward fault? If so, where?</p>	<p>The proposed project does not involve any changes to the existing natural gas main that serves the LBNL hill site. Therefore, an analysis of a scenario involving a gas main rupture is not required in this EIR.</p> <p>A 6-inch medium pressure gas main supplies gas to the LBNL hill site. This main has a point of connection to the PG&E pipeline at a point northeast of Foothill parking lot. This main runs between Cyclotron Road and Buildings 50 and 70 and provides gas service to the entire LBNL hill site; no other natural gas mains serve the LBNL hill site.</p> <p>This gas main is not similar to the 30-inch transmission line with a pressure of 386 pounds per square inch (PSIG) that was involved in the recent San Bruno accident. Instead, the gas main has a 6-inch diameter and a pressure of 13.5 PSIG. There are automatic shut-off valves at every building on the LBNL site and at the point of connection of this gas main to the PG&E line at the northeast of Foothill parking lot. The gas main at the LBNL site was installed in the 1960s and upgraded in the 1980s, and is in good condition, as affirmed in the most recent leak survey. A subcontractor performs a leak survey on the gas main every year and any leaks that are detected are repaired immediately. The potential for gas line leaks and ruptures is greatly reduced by the routine leak surveys and these automatic shutoff valves.</p>

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Comment Code	Comment Text	Response
CMTW-10 (continued)	<p>What is the size, age and condition of this pipeline?</p> <p>What is the size, age and condition of all the other pipelines at LBNL distributing high pressure natural gas from the PG&E metering vault?</p> <p>When were these pipelines last inspected and/or repaired or replaced? What was the condition of the pipelines when last inspected or serviced? Do they all have automatic shut-off valves? If so, where?</p> <p>Do the gas lines crossing the Hayward fault have automatic shut-off valves on both sides of the fault? What are the pressures inside the gas pipelines?</p> <p>The DEIR was extremely deficient regarding any substantial analysis and discussion of a worse-case scenario, following a natural gas pipeline explosion at the Hayward fault, following a major earthquake, destroying the pipeline serving the SERC site and vicinity.</p> <p>In fact no analysis was provided regarding this VERY HIGH CONSEQUENCE AREA, so it must be included in the FEIR!</p> <p>Are LBNL's natural gas pipelines located in the same utility trenches as water, electrical- and sewerlines? If so, a worse-case scenario of all pipes exploding, as was the case in San Bruno, must be fully analyzed, especially as to the availability of water to fight the ensuing fire- if all the water lines were to be destroyed! Building 88 and PG&E's natural gas metering vault are in the Alquist-Priolo Earth-quake Fault Zone and the vault right on top of one of the traces of the Hayward fault. (See Attachment 12.)</p>	<p>The gas main crosses the Hayward fault near the Foothill parking lot where automatic shut off valves are present that would shut off supply in the event of a rupture. As noted above, the proposed project would not make any changes to the gas main and would therefore not increase the risk of explosion of the gas main compared to current conditions.</p>

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Comment Code	Comment Text	Response
CMTW-11	<p>In view of the scenario above, LBNL's Emergency Response Plan is totally inadequate and relying on the local fire and police services is PURE FANTASY! After a major earthquake on the Hayward fault, the whole city on fire, Berkeley fire and police will not come to LBNL, they will be protecting residential neighborhoods, thus LBNL must provide a realistic Emergency Response Plan, and barring such, all future construction on the hill must be stopped! LBNL has no adequate or realistic plan to fight wildland fires, either, thus a careful analysis of Hazards from Wildfires must be included in the FEIR as LBNL is located in a High Risk Wildland Fire Zone/Critical Fire Area/California Fire Hazard Severity Zone and stores, uses, treats radioactive and hazardous wastes and materials in Strawberry Canyon, a notorious funnel for wildland fire winds.</p>	<p>Please refer to Master Response 3, Fire Hazards and Draft EIR pages 4.5-6 and 4.5-7.</p>
CMTW-12	<p>In addition to the above, the DEIR failed to consider the impacts of Tectonic Creep in the Hayward fault Zone, i.e., a continuous movement along the fault, which has caused cracking, leaky construction joints, holes in the floor of the culvert under UC's Memorial Stadium, offsets in the Claremont water tunnel, distortions of a warehouse in Fremont etc. (See Attachment 13.) Where are all the utility trenches located, serving SERC and LBNL, crossing the Hayward fault? How are they protected? When are they inspected? UC maintenance personnel report recurrent trouble with utilities, such as bending or breaking of conduit near the Stadium. Please analyze tectonic creep impacts in the FEIR! Describe what precautions LBNL has implemented to protect residents along High-land Avenue, just below the PG&E's natural gas vault, in case of an explosion.</p>	<p>The proposed project would not alter the gas main that supplies natural gas to the LBNL hill site. Other pipelines that cross the Hayward fault near the LBNL hill site are not owned by the University but by utility companies such as PG&E and EBMUD, and would not be altered by the proposed project.</p>

Comment Code	Comment Text	Response
CMTW-13	<p>In addition to all of the above, the most alarming, dangerous and controversial issue related to SERC is the ENGINEERING, MANUFACTURE AND USE OF NANOSCALE MATERIALS! Since the proposal and construction of the MOLECULAR FOUNDRY at LBNL, dedicated to NANOTECHNOLOGY, built without proper environmental review, NO EIR, NO EIS, in 2003, concerns have only escalated. In early 2004 protestors expressed concern at LBNL's gate during groundbreaking. (See Attachment 14.) ETC Group of Canada, dedicated to cultural and ecological diversity and human rights has called on governments to ADOPT A MORATORIUM ON SYNTHETIC NANOMATERIALS BEING PRODUCED IN LABORATORIES WITHOUT TESTING FOR HEALTH, SAFETY AND ENVIRONMENTAL IMPACTS! Dr. Vyvyan Howard, a pathology specialist, University of Liverpool, states that nanoparticles far smaller than human cells are easily ingested, inhaled, or absorbed through the skin (NY Times 4/14/2003). David Warheit, DuPont Haskell Laboratory, Newark, Delaware, found in animal experiments that 15% of the subjects <u>died from suffocation</u> because the nanotubes clumped in their lungs obstructed the bronchial tubes! (See Attachment 14 A.)</p> <p>LBNL should heed the Precautionary Principle! The SERC DEIR failed to consider the proximity of SERC to the Lawrence Hall of Science, a children's school and museum, less than 200 meters away and downwind:</p> <p>Indeed, the children at LHS are the Maximally Exposed Individuals (MET) and the impact of nanoparticles from SERC, and cumulative impacts of nanoparticles from the Molecular Foundry and other LBNL facilities, entering the childrens' lungs must be analyzed in a Safety Analysis Document (SAD), and attached to the FEIR!</p>	<p>Please refer to Master Response 4, Nanomaterials.</p> <p>The SERC EIR analyzes the potentially significant impacts associated with the proposed SERC Project, along with potentially significant cumulative impacts of the SERC Project in combination with other projects. Except to the extent that any impacts of the Molecular Foundry are compounded by SERC, questions and discussion concerning the Molecular Foundry are outside the scope of this EIR.</p>

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Comment Code	Comment Text	Response
CMTW-14	The DEIR states that <u>one pound</u> of nano material is manufactured at LBNL's Molecular Foundry (MF) in one year, out of one type of nano-material research? What is the type? What is it used for? Who are the users of MF?	Please refer to Master Response 4, Nanomaterials . The SERC EIR analyzes the potentially significant impacts associated with the proposed SERC Project, along with potentially significant cumulative impacts of the SERC Project in combination with other projects. Except to the extent that any impacts of the Molecular Foundry might be compounded by SERC, questions and discussion concerning the Molecular Foundry are outside the scope of this EIR.
CMTW-15	The DEIR further states that SERC will accommodate both US Department of Energy (DOE) and non-DOE research programs. Is SERC also a DOE User Facility? Who are the non-DOE users? The DEIR's disclosure of operations is inadequate.	SERC would not be a DOE user facility. It is anticipated that the SERC facility would house research funded primarily by the DOE, which is the case with current SERC programmatic research activities taking place at the LBNL hill site and UC Berkeley. It is anticipated that some of the funding for programs in SERC could come from the State of California. SERC may also attract post-doctoral researchers whose research is funded by other public and private donors or foundations.
CMTW-16	SERC would synthesize, manufacture and use engineered nano material. RISKS regarding the use and manufacture of DISPERSIBLE engineered nanomaterials were not addressed! The DEIR further states: "All nanoscale research is conducted in negative-pressure or isolation enclosure...", i.e., all nano waste/nanopollution will be vented out into the environment, into the Strawberry Creek watershed, into the air, to enter the lungs innocent bystanders, children at LHS, people working and visiting UC's Botanical Garden or walking, jogging, bicycling up and down Centennial Drive, just a few dozen feet from the MF's huge 4 towering stacks hiding 48 stacks connected to the individual laboratories. SERC will add another 28 stacks! (See Attachment 15.)	Please refer to Master Response 4, Nanomaterials .
CMTW-17	In the manufacture of the one pound of nano material referenced above, how many pounds were vented out into the atmosphere? How are nano waste emissions measured? There are <u>no known</u> filters to capture nano particle waste pollution: There are no Federal or State laws regulating nano research, it is morally reprehensible to continue such research <u>until</u> there are adequate human health and environmental protections in place! Please describe what would be the <u>total surface area</u> of one pound of nano material? How many million, billion, trillion square feet? This is critical information, since nano particles have a <u>disproportionately large surface to volume ratio!</u>	Please refer to Master Response 4, Nanomaterials . The SERC EIR analyzes the potentially significant impacts associated with the proposed SERC Project, along with potentially significant cumulative impacts of the SERC Project in combination with other projects. Except to the extent that any impacts of the Molecular Foundry are compounded by SERC, questions and discussion concerning the Molecular Foundry are outside the scope of this EIR.

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CMTW-18	<p>In addition to the SAD document, LBNL must prepare a Human Health and Ecological Risk Assessment for SERC, including cumulative impacts and risks from all other LBNL nano research. List all facilities, buildings currently doing nano scale research. List all non-DOE users.</p> <p>In 2006 the City of Berkeley's Municipal Code was changed to require facilities that manufacture or use manufactured nanoparticles to report/disclose "current toxicology of materials reported... and how the facility will safely handle, monitor, contain, dispose, track inventory, prevent releases, and mitigate such materials." Has LBNL complied with this Ordinance? How many reports have been provided to the City of Berkeley? Please, attach the last 3 to the FEIR!</p> <p>Also attach the most recent critical studies regarding Human Health and Ecotoxicity Hazards and risks from the use of nano particles, and also provide most updated answers to the 12 Questions presented herein (See Attachment 16.)</p>	<p>Please refer to Master Response 4, Nanomaterials.</p>
CMTW-19	<p>In conclusion, in view of all the hazards presented above, we ask that SERC, along with CRT be considered as anchor facilities for LBNL's second campus, in one of the many locations being considered from Fremont to Vallejo, to avoid continuing logistical, environmental, geotechnical constrains and legal challenges, currently crippling LBNL and its future! This is a prime opportunity for LBNL to offload facilities from the unstable Strawberry Creek watershed site, with its unconsolidated soils, water and mud of a collapsed caldera, riddled with landslides and earthquake faults. This is an opportunity to carefully guard scarce taxpayer funds and not waste them in continuing construction in an active earthquake fault zone! (See Attachment 17.)</p>	<p>See Master Response 1 and Response to Comment PH-3.</p>

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CMTW-20	And lastly, since LBNL is owned and operated by DOE, and SERC operations are funded by DOE for DOE researchers, a NEPA (National Environmental Policy Act) review is required to analyze the impacts of this Federal Project! (See Attachment 18.)	The Department of Energy will conduct a review under NEPA and determine what level of environmental documentation may be required for the SERC project.
CMTW-21	<p><u>NOTE!</u> In 1939 E. O. Lawrence got permission from the UC Regents to build in Strawberry Canyon, and wrote of his delight, saying that it gave privacy and sufficient distance to alleviate the possible <u>ill effects of errant radiation</u> upon the town below. It is critical for LBNL's administration to heed Lawrence's statement and find a <u>new</u> "Strawberry Canyon site" to alleviate the possible <u>ill effects of errant nano particles</u> upon the neighborhoods nearby! Alameda Naval Station at Alameda Point certainly meets all the qualifications! Put Helios plan back together and site both Helios East and West in Alameda) (See Attachment 19.)</p> <p><u>NOTE!</u> <u>NOTE!</u> (See Attachment 19.) The 2010 Nobel Prize in Physics was awarded to two scientists working at the University of Manchester in England with Scotch tape and pencil carbon flakes <u>without any fancy nano prosciutto slicers!</u>(See Attachment 20.)</p>	<p>The comment is noted. Please see Response to Comment PH-3.</p> <p>Please refer to Master Response 4, Nanopmaterials.</p>

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Comment Code	Comment Text	Response
SSC-1	<p>Save Strawberry Canyon:</p> <p>This letter is being written to request further environmental review of the proposed SERC project <i>vis-à-vis</i> significant unaddressed impacts and to request immediate environmental review in compliance with NEPA. While the DEIR discusses many aspects of the project, important questions appear to be left unanswered. Save Strawberry Canyon (SSC) remains concerned regarding matters of environmental impacts such as site ground water, site geology, soils instability, seismic safety, public safety, and alternative project sites. SSC is also concerned that federal responsibility for the project is being sidestepped without legal merit.</p> <p>SSC, a non-profit 501(c)3 organization with some 300 members, is dedicated to preserving and protecting the hills and valleys that define the cultural landscape surrounding Strawberry Canyon and its Strawberry Creek Watershed. SSC first formed upon learning of LBNL's 2006 Long Range Development Plan (LRDP) to build up to one million gross sq. ft. of new facilities for the Department of Energy (DOE) to implement its mission and programs in Blackberry and Strawberry Canyons. Since then, the ongoing discussions that have occurred within the context of environmental review for the various environmental impact studies (CRT, Helios, BELLA, and Seismic Safety II), each, have been illuminating. While SSC disputes the conclusions of the SERC EIR, minimizing the degradation to the natural landscape and the visual character of the sloping hillsides, SSC understands that a new community awareness and concern for the value of the area has grown, including concern for the landscape as both an impaired resource and as a geologically unstable site for further development.</p>	<p>The comment does not state clearly what impacts of the project remain unaddressed. With respect to other concerns noted in the comment, please note that project impacts on groundwater, site geology, geologic instability, seismic safety, public safety are analyzed in Chapter 4.0 of the Draft EIR, and alternatives to the proposed project are analyzed in Chapter 5.0.</p> <p>As SERC would occupy a site that is already developed with a number of old buildings, it would not result in degradation of the natural landscape and alter the visual character of the sloping hillsides. Also given its location behind ALS, the project would not be visible from most viewpoints in Strawberry Canyon and the downtown portions of City of Berkeley. With respect to concerns about the geologic stability of the entire lab site, please refer to Master Response 1. With respect to concerns about the geological stability of the SERC site, please refer to Master Response 2.</p> <p>With respect to review under NEPA, please see Response to Comment CMTW-20.</p>

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Comment Code	Comment Text	Response
SSC-1 (continued)	<p>The DEIR clearly attempts to exempt SERC from NEPA review. Such an exemption does not appear to be legitimate. The hundreds of millions of dollars of federal funds flowing into LBNL are driven by the federal contract between DOE and the University of California (UC) establishing a National Laboratory to find new sources of energy through science. DOE's Office of Science "Business Plan," July 2010, specifies that LBNL "hosts" SERC as one of its two sustainable-energy research centers. Regardless of the fact that the land proposed for SERC is owned by UC and not intended to be leased to DOE, the operation of SERC's scientific research is acclaimed to be a function of LBNL, in whole or in part. It is not plausible to claim that SERC is independent of LBNL's infrastructure, network, operational oversight, and, thus, its duty to comply with NEPA.</p>	

Comment Code	Comment Text	Response
SSC-2	<p>In light of the question of compliance with NEPA, the DEIR raises another question regarding the adequacy of the 2006 LBNL LRDP EIR from which SERC is tiered-off. Indeed, there are responsibilities of UC ownership and long-range programmatic development that mandate California Environmental Quality Act (CEQA) review. However, the research at LBNL's 200 acres of hillside and canyon terrain is federally funded, driven by a national goal. It is entirely relevant that increasing concerns are mounting regarding the suitability of this location for further federal investment by the American Recovery and Investment Act (ARRA), or any other federal monies. Because of pressing questions regarding federal risk management and financial responsibility surrounding the LBNL site, it would seem prudent that a Site-wide Environmental Impact Statement (Site-wide EIS) be undertaken in accordance with NEPA. It is proforma for both Los Alamos and Livermore Labs, other UC National Laboratory sites, to undertake Site-wide EIS review. For reasons of equal concern, it would seem timely that a Site-wide EIS be undertaken to review programmatic development at LBNL.</p> <p>NEPA is specifically urgent at this time in regards to its provisions that provide for a process for federal decision-makers to weigh alternatives and to influence best-practice environmental outcomes.</p> <p>SSC urges the University, LBNL, and DOE to undertake such federal review, due not only to questions regarding SERC, but due also to questions of risk that may adversely impact LBNL's long-range research program if fully developed on the unstable hillsides above the UC, having the potential to "...significantly affect the quality of the human environment."</p>	<p>See Responses to Comments PH-11 and CMTW-20.</p> <p>The Department of Energy (DOE) complies with National Policy Act (NEPA) requirements at all of its facilities and National Laboratories, including LBNL. DOE's NEPA Implementing Procedures are articulated in 10 CFR 1021. The decision to prepare a Sitewide Environmental Impact Statement (EIS) for a particular National Laboratory is at the discretion of DOE and is not required under NEPA. A Sitewide EIS would not be triggered by the proposed SERC project.</p>

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Comment Code	Comment Text	Response
SSC-3	<p>The DEIR revelation of unresolved questions regarding SERC’s nanomaterial research only raises more questions regarding long-term health issues for both the natural and human environments. In fact, there may be a tragic irony to the SERC quest to create and use nanoparticles to discover new sustainable-energy matter – such a quest may be the cause of uncontainable destruction and effects to the air, water, plant life, animal life and the human population. Basically, the SERC DEIR claims that no one is responsible: “engineered nanomaterials...is an emerging field and at the present time, there are no federal or state regulations controlling engineered nanomaterials.” The DEIR therefore avoids the outstanding questions of nano risk in its “Impact Summery” and, furthermore, it fails to acknowledge the potential long-term cumulative risk of released nanoparticles from other hillside LBNL facilities and programs, including the Molecular Foundry, Advanced Light Source, National Center for Electron Microscopy, and connecting Energy Sciences Network. Adequate federal responsibility and discussion is sorely needed, especially because the Environmental Protection Agency (EPA) and other agencies are still in the pursuit of “gathering information” and setting regulatory standards.</p>	<p>Please refer to Master Response 4, Nanomaterials.</p>
SSC-4	<p>The potential for release and harm, or already released and harming, nanoparticles into the environment, unseen, unknown, or undetectable by an instrument yet-to-be-devised, is reminiscent of LBNL’s historic operations, beginning in the mid-century, when toxic and radioactive contamination of the watershed and soils were also considered to be of no consequence.</p>	<p>Please refer to Master Response 4, Nanomaterials.</p>

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Comment Code	Comment Text	Response
SSC-5	<p>The DEIR statement of fact that hazardous materials exist at the SERC site lacks any background explanation regarding the extent of the contamination (such as is identified at Livermore Lab). Without such information, the described <i>in-situ</i> remediation for SERC may or may not be sufficient i.e. there is no “red flag.” In fact, in light of the contaminated waters and soil, SSC has become concerned that proper National Pollutant Discharge Elimination System (NPDES) permits, Army Corps of Engineers (ACE) Section 404 permits, and Environmental Protection Agency (EPA) Total Maximum Daily Limit (TMDL) permits may not have been and/or are not being properly sought at LBNL.</p>	<p>The Building 25A lobe groundwater contamination is described on pages 4.6-6 and 4.6-7 of the Draft EIR. The extent of contamination that is being remediated by the soil flushing system is shown in Figure 3.0-7, Soil Flushing and Groundwater Migration Control System, in the Draft EIR. The site is being remediated under the regulatory authority of the DTSC as part of the RCRA Corrective Action process.</p> <p>NPDES permits address storm water discharges and do not regulate groundwater. As noted in the Draft EIR, any groundwater that is intercepted during grading at the project site would be tested and if determined to be contaminated appropriately treated and disposed. Section 404 permits concern discharge of fill in the Waters of the US. The project does not involve filling of any waters of the US. A requirement to apply for a Total Maximum Daily Load (TMDL) permit does not apply to the SERC project. TMDLs are required to be developed by states, territories, and Indian tribes with jurisdiction over impaired waterbodies and concern the maximum amount of a pollutant that a water body can receive and still meet water quality standards. As discussed in Section 4.6, Hydrology and Water Quality, there is a TMDL for diazinon in urban creeks, but diazinon is not used at the LBNL hill site, and therefore, the SERC project would not discharge this pollutant to surface waters.</p>
SSC-6	<p>SSC continues to question with alarm the apparent blind eye with which LBNL views the geological threat to any development on its hillside campus. The SERC DEIR is yet another LBNL project that ignores, obscures, or minimizes the inherent risks of the unstable site, a contaminated site continuing to develop risky science. To determine in the “Executive Summary” that the immediately adjacent Hayward Fault, due for the “Big One,” and the multitude of fissures connected with the Wildcat Canyon Fault, are of “less than significant” impact defies a significant risk to the existence of LBNL’s facilities, its community, and the community below. Please take note of the following comments regarding geotechnical observations in the DEIR:</p>	<p>Please see Master Response 2.</p>

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SSC-7	<p>In the AKA memorandum of May 29, 2009, for the General Purpose Laboratory, summarizing results of a preliminary investigation and a previously-mapped paleo-landslide beneath Building 25, the firm found geologic conditions consistent with a paleo-landslide hypothesis, including sheared bedrock materials that it was permissible to interpret Orinda Formation beneath Lawrence Road as potentially part of the paleo-landslide rather than “in-place” bedrock that slide-plane friction angle of slope stability was 15 degrees, a very low safety factor that to adjust the 15 degrees upward it would be necessary to do lab tests and that slope displacement in a seismic event might be 1.3 to 3.5 feet.</p> <p>In order to investigate these, AKA proposed trenching. The April 8, 2010 report and its May 27 supplement appended general colored drawings of the single trench well (to the southwest of SERC) but no analysis. The supplement merely stated that no evidence of recent movement was found, leaving one to wonder if AKA had overlooked slickenside evidence of faulting or sheared bedrock, evidence of movement, or whether AKA chose to dig on a site believed to be outside of the slide area. The boring samples have Plasticity indices so high that a huge amount of material will have to be excavated.</p> <p>Now there is the SERC report and AKA has done NO trenching at all and only ONE boring! Older borings around 25A are useful to a point but not for moisture content. Moreover, AKA supplied no real analysis of the lot other than to suggest there are different materials underneath different parts of the site.</p>	<p>AKA’s 2009 memorandum summarized a preliminary study based on the results of two borings and a paleo-landslide model that has since been proven incorrect (WLA 2009); see Master Response 2. The seismic displacements calculated using this incorrect geologic model are therefore no longer relevant.</p> <p>Following AKA’s 2009 memorandum, a trenching investigation was undertaken to more thoroughly evaluate the previously-mapped “paleo-landslide” model, which postulated a landslide slip surface at the contact between volcanic and sedimentary rock. The trench sidewalls were observed and mapped in considerable detail by geologists who are recognized experts in this specialized field. The assertions and suggestions that shears or other significant geologic features were overlooked or that trenches were deliberately mis-located are unfounded and incorrect. As described in Master Response 2, the results of the Paleolandslide Investigation (WLA 2009) demonstrated the geologic stability of the proposed SERC site.</p> <p>The comments pertaining to the adequacy of the SERC geotechnical investigation reports are addressed in Master Response 2.</p> <p>The May 27, 2010 “supplement” referred to by the commenter was prepared for the General Purpose Laboratory Central Utilities Plant (GPL-CUP) and not for SERC. Consequently the Plasticity Indices reported in the May 27, 2010 supplement are for a different site. The commenter’s assertion that a “huge amount of material will have to be excavated” in order to address high plasticity soils at the SERC site is incorrect (see also Master Response 2).</p>

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SSC-7 (continued)	<p>AKA-1, under SERC, finds “bedrock,” that is siltstone and then claystone, at 10.5 feet. MW25A-98-6—under SERC—tuffaceous siltstone/ tuffaceous silty sandstone/ sandy siltstone/sandstone/silty sandstone down to 25 feet. SB25A-96-3 (Preston Jordan)— just south of SERC—tuffaceous siltstone/tuffaceous silty sandstone/sandstone to 20 feet.</p> <p>The latter two are part of slides or deposits of volcanic materials. These will move at a different rate from the “pure” siltstone in a seismic event.</p>	
SSC-8	<p>The Old Town area has suffered a number of landslides ever since the 1940s when the Cyclotron floor subsided. Almost every new grading for road or building resulted in a slide according to Dunn and Goodman’s inventory of 1984. And these landslides extend from the westernmost buildings to those in the east canyon. The worst were probably those of 1973, splitting Bldg. 46, taking out roads and utilities, undermining Centennial Drive, and threatening the Lawrence Hall of Science. But there were more to come. While more recent records were not made available, a recent map labels one huge landslide 41!</p> <p>Two maps from 1897, probably made by Lawson, show landslides over the whole hill before the Lab was built. These were not dirt scars but ravines and swellings that characterized the terrain and were clear evidence of slides. This evidence and more recent maps of paleolandslides have been waved away.</p>	<p>Please see Master Response 2. The Old Town area is generally considered the area bounded by Building 25, Building 25A, and Building 17. No historic landslides in this area, which includes the SERC site, are delineated in the geotechnical files in LBNL’s possession, and UC LBNL is not aware of any such slides.</p> <p>UC LBNL is not aware of a landslide that caused subsidence of the original (and since removed) Cyclotron floor in Building 25. An alternative and more likely explanation for such subsidence, if it occurred, is consolidation of soils beneath the building. Such occurrences were more common at the time the Cyclotron was built about 70 years ago due to the state of geotechnical engineering practice then.</p> <p>UC LBNL is not aware of any maps from 1897 that show landslides in the area now occupied by UC LBNL. The earliest map LBNL is aware of that bears on the subsurface conditions at the Lab is a geologic map by Lawson (c. 1900). This focused on bedrock geology and shows topographic contours but not landslides.</p> <p>More recently, the paleolandslide hypothesis was examined by UC LBNL’s geologists. As described in Master Response 2, this hypothesis was investigated through a focused field data collection effort. This data indicated the paleolandslide likely does not exist, but if does the data indicate it has not moved in at least thousands of years (WLA 2009).</p>

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SSC-9	<p>LBNL has chosen to ignore its older consulting reports, which found “depositional” volcanics and vents from the old volcano. The caldera, however, has been traced from the north, 150 yards west of the Brazilian Room in Tilden Park on the Wildcat Fault, along Shasta, where outcrops have been used for walls, down to LBNL just inside the westernmost buildings and where Miocene in the caldera meets Cretaceous strata (erroneously called the “Chicken Creek Fault,” around the Botanical Garden and up Claremont Canyon to join the Wildcat Fault in a giant half circle. Here there are good outcrops of welded and semi-welded tuff, made from volcanic ash deposits (Communication, and tour, from Garniss Curtis). The largest vent is north of the lab, but some consultants have mentioned other vents. The volcano, erupting on the Wildcat Fault, was divided as the right-lateral fault carried part to Sibley Volcanic Preserve where its rhyolite constituents differentiate it from remains of other volcanoes in the preserve.</p> <p>The caldera accounts for the presence of “perched water tables,” large pockets where ash was replaced by water in the mud matrix. Borings and trenches find basalt, andesite, and other volcanics mixed with the mudstones made from the sedimentary rock that covered the volcano before its eruptions.</p>	<p>UC LBNL recognizes that volcanic rocks exist on site and at other Berkeley Hill locations and that rock units within the Berkeley Hills have been displaced by faults which are no longer active. The caldera hypothesis referenced by the commenter and related assertions involving the contact with Cretaceous strata and the nature of groundwater at the LBNL hill site are discussed and refuted in Master Response 1.</p>
SSC-10	<p>Mudstones, that is claystone and siltstone, “give rise to many problems in civil engineering because they are weak and shrink or swell on being dried or wetted.” (<i>The Oxford Companion to the Earth</i>, Oxford, 2000, p. 714.) The consultants dub these “bedrock.”</p>	<p>The comment is noted. In local engineering and geologic practice, mudstone, claystone, and siltstone are commonly referred to as bedrock. See Master Response 1.</p>

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Comment Code	Comment Text	Response
SSC-11	<p>To propose yet another building on these materials, all under the rubric of Seismic Safety, is delusional or hypocritical. Every building adds more weight to the ground pressing on the bowl of the caldera which in turn presses against the steep and unstable hill threatening the dorms and residential neighborhood below, so close to the Hayward fault.</p>	<p>While SERC will be built according to local building codes, which include measures to assure seismic safety, SERC is not being built as a seismic safety project. Perhaps the commenter is thinking of the Seismic Phase II project, under which a building next to SERC will be built to allow researchers to move from space that is seismically less safe to space that is seismically safer.</p> <p>Regarding the contention that the addition of buildings necessarily degrades site stability, this is not the case. For instance, the project site is currently occupied by buildings that were developed in the 1950s. The presence of these buildings has not decreased slope stability on or around the project site. Please see Master Response 2 for discussion of the proposition that a caldera underlies the project site.</p> <p>Beyond this historical record, current geotechnical engineering practice includes consideration of site stability during investigation, and site preparation incorporates slope stabilization measures as determined necessary by geotechnical engineers. With regard to SERC, the site was determined stable as a result of these investigations, as explained in Master Response 2, and no stabilization measures are needed as a part of the project.</p> <p>With respect to the stability of the site as a whole, please refer to Master Response 1.</p>
SSC-12	<p>As for SERC, the geotechnical report, clearly done too fast and under pressure, is wholly inadequate. A trench running north-south as well as one between the GPL and SERC footprints should be made. More borings should be made and their Atterberg Limits recorded.</p>	<p>The site investigations were designed and carried out by California-licensed engineering geologists and geotechnical engineers. As such they meet the standard of care. Please refer to Master Response 2 for additional information.</p>
SSC-13	<p>While LBNL may cry at the expense of a delay and new reports, the Lab discounts the huge expense of building on this land rather than on a flat site, and appears to care nothing about the danger to life, instrumentation, buildings, and research. But giving up this site would be the most economical, conscientious, and seismically safe thing to do.</p> <p>Geotechnical comments by Georgia S. Wright PhD</p>	<p>The SERC building site is relatively level and has been determined stable. Please refer to Master Response 2.</p>

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Comment Code	Comment Text	Response
SSC-14	<p>In light of the fact that there will be earth movement(s) in the future potentially causing unknown damage to the built environment, and in light of the fact that climate change may cause unknown periods of rainfall, it seems prudent to re-evaluate and question the danger, cumulatively, posed by continuing to build facilities on the LBNL hillsides that require high levels of electricity consumption and gas consumption. In particular, the SERC DEIR discloses that the PG&E delivery “metering vault” is located above Cyclotron Road from which point it distributes gas to all the buildings at LBNL. The area above Cyclotron Road is both unstable and highly subject to earth movement. Again, whether with regard to SERC or to all of LBNL’s operations and facilities, a Site-wide EIS would seriously consider alternatives.</p>	<p>The cumulative impacts from the development of facilities at the LBNL hill site are adequately analyzed in the 2006 LRDP EIR and summarized in the SERC Draft EIR.</p> <p>With respect to the gas main serving the LBNL hill site, please see Response to Comments CMTW-10 and CMTW-12. The area above Cyclotron Road is not part of the project site and would not be affected by implementation of the proposed project.</p> <p>DOE will conduct a review and determine what level of documentation may be required for the SERC project under NEPA. For consideration of a site-wide EIS under NEPA, please see Response to Comment SSC-2.</p> <p>Alternatives to the proposed project, including off-site alternatives, are evaluated in detail in Section 5.0, Alternatives, of the Draft EIR.</p> <p>Alternatives to any further development on the LBNL hill site were evaluated in the 2006 LRDP EIR.</p>
SSC-15	<p>The discussion in the SERC DEIR on climate change is extensive. However, all the discussion and calculation defy the reality that tons and tons of dirt will be moved and countless trucks will produce gas emissions if SERC, CRT, Seismic Safety II, the Stadium project dirt removal, and the underground Stadium Garage go forward.</p>	<p>The proposed project’s greenhouse gas emissions were analyzed in the Draft EIR in accordance with the BAAQMD guidelines. The BAAQMD guidelines do not require the quantification of construction-phase greenhouse gas emissions. The guidelines require the quantification of operational emissions, which were quantified and compared to the BAAQMD thresholds. The greenhouse gas emissions from the proposed project would not exceed the BAAQMD thresholds for stationary or non-stationary sources, and therefore would not result in a cumulatively considerable contribution to greenhouse gas emissions.</p>
SSC-16	<p>For reasons of environmental stewardship, financial wise-practice, and community health and good relationships, SSC urges that UC, LBNL, and DOE seek an alternative site for SERC.</p>	<p>The comment is noted. Off-site alternatives to the proposed project were evaluated in detail in Chapter 5.0, Alternatives, of the Draft EIR. Please also see Response to Comment PH-3.</p>

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Comment Code	Comment Text	Response
SCWC-1	<p>Strawberry Creek Watershed Council: The Strawberry Creek Watershed is very dubious about your plan to place a new building on a site that is heavily contaminated with a wide variety of contaminants. Your "pump and treat" regimen for cleanup of VOCs and other toxics, is not reassuring. And we would very much like to know:</p> <p>How much will the cleanup cost?</p> <p>Who is paying for the cleanup?</p> <p>Are you planning to use ARRA funds to clean this site?</p> <p>Are the commercial Users contributing to the cost of the cleanup and the proposed building?</p> <p>From whom you are expecting to get the required permits?</p>	<ol style="list-style-type: none"> (1) The cost of the ongoing pump and treat system is approximately \$50,000 per year. (2) The ongoing cleanup program is funded by the Department of Energy. (3) ARRA funds are not being used to fund the ongoing water monitoring and cleanup work. (4) "Commercial" Users are not contributing to the cost of the cleanup or the proposed building (5) A Storm Water Pollution Prevention Permit is expected to be acquired from the Water Quality Control Board. <p>The Draft EIR discusses the on-site contamination and ongoing remediation using an in-situ soil flushing system. The Draft EIR also describes the changes to the in-situ soil flushing system that would be made as part of the proposed project. The cost of the cleanup and how it would be funded is not an issue under CEQA. As stated in the Draft EIR, any changes to the soil flushing system would need to be approved by the DTSC before they could be implemented.</p> <p>Soil and groundwater contamination in the SERC area were extensively investigated from 1992 to 2000 under the regulatory authority of the DTSC, as part of the RCRA Corrective Action Process (CAP) at LBNL. Relatively low levels of industrial solvents (less than 1 milligram per liter) were originally identified in groundwater at the site. As a result of the CAP investigations, DTSC determined that cleanup of groundwater in the SERC area was required. Following a detailed evaluation process, which is provided in the LBNL Corrective Measures Study Report (LBNL, 2005), DTSC approved in situ soil flushing as the most appropriate technology to clean up the contaminated groundwater that underlies the SERC area. The use of this DTSC-approved method has significantly lowered contaminant concentrations, with levels currently below, or only slightly above, the Drinking Water Standard over most of the SERC area. Based on the relatively low concentrations of contaminants detected in the soil, DTSC required no cleanup of soil contamination. Additional assessment of potential soil contamination will be completed prior to SERC construction in those areas that were previously inaccessible to investigation.</p> <p>Results of the CAP investigations are included in LBNL documents, primarily the RCRA Facility Investigation Report (LBNL, 2000). In addition, LBNL continues to submit Quarterly Progress Reports to the DTSC and the other oversight agencies that describe the status of the groundwater cleanup. All the reports cited in this response are available to the public, either online at the LBNL Environmental Services Group website or in paper copy at the Berkeley Public Library.</p>
SCWC-2	<p>We also want to know how you intend to deal with the Nano contamination that this project would generate, if built. It would also be good to know if and how you deal with any of the Nano-contamination that is generated by your other facilities at LBNL.</p>	<p>Please refer to Master Response 4, Nanomaterials.</p>
SCWC-3	<p>Finally, are you looking at the other sites for this building? If not why not? We would appreciate seeing an independent cost/benefit analysis that you should be having done for this and all your projects.</p>	<p>Alternatives to the proposed project were evaluated in detail in Chapter 5.0, Alternatives, of the Draft EIR. A cost/benefit analysis is not required in a CEQA document.</p>

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Comment Code	Comment Text	Response
SCWC-4	<p>The Strawberry Creek Watershed Council wants to see a thorough environmental restoration of this site after the decontamination process is completed. Putting a new building there, is adding insult to injury to the very top of this very important, very abused, watershed.</p>	<p>Comment noted. As described in the Draft EIR, the project site is currently developed. The project would not increase the amount of impervious surface at the project site, and post-project run-off would approximate pre-project run-off.</p>
GB-1	<p>Gene Bernardi: Just as the non-EI Red Molecular Foundry should not have been located in the Strawberry Canyon neither should the Solar Energy Research Center (SERC) be built there, since both involve nanotechnology research. This relatively new type of research has not existed long enough for proper testing that would determine the potential health and environmental impact.</p> <p>It is already known that HEPA filters cannot screen out nanoparticles which are far smaller than human cells. Consequently they are easily ingested, inhaled and absorbed through the skin (N.Y Times 4-14-03). Every lab where nanotechnology is used has an individual stack vent to carry the nanoparticles away from the lab worker and deposit them in air-space shared by the Lawrence Hall of Science Children's Museum, the Botanical Gardens and nearby residents on Panoramic Hill and to the Northeast.</p> <p>Will you gather together the 24 SERC stacks so it appears there are fewer stacks as you have with the Molecular Foundry where 48 stacks are bundled such that it appears there are only four stacks? There will be research done on oil and coal to make them more climate friendly; where is this research to be located?</p>	<p>Please see Master Response 4, Nanomaterials.</p>

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Comment Code	Comment Text	Response
MM-1	<p>I am writing these comments to express my concerns about the proposed Solar Energy Research Construction & Research Project SCH#2010052040. I personally support the concepts of power creation by solar, wind, wave, cogeneration & conservation to reverse the carbon increases and greenhouse effects from them. I however believe that the potential risks from nano-scale materials and the proximity of the proposed facility to the Lawrence Hall of Science (LHOS), the largest children center in the East Bay to be incongruent with good sense and unnecessarily risky to the health of the museum attendees. As a concerned parent I respectfully submit these comments and questions.</p> <p>The LHOS already has the Molecular Foundry on one side and placing another facility that handles nano-materials 200 yards close on yet another side demonstrates a scathing indifference to the safety and wellbeing of the region's children who may be attending the museum.</p> <ol style="list-style-type: none"> (1) If one is exposed to nano-materials what methods exist to remove them safely ? (2) Are there different safety standards for exposures of nano-materials to children? (3) What are the safe limits of nano-materials? (4) What are the long-lasting effects to nano-material exposure ? 	<p>Please see Master Response 4, Nanomaterials. The master response provides a detailed explanation as to why nanoparticle exposure would not occur to visitors at the Lawrence Hall of Science or to people in any locations inside or outside of the SERC facility.</p> <p>While some of the topics raised by the commenter are addressed in the master response, several other points are not questions that can be answered in the general way in which they presented, and/or they are not within the scope of analysis of this EIR, given that they pertain to issues that are not reasonably foreseeable with this proposed project. There are many different types of nanomaterials and these may exhibit very different characteristics depending on their size, their chemical constituents, their concentrations, the media through which they are transported, their architecture, etc.</p> <p>The proposed SERC building and the currently operating "Molecular Foundry" building would not be on opposing sides of the Lawrence Hall of Science. The Molecular Foundry is approximately 2,000 ft. south/southeast of the Lawrence Hall of Science, and the proposed SERC building would be approximately 1,000 ft. south of the Lawrence Hall of Science.</p>

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Comment Code	Comment Text	Response
MM-1 (continued)	<p>(5) Can a person suffer a fatal event from absorption or exposure to nano-materials?</p> <p>(6) What methods are available to protect museum visitors and local residents from escaped or released nano-materials ?</p> <p>(7) Would you please describe how a release accidental or otherwise of nano-materials will be detected and alerted to the LHOS and the local community?</p> <p>(8) How long does the concentration of nano-materials take to reduce once it has been absorbed by children and adult bodies?</p>	
MM-2	(9) Would you please describe any radioactive materials and/or hazardous materials that will be employed at the proposed facility?	As discussed in Section 4.5, Hazards and Hazardous Materials, no use of radioactive or biohazardous materials is planned under the proposed project. It is anticipated that research at SERC would primarily use inorganic materials. Any hazardous materials used in the research effort at SERC would be handled in accordance with applicable federal, state, and local laws and regulations. Chemicals commonly used in chemistry labs, including inorganic materials and solvents, would be used at the SERC facility.
MM-3	(10) Are there any detectable tritium residuals in the LHOS from the adjacent closed NTIF?	The comment does not relate to the CEQA analysis for SERC project.
MM-4	(11) Would you please quantify the effects that the number of truck trips in the construction and operation of the SERC facility will add to other construction projects at LBNL and U.C. Berkeley and assess the total wear to the already motley condition of the streets of Berkeley?	<p>Analysis of SERC construction-related traffic impacts presented in SERC Draft EIR Section 4.8, Transportation and Traffic, Impact TRANS-5, is inherently cumulative because it evaluates the impacts of traffic generated by SERC construction in combination with traffic generated by other reasonably foreseeable construction projects including those slated for the same timeframe at the LBNL hill site and UC Berkeley.</p> <p>Cumulative roadway impacts to pavement were quantified in a memorandum prepared by Fehr & Peers in May 2009. The pavement analysis determined that construction truck trips associated with cumulative UC projects would not cause a significant impact to the pavement along the designated truck route in Berkeley. Therefore, implementation of the proposed SERC project would not result in a cumulatively considerable contribution to cumulative pavement impacts.</p> <p>A similar pavement impact study conducted in the 2006 LRDP EIR (see Impact TRANS-7) analyzed the potential road degradation in Berkeley due to long-term construction at LBNL. Impacts were found to be well below significance levels and no mitigation was required. Implementation of the SERC project would not change this conclusion.</p>

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Comment Code	Comment Text	Response
MM-5	(12) Could you please provide a comprehensive quantitative evaluation of the overall impacts from exhausts, road wear and accidents from all the truck and vehicle activity at LBNL from normal operations and new construction and provide specific quantitative analysis of what the SERC project will add to this activity.	<p>Emissions estimates from construction equipment and operational mobile sources associated with the proposed SERC project are presented under SERC Impacts AQ-1 and AQ-2 in Section 4.2, Air Quality, of the Draft EIR. The cumulative air emission risk from the concurrent construction of projects in the vicinity of the SERC project was evaluated under Cumulative Impact AQ-1 in the Draft EIR and determined to be less than significant.</p> <p>Please see Response to Comment MM-4 above regarding road wear/pavement impacts.</p> <p>Regarding traffic accidents, although background traffic is expected to increase on city streets, construction of the proposed project in combination with other construction projects at the LBNL hill site would not result in a considerable increase in construction truck traffic as truck trips would be controlled (see Response to Comment PH-9 above). Therefore, there would be no corresponding increase in potential for traffic accidents compared to existing conditions as a result of LBNL projects, including the SERC project.</p>
MM-6	<p>(13) What compensation to the coffers of the City of Berkeley is the Department of Energy planning to contribute to pay for all the extreme wear and tear to these already suffering roadways from normal operations and the rugged construction truck trips?</p> <p>(14) Since LBNL and U.C. has repeatedly refused to address these road cost issues in the past please explain why a tax-paying Berkeley citizen should be happy to continue paying for these costs?</p>	<p>As discussed in Response to Comment MM-4, UC LBNL projects, including the proposed project, would not result in a significant impact to pavement along the designated truck route in the City of Berkeley.</p>
MM-7	(15) Are there currently regulations on how nano-materials are handled? How are these being implemented?	Please refer to Master Response 4, Nanomaterials.
MM-8	<p>(16) Are there any nano -materials or operations involving such that in the event of an accident that causes the release of said materials that would require an evacuation of LHOS guests and personnel and local residents?</p> <p>(17) What avenues or media in the local environment are capable of transporting nano-materials that may be accidentally released?</p>	Please refer to Master Response 4, Nanomaterials.

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Comment Code	Comment Text	Response
MM-9	<p>(18) What types of protective gear will workers at the SERC facility employ to protect themselves from inhalation or absorption of nano-materials?</p> <p>(19) Will any of these protective equipment be provided to the LHOS to safeguard visiting children guests, adults and personnel?</p>	Please see Master Response 4.

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Comment Code	Comment Text	Response
BR-1	<p>Barbara Robben: In general, I think that this Sept. 2010 version of LBNL's Environmental Impact Report is an improvement over previous versions. The document itself is well done: nice paper and binding, easy to read type-face and spacing; attractive maps. I was not able to access Appendices 1.0 to 5.0 because of the format: it was on a disc. I would have liked especially to see section 1.0: Public Scoping Comments, but they were on the disc. I do thank you for sending me the bound report, as without it I would be unable to read it and comment. Please keep me on the list to receive the Final Environmental Impact Report and any other pertinent information regarding building projects at the Lab; on the Hill; Public Tours; and so forth.</p> <p>To me, what most stands out at first is the Title of the report: Solar Energy Research Center. I have spent time commenting on the Computer Research and Theory building, the General Purpose Lab building, and Helios; perhaps even more projects-but the Solar Energy Research Center caught me off-guard. Referring to 2.0-6 I see that SERC is "not a part of the Helios Project." However, I believe that at some time in the past, the two were connected in some manner. I would like to see a diagram of this, with a time-line, showing the original proposal, and its modifications over time, and the various locations that have been proposed, and any splits, or changes in authority.</p> <p>I believe that the project presented in the Draft EIR – Solar Energy Research Center, is a much more acceptable project than the original Helios Project, which caused quite a negative stir in the populace. The fact that the present project is so different from the initial proposal shows that perhaps the citizens were correct, and the original Helios was very wrong-headed. These citizens are entitled to know what has happened along the way-to the initial project which they opposed. Ideally this would be included on the report cover, or at the very least, this information should be featured at the front of the report.</p>	<p>See Response to Comments PH-1, PH-10, and PH-22. The appendices to the SERC Draft EIR are available on the web at: http://www.lbl.gov/Community/SERC/documents/index.html.</p>

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Comment Code	Comment Text	Response
BR-2	<p>There is another diagram which I would like to see included in this report. It concerns the relationships between the University of California, the Lawrence Berkeley National Laboratory (perhaps also the Lawrence Livermore National Laboratory), the Department of Energy, the Regents of the University of California, and any other parties of significance. This was somewhat explained in section 1.0, but questions remain. If the U.S. D. O. E. is involved, why is there only a State CEQA E.I.R. and not a National NEPA requirement? Why are the U.C. Regents allowed to certify the E.I.R. report? Are they not connected to the same U.C. which is the 'lead agency' and which wants to build the facility? To me this seems like the outcome is predetermined, within a group of people with shared interests. Where is the independent oversight to watch for the interests of other affected parties?</p>	<p>For information about the relationships between LBNL, the University of California, and the Department of Energy, please refer to Draft EIR Section 1.3, <i>Relationship Between LBNL, University of California, and the U.S. Department of Energy</i>.</p> <p>See Responses to Comments PH-25 and PH-39. The Department of Energy (DOE) is not involved in the siting and construction of the SERC building. Nevertheless, DOE is currently considering what level of documentation under the National Environmental Policy Act (NEPA) may be appropriate for this project.</p> <p>As stated in the SERC Draft EIR Introduction, the University of California is the lead agency for the SERC project and the UC Board of Regents is the body that would decide on EIR certification and project approval. This is in keeping with CEQA Guidelines. "Lead Agency' means the public agency which has the principal responsibility for carrying out or approving a project. The Lead Agency will decide whether an EIR or Negative Declaration will be required for the project and will cause the document to be prepared." (CEQA Section 15367).</p> <p>CEQA does not empower outside or third-party agencies to oversee or exercise authority over the CEQA process.</p>
BR-3	<p>My interest in the original Helios project, and also in the CRT and GPL projects, is in the general unsuitability of the hilly LBNL site, and this would also apply to the SERC projects. The site is steep, with slopes of up to 75% - and the ground is unstable. It is fractured and fissured in the bedrock, and has been subject to repeated landslides in the recent past. There is abundant groundwater present, some of which has had to be pumped out, so as to stabilize the buildings already built there.</p>	<p>The SERC site is gently sloping and not steep. The SERC building would be founded on rock. There have been no landslides at the SERC site in the historic past. The comments pertaining to groundwater pumping and drainage as a method of slope stabilization refer to other areas of the LBNL hill site. Please refer also to Master Response 2.</p>
BR-4	<p>Add to this the fact that over the years since WWII, toxics of all kinds have been dumped, or have leached onto or into the soil, and have continued leaching down into the groundwater. This is of concern to more than LBNL, as the groundwater is a shared resource. Add to this the fact that the LBNL waters, both the surface storm water and the natural springs, are possibly polluted with the chemicals, and tend to flow into Strawberry Creek-which traverses the U.C. Campus as well as the City of Berkeley on its way to the bay....and the ocean.</p>	<p>As discussed under SERC Impact HAZ-1 on pages 4.5-19 and 4.5-20 of the Draft EIR, the proposed project would not result in significant impacts related to accidental releases of hazardous materials.</p> <p>Stormwater protection regulations have been established by the state and regional water quality boards to protect the creeks, and UC LBNL is in full compliance with them. UC LBNL regularly monitors the creeks and reports the results in the annual Site Environmental Report (SER).</p> <p>As for limited areas of LBNL with groundwater contamination, UC LBNL is remediating the groundwater under the regulatory authority of DTSC and DOE. UC LBNL regulatory monitors groundwater, and the groundwater monitoring data show that the remediation systems are effective in reducing the concentrations of contaminants in the groundwater. The long-term goal is to restore all groundwater at the site to drinking water standards, if practicable, even though the groundwater is not used as a source of drinking water.</p>

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Comment Code	Comment Text	Response
BR-5	<p>This can be broken into several components:</p> <p>The unsuitability of building on the hillside for LBNL's sake alone.</p> <p>The dangers of LBNL's building expansions to the surrounding neighbors and those downstream.</p> <p>The increase in costs to shore up buildings in an unstable geologic area.</p> <p>The need to clean up the soil and groundwater before even contemplating any additional building.</p> <p>Let's discuss the Hayward fault. It traverses the base of the LBNL property and divides the Lab from the campus proper. See Fault Zone Map 4.3-1</p> <p>A rupture of this fault, which is expected soon, would certainly trigger any landslides or other instabilities that were waiting in the wings. I would like to see an additional figure, which combines fig. 4.3-1 with fig. 4.6-1 (Existing Stormwater Drainage Near Project Site). See below</p>	<p>The commenter's suggestion the hillside is generally unsuitable for building projects is addressed and refuted in Master Response 1. LRDP EIR Mitigation Measures GEO-1, GEO-2, and GEO-3, include requirements for building projects at LBNL, including the proposed SERC project, which ensure that potential impacts to public health and safety from landslides, liquefaction, and other geologic hazards caused by earthquake shaking are analyzed and addressed. The work performed by UC LBNL to mitigate geologic hazards is supported by cost-benefit analysis and reduces potential off-site impacts to less than significant. UC LBNL investigates and remediates soil and groundwater contamination on a campus-wide basis. Figures 4.3-1 shows the official Alquist-Priolo Map for the Hayward fault and the stormwater drainage, whereas Figure 4.6-1 shows stormwater drainage features. These features intersect off site and are not proximate to the SERC project (see also Response to Comment BR-7).</p>
BR-6	<p>See section 4.3-4: "Primary Seismic Hazards," It is said that "the project site is not expected to be subject to surface fault rupture." The meaning of this is that the ground will not be expected to open up a crack the size of which could swallow a cow. This is a valid expectation for the proposed SERC site...though it could be a concern for cows not far away at U.C.'s Memorial Stadium.</p>	<p>The comment acknowledges that the proposed project site is not subject to fault rupture. No further analysis is required.</p>

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BR-7	<p>By superimposing fig. 4.3-1 onto fig. 4.6-1, one will notice however, that the Hayward fault runs perpendicular to the blue and black lines on 4.6-1, which represent the surface and sub-surface drainage from the Lab on the way thru Berkeley to the Bay, or to treatment plants. The creeks will be off-set, and the underground pipes will be ruptured, in the event of a major earthquake on the Hayward fault. Creek water may be creating new pathways to the sea (flooding), which sewage water will be released from underground culverts to gravity-flow through-out the city-a health hazard, to say the least.</p>	<p>See Response to Comment PH-27. None of the events speculated about by the commenter are related to the proposed project. No new stormwater runoff would be created, as described in Draft EIR Section 4.6, and thus there would be no project-related contribution to the downstream creek and drainage systems described by the commenter. Wastewater flows would be minimal as described in Draft EIR Section 4.9, and their contribution to the volumes handled by downstream sewer mains would be incremental.</p> <p>The sanitary sewer system at the Lab is maintained and managed in accordance with requirements established by the California State Water Resources Control Board. The LBNL Sanitary Sewer System Management Plan (SSMP) (see: http://www.lbl.gov/ehs/esg/Reports/assets/SSMP2009.pdf) is a document that ensures a plan is in place to reduce or eliminate sanitary sewer overflows and to protect public health. One section of the SSMP establishes emergency response protocols for safely containing and managing the release of sewage and potable water in all types of emergency situations.</p>
BR-8	<p>Along with wastewater pipes, EBMUD pipes would also possibly shear....leaving LBNL with no water to put out the fires-which could be started when the gas lines to LBNL also shear (see sec. 4.9-3) This is how San Francisco largely was destroyed after the 1906 earthquake...more from the fires that started than from the earthquake itself. See section 4.5 for a listing of hazardous materials which may be raining down on neighbors as the ash settles:</p> <p>Solvents Carcinogens Organic Compounds Ethylene Oxide Radio Active Materials Lead Nanoparticles Asbestos etc. Chlorinated VOCs PBCs Radionuclide Tritium</p> <p>On a normal day-to-day basis, LBNL encourages the use of glove-boxes, fume hoods, HEPA filters (p.4.5-4) but no mention of what the entire East Bay and beyond should employ in case of wide-spread disaster involving a fire at LBNL.</p>	<p>Please see Draft EIR section 4.5, Hazards and Hazardous Materials (Fire Hazards), Response to Comment PH-27, and Master Response 3, Fire Hazards, in this Final EIR. None of the conditions described in the comment are related to or would be affected by the proposed project. LBNL's sitewide preparation for site and wildland fires includes maintaining an on-site fire department and series of 200,00-gallon water tanks that provide pressurized water even in the event that a seismic event were to interrupt outside water service.</p> <p>Please refer to Master Response 4, Nanomaterials, for further discussion on nanoparticles.</p>

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BR-9	Continuing on the subject of faults: p.4.0-6 mentions “the U.C. Seismic Safety Policy.” The University has no seismic safety policy at all except that what will further its own agenda! Please refer to Assembly Bill 2133 which gives special exemption to the Alquist-Priolo Act (pages 4.3-7 and 4.3-8) for the California Memorial Stadium, which sits directly on top of the active Hayward fault. AB 2133 was passed Sept. 24, 2010, at the instigation of U.C.	Assembly Bill 2133 does not apply to the proposed project site. Also see Response to Comment PH-13 above.
BR-10	The statements made on 4.3-13, concerning Project Impacts, and labeled SERC Impact GEO-1 and GEO-2, claim that “the proposed project would not expose people to potentially substantial adverse effects, including the risk of loss, injury, or death, do to seismic ground-shaking.” And the impact is labeled <u>Less than Significant</u> . This is laughable-except of course when the seismic event unfolds, as it will, with tears-and ‘loss, injury and death’.	As discussed on page 4.3-9 of the Draft EIR, the proposed project would comply with the UC Seismic Safety Policy, which requires that all “new buildings...comply with the current provisions of the California Building Code, or local seismic requirements, whichever is more stringent. These codes have been developed to assure life safety and limit the occurrence of significant impacts. Please also see Response to Comment PH-27 .
BR-11	The list of projects presently being constructed, or demolished, is stagger: see Sec 4.0-4 and 5. there are 14 huge projects in the works at LBNL and another 16 projects on the nearby campus-with some of them intruding into the City of Berkeley itself. The impact is huge. Construction fences block the sidewalks, endangering pedestrians. Construction equipment is present everywhere. Enormous cranes punctuate the skyline. Yet predictably, in section 4.1.5 “Cumulative Impacts”, Cumulative Impact VIS-1 is labeled “Less than Significant”. Yet the impacts are <u>very significant</u> . LBNL and U.C. construction projects are changing the character of Berkeley in <u>major ways</u> . This might be a good place to remind all: the University of California does not need to pay taxes to the City for services rendered. Nor does the University need to obey local zoning laws. p. 4.8-13 And the citizens who are watching all these cumulative impacts unfold before our eyes, are the very ones who, thru our taxes, are paying for them.	As discussed in the Draft EIR under Cumulative Impact VIS-1 in Section 4.1, Aesthetics, the UC Berkeley campus and the LBNL hill site are located in different viewsheds. Project related changes in views of the LBNL site would not contribute cumulatively to the perception of changes in views of the Berkeley campus. Moreover, the construction related visual elements described by the commenter are temporary and do not affect the longer-term visual character of either the city of Berkeley or LBNL.

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Comment Code	Comment Text	Response
BR-12	<p>Please refer to p. 4.8-2: Hearst Avenue. See p. 3.0-21</p> <p>Hearst Avenue has been designated as the route for construction vehicles on the north side of the campus. Why couldn't U.C. construction traffic proceed <u>thru</u> the campus? According to the EIR draft, noise or dust should not be a problem...or, it would be mitigated. U.C. also has its own police force, so that officers could be stationed along the route, thus ensuring the safety pedestrians. If there is a problem implementing this idea, it raises the question of why U.C. would risk endangering Berkeley citizens in preference to its own community. Are the 2,170 truck trips attributable to SERC too much for the campus to bear, but acceptable to pass off onto the neighbors of the University? Please respond.</p> <p>Also of note: Hearst Avenue has been used as a parking lot for U.C. construction workers for over a decade. One lane and the sidewalk have been fenced off, and a long line of what appears to be construction workers private vehicles are parked within this fenced off area. Would it be too much to ask for U.C. or LBNL as part of U.C. to eliminate this long term fence and restore the lane of traffic and the sidewalk to its proper use?</p>	<p>The City of Berkeley has designated certain streets as truck routes. Hearst Avenue is a designated truck route and is therefore used by construction traffic traveling between the LBNL hill site and the I-80 freeway. The commenter's suggestion that project trucks originating at LBNL be routed only through UC Berkeley campus and not through Berkeley city streets is impractical, as the UC Berkeley campus does not connect to Interstate 80. Project trucks need a route to Interstate 80 in order to reach their next destination.</p> <p>The temporary parking and construction staging along Hearst Avenue described by the commenter has been removed and traffic and pedestrian access restored to that lane and sidewalk. Nevertheless, concerns regarding UC Berkeley construction projects may be directed to the UC Berkeley Office of Local Government and Community Relations.</p> <p>200 California Hall, MC#1500 University of California Berkeley, California 94720-1500 http://office.chancellor.berkeley.edu/gcr/local.shtml</p>
BR-13	<p>In addition, I have questions about the symbols on figure 3.0-7.</p> <p style="text-align: center;">  </p> <p>Symbols    are not included in the Explanation box. Are these wells or bore-holes?</p>	<p>As published in the April 2007 RCRA Corrective Measures Implementation Report prepared for the LBNL hill site, the first symbol represents a properly destroyed monitoring well, the second symbol represents a groundwater monitoring well, and the third symbol represents a temporary groundwater sampling point. Figure 3.0-7, Soil Flushing and Groundwater Migration Control System, has been revised to include these symbols in the legend, as shown at the end of this table.</p>

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Comment Code	Comment Text	Response
BR-14	<p>At LBNL's sister site in Livermore, a CERCLA process 'Super-fund' site, there is regulatory oversight all the time. New problems come up, and there are unexpected costs. Yet since LBNL does not presently appear on the Super-fund list, is the oversight over toxic remediation of the groundwater being done? What role does DTSC perform?</p>	<p>In the late 1990s, in response to local concerns, the United States Environmental Protection Agency (EPA) investigated the LBNL site and deemed it "potentially eligible" for the National Priorities List (NPL) until its investigation could be concluded. After reviewing extensive environmental data, EPA determined that LBNL would not be listed on the NPL and that no further Superfund program involvement was necessary. Since 1991, the California Environmental Protection Agency Department of Toxic Substance Control (DTSC) has been the lead regulatory agency overseeing assessment and cleanup of environmental contamination at Berkeley Lab under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program (CAP). The DTSC has delegated some CAP oversight agency responsibilities to other regulatory agencies, including the San Francisco Bay Region of the Regional Water Quality Control Board (Water Board), which was delegated responsibility for the technical review of surface water and groundwater issues. Berkeley Lab is required to submit to these agencies quarterly progress reports that include a description of the status of groundwater cleanup at Berkeley Lab. If new problems are identified (e.g., immediate or potential threats to human health or the environment), Berkeley Lab is required to notify the DTSC. The DTSC can require investigation, mitigation, and/or other action to address the problem.</p>

Comment Code	Comment Text	Response
BR-15	<p>Who, exactly, oversees the clean-up of extracted groundwater, and the “1000 pound granular activated carbon canister”? Please explain the 55-gallon GAC drum being used as a ‘back-up’. To what standards is the groundwater clean-up being done? The ‘drinking water standards’ mentioned-is this secondary or tertiary standards and what oversight and testing is being done? The EIR mentions an infiltration bed, and yet in figure 3.0-7 there are several injection wells marked. Injection of treated water into the groundwater raises many questions and it must be addressed in detail in this report. Also the existence of monitoring wells must be addressed. Wells that pass from one water table to another are another source of possible contamination-especially considering the many already existing contaminants mentioned in the EIR. Please be specific about how abandoned monitoring wells would be closed, and about plans for new monitoring wells, and the oversight.</p>	<p>As discussed in Response to Comment BR-14 the DTSC and the Water Board oversee the cleanup of contaminated groundwater at Berkeley Lab. The primary method approved by DTSC for the cleanup of contaminated groundwater and associated residual soil contamination at Berkeley Lab is in-situ soil flushing. The purpose of flushing is to increase the rate that contaminants desorb from the soil into the groundwater and promote the flow of contaminated groundwater towards locations where it can be extracted. The extracted groundwater is cleaned to non-detectable levels of contaminants by passing the water through a granular activated carbon (GAC) treatment system. Most of the treated water is then returned to the injection area for continued soil flushing purposes. Treated water that is not needed for flushing, is discharged to the sanitary sewer in accordance with the provisions of Berkeley Lab’s East Bay Municipal Utility District (EBMUD) Wastewater Discharge Permit. As a permit condition, Berkeley Lab is required to send a semi-annual report to EBMUD that provides information about the operation and maintenance of the treatment system. EBMUD also independently inspects and collects water samples from each treatment system.</p> <p>All of the GAC treatment systems have a primary GAC treatment unit and a secondary (“back-up”) in-line GAC treatment unit to prevent the discharge of contaminated groundwater if there is breakthrough of contaminants from the primary unit. Berkeley Lab regularly collects samples for laboratory analysis from the influent to the primary GAC unit, between the two units, and from the post-secondary treatment unit water. If breakthrough (contamination) is detected in the sample collected between the units, the carbon in the primary unit is replaced. This assures that any contaminants in the outflow from the secondary unit will be well below the detectable level. The laboratory detection limits are at least as stringent as the primary drinking water standard, and for most of the contaminants present in the groundwater at Berkeley Lab, well below the primary drinking water standard.</p> <p>The size of the treatment unit used to clean the groundwater depends on the level of contamination and the volume of water that requires treatment. Most of Berkeley Lab’s treatment units consist of 1000-pound GAC canisters. However, at some locations where the flow rate and/or the level of contamination is low, 55 gallon GAC drums can provide sufficient treatment capacity.</p> <p>As shown in Figure 3.0-7, the infiltration bed for the Building 25A soil flushing system is the blue shaded area located between Building 25A and Building 44. Components of three separate DTSC approved soil flushing systems are indicated in each of the three brown shaded areas on Figure 3.0-7. Injection or extraction wells IW-04-1, MW91-9, MW25-98-10, and MW25-95-5 shown on Figure 3.0-7 are not components of the Building 25A system.</p> <p>After an extensive evaluation of cleanup alternatives during the RCRA Corrective Measures Study at Berkeley Lab, soil flushing was approved by the DTSC and the Regional Water Quality Control Board (RWQCB) for cleanup of many of the areas of contaminated groundwater at Berkeley Lab. Construction details for groundwater monitoring wells at Berkeley Lab and the construction details of components of the soil flushing systems were provided in workplans submitted to and approved by the DTSC and the RWQCB. Permits for construction of monitoring wells at Berkeley Lab are obtained from the City of Berkeley prior to construction. Monitoring wells installed at the RWQCB’s request in 2000 showed that the contaminated groundwater in the Building 25A area is limited to the shallower groundwater.</p>

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Comment Code	Comment Text	Response
BR-15 (continued)		Construction of SERC requires the destruction of some existing wells to accommodate site excavation requirements. These wells will be destroyed in accordance with requirements of the California Well Standards. Replacement wells will later be installed near the same locations. These activities will be done with the approval and under the oversight of the DTSC, the RWQCB, and the City of Berkeley.
BR-16	<p>In conclusion, referring to section 5.0, the Alternatives, I think that Laboratory buildings constructed on the Hillside after WWII have all been built in the wrong place. It is understandable that faculty and staff would be attracted to a nearby location with excellent views and a star-studded history of prominent scientists. The site, however, is unsuitable, due primarily to its unstable geologic nature. Every building that is added to the hillside makes the matter worse and causes otherwise excellent scientists to wring their hands and wail about collaboration, consolidation, minimizing travel, integration of facilities, proximity to unique user facilities, partnership and so forth.</p> <p>It is time, way past time actually, to understand that growth cannot be accommodated as desired on the Strawberry Canyon hillsides. Look for another site that will be suitable for the experiments and scientists of the future.</p>	<p>The comment is noted. Please see Master Response 5 regarding off-site alternatives, and Responses to Comments PH-26 and BR-5.</p> <p>Please also see Master Responses 1 and 2.</p>
PH-1	<p>MS. ROBBEN: My name is Barbara Robben. And first of all, I want to thank you for sending me a copy of this stuff because in my case it's necessary. Is this on? MR. CHAPMAN: Yes. MS. ROBBEN: I'm a little bit confused because I've known this project, I think, as the Helios Project. And you were explaining here, but I think the general public, if they weren't in attendance, certainly would be confused because we had a bigger crowd for the Helios, when it was called that. And then you called it Helios East and Helios West and now Solar Energy Research Center. I'm not sure that everybody followed the track of where the project has gone.</p>	<p>The Helios Energy Research Facility Project was originally proposed in 2007. The Helios Energy Research Facility would have housed two energy research programs - Solar Energy Research Program and the EBI (Energy Biosciences Institute) program. The Helios Energy Research Facility is now under construction in downtown Berkeley on Hearst Avenue, and will house the EBI Program. (see SERC Draft EIR pages 4.0-10 - 11). The solar energy research program would be housed in the proposed SERC facility at LBNL. Please also refer to Response to Comment PH-10.</p>

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PH-2	And I have commented upon these projects, particularly this one, but also the other projects, and it basically comes down to the fact that it's an unsuitable location to have all these buildings. It's geologically unstable and it's steep and a bad use of that canyon itself.	Neither the LBNL hill site as a whole nor the SERC site is "geologically unstable." Please see Master Responses 1 and 2.
PH-3	I think that you should, when you're talking about building in the Old Town, I've always thought that you should try, when you have to demolish anything, you should try to move your project off the hill and stick with that.	Please see Master Response 5, Off-Site Alternatives.
PH-4	You're talking about no significant impacts, and I also disagree with that because I think it is significant. I know it's handy to put that in there because then you don't really have to do much work. But I think it's very significant.	Based on the substantial evidence presented in the document, the Draft EIR determined that the proposed project would not result in significant project-level impacts; however, the Draft EIR determined that the proposed project would contribute to a significant and unavoidable cumulative traffic impact. Therefore, the EIR concludes that the proposed project would result in a significant cumulative impact.
PH-5	Of course, the cumulative impacts of having all these buildings, CRT, and then it goes on and on and on with the buildings that you want to have up there. I think it's a bad idea.	The cumulative impacts of the proposed project and other planned projects in the vicinity, including the CRT project, are evaluated at the end of each resource topic section in the Draft EIR. Cumulative impacts associated with long-term development and operation of LBNL have also been analyzed and disclosed in the 2006 LRDP EIR.
PH-6	I know it sounds great to talk about Gold, LEED standards and Green Buildings, but we're not really, I think, confused about that. It just means that there's more money that's going out to build things to a higher standard.	The comment is noted. As discussed in the Draft EIR, the proposed project would comply with the UC Policy on Sustainable Practices which requires new buildings to be built to a minimum of a LEED Silver rating.
PH-7	So in regard to the Old Town location, the whole hillside, I believe, has got toxic waste in it. So before anything is built, it's very important to clean up the toxics, to address that issue before even thinking about building anything.	As discussed in the Draft EIR on page 3.0-4, before construction of the new building, the SERC project site would be decontaminated as necessary following demolition of the existing Old Town buildings. The existing groundwater remediation and monitoring program discussed on pages 3.0-22 and pages 4.6-6-4.6-7 would be modified to ensure that the Old Town area is remediated to regulatory requirements. As discussed on pages 3.0-23 and 4.5-21, the proposed project includes modification/relocation of some portions of the existing Building 25A in situ soil flushing groundwater remediation system. The modifications would be designed to maintain or enhance the effectiveness of the currently installed system and would require DTSC approval prior to implementation.

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Comment Code	Comment Text	Response
PH-8	<p>MR. JONES: Hello. My name is Stuart Jones. I have a series of questions that I'd like to ask you guys. I want to know, when you're talking about cumulative impacts, how you're accounting for basically this building being built, being surrounded by other massive projects that the University has going at this very moment, including Helios East at the bottom of Hearst. And you also have the creation of the sports/entertainment complex and the expansion of the stadium to the south of this project. And so these are massively large projects, and as you can imagine, there are going to be cumulative noise impacts, cumulative quality-of-life impacts, cumulative air quality impacts.</p>	<p>The cumulative impacts of the proposed project are discussed at the end of each resource topic section in the Draft EIR. Construction timelines and descriptions of the nearby LBNL hill site and UC Berkeley projects that are planned or approved for construction during the projected SERC construction timeline (near-term) are provided on pages 4.0-4 through 4.0-11 of the Draft EIR. The UC Berkeley Helios Energy Research Facility project at the former DHS site and the UC Berkeley South Campus Integrated Projects, which includes improvements to Memorial Stadium and an athletic training center, are included in the near-term cumulative analysis. Under Cumulative Impact AQ-1, the Draft EIR concluded that construction emissions of the proposed project, in conjunction with emissions from other construction projects in the vicinity would not result in significant adverse health impacts. As discussed under Cumulative Impact NOISE-1, the proposed project would not make a cumulatively considerable contribution to noise impacts associated with construction of multiple projects at the LBNL hill site during the 2010 to 2013 construction window.</p>
PH-9	<p>And I think to say one -- not only are you going to have trucks going down Hearst, but you're also going to have trucks going down Gayley Road and Piedmont Avenue. And I'm curious as to how you are going to adequately address these impacts and what you're going to be doing to mitigate such intense impacts. Because essentially, right now, they have turned Gayley Road -- it used to be a two-lane road, now they're putting -- traffic is running two directions on one lane. So, you know, what are you guys -- I feel as if you're giving us some sort of -- it's convenient for you to say there are no impacts, but in fact I believe that they are rather intense.</p>	<p>As discussed on page 4.8-16 of the Draft EIR, the Site Construction Coordinator at LBNL is responsible for administering best management practices and ensuring that construction vehicle traffic does not contribute to a substantial increase in volumes or degradation in level of service on surrounding roadways. UC LBNL carefully monitors and controls construction truck traffic at the LBNL hill site to keep the total number of one-way truck trips on the City-designated Hearst-Oxford-University Avenue truck route below 98 trips per day. A 2009 traffic study conducted by Fehr & Peers determined that so long as the total number of one-way construction truck trips from the LBNL hill site that pass through the Hearst Avenue, Oxford Street, and University Avenue intersections do not exceed 98 one-way truck trips per day and LBNL's construction truck traffic does not exceed 50 one-way truck trips per day through the Gayley Road/Stadium Rim Way intersection, construction traffic would result in minimal effects on city intersections. All of the construction truck traffic associated with LBNL projects is required via contract specification to use only the designated truck routes within the City of Berkeley. Trucks associated with construction of the SERC project would use only the Hearst-Oxford-University Avenue route, which is the most direct designated truck route between the LBNL hill site and the I-80 freeway. The requirement that the trucks use only this route would be included in the contract specifications.</p>
PH-10	<p>Another thing. I want to know where the comments, why -- I want to know what happened to the comments on the previous Helios building. There was a roomful of people, people commented, what happened? I want to know why there was no EIR for the Helios West. What happened to that? Why does this Helios building deserve an EIR, and Helios West is just tiered off of a previous EIR? Why are you not tiering this building off the previous EIR?</p>	<p>Comments received on the previous EIR prepared for the Helios project were addressed in the Final EIR for that project.</p> <p>The current SERC is a much smaller project than the Helios project and is proposed at a new site at LBNL. As the project is not the same as before, a new EIR has been prepared for this project. The EIR for SERC is tiered from the LBNL 2006 LRDP EIR.</p> <p>The Helios West project was approved for construction on the UC Berkeley campus in January 2010. The University prepared an addendum to the UC Berkeley LRDP EIR that concluded that the environmental impacts from the construction and operation of Helios West were adequately analyzed in the UC Berkeley LRDP EIR and further documentation was not necessary.</p>

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PH-11	I would also like to know why stimulus money is being used in the name of public research, but in fact we know its proprietary industrial research. And why British Petroleum was not mentioned in your presentation.	Construction of the proposed SERC facility would be funded by State of California Lease Revenue Bonds, the California Public Utilities Commission, and external financing. Neither the American Recovery and Reinvestment Act (U.S. federal stimulus) nor BP (formerly known as the British Petroleum Company) is proposing to provide funding for SERC.
PH-12	I would also like to know why you did not include alternative sites in your presentation. I know that the Lab is looking at alternative sites in Richmond and Alameda. And it seems to me this is acknowledged by the state government, by the U.S. Geological Survey that this is a high-risk earthquake and fire hazard zone.	Alternative sites (both within and outside of LBNL), including a site in Richmond, are analyzed in Section 5.0 of the Draft EIR. Other locations, such as NUMMI in Fremont, were considered but not carried forth as they would not meet the key project objectives of access to LBNL user facilities. Any site in Alameda would also not meet the project's objectives. Potential seismic hazards are addressed in Section 4.3 of the Draft EIR (see SERC Impacts GEO-1 through GEO-4), and potential wildland fire hazards are addressed in Section 4.5 of the Draft EIR (see SERC Impact HAZ-4) and in the Master Response 3 on Fire Hazards.
PH-13	I want to know why you guys think that it's okay for you to negligently develop adjacent to the Hayward fault when alternative sites do exist.	See Response to Comment PH-3 above, and Master Response 1, Geological Conditions Underlying the LBNL Site . Regarding seismic safety concerns, the University of California enforces a stringent seismic safety policy to which the proposed project, like all University undertakings, will be subject. The Seismic Safety Policy requires that all new buildings comply with the current provisions of the California Building Code, or local seismic requirements, whichever is more stringent. The Seismic Safety Policy also prohibits the construction of University facilities on the trace of an active fault. The project has been designed in accordance with the seismic design provisions of the California Building Code. The proposed project therefore meets the current engineering standard of care for seismic safety.
PH-14	I also want to know why you believe that synergy is still so important to your research when we live in modern world that has the technology. We solved Swine -- Alien Flu using Skype. So we don't have to continue to build in such a high-risk zone.	Please see Master Response 5, Off-Site Alternatives .
PH-15	I also want to point out that we are adjacent to a children's museum, and we're also -- we're not just in a canyon, we're also adjacent to residential zones as well that face incredible potential impacts, public safety impacts, and what you are doing to mitigate those impacts. Thank you.	Potential project impacts related to traffic, noise, air quality, and the use and transport of hazardous materials, are analyzed in the Draft EIR and determined to be less than significant (see SERC Impacts TRANS-2, TRANS-4, NOISE-1, NOISE-3, NOISE-4, AQ-1 through AQ-6, and HAZ-1). Because the impacts would be less than significant, mitigation is not required.
PH-16	MS. MERRYDAY: Hi. Where is this project in the long-range development plan?	The SERC project's consistency with the UC LBNL 2006 LRDP is discussed in the May 2010 SERC Notice of Preparation/Initial Study in Section 6.10.3.b. on pages 50 through 53. Also, as discussed on page 4.0-3 of the Draft EIR, the 2006 LRDP EIR included an evaluation of an illustrative development scenario consistent with the 2006 LRDP land use diagram. That illustrative development scenario evaluated impacts from the construction of a larger (142,000 square foot) new building at the proposed site of the SERC project.

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PH-17	The speaker talked about mimicking photosynthesis and we heard about artificial devices. We did not hear because we're nanoparticles tonight. I'm assuming these things are nanoparticle. I heard the word "rod" and I heard the word "membrane." And the schematics looked as if it was like a whole bunch of rods that were a whole bunch of nanoparticles. And we have heard at length about the need to be near like a foundry and why people have to be close together. I have questions specifically about the way that such artificial machines would be moved from one building to another, artificial devices would be moved from one building to another. What are the environmental conditions that are going to allow this mimicry of photosynthesis to occur? We didn't hear anything about the chemical conditions or the temperature or sort of the space that this would occur in. The fuels that come off of these engineered membranes, are they volatile? How does one capture the fuels that come off of these membranes? And how will they be stored? Or is it a dynamic system?	Please refer to Master Response 4, Nanomaterials.
PH-18	Would it not make sense to do this work somewhere else?	See Responses to Comments PH-3 and PH-14 above.
PH-19	Rather than hanging onto the idea that we can and need to generate more fuel so that we don't have to give up our wasteful lifestyle, isn't it about time to give up that sense of entitlement? When are we going to decide that we can use less and not ruin our world?	The comment is noted but does not pertain to the adequacy of the environmental analysis of the proposed project.
PH-20	What are the federal guidelines for nanoparticles? How will new regulations come online to an existing project?	Please refer to Master Response 4, Nanomaterials.
PH-21	When you talk about integrating into the Lab environment, for many of us who have been watching what the Lab has done over the past few years, that means integrating within the toxic plumes, within the tritiated creeks and within the contaminated soils.	The proposed project would be located at the site of existing buildings on the LBNL hill site. An in-situ soil flushing system is currently in place at the project site to remediate previous VOC contamination. As discussed in Draft EIR Section 3.0, Project Description, this system would be modified with DTSC approval in order to accommodate the SERC facility. The project as proposed would not create a significant hazard to the public or the environment by disturbing or redirecting the on-site contamination, or adversely impact the ongoing remediation as discussed under SERC Impact HAZ-2 in Section 4.5, Hazards and Hazardous Materials, in the Draft EIR.

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Comment Code	Comment Text	Response
PH-22	<p>MS. EMMINGTON: Yes, thank you. My name is Leslie Emmington. The first concern, of course, is an environmental impact in the greatest sense of an area that should not be filled with research and development. And it's along those lines, Jeff, that our first comments from the community, many of us felt truly impacted by the Helios Project in Strawberry Canyon. You referred, with some grace and appreciation, to those sentiments expressed strongly and being filed in court. But the real reason that Helios was moved out of the canyon and the EIR was decertified was because of an alarm about the geotechnical conditions of the site. The question is the geotechnical conditions of this site are equally of concern. And this Draft EIR appears to lack any offering of discussion that's serious or reports on the geotechnical conditions. There's a reference to Alan Kropp's report, and you go online to look at it, and it's locked. It is not available to the public. We know that Alan Kropp is the latest consultant for your borings and your reports, and whatever he's done on this project is locked.</p>	<p>The commenter's assertion that the geotechnical conditions at the SERC site are similar to those at the former Helios Project site is contradicted by the data contained in the project geotechnical reports. The former Helios Project site included thick landslide deposits. The SERC building would be supported entirely on rock as described further in Master Responses 1 and 2.</p> <p>The Helios geotechnical report is accessible at: https://sites.google.com/a/lbl.gov/berkeley-lab-geotechnical-reports-and-studies/Home/2000s/2009/geotechnical. The link to the technical appendices for the Draft EIR was repaired right after this comment was received at the September 23, 2010 public hearing.</p> <p>The project team for the original Helios project determined that issues related to removal of colluvial material beneath the proposed building footprint and the engineered backfill to replace this colluvium could be entirely eliminated with design changes. The project team concluded that the revision to project design was sufficiently substantial to warrant submittal of a revised design to the Regents for approval following analysis in and certification of a new EIR. Following the Regents' approval of the request to decertify the Helios EIR, Helios was moved (for a variety of reasons not identified by the commenter) to the location on the UC Berkeley campus where it is currently under construction. See also Response to Comment PH-1.</p>
PH-23	<p>The second thing is in the DEIR, there is reference to -- what is it called -- it's called 2010 -- LBNL 2010. What is that? It's not in the report.</p>	<p>There are two references to LBNL 2010 documents in the Draft EIR. The references (LBNL 2010a and LBNL 2010b) are located in Section 4.6, Hydrology and Water Quality, and refer to the Storm Water Pollution Prevention Plan prepared for the LBNL hill site (http://www.lbl.gov/ehs/esg/Reports/assets/SWPPP2010.pdf), and the Environmental Restoration Program Quarterly Progress Report under the LBNL Hazardous Waste Facility Permit (http://www.lbl.gov/ehs/erp/assets/pdfs/FY09Q4_ERP.pdf), respectively.</p>

Comment Code	Comment Text	Response
PH-24	<p>So if we're saying that the Helios protest was because of environmental conditions par excellence, they're also geotechnical in the very decent sense for you and for us. This is not the right place to build. We are aware that you know that, more and more, and even your own staff and your research. It's throwing good money to bad. It's throwing federal money to a potentially extremely risky site. And we all know why. This is not the place to discuss it. It will be discussed as we respond. So for no significant project impact, it seems to me, we're all potentially at risk being impacted by soil conditions. We're trying to play God and re-create something out of new -- whatever. But God is already there and the soils are bad. They are filled with water. They're subject to earthquakes which are dynamic and coming any day. Thank you.</p>	<p>The proposed SERC project site has been investigated by a qualified geotechnical engineering firm (Alan Kropp & Associates) and has been found to be suitable for the proposed project. The SERC building would be supported on rock and not on soil. Groundwater has been addressed in the project design, as have earthquakes. The project is designed in accordance with the seismic design provisions of the California Building Code. Please see also Master Response 2.</p>
PH-25	<p>MS. SIHVOLA: I just wanted to ask a couple of questions first. Who is funding the demolition of the SERC site in the Old Town? Who is funding the construction of SERC? Who is funding the research? How are nanoparticles prevented from entering the atmosphere since there are no filters in existence to do that? And when will the NEPA documents be circulated for public review? I'd like to remind the Lab, UC, Department of Energy, all principals involved in making decisions, how to spend scarce taxpayer funds most prudently, of a statement made by Paul Alivisatos last spring -- this is the Lab director. And this is what he said: "Since the nation has decided to rely on science to lay a foundation for the future, as well as help dig ourselves out of recession, our job with the labs is to make sure there is good return on investment." And then the writer of this article comments, "Paul Alivisatos realizes this is his high-stakes assignment. Time is running out." And yet, we are here again to comment on another project proposed for the unstable Strawberry Creek watershed site.</p>	<p>The comment is noted. The demolition of B25A, 44, 44A, and 44B, which has already been approved under the "Old Town" demolition project, is anticipated to be paid for with Lawrence Berkeley National Laboratory funds. Please see Response to Comment PH-11 regarding SERC construction funding.</p> <p>The Department of Energy (DOE) funds the research currently taking place under the SERC program. While it is anticipated that future research taking place in the SERC building may be similarly funded, that has not been determined to date. Such information is not pertinent to the scope of environmental analysis in this EIR.</p> <p>The DOE is responsible for any review of the SERC project under the National Environmental Policy Act (NEPA); please contact the Berkeley Site Office of the DOE for information regarding the level and timing of SERC-related NEPA documentation.</p> <p>Please refer to Master Response 4, Nanomaterials.</p>

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Comment Code	Comment Text	Response
PH-26	<p>There has never been any direct, truthful, transparent, credible, scientific analysis, conquering Garniss Curtis' caldera theory, even though all evidence supports him; no serious acknowledgement from LBNL that, indeed, the Strawberry Canyon, Strawberry Creek watershed site is the most dangerous proposition in the nation to any development. And yet, the planning to expand a nuclear industrial complex at the site continues defying any logic, science, financial prudence and responsibility. This is a prescription for a national disaster.</p>	<p>The "caldera theory" put forth by Garniss Curtis, has been reviewed by LBNL and consulting geologists who found it is not supported by the available scientific data (refer to Master Response 1). Further, Dr. Russell Graymer of the United States Geological Survey has formally reviewed this conclusion and agrees that there is no large volcanic caldera present beneath the LBNL hill site.</p>
PH-27	<p>When the Hayward fault explodes, all natural gas pipelines that cross the Hayward fault servicing LBNL explode, and if the water lines traveling in the same utility trenches, indeed, explode at the same time, as was the case with the September 9 San Bruno disaster, there will be no water to fight the ensuing radioactive fires in the canyon. This proposition is doomed. LBNL, UC, Department of Energy, stop playing Russian roulette with federal and state funds and with the lives of thousands of innocent residents now living around the Lab, on Panoramic Hill and in the north and northeast neighborhoods of Berkeley.</p>	<p>Please see Master Response 3, Fire Hazards, for further discussion about wildland fires and water provision for fighting fires following a seismic event. Implementation of the proposed SERC project would not alter the existing risk to people or structures from fault rupture, earthquakes, or fires. The project would make no changes to the main natural gas pipelines or water supply lines on or off the LBNL hill site. It is not apparent what is intended by the commenter's assertion of "ensuing radioactive fires," but the proposed SERC building is not proposed to store or use radioactive materials or hazards and, as such, would not create a potential for radioactive fallout or exposure due to earthquake and/or fire at the LBNL hill site.</p>
PH-28	<p>It is time to offload facilities from the unstable Strawberry Creek watershed site with its unconsolidated soils, water and mud of a collapsed caldera; riddled with landslides and earthquake faults; stifled by logistical, environmental, geotechnical constraints and legal challenges currently crippling LBNL and its future. And in closing, the recent articles in the Berkeley papers are merely a hoax to attract Berkeley Lab. Daily California: "A new facility may be ahead for the Laboratory." Indeed, we ask you to stop all new projects in the canyon, for the canyon, and very, very seriously consider putting these new projects as anchor buildings to the new proposed second LBNL campus. Thank you.</p>	<p>Please see Response to Comment PH-3, PH-26, and Master Response 1.</p>

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Comment Code	Comment Text	Response
PH-29	<p>MS. MITCHELL: I would like to say first, the concept of having this at the new campus, not if it's in Berkeley. And I've known for three years it's likely to be the Bayer site. I know people that work at Bayer and know how they have polluted the waters. And I don't have time to go into it. And we know that Lawrence Berkeley Lab has been polluting the environment in a very bad way. The last Thing we want is to have them down there in Berkeley, where we need to clean up and where we have been trying to clean up the Bay for 40 years. And we need to do that. That's the most important for the greenhouse gases, not putting concrete buildings and paving the earth, et cetera.</p>	<p>The proposed project would be located at the LBNL hill site on a site that is currently occupied by buildings and paved surfaces.</p>

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Comment Code	Comment Text	Response
PH-30	<p>And so I like the idea of the multiple sites that you've talked about, Alameda. And we hear Mare Island or Bayer Island or, you know. There are many – the genomic site in Walnut Creek, sites in Oakland, et cetera. What I think -- and I tried to talk to Mr. Alivisatos about this -- he believes that you need to have all your scientists together. I think that's too much like a monocrop, you know what I mean? And it's disastrous. And by going to the smaller sites, I mean, having smaller sites with specific projects. In Alameda, I think of Alameda as very sunny, so if you were there, it might be a good place to do your solar, possibly. And so what you would do is you would, instead of what you do, come up against the people, have this big board, then you end up doing what you want to do. Instead, do something unique. It would be really beautiful. You would really get creative thinking. You go to these mini sites, and what you do is you tune in to the environment. You have water in Alameda. How can you help clean up the environment? How can you even design a project that's not going to -- that's going to harm it in the most minimal -- not harm it, you're going to even it up, that type of thing. And you're going to work with the neighbors and you're going to work with the people, because they're very sharp. There are some young kids in here that are sharp. And so that's where I'm coming from.</p>	<p>As discussed in the Draft EIR, the proposed project would be implemented on a previously developed site that is currently occupied by buildings and paved surfaces. In general, splitting a project into multiple facilities at smaller sites results in greater environmental impacts than building a single facility at one site. Please also see Master Response 5 regarding alternative sites.</p>
PH-31	<p>And then the nanoparticles, I remember when the nano deal first came in. I read an article in the Daily Cal, and I was shocked because it said that you weren't going to go by the precautionary principle because you didn't know what you were making. I couldn't believe that. It's still on my bulletin board. I've left it up for years because I haven't gotten an answer to that one.</p>	<p>Comment is noted. Please refer to response to Master Response 4, Nanomaterials.</p>

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Comment Code	Comment Text	Response
PH-32	I'd like to say that I asked the lady over here about the height, and she said I could ask her, and she said that she wouldn't be able to tell me. So I'm asking you. And I'd like to get an answer. I think maybe other people would want to know. I want to know what it is. I don't want to know that "You're not going to see it because there's trees." I just want to know. If you don't know exactly, could you tell us now. Even say it's between something and something else, that will be fine.	The top of the penthouse would extend approximately 40 feet above the entrance level on the east side of the building, and approximately 60 feet above grade level on the (downhill) west side of the building.
PH-33	If I have any more time, I'll keep speaking. I just want to say that up there in the canyon where people say you should not build, I totally agree. That's our greenbelt. Other cities have a greenbelt, but not Berkeley. And we need a greenbelt.	The comment is noted.
PH-34	MR. JONES: For the record, I'd like to state that my understanding of CEQA is not a series of, you know, procedural hoops that you jump through, but actually the public -- by speaking with the public, you actually become better informed about your projects so you can be better informed when you make your decisions. So as far as I'm concerned, this should be a beneficial process for you guys, and our concern about what's going on in our community should be something -- and our exuberance about it all should be something that is actually making you -- it should be the driving force behind what you do. So I hope that your frustration is not, you know, too...	The comment is noted.
PH-35	MR. JONES: Right. Right. Anyway, so a couple comments that I wanted to make. My first comment is about the timeline. So previously, when I came here and commented about the timeline -- or when you guys had the first Helios bill, you also presented us with a timeline. And there's this sort of, you know, sense that you are just going to -- regardless of what we say here tonight, you're going to proceed on time with your timeline, and it's going to be banged out by 2013. And I want to know how our comments affect that timeline.	In accordance with CEQA, the Regents of the University of California will consider all comments received on the Draft EIR and the responses to these comments in order to determine the adequacy of the Final EIR. Should the Regents determine that more work is needed to address the comments received, the Board of Regents would delay further consideration of certifying the EIR and approving the project until that work was satisfactorily completed.

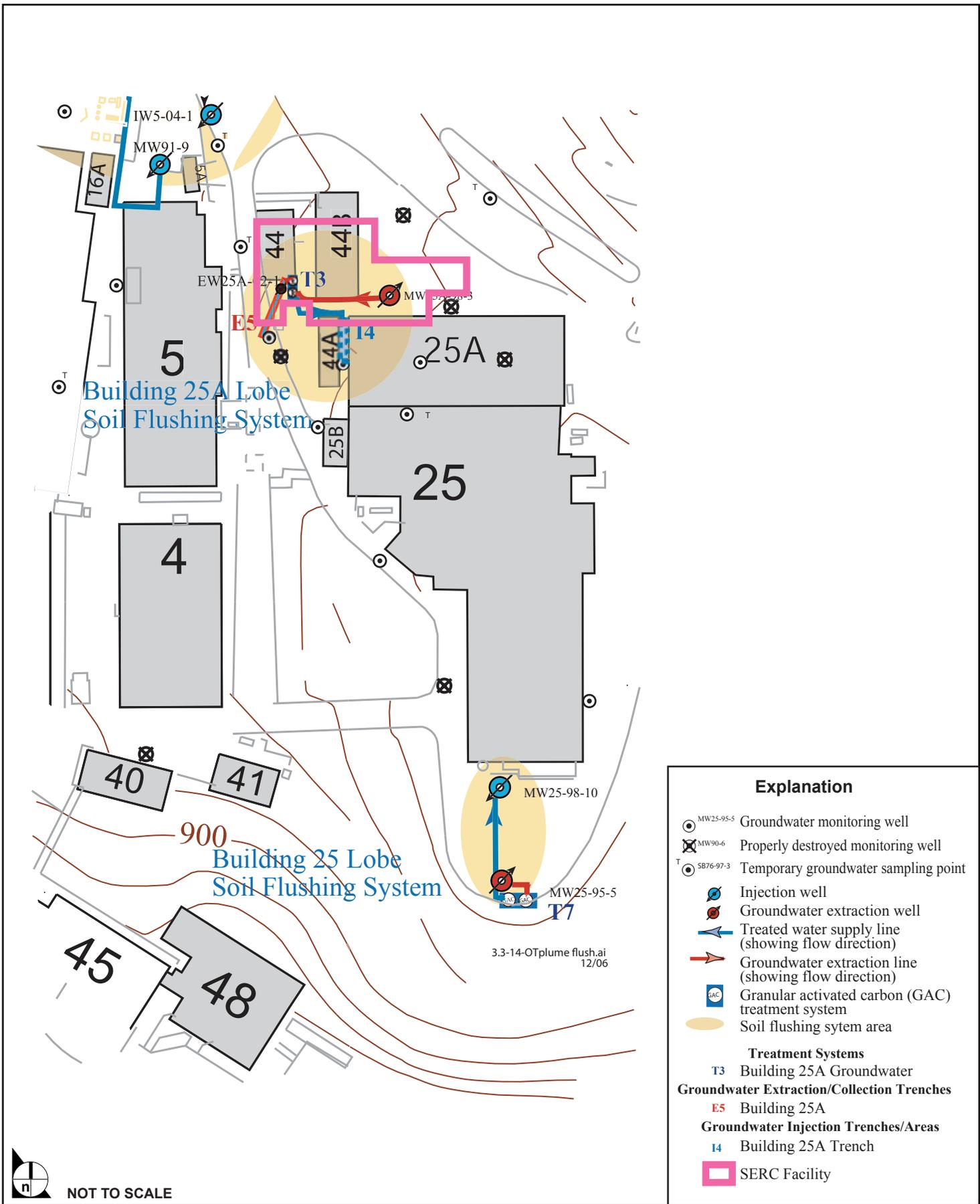
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Comment Code	Comment Text	Response
PH-36	I also want to know, the professor mentioned that there's going to be biofuel research, and I want to know where those biofuels are going to be grown. I'd also like to know what the impacts of those biofuels on the communities in which they will be grown because it will be an extension of that building will be in how those impacts will be mitigated. Thank you.	The proposed project would not involve biofuel research or production. Research at the proposed SERC facility would seek to create fuels using sunlight, carbon dioxide, and water by performing artificial photosynthesis.

Comment Code	Comment Text	Response
PH-37	<p>MS. MITCHELL: I appreciate Stuart's questions about the biofuels. I was thinking about – that Pamela said Mr. Alivisatos said time is running out. And I have known for several years that they want to make these biofuels and they want to sell them to China and India. And that concerns me as well because then they'll be driving -- paving more earth and driving more cars, and you all will be patenting more of these biofuels and making a lot of money on those patents. And so it might not directly connect with BP, but it connects, to me, connects in my mind to be BP because you've got the BP at the Helios down on Hearst, and then you're making ethanol, and the BP makes diesel fuel that fuels our transportation fleet in the country. And so when they're involved in patenting ethanol and other higher alcohols that you want to make, then that just cuts the diesel fuel by like five percent. People might call it biofuel. I don't call it biofuel. And ethanol doesn't always do the job, doesn't really improve things, according to some people. And so the whole thing is very questionable.</p> <p>And so if Mr. Alivisatos says time is running out, maybe that's good. And maybe that idea or other people's ideas that you don't do it here, but if you were doing it in other places, smaller places, and tuning in to the people and the environment, maybe you could think of some other things that are more creative and more helpful to our environment, that you're always doing the stuff in the name of helping the environment. And what Stuart is talking about is something that I've had nightmares about. Because of all of those indigenous people, people in Haiti get two dollars and go -- you plant these fields like slave plantations. And the people get two dollars, and they go to 7-Eleven and buy Ho-Hos or something. When they could be -- the people in Haiti are in such a terrible situation that people should be helping them to get back to where they can fish. You know, they live in a country where they can grow their own food, and they shouldn't be put in plantations.</p>	<p>The comment is noted. Please see Response to Comment PH-36.</p>

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Comment Code	Comment Text	Response
PH-38	M. Mitchell: How tall is the SERC bldg at highest point?	Please see Response to Comment PH-32 . The highest point of the building, the exhaust stack, would extend approximately 70 feet above the main entrance.
PH-39	Pamela Shivola: Who is funding the demolition of the SERC Site in the Old Town? Who is funding the construction of SERC? Who is funding the research? How are nanoparticles prevented from entering the atmosphere since there are no filters in existence to do that? When will the NEPA Document be circulated?	Please see Responses to Comments PH-11 and PH-25 . The demolition of Buildings 25A, 44, 44A, and 44B, which has already been approved under the “Old Town” demolition project, is anticipated to be paid for with Lawrence Berkeley National Laboratory funds. SERC construction would be funded with a combination State of California Lease Revenue Bonds, the California Public Utilities Commission, and external financing. While funding sources for future SERC research activities have not yet been determined, such information is not pertinent to the scope of environmental analysis in this EIR. The Department of Energy is responsible for any review of the SERC project under the National Environmental Policy Act (NEPA); please contact the Berkeley Site Office of the DOE for information regarding the level and timing of SERC-related NEPA documentation Please see Master Response 4, Nanomaterials .



SOURCE: LBNL – 2007, Impact Sciences, Inc. – December 2010

FIGURE 3.0-7

Soil Flushing and Groundwater Migration Control System