Feasibility Study to Replace Cordilleras Mental Health Center

November 6, 2014

San Mateo County
Department of Public Works and Health System
Behavioral Health and Recovery Services

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Part 1

Executive Summary
Part 1 – Executive Summary

Introduction

The San Mateo County Public Works Department and the San Mateo County Health System, Behavioral Health and Recovery Services (BHRS) commissioned this Study with the support of the Board of Supervisors to determine the feasibility, including estimated costs, of replacing the existing Cordilleras Mental Health Center, a sixty-two year old San Mateo County-owned 117-bed psychiatric facility, with facilities that meet modern standards of care for seriously mentally ill consumers. The goal of the project would be to transform Cordilleras, one of the County’s most important resources in the continuum of care for its most vulnerable mentally ill residents, into a center for consumer wellness, rehabilitation and recovery that leverages every aspect of the built and natural environment, the best practices for treatment, and the expertise of providers, family members, consumers and community.

Cordilleras Mental Health Center is located on unincorporated County land at 200 Edmonds Road near Redwood City, CA. The Center houses two separate treatment programs operated by Telecare Corporation for adults with chronic mental illness: a licensed locked 68-bed Mental Health Rehabilitation Center (MHRC) and a licensed 49-bed Adult Residential Facility (ARF). Cordilleras serves San Mateo County residents, 18 and older, with long histories of mental illness and multiple episodes of acute psychiatric hospitalization. Most consumers are admitted to the Cordilleras locked MHRC beds from San Mateo Medical Center’s psychiatric inpatient unit or another locked facility outside San Mateo County. The MHRC is the highest, most intensive level of care for people with mental illness other than psychiatric inpatient services and state hospitals. All of the residents of the MHRC are conserved, dependent adults, who meet legal criteria for grave disability, and the vast majority have been admitted to the program involuntarily. Without access to the Cordilleras MHRC, most would remain in psychiatric inpatient services, state hospitals, or out-of-county MHRCs.

Consumer are admitted to the MHRC with the goal of achieving sufficient recovery from the symptoms of their mental illness, so they can regain independence and return to living independently in the community. The relative proximity of Cordilleras to consumers’ families and friends in San Mateo County increases the possibility of re-establishing relationships and support that help consumers ultimately graduate to living independently. In fact, family member advocates who were concerned about their loved ones residing in programs far away played an important role in the dedication of Cordilleras to mental health treatment in 1978. The length of time residents remain in the program varies considerably, with some remaining in the program for more than a year and others leaving within 6 months. Mental health and substance abuse treatment are provided on-site as well as routine primary care. More urgent acute medical and psychiatric needs are addressed through return to the San Mateo Medical Center.

The unlocked ARF is permanent housing in which consumers may stay for many years, although most do not. The majority of ARF residents have “stepped down” from more intensive levels of care including the MHRC and other facilities outside of San Mateo County. The average length of stay for those discharged is five months. Consumers are free to come and go, and frequently use the bus that stops right out in front of the building. Most of the consumers of the ARF receive their mental health treatment at an outpatient behavioral health clinic located in Redwood City but may receive health care and other services in other places.
The two programs are currently housed in a 1952 vintage building, which was designed as a hospital for tuberculosis patients. The building is deteriorating, is maintained at considerable annual expense, and has deferred maintenance and upgrade needs. More importantly, the large institutional structure does not support current treatment practices and support services that are effective in promoting recovery for people who have serious mental illnesses such as schizophrenia. The prevailing best practice for treating persons whose serious mental illness/co-occurring disorder requires a secure locked level of care is in smaller homelike settings, rather than large institutions. This Study thus evaluates the feasibility, including estimated costs, of eliminating the existing Cordilleras Center and building smaller more home-like facilities on the nearly 20 acre site that will support a new approach to mental health treatment.

Summary of Findings

There is a strong case for treating people with mental illness in smaller scale, more homelike settings rather than large institutions like Cordilleras. Most large institutions were designed decades ago for maximum supervision and control of a large number of consumers by a minimum number of staff. They were not designed for the purposes of promoting recovery and rehabilitation of consumers. Over the last twenty years revolutionary improvements in treatment and medications now make it possible for people who in a previous era would have been confined to a state hospital for life, to return to the community and live successfully. For this transition to occur successfully, however, consumers must have the opportunity to develop and practice the skills they will need, before they leave the hospital. State of the art environments for psychiatric recovery and rehabilitation are now designed to more closely resemble the homes in which consumers will live upon leaving the treatment facilities and returning to the community.

Smaller residences reduce social isolation and create a more natural environment for social skills training to reduce problems with adjustment as consumers move through successive levels of care and finally achieve independent or supported living in the community. Smaller residences can be designed to have less noise, stimulation, and mixing of consumers than do larger facilities, thus reducing stress and aggression that can lead to violent behaviors. Telecare’s experience is that residents of sixteen-bed programs experience almost no episodes of violence, whereas Cordilleras experienced 48 episodes in FY 13-14. The large size and layout of Cordilleras contributes to difficulty in maintaining safety and tailoring programming to the diverse needs of consumers. Treatment may be more tailored to address the different needs of individual consumers in smaller residences versus larger facilities containing congregate groups. For example, frail, older adults have medical complexity that must be addressed whereas young adults need to be physically active. Suicidal patients require close monitoring. Patients who are likely to be aggressive should not be mixed with patients who are vulnerable to becoming victims. The optimal facility scale and design would address both requirements for security, monitoring and safety and requirements for residents to practice skills of everyday life and become more autonomous.

Research conducted by Telecare and others suggests that there is a correlation between larger program size and longer lengths of stay. As the number of beds in a program grows, the less efficient the program becomes. In a study performed by Tulloch (et al) in 2011, larger size hospitals were associated with longer lengths of stay. Telecare’s experience is that the length of stay in larger facilities is more than twice the length of stay in their 16-bed programs.
There is a strong correlation between consumer’s perception of their environment and positive clinical outcomes. In a 2008 study, researchers determined that when a facility was perceived as a safe place, positive therapeutic relationships resulted between consumers and staff contributing to positive clinical outcomes.

Consumer satisfaction is a highly desired outcome. Research has demonstrated a relationship between larger sized programs and lower levels of consumer satisfaction. Consumer satisfaction is positively influenced by the development of positive therapeutic relationships between clinicians and consumers and the program’s respect for consumer rights and privileges. The research as well as experience, clearly demonstrate the benefits of smaller scale mental health rehabilitation facilities, and support the program and design model proposed in the Feasibility Study.

After initial review of the available space and input from stakeholders, the Study focused on the feasibility of building six facilities, comprising five 16-bed MHRCs (80 total beds) each 10,500 gross-square-feet, and one 37-bed ARF/Campus Center at 35,100 gross-square-feet, for a total of 117 beds and 87,600 gross-square-feet of new construction. The estimated cost of this project is $85,364,021. The cost includes an estimate to expand the ARF by one floor, with 18 beds and 9,500 gross-square-feet, at a cost of $2,628,515, plus $972,540 for terraced floors/massing, for a total of $3,601,058. These beds would bolster the dwindling number of ARF beds available in San Mateo County for publicly insured clients. With a total of 135 beds on the campus, this would provide greater capacity for MHRC consumers to step down to independent living gradually, and increase their opportunities for success.

In addition to estimating the costs of demolishing and replacing Cordilleras with new facilities, the Study estimates the costs to operate the new programs and services. BHRS currently spends $8.7M per year for services provided at Cordilleras for 117 consumers, and $1.1M for 18 additional consumers who would be able to live in the new facilities (in the model that incorporates the expanded ARF beds). None of their treatment services are currently federally reimbursable because of federal law that excludes psychiatric facilities over 16 beds from Medicaid reimbursement. Treatment facilities that are smaller than Cordilleras, housing 16 or fewer individuals, and that meet various other requirements, are eligible for federal reimbursement of 50% of treatment costs under existing laws and regulations. This Study incorporates a review of those requirements and includes a model for operating costs and reimbursement that would be available for services provided by the new programs under current laws and regulations. This shows that due to increased staffing and more intensive programming the total annual expense of operating smaller treatment programs including the expanded ARF would be $17.3M which is greater than the current operating expense of $9.8 M. However, reimbursement and revenue would offset the added cost, leaving the Health System with the same net cost for expanded, more modern and more effective facilities. Successful transitions of these consumers back to community living in turn creates opportunities for other consumers to move in to the programs who would otherwise be waiting at higher and more costly levels of care ($1800/per day for inpatient or $617 for state hospital). Analyzing the financial benefits of such improved flow of consumers among levels of care was not within the scope of the Study but is recognized as promising.
This Study proposes a phased approach to the project development, to allow the majority of Cordilleras and Canyon Oaks residents to remain on site during the early phase construction. The Study outlines a plan and schedule that requires up to 36 MHRC consumers to be temporarily relocated for 16 months, from September 2018 to January 2020, in either the currently vacant ground floor of San Mateo Medical Center or in other MHRC facilities. The additional funds needed to cover the cost of this temporary relocation are estimated at $4.6 million.

Transition planning for the temporary relocation and final occupancy of the project is an important aspect of the total costs. The challenges, assumptions, and placement scenarios associated with each of these moves must be addressed through specific planning in the next phase of the project that will result in projections for the FY 15-16 budget cycle.

Other challenges for the project that can be overcome include potential mitigation of environmental impact concerns, such as tree replacement and protection of plant and animal species, and other issues that may emerge through the environmental impact report process.

Conclusions and Recommendations

For the past 62 years, the Cordilleras building has supported essential services for residents of San Mateo with serious mental illness. Significant advances in treatment and system design have occurred over the past 20 years that are not supported by this existing facility — now at the end of its useful life. This Study assessed the existing facility and identified $55 million in infrastructure repairs and renovation that would be required for continued long term use of the facility. Instead of investing in this inadequate and aging structure, this Study recommends that Cordilleras be replaced with new state-of-the art facilities, 5 MHRCs each of 10,500 gross-square-feet and 1 ARF/Campus Center building of 35,100 gross-square-feet that will support providers, families, consumers and others to provide transformative care for people with mental illness.

The total cost of building the replacement facilities is estimated at $85,364,021. This cost includes $2,628,515 to add a floor containing 18 additional ARF beds, plus $972,540 for terraced floor/massing, for a total of $3,601,058. This is the Health System’s recommendation.

The total cost of the project including temporary relocation of clients ($4.6 million) will thus be $89,964,021.

The operating costs for the new programs and services will increase substantially ($6.2M), but these increased costs will be offset by additional revenue and savings available with the new model that are not possible today. The net costs to the Health System and BHRS will be the same for expanded, more modern, and more effective facilities. See Summary of Part 8 – Financial Analysis below.

The new Cordilleras project can be completed in approximately 5 years. If the Board of Supervisors approves proceeding with the project, the design process could begin immediately. The proposed schedule reflects a Design-Build project delivery method, with the selection of the Design-Build team occurring in early April 2015. The design and documentation process would continue through summer of 2016, and permits would be issued in early 2017. Construction would continue until the end of 2019. The new facility will be ready for occupancy by consumers in early 2020.
Part 1: Executive Summary

Report

The following report, summarized below, contains the Feasibility Study findings. Supportive Appendices are also included.

Summary of Part 2 – Vision Statements and Goals

Crafting the vision for the replacement of the Cordilleras Mental Health Center set the foundation for all work included in this Feasibility Study. It was important that the Vision be defined early in the study process by a wide range of individuals including providers, family members, consumers and others with a vested interest in creating an optimal recovery environment for consumers. The Vision Statements will guide the decision making process and the development of the design throughout the life of the project. The crafting of the Vision Statements also took into consideration a desire to align with the County’s overall vision for future development, as defined in the publication Shared Vision 2025. The County’s vision is represented with the italicized phrases in the following Vision Statements:

Focus on Wellness – to be healthy
The new Cordilleras campus will offer programs and services that are dedicated to the whole health and wellness of its consumers. The environment will support and reflect a productive individualized wellness path for all consumers.

Promote Respect - to be livable
The programs and services offered will provide a strong foundation of assuring dignity and respect for its consumers and staff. The programs and services will emphasize consumer’s choice, in a safe environment that inspires pride, motivates the spirit, accommodates diversity in culture and beliefs, instills optimism for personal growth and improves quality of life.

Build Community – to be collaborative
The programs and services offered at the new campus will build strong communities – amongst their own consumers, families, staff, and visitors, and add value to the surrounding community. The campus will become an integral part of its social surroundings, with its programs and services valued as innovative assets and its residents respected as citizens.

Heal through Nature – to be environmentally conscious
The programs and services offered at the new campus will capitalize on the beautiful serene natural setting to complement the process of wellness, rehabilitation and recovery. The new facilities will incorporate progressive sustainable design strategies, efficient building systems, and natural materials to the benefit of healthy people, place, and planet.

Strive for Recovery - to flourish
The new programs and services will help consumers realize their full potential, achieving their goals for recovery, and return to living independently in the community. We will develop a world-class model of care that sets a new standard for excellence, by drawing from current best practices and anticipating future advances in behavioral health care.
Measures for Success for the New Cordilleras Project

In keeping with the spirit and intent of the project Vision Statement, and consistent with evidence based design best practices in behavioral health, the success of the new programs and services will be measured by improved outcomes including:

- Reduced length of stay at the MHRCs
- Reduced rates of readmissions to the MHRCs
- Reduced admissions to Psychiatric Emergency Services for the Cordilleras population
- Reduced resident to resident and resident to staff altercation
- Increased consumer/family satisfaction
- Increased staff satisfaction
- Reduced waiting time for the transfer from the San Mateo Medical Center psychiatric inpatient services to the MHRCs which will improve access and patient flow through the healthcare delivery system.

The project staff will develop baseline data to support a pre/post analysis of the effect of the new programs and services.

Summary of Part 3 – Site Assessment and Recommendations

The site of the Cordilleras Mental Health Center is located at 200 Edmonds Road on unincorporated land in San Mateo County, near Redwood City. In addition to the existing Cordilleras Mental Health Center building, the site is shared by the County Fire Station 18 and the Canyon Oaks Youth Center, a level-14 intensive residential treatment program for adolescents. Both of these buildings were built approximately 15 years ago, and are still in operation. The 19.4 acre parcel is bound by Edgewood Road to the southeast, and by the Pulgas Ridge Open Space Preserve on the other three sides. Edmonds Road is the only way in and out of the site.

The site has a canyon in the center, running east to west, with steeply sloped sides to both the north and south. The overall elevation change of the site is more than 140’. The seasonally active Cordilleras Creek runs along the bottom of the canyon. It enters from the western side of the site, and then is undergrounded in a culvert concrete pipe. Much of the site is heavily wooded, with a few gravel access roads and trails traversing the site and providing access to a water tank on the northern hilltop.

Geotechnical Investigation

Geologists and geotechnical engineers from Arup and Lettis Consultants International conducted a preliminary study to facilitate a feasibility-level evaluation of geological and geotechnical conditions in the vicinity of the project. The geo-hazards evaluation considered the effects on the proposed construction due to: faulting, seismicity, slope stability, rock fall, flooding, debris flow, and naturally occurring asbestos. This initial geotechnical and engineering geological evaluation considers the site demolition, large design-level ground motions (earthquakes), and the feasibility of the proposed areas of site cut and fill.
From the perspective of this feasibility-level study the potential geo-hazards identified can all be mitigated by engineering design. The site will experience high seismic shaking during an earthquake, but execution of well-prepared construction specifications can minimize the effects of ground shaking on the proposed improvements. Cut slope areas of potential instability should be investigated as part of final design but were not anticipated to be unmanageable from a design perspective. The geotechnical and engineering geological Feasibility Report (Appendix E) presents the foundation concepts and retaining wall concepts for the site. The proposed site reconstruction does warrant further study during a design-level geotechnical and engineering geological investigation and analysis.

See Appendix E for the complete Geology and Geotechnical Report

Biological Constraints

TRA Environmental Sciences conducted a Biological Constraints Analysis for the project. We addressed potential impacts to special-status plant and animal species, and regulatory and mitigation requirements that could affect decisions regarding the feasibility of the project. The special-status species in the region include federal and state listed species, as well as state species of special concern. The project site contains waters of the State of California and United States, namely Cordilleras Creek and its adjacent riparian zone, but does not contain wetlands.

The project will impact the San Francisco dusky-footed woodrat, a California species of special concern, and will require mitigation to address those impacts. In the case of this species, the mitigation can be provided on the project site. The project may impact San Francisco collinsia, a rare plant that occurs on the property. Follow up surveys to document the location of these species are recommended.

The project has a very low potential to impact special status species, California red-legged frog, San Francisco garter snake, and western pond turtle, which are known to occur on the other side of I-280 from the project. These species are not expected to occur on the project site, but best management practices are recommended to avoid impacts. Without state and federal authorization (a lengthy process), the discovery of these species during construction would halt the project until state and federal wildlife agencies are consulted and concur with how to move forward.

The project will impact the riparian zone of Cordilleras Creek, but will not directly impact the creek bed, bank or channel. In order to comply with zoning the project will need to be designed to avoid significant impacts to the creek and riparian zone by having a setback from the top of the creek bank, by protecting creek water quality from storm water runoff (eg, minimizing hardscape and other measures), and by incorporating riparian plant species in the landscaping.

The project may need to remove trees that are protected by local zoning regulations, and should have a tree removal and replacement plan to address the removal of trees with a diameter at breast height of 17 inches or more (circumference 55 inches) for local regulations and 4 inches or more for California Department of Fish and Wildlife recommendations. It may be necessary to work with the Mid-peninsula Regional Open Space District regarding the possibility of planting trees in the adjacent Pulgas Ridge Open Space Reserve to meet the replacement requirements.
Part 1: Executive Summary

See Appendix F for the complete Biological Constraint Analysis

Cultural Resources

Basin Research Associates conducted a Cultural Resources Review. The intent of this Review is to provide a constraint analysis of archaeological and historic properties within the project area which may be listed, determined, or potentially eligible for inclusion on the California Register of Historical Resources (CRHR) and that could be affected by the proposed project.

Basin’s Cultural Resources Review included:

- Records Search by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC)
- Limited Literature Review
- Native American Consultation to determine if historic properties are located in or adjacent to the proposed project
- Preliminary Built Environment Review of the facility by an Architectural Historian

No archaeological field review was conducted since the property is developed with buildings and/or introduced landscaping.

An initial 1998 review of records and literature on file at BASIN, completed for an adjacent project, was negative. An updated prehistoric and historic site record and literature search was commissioned for this constraints analysis. The findings concluded that:

- No prehistoric, Hispanic or American era historic archaeological sites have been recorded in, adjacent to, or within 0.25 miles of the project.
- None of the known late 19th and/or early 20th century "Indian Mounds" have been reported or mapped in or adjacent to the project.
- No known ethnographic, traditional, or contemporary Native American resources have been identified in or adjacent to the project.
- No known historic era trails, roads, or dwellings or structures dating to the 19th or early 20th century were located in or adjacent the project.
- No historic resources listed on the Historic Properties Directory or other lists/inventories of historic resources are located in or adjacent to the project or area adjacent.

The Native American Heritage Commission was contacted for a review of the Sacred Lands Files and results were negative.

A consulting architectural historian, Ward Hill, completed a preliminary built environment review of the facility. He concluded that the former San Mateo County Tuberculosis Hospital retains historic integrity from its original construction in 1950. The hospital’s architects were Douglas Dacre Stone and Louis B. Malloy. The architectural team designed many major hospitals in the Bay Area in the Post World War II years and were known for their hospital designs. An architectural historian should be retained to formally evaluate the building including the development of a suitable context.
The Cultural Resources Review suggests a very low sensitivity for prehistoric and/or historic era archaeological resources within the project. It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried archaeological resources appears necessary.

See Appendix G for the Cultural Resources Constraint Analysis

Site Utilities

- **Existing Water System**
  Potable water service to the site is provided by the San Francisco Public Utility Commission. Domestic and fire water for the site is provided from a tank with a storage capacity of 150,000 gallons. Water from public main is pumped up to the tank and the pump station is located at the southeast corner of the site. Recent fire hydrant flows tests show that the system does not currently meet current California Fire Code requirements for pressure.

- **Proposed Water System**
  There are two options being considered for the new water system: a Base Case and a more Sustainable Alternate.

- **Base Case – Maintain the Existing Water Tank for Domestic and Fire Water**
  For this option, the existing storage tank and pump station will continue to be used for both fire and domestic water. The feed line to the tank will be replaced and the existing discharge lines from the tank down the slope to the site will be replaced. New domestic and fire water mains will be installed around the site to serve the buildings and fire hydrants. New fire hydrants will be installed that conform to current San Mateo County standards. To increase the pressure and available flow in the site fire system, a booster pump(s) will be installed above ground, within a small enclosure. The booster pumps will also have backup power supply from the emergency generator.

- **Sustainable Design Alternate – Use the Existing Tank for Greywater and Fire Water**
  For this option, the tank would be used to store runoff collected from building roofs and reused for non-potable uses, irrigation water and fire water. Runoff from the building roofs would first be filtered and then be piped and collected in an underground tank. The water would be treated by a chlorine chemical system and filtered by a pressure filtration system. The treated water would then be pumped up to the existing tank on the hill. From the tank, three discharge lines (one each for non-potable, irrigation and fire water) would deliver water via gravity to the site. Each building would have a separate plumbing system for non-potable water that would likely serve toilet flushing within the building. As with Option 1, a booster pump(s) would be installed on the fire water discharge line from the tank to increase the pressure. The existing pump station would be removed.
For the domestic water system, a new service line would be connected to the existing line in Edmonds Road. A booster pump(s) would be installed to increase the pressure in the domestic system.

- **Existing Storm Drain System**
  The main storm drain collection system on the site is Cordilleras Creek. The creek flows southeasterly through the site and eventually parallels Edmonds Road. A concrete headwall directs the creek into a 30-inch diameter underground concrete pipe that flows along the west side of the Existing building. The County has reported some known issues with the inlets being blocked by debris and preventing flow from the creeks and tributaries from entering the pipes. This has caused some flooding at the site. However, the flooding is not likely caused by lack of capacity in the pipes.

- **Proposed Storm Drain System**
  The new storm drain system will consist of a network of pipes and catch basins to collect surface runoff and convey it to one of the existing, large diameter pipes. The existing pipes will need to be relocated to avoid the new building footprints.

San Mateo County standards require that runoff from new and replaced impervious surfaces must be treated prior to entering the storm drain system. Runoff from the new building roofs and access roads will be directed to storm water treatment areas. The will be several storm water treatment areas located throughout the site at low points, and other natural areas to collect runoff.

**Summary of Part 4 – Existing Building Assessment and Recommendations**

Opened in 1952, the Cordilleras Mental Health Center originally served as the San Mateo Tuberculosis Hospital. With the reduction of tuberculosis cases in the following decades, the hospital closed and sat unused for several years before being repurposed in 1978 for its current use for treatment of people with mental illness. At 62 years old, it has served out its intended useful life and is currently being maintained in serviceable condition at a significant cost. The current yearly cost to maintain the facility is $473,000, and an additional $3.9 million in upgrades is being deferred. The building is not well-suited for the current best practice in behavioral health and rehabilitative care. It is also in much need of building systems upgrades and repairs.

As part of our evaluation, we have provided recommendations for renovations and upgrades that would be required if a decision was made to reuse the existing building as a residential mental health rehabilitation facility. These recommendations are not listed here in detail, but can be found in *Part 4 - Existing Building Assessment and Recommendations*, and in *Appendix H: Existing Systems Report*. We have estimated the cost of reuse of the existing building at more than $55 million. This estimate is documented on the last page of the cost estimate contained in section 8.1 Capital Costs.

In the descriptions below, we summarize the primary problems and deficiencies of the existing building identified during our evaluation.
Existing Building Functionality

The “Y-Shaped” plan of the existing building was designed for an acute care hospital function (for treatment of people who had tuberculosis) that allows a large capacity of people within an efficient floor plate. Levels 2 and 3 are the patient bedroom floors and relatively the same. Today there exists a different consumer population with different needs that has had to adapt to the acute care planning model. There is a double loaded corridor of semi-private bedrooms with shared toilet rooms and community showers down the hall. Each wing is considerably long with little to no visibility between wings and no daylight other than the window in the stair door at the end of the corridor.

The overall functionality of the current building is not ideal as it was not designed for the current MHRC and ARF functions. The two levels of care require different levels of security and it is not optimal for them to co-exist in the same building and share one designed entry point. The front door identity for the ARF has been lost and delegated to the exit stair way. The ARF’s level of non-secure residential housing is different than the high secure treatment facility of the MHRC and both need a different planning and design response. The Cordilleras building does not meet the optimal residential and treatment needs and best practices of both the MHRC and the ARF programs.

Building Structure

The building is a three story cast-in-place concrete structure with a basement. The condition of the exposed concrete structure appeared to be in good shape on a recent site visit. Remedial work and a
thorough analysis would be required to address the seismic performance of the existing structure. One item that was preliminarily identified as having insufficient capacity is the discontinuous concrete exterior wall below the second level. Per current practice and code requirements, there are structural calculation penalties for such irregularities. In the patient room wings, there are added corridor walls to address the discontinuity noted above. It appears that these walls are under-designed. Effectively they carry all the lateral load in the longitudinal direction between the First and Second Levels. There appears to be insufficient capacity to transfer these loads. Collectors along the corridor would be required as part of the transfer of loads. There is not sufficient capacity in the beams along the same grid as the added corridor walls to transfer these loads.

Building Systems

Interface Engineering performed an assessment and examination of the existing mechanical, electrical, plumbing, and fire/life safety systems. The assessment and examination was performed with the intent of determining the existing systems’ conditions, operations, reliability and capacity. Investigations included a site visit and an examination of existing as-built drawings of the facility.

- **Heating Plant System**

  The heating plant consists of two natural gas-fired steam generating boilers located in the basement level of this main building. The boiler flue appeared to be in good condition with no evidence of corrosion. The flue extends through the exterior wall and connects to a stucco enclosed stack on the east side of the building. Some cracking of the plaster was noted in the exterior finish. The boiler nameplate data indicates the boilers were manufactured in 2003. Although the boilers appear to be in good working condition with routine maintenance, they do not meet the current regional air quality requirements. The boiler service life is approximately 25 years with another 15 years of operation available. This type of system requires a greater amount of maintenance and can encounter premature equipment failures and poor steam system efficiency.

  The piping, blow-off and flash tanks, including some of the valves in the Mechanical Room are original to the 1949 construction. The estimated piping service life is approximately 30 years from the time of installation, so these components have served more than double their expected life. The steam and condensate return piping system is original to the 1949 building construction and has exceeded its useful service life.

- **Fans and Supply/Exhaust Air Distribution Systems**

  The Basement Level Mechanical Room contains the buildings 100% outside air and supply fan system. The four individual supply air fans and duct distribution serving the First, Second, Third Floors and Kitchen areas are original to the 1949 construction. The fan motors and belts have been refurbished. The supply fans and associated casework have exceeded their life expectancy.

  The supply air distribution system serves the individual floor corridors with no air discharged directly into the patient rooms. Outside ventilation air to the individual patient rooms was intended to be through the operable windows, however due to safety reasons, a number of these windows have been secured. The rooms are not ventilated and do not meet current code compliance.
The heating air handling system consists of a 100% outside air arrangement with a single outside air louver connected to a plenum. The record drawings do not indicate that an outside or individual fan damper has been installed. This is a code violation that should be remedied. The air is relieved through a number of exhaust fans located on the roof in a Mechanical Room. The fans are original to the 1949 building construction; however, the motors and belts have been replaced. The fans and associated casework and duct system has exceeded their life expectancy. The air distribution for both supply and exhaust systems located throughout the building is original and has passed its life expectancy. The kitchen exhaust fan and duct system serving the hood does not meet current code requirements and should be replaced.

- **Sanitary Waste and Vent System**
  The majority of the sanitary waste is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what is visible on the Ground Floor and Boiler Room. The sanitary waste lines for the building appear worn-out and outdated; the pipes and fittings are hub spigot type with lead joints. The existing sump pump in the Boiler Room appears to be worn-out and outdated. It has a broken cover and its associated piping needs to be replaced.

- **Storm and Overflow Drainage System**
  The majority of the storm water piping is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what was visible in the Ground Floor and the Boiler Room. Rainwater lines for the building appear to be original with a hub spigot type fitting with lead joints. When it rains, underground water rises up and enters into the trenches of the Boiler Room. Building maintenance staff places a single sump pump to lift and discharge the water to the main sewer. Sometimes single pump is not able to accommodate all of the water, and so they place a second pump to get rid of all underground water. The sump pump discharge piping in the trench is rusty and needs to be replaced.

- **Plumbing Fixtures**
  Most of the plumbing fixtures in the building have exceeded their service life and do not meet current low flow standards and ADA requirements.

- **Kitchen**
  Grease interceptor located in the Boiler Room appears to be worn-out and outdated. The equipment has probably reached the end of its effectiveness and needs to be replaced.

- **Fire Protection Systems**
  The building is partially fire-sprinklered with only the Basement Level currently sprinklered at this time. The current code requires this type of building occupancy to be fully sprinklered. Although the installed fire sprinkler system is grandfathered in, a renovation or change of occupancy will trigger a complete building Fire Sprinkler System upgrade in compliance with the latest codes.

- **Electrical Distribution Systems**
  Utility power for the building is derived from a PG&E pad-mount transformer located in an indoor dry vault in the basement level. The building is served by Main Switchboard located in
the Main Electrical room adjacent to the PG&E’s vault. The majority of the electrical equipment, including the Main Switchboard, is original equipment installed in 1949. The equipment is outdated and past the manufacturer’s 25 year recommended life span. The manufacturer is no longer in business and parts are obsolete and will be difficult to obtain. Existing antiquated equipment is difficult and costly to maintain, replacement parts and service may not be readily available. Furthermore, the installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and is no longer compliant with the Utility Company standards and regulations.

- **Emergency Distribution System**
  There is an existing diesel driven indoor emergency generator with a 60 gallon sub-base fuel tank serving the building. The installed location of the equipment is not in compliance with the current code requirements for essential/emergency systems. Also, the generator is located in the basement level that is at risk for flooding during a heavy rainfall. Critical equipment like a generator should not be located in an area that may cause it to fail during an emergency situation.

- **Lighting System**
  Lighting luminaires being utilized in the center uses a mixture of both fluorescent and incandescent lamps. Majority of the luminaires are outdated and not energy efficient. Both lighting and associated controls are outdated and no longer comply with the latest requirements of Title 24.

### Hazardous Materials

As part of the existing building assessment, SCA Environmental conducted an investigation for hazardous materials, which would require abatement if the building were to be renovated or demolished.

- **Asbestos Hazards**
  Certain existing building components or materials are known or presumed to contain asbestos. Note that as the survey was non-destructive, various materials were assumed asbestos containing and not sampled. Furthermore, as the building is still in use, we did not perform destructive sampling to inspect wall cavities, above ceilings, etc. As destructive testing was excluded from the scope of work, the following items were to be assumed asbestos-containing during the survey: vapor barriers under concrete slab/restrooms, fire doors, ceramic tiles, etc. We have listed these materials as assumed asbestos-containing items in Appendix I. Asbestos-containing material was found and confirmed through testing in some elements on the property, including duct insulation, floor tiles, caulking, and asphalt.

- **Lead Hazards**
  Certain existing painted or coated surfaces to be impacted by the proposed renovation or demolition of the facility are known or suspected to contain lead. Since elemental lead is a suspect carcinogen and known teratogen and neurotoxic in high doses, lead-containing materials need to be identified prior to the on-set of demolition activities. We collected a number of bulk samples for analysis to determine the lead content of these materials. Lead was detected in these paint samples and floor tiles. Lead sheeting is also known
Part 1: Executive Summary

to be present in the existing Offices Area on the 2nd Floor of the building. This area was formerly used as X-ray clinics and dental areas, and visual evidence of lining within the walls and doors was noted during the inspection. We recommend that destructive sampling be performed prior to renovation or demolition of the building to determine the presence and lead content of this material.

- **PCB & Mercury-Containing Items**
  We quantified lighting ballasts that were observed in conjunction with mercury-containing, fluorescent lighting fixtures in various locations. We found quantities of both PCB ballasts and fluorescent tubes in various locations. Various mercury-containing fluorescent tubes were identified throughout the building. Recycling vendors for reclaiming the mercury vapor are commonly available.

**Demolition**

Upon review of the assessments discussed in the preceding sections, as well as the cost estimated to upgrade the existing building (Section 8.1) and the missed opportunity for federal reimbursement (Section 5.4), this Feasibility Study recommends the demolition of the existing building at an estimated cost of $3 million and the development of a strategy to provide the required program on this site.

**Summary of Part 5 – Regulatory Assumptions and Reviews**

The contracted providers who operate the programs located on the new Cordilleras site will have the responsibility for appropriately licensing and maintaining licensure for each program.

The State licensing authority for the Mental Health Rehabilitation Centers is the Mental Health Licensing and Certification section of the California Department of Health Care Services (DHCS). The State licensing authority for Adult Residential Facilities and Social Rehabilitation Programs for people with mental illness is the California Department of Social Services, Community Care Licensing Division (CCL).

The California Department of Health Care Services has an agreement with the federal Centers for Medicare and Medicaid Services (CMS) that establishes various services for mental health care that are eligible for Medi-Cal reimbursement when provided to Medi-Cal beneficiaries who meet clinical criteria. Certification of a program offering adult residential treatment by the State is required as described above.

Mental Health Rehabilitation Centers with no more than 16 beds may be certified to provide adult residential treatment under regulations contained in Title 9, Division 1, Chapter 11, Subchapter 4, Article 3, 1840.332 *Adult Residential Treatment Service Contact and Site Requirements*. This provision has been used rarely in California because most facilities are large institutions. Certification alone does not make a program eligible to receive Medi-Cal reimbursement but it is one necessary component.
Part 1: Executive Summary

The current configuration of services provided at Cordilleras does not offer federal Medi-Cal reimbursement because it exceeds 17 beds and meets criteria for the federal Institutes for Mental Disease (IMD) exclusion. The replacement facilities meet the following criteria, which will be necessary in order to avoid IMD status:

- The licensed capacity of each of the treatment program will not exceed 16 beds.
- The facilities will each be separately licensed and will each be able to meet conditions of participation.
- Each treatment program will be physically free-standing, organizationally distinct, contracted by the County to be operated by different vendors with different chief executives and different chief medical officers.
- The programs will be operated out of different addresses on the 20 acre site.

The 2013 California Building Code (CBC) and the 2012 Zoning Code: Planning and Building Department of County of San Mateo were used for the code analysis in Part 5.

Building Occupancy and Construction Type for basis of this Feasibility Study are as follows:

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Occupancy</th>
<th>Construction Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Rehabilitation Center</td>
<td>I-3, Condition 2 (Institutional)</td>
<td>Type V-A (wood frame)</td>
</tr>
<tr>
<td>(MHRC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Residential Facility (ARF)</td>
<td>R-2.1 (Residential)</td>
<td>Type V-A (wood frame)</td>
</tr>
<tr>
<td>Campus Center</td>
<td>B (Business)</td>
<td>Type V-A (wood frame)</td>
</tr>
</tbody>
</table>

The Cordilleras site is zoned as RM (Resource Management District) by San Mateo County.

As this is a County project on County property, it will not require a formal Planning permit review process. The California Environmental Quality Act (CEQA) requires that we identify the significant environmental impacts of the project and develop strategies to avoid or mitigate those impacts. As the project does not propose new or added uses on the site, it is believed that a Negative Declaration of the environmental impacts may be achievable, and therefore a full Environmental Impact Report and hearing process would not be required.

Due to the proposed development alongside Cordilleras Creek, Federal, State and County Environmental Reviews are anticipated as required. Reviews and potential approvals may be required by the US and California offices of Fish and Wildlife Services, and County departments such as Planning, Building, Fire Marshall, Sheriff and the Historic Resources Advisory Board.

**Summary of Part 6 – Program**

The site and building programs developed by the project team accommodate the needs and vision of project stake-holders including requirements related to operations, consumer levels-of-care, licensing, and the environment. Listed below are the general program requirements discussed and used as the basis of feasibility:
Five MHRC buildings each housing 16 residents in approximately 10,500 gross square feet (GSF) each
One ARF/Campus Center building at approximately 35,000 GSF with the Campus Center components on the ground level and the 37 Suites residents split among 2 floors above. Each of the 2 ARF floors will be approximately 9,500 GSF over an approximate 15,000 GSF Campus Center.
Provisions for supplemental ARF placements provided as an additional floor on the Campus Center (18 beds).
Secured Recreation Yard
Separate front doors and addresses for each MHRC, Campus Center and ARF.
Parking for 85 cars (20 more than currently available)
In order to maximize reimbursement potential, optimize treatment opportunities and create a more comfortable and safe residential living environment the Mental Health Rehabilitation Center (MHRC) and the Adult Residential Facility (ARF) as known as “The Suites” is proposed to exist in separate structures on the site. This plan proposes to modify the existing 117 bed capacity as follows:

<table>
<thead>
<tr>
<th>Licensed Bed Capacity</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHRC</td>
<td>68</td>
<td>80</td>
</tr>
<tr>
<td>ARF</td>
<td>49</td>
<td>37</td>
</tr>
<tr>
<td>Supplemental ARF</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>135</td>
</tr>
</tbody>
</table>

The proposed increase in Mental Health Rehabilitation Center (MHRC) beds will assist in expanding placement capacity for treatment beds within the County. This will allow the county to reduce the number of consumers that will need to be treated in MHRCs outside of the County by 12 and help with the flow of consumers among levels of care. This includes facilitating discharges for people ready but unable to leave San Mateo Medical Center (SMMC) inpatient psychiatry units due to the lack of available MHRC beds or because that most providers reject them. Currently the high administrative day and unreimbursed day rate for SMMC inpatient psychiatry is partially the result of consumers waiting for MHRC beds. If consumers were able to be timely discharged, SMMC beds costing $1800 a day would be available for acute Medi-Cal patients whose services would be reimbursed by Medi-Cal.

Although one option addressed by the Study is to reduce the number of ARF beds by 12 in order to add 12 MHRC beds, there is a need for more ARF beds for consumers ready to leave the more intensive MHRC level of care. The Health System BHRS and Aging and Adult Services report that ARF beds are increasingly difficult to find in the community for consumers stepping down from MHRCs. The lack of availability results in consumers remaining at more intensive and costly levels of care and prevents placements of other consumers who need beds at those higher levels of care. For estimating purposes, we have included a separate cost to add an additional 18-bed ARF floor onto the building (see Part 8 – Financial Analysis).
• Proposed Bed Mix
  o MHRC: 75% private bedrooms and 25% semi-private bedrooms
  o ARF: 25% private bedrooms and 75% semi-private bedrooms

The **Campus Center** will be the hub of the campus for the consumers and staff and a location for the San Mateo community to attend activities, events and to be involved with the consumers living in their community.

Visitors will be able to visit with their family members in visitation lounges and common areas. They may also visit on the grounds or in visitor areas located on the part of the campus where their family members are residing.

There will be a number of staff offices located in the Campus Center for staff to complement office space designated in MHRC’s and the ARF. Office and assessment space is also included for basic medical services.

An industrial kitchen will serve multiple purposes. It will produce meals for consumers living in the residential floors above the Campus Center and will be a place where meals can be prepared for large events taking place on the campus. This kitchen will also serve as a life skills training area and for gourmet cooking classes for consumers. The kitchen will also be tied in with the organic gardening program on campus as the next step in putting to use the crops harvested.

The central data system and electrical systems for the campus will be housed in and routed through this building. It will have a County staff person assigned to monitor these systems such as IT/telecommunications and also include space for county facilities and maintenance services.

There will be a large auditorium/gymnasium that will be available for group fitness classes, group rehab therapies, indoor sports, movies, theatre productions, special Cordilleras Campus events, community events and other social gatherings.

Conference space and activity rooms will be available for regular scheduled use by Cordilleras and other organizations. The Campus Center events and activities that involve the extended San Mateo community will help to decrease stigma and increase the understanding of the challenges of living with mental illness.

There will be other programs and services present in the Campus Center. Some of these programs will be: a yoga/dance studio; a secondhand store; an art studio and gift shop.

*Refer to Part 6 and Appendix D for additional information.*
Summary of Part 7 – Conceptual Design Recommendation

Site Plan

The MHRC buildings are set in a radial line along the southern side of the site. Accessible courtyards are located between each of the MHRC buildings. Also along this southern edge, a large retaining wall will hold back the hillside and create buildable area to accommodate a service and fire access road. The access road is considered an extension of Edmonds Road, with the five new MHRC buildings addressing onto it. This access road terminates at the western corner of the site, with a turn-around bulb to accommodate fire trucks. Access to the existing Canyon Oaks Youth Center and the Fire Station must be maintained at all times during construction.

The MHRC buildings are all accessible by the consumers and staff coming from the main recreation yard which sits between the Campus Center and the MHRC’s. The yard will be fenced in for security, but several large gates will be required to allow for fire truck access through.

At the northern side of the site, another access road follows the slope of the site upwards and terminates in another turn-around for use by fire trucks. This turn-around creates an opportunity for a separate identity and front door entry for the ARF building on the second floor. The main front door to the Campus Center at the ground level will occur off of the access road, and will be configured with a drop-off and parking for 40 cars.

The exposed area of the Cordilleras Creek, in the western portion of the site, will be maintained in its current location and general condition. The north bank of the Creek can be reached from the
ARF/Campus Center Building, and is proposed to serve as an accessible nature area for the staff, residents, and their families.

Building Block Diagrams

Mental Health Rehabilitation Center (MHRC) Conceptual Block Diagram

Adult Residential Facility (ARF) Typical Floor Conceptual Block Diagram
In order to determine the capacity of the site for the replacement of Cordilleras, the project team developed basic building configurations with the help of county, staff, consumer and community stakeholders through a series of three integration events also known as “3P event”. The team dove in deep enough to understand the basic size, configuration and functional relationships of a typical MHRC and a typical ARF floor plate.

For the MHRC, the consensus of the group proposes a four-wing plan connected on one end to a centralized staff and support core. Each wing holds four consumers; two wings have all privates and the other two wings have a mix of semi-private and privates. The four-wing “cross” responds to the programmatic and functional criteria of Flexibility, Safety, Security, and access to nature/daylight.

The Adult Residential Facility (ARF) has a reduced level of care need. Consumers are able to come and go as they choose and the focus is supportive residential living rather than treatment. Therefore the bedrooms, dining, group activity, and living rooms are more central rather than the care team areas. The ARF is preferred to be connected to the Campus Center building to conveniently share and utilize the campus amenities proposed in that program. The planning for the ARF evolved into a linear scheme to with bedrooms on the ends separated by a central activity/dining core with entry points.

**Architecture and Building Systems**

As described in Part 6, the MHRC buildings are proposed to be built with a cost-effective Type V wood frame construction as the basis of design. The buildings will be designed for a lifespan of at least 50 years, and if properly maintained, will last much longer. The Type V construction allows for an exterior cladding material like hard wood siding. A durable natural wood expression will be compatible with the natural wooded surroundings of the site, and add to the project’s Vision of healing through nature. The windows are proposed to be high performance glazing, but will not be operable for reasons of security.

The buildings are conceived as having flat roofs (shallow slopes to drain) with a parapet for protection and to hide the rooftop equipment, fans and vents. An architectural expression for the building roof form will be created by a steel trellis that both provides shading to the courtyards and supports the photovoltaic (PV) panels.

At the MHRC buildings, pre-fabricated bedroom/bathroom modules may be an option. Built in a shop and transported to the site, these repetitive modules could potentially save construction time and cost, allowing the residents to move back more quickly.

For the ARF/Campus Center, as the first level of the building backs into and retains a hillside, this Study proposes an all concrete structure. The lateral system at the lowest level will be concrete shear walls. The upper levels could include concrete shear walls or could be composed of special concrete moment resisting frames. The foundation is assumed to be conventional spread footings and grade beams.

The mechanical design involves all mechanical HVAC systems and controls serving individual buildings. The system includes air-cooled variable refrigerant volume system (VRV/VRF) units.
including air-cooled condensers and indoor fan coil units. Motorized louver/window exhaust fan will provide ventilation to the common areas in the individual buildings. In addition, fan coil systems will be provided. Each residence room will be designed with dedicated HVAC system and control. Control of temperature in individual resident rooms will not be directly available to resident; however, central administration control of temperature in individual resident rooms will be verified during design. Building automation system is BACNET over Ethernet, with web access and pager alarming.

The plumbing design involves all domestic cold and recycled water, domestic hot water, storm, sanitary sewer, and vent systems. The scope of work also includes the testing of all plumbing equipment and systems associated with the new construction. The following systems are proposed: sanitary sewer and vent system; storm drainage system; domestic cold and recycled water system; domestic hot water system; drain systems; and natural gas system for main central service kitchen only. The project will be LEED certified and water conserving fixtures will be selected accordingly.

The electrical design involves all power, lighting, lighting controls, fire alarm, and testing of all electrical equipment. One new main power utility service for the entire complex will be installed at the ARF/Campus Center building, the power distribution will feed both ARF building and each MHRC building. An emergency standby diesel engine generator unit will be installed near the ARF building to provide 12 hours back-up power for 80 percent electrical load of the entire facility. Light fixtures to be specified will utilize fluorescent, LED, and HID lamps. Lighting controls will be provided. Fire alarm will be designed with full coverage area detection. Telecommunication system will be provided to support new service, backbone and horizontal distribution throughout the facility.

Sustainability

In 2013, California revised its Building Standards Code for energy efficiency, Title 24. The revisions put in place a mandate for all residential buildings to be designed and built to achieve Zero Net Energy (ZNE) performance standards by 2020, and non-residential buildings by 2030. To build a ZNE building, the amount of energy provided by on-site renewable energy sources must be equal or greater to the amount of energy used by the building over the course of a year.

To meet the challenges of San Mateo County’s Sustainable Guidelines, California’s revised Title 24 energy codes, and Cordillera’s vision to heal through nature, the Feasibility Study proposes the ZNE standard as a basis-of-design. By pursuing a ZNE strategy, the project will also meet many of the requirements necessary to achieve a rating in the Leadership in Energy & Environmental Design program (LEED).

A strong sustainable design approach, combined with the site’s serene natural setting, provides an opportunity to create a prime example of an environmentally sensitive residential campus. Some of the sustainable design strategies proposed throughout this Study include:

- Rain water catchment and treatment to conserve water and reduce impacts to the County storm water system
- Rooftop photovoltaic arrays and fuel cell systems for on-site energy production
• High-efficiency heating and cooling systems, such as Variable Refrigerant Flow (VRF)
• The use of extensive day-lighting and natural ventilation to take advantage of the site’s built-in conditioning systems

Consumer Relocation Planning

The Feasibility Study assessed the need to relocate the Cordilleras and Canyon Oaks residents during the period of construction. To the extent relocation will be necessary, this Study outlines recommended solutions. Before identifying these recommended solutions for consumer relocation, the project team considered the cost and availability of relocation options including; the feasibility of phasing construction at the site in order to minimize relocations; and the extent to which disturbances at the site would detract from consumer quality of life or could be mitigated.

Challenges to relocation of ARF consumers
We explored the following options for relocation of the 49 consumers residing at the Adult Residential Facility portion of Cordilleras:

• Availability of rooms in existing Adult Residential Facilities (ARF’s)
• ARF’s that would need to be developed and licensed from current housing stock
• ARF’s that would need to be built

San Mateo County has very limited ARF bed availability that has worsened due to increasing cost of housing and dwindling supply of provider operators. There are already consumers waiting for ARF openings in order to be able to move to a less restrictive level of care. The research described in more detail in this section of the Study, led to the conclusion that our best plan would be to design phasing of construction in such a way as to avoid relocation of the majority of ARF consumers. In addition, this information supported the option of adding to the number of ARF beds planned for the project.

Challenges to relocation of MHRC consumers
We explored the following options for relocation of the 68 consumers residing in the locked MHRC portion of Cordilleras:

• Repurposing the now vacant ground floor of San Mateo Medical Center
• Rental of another vacant building or portion of a building in the Bay Area that could be converted to a temporary MHRC
• Available beds in other MHRCs operated by Telecare and other organizations

We could not find a solution for relocation of the entire group of consumers that would be available on the timeline required for this project. We have concluded that the most viable solution appears to be a combination of contracting for MHRC beds in other facilities outside of San Mateo County as well as possibly using part of the ground floor at San Mateo Medical Center.
Cost of Relocation
The estimated costs for the alternate temporary relocation strategies are $6,432,220, which can be funded partially by $1,865,211 that will be available from current sources for placements, leaving $4,567,009 needed for one-time costs.

Challenges to relocation of Canyon Oaks consumers
The third group of 12 adolescents, located at Canyon Oaks residential treatment program, was considered for temporary relocation to another existing vacant building or program. We determined there were no appropriate solutions inside or outside San Mateo County. We also explored what the impact would be of leaving Canyon Oaks occupied during demolition and construction and whether there are strategies for mitigating potential problems.

The project team consulted with local providers and providers around the United States with whom we visited to see what their experience was with similar challenges during construction of new facilities. We learned that many organizations have successfully managed consumer services while construction is underway.

Consideration of Alternate County Owned Sites
The project team also performed due diligence in assessing potential alternate County owned sites for the replacement project. The project team conferred with the County’s Real Property division and obtained a list of all available County parcels. Each of these sites was evaluated for adequacy of size for the programs, zoning, appropriate location in a therapeutic environment, central access to medical and other essential services that are frequently required by MHRC consumers, and compatibility with the surrounding neighborhood. None of the available County owned parcels met all of the program criteria as well as the existing site on Edmonds Road. Therefore, the project team focused on developing a phased replacement program on the existing site.

Recommended Solution for Consumer Transition
The Cordilleras project staff, representatives from HGA architects and engineers and Telecare leaderships thoroughly assessed the feasibility of allowing consumers to remain in place on campus during the phased construction of new facilities. The results of the assessment showed that it was possible to allow most consumers to remain on site during the construction phases. There is a 16 month period that up to 36 MHRC consumers will need to be temporarily relocated to allow for the demolition of the existing building, and the construction of the last MHRC facilities.

A feasible project phasing plan would be:

Phase 1 Earthwork and Construction
During the initial phases all Cordilleras consumers in the MHRC, ARF and Canyon Oaks will remain in place.

First Consumer Move
At the conclusion of Phase 1 the new ARF and two 16-bed MHRCs would be completed. All ARF consumers and 32 MHRC consumers will move into these new facilities. The remaining 36 MHRC consumers will temporarily relocate to other appropriate MHRC’s outside of San Mateo County and possibly the ground floor of San Mateo Medical Center.
Part 1: Executive Summary

Demolition of Existing Cordilleras Building, Phase 2 Earthwork and Construction
After all consumers vacate Cordilleras, the existing building will be demolished and the final three MHRC buildings will be constructed.

Final Consumer Move
Upon completion of the final 3 MHRCs, the MHRC consumers relocated to the other settings will return to the new facilities.

Summary of Part 8 – Financial Analysis
The financial analysis for this Feasibility Study includes an estimate of the capital costs to replace the existing Cordilleras Center with a campus of new buildings, as well as an estimate for the annual operating costs for the proposed replacement project. In addition, for comparison purposes we have estimated the cost to renovate and upgrade the existing Center.

As previously described in the Summary of Findings above:

- Estimated base cost of replacement project is $85.3 M
- Estimated cost of renovation and upgrade of existing structure is $55.6 M
- Current annual operating expense for existing facility is $9.8 M
- Current annual revenue for existing facility is $1.8 M
- Current annual net operating costs for existing facility is $8 M
- Estimated annual operating expense of replacement project is $17.3 M
- Estimated annual revenue and savings for replacement project is $9.8 M
- Estimated annual net operating cost of replacement project is $7.5 M

See Appendix L for the complete Financial Analysis Reports

Summary of Part 9 – Schedule
The new Cordilleras project can be completed in approximately 5 years. If the Board of Supervisors approves proceeding with the project, the design process could begin immediately with a brief Bridging effort to develop a schematic design and begin the environmental review process. The proposed schedule reflects a Design-Build project delivery method, with the selection of the Design-Build contractor and team occurring in early April 2015. The design and documentation process would continue through summer of 2016, and run concurrently with the required environmental review and permitting process. Permits would be issued in early 2017. Construction would continue until the end of 2019. The new facility will be ready for occupancy by consumers in early 2020. This schedule will be adjusted as the project scope continues to be refined.
Part 2

Vision Statement and Goals
Part 2 – Vision Statement and Goals

Introduction

Crafting the vision for the replacement of the Cordilleras Mental Health Center set the foundation for all work included in this feasibility study. It was important that the Vision be defined early in the study process by a wide range of individuals including providers, family members, consumers and others with a vested interest in creating an optimal recovery environment for consumers. The Vision Statements will guide the decision making process and the development of the design throughout the life of the project.

HGA guided a Visioning process at a half-day event in February 2014. Participants included past and present residents and staff of Cordilleras, mental health specialists, administrators and staff of other local mental health facilities, resident family members, and county leaders. HGA explained the need and benefits of having a vision statement and provided the group with background information to help the participants start to think about what they really wanted Cordilleras to become and how they were playing an important role in guiding its future.

The session started with brief self-introductions of all participants in the room and explanation of the events to come that day and in the future by HGA. The core team, consisting of HGA and mental health experts from the county, gave the group an overview of the history of mental health and Cordilleras, discussed best practices in mental health, and the project schedule. From there, the group was given the opportunity to jot down examples of headlines they would like to see in a prominent newspaper or national magazine celebrating a newly-opened Cordilleras Center. Participants worked independently and were encouraged to be selfish about their headline by thinking about what they wanted for Cordilleras from their own perspective. The headlines were then gathered by HGA and sorted into main themes. After this, the participants were broken into groups lead by HGA and the County and the headline themes were distributed among the groups for brainstorming of preliminary Vision Statements. These themes helped to identify goals of Cordilleras Center, which helped to form the driving factors, or Vision, of the center. At the conclusion of this break-out session, the participants were once more brought together to share and build on each other’s findings.

At the conclusion of the Visioning Session, HGA and the county had the bones of a clear vision born from possibilities that the stakeholders saw for the future of Cordilleras Center. In thinking of the future of Cordilleras, and the residents of San Mateo County in which it supports, it was natural to align the vision of Cordilleras with the vision that the county had for itself. San Mateo County’s Shared Vision 2025. The Shared Vision 2025 calls for a community that is health, livable, collaborative, environmentally conscious and prosperous. Those qualities were also identified by the Vision Session participants as being part of the fundamental values of Cordilleras. The core team took the values brainstormed at the Visioning Session and merged them with those of the County in their Shared Vision 2025 report. The two were further distilled it to become the Vision Statement and Goal of the new Cordilleras Center.

See Appendix A for the Vision Session artifacts
Cordilleras Center Vision Statements

Focus on Wellness – to be healthy
The new Cordilleras campus will offer programs and services that are dedicated to the whole health and wellness of its consumers. The environment will support and reflect a productive individualized wellness path for all consumers.

Promote Respect - to be livable
The programs and services offered will provide a strong foundation of assuring dignity and respect for its consumers and staff. The programs and services will emphasize consumer’s choice, in a safe environment that inspires pride, motivates the spirit, accommodates diversity in culture and beliefs, instills optimism for personal growth and improves quality of life.

Build Community – to be collaborative
The programs and services offered at the new campus will build strong communities – amongst their own consumers, families, staff, and visitors, and add value to the surrounding community. The campus will become an integral part of its social surroundings, with its programs and services valued as innovative assets and its residents respected as citizens.

Heal through Nature – to be environmentally conscious
The programs and services offered at the new campus will capitalize on the beautiful serene natural setting to complement the process of wellness, rehabilitation and recovery. The new facilities will incorporate progressive sustainable design strategies, efficient building systems, and natural materials to the benefit of healthy people, place, and planet.

Strive for Recovery - to flourish
The new programs and services will help consumers realize their full potential, achieving their goals for recovery, and return to living independently in the community. We will develop a world-class model of care that sets a new standard for excellence, by drawing from current best practices and anticipating future advances in behavioral health care.
Cordilleras Center Goals

Focus on Wellness – to be healthy

Goals:
- Plan for consumer-centered treatment with a greater focus on whole health
- Provide specific care for variety of populations
- Create a more inclusive and supportive environment
- Integrate flexible spaces

Promote Respect - to be livable

Goals:
- Promote consumer empowerment through access to the natural environment and a design that is attractive and comfortable
- Foster pride in the facilities
- Provide a strong aesthetically pleasing design that sets a tone of respect
- Develop a clear separation and transition between public and private spaces

Build Community – to be collaborative

Goals:
- Build community on all levels, from consumer to County, by providing spaces and services to bring consumers, families, and the neighboring community together
- Seamlessly integrate the campus into the local community
- Create an inviting environment for all
- Become a learning center for consumers

Heal through Nature – to be environmentally conscious

Goals:
- Design environmentally sustainable facilities that touch lightly on the earth
- Integrate nature into public and private spaces and health and wellness activities
- Develop the campus as a therapeutic milieu

Strive for Recovery - to flourish

Goals:
- Be innovative
- Create an effective and accessible environment
- Facilitate each consumer’s success to function at highest possible level and integrate back into community
Measures for Success for the New Cordilleras Project

In keeping with the spirit and intent of the project Vision Statement, and consistent with evidence based design best practices in behavioral health, the success of the new programs and services will be measured by improved outcomes including:

• Reduced length of stay at the MHRCs
• Reduced rates of readmissions to the MHRCs
• Reduced admissions to Psychiatric Emergency Services for the Cordilleras population
• Reduced resident to resident and resident to staff altercation
• Increased consumer/family satisfaction
• Increased staff satisfaction
• Reduced waiting time for the transfer from the San Mateo Medical Center psychiatric inpatient services to the MHRCs which will improve access and patient flow through the healthcare delivery system.

The project staff will develop baseline data to support a pre/post analysis of the effect of the new programs and services.
Part 3

Site Assessment and Recommendations
Part 3 – Site Assessments and Recommendations

Introduction

The site of the Cordilleras Mental Health Center is located at 200 Edmonds Road on
unincorporated land in San Mateo County, near Redwood City. In addition to the existing
Cordilleras Mental Health Center building, the site is shared by the County Fire Station 18 and the
Canyon Oaks Youth Center, a residential treatment program for adolescents. Both of these
buildings were built approximately 15 years ago, and are still in operation. The 19.4 acre parcel is
bound by Edgewood Road to the southeast, and by the Pulgas Ridge Open Space Preserve on the
other three sides. Interstate 280 is one half mile to the southwest. Edmonds Road is the only way
in and out of the site. The site is shaped like a top hat, with one side of the brim elongated to the
southwest paralleling Edgewood Road. This portion of the site is narrow, steeply-sloped, and
inaccessible by roads and was therefore not considered for proposed development. The remainder
of the site is approximately 10-1/2 acres. The site has a canyon in the center, running east to west,
with steeply sloped sides to both the north and south with an average slope of about 1.5:1. The
overall elevation change in this portion of the site is more than 140’ – extending from about 280’
above sea level at the canyon floor, to 420’ at the hilltops. The seasonally active Cordilleras Creek
runs along the bottom of the canyon. It enters from the western side of the site, runs for about
500’, and then is undergrounded in a culvert concrete pipe. This culvert splits at a ‘Y’ and runs
north and south, with the creek day-lighting again just past the Canyon Oaks Youth Center to the
south and just beyond the site property line to the north. A second culvert system, less active than
the main creek, carries water from a north tributary underground along the northern edge of the site.
Much of the site is heavily wooded, with a few gravel access roads and trails traversing the site and
providing access to a water tank on the northern hilltop.

In the sections that follow, the primary site features are discussed in greater detail.

3. 1 Geotechnical Investigation

Geologists and geotechnical engineers from Arup and Lettis Consultants International conducted a
preliminary study to facilitate a feasibility-level evaluation of geological and geotechnical conditions
in the vicinity of the project. This preliminary engineering geologic study of the site included a
geologic desktop study of existing information, site reconnaissance, preliminary geotechnical
evaluation, and development of preliminary design recommendations.

The geohazards evaluation considered the effects on the proposed construction due to: faulting,
seismicity, slope stability, rock fall, flooding, debris flow, and naturally occurring asbestos. This
initial geotechnical and engineering geological evaluation considers the site demolition, large design-
level ground motions (earthquakes), and the feasibility of the proposed areas of site cut and fill.

From the perspective of this feasibility-level study the potential geohazards identified can all be
mitigated by engineering design, and the proposed site improvements are feasible. The site will
experience high seismic shaking during an earthquake, but execution of well-prepared construction
specifications can minimize the effects of ground shaking on the proposed improvements. Identified
areas of slope instability are not immediately proximate to the proposed development. Cut slope
areas of potential instability should be investigated as part of final design but were not anticipated to be unmanageable from a design perspective.

The geotechnical and engineering geological feasibility report (Appendix E) presents in detail the foundation concepts and retaining wall concepts for the site. For the ARF/Campus Center building, the final foundation design will depend on the depth to bedrock from the ground floor elevation. Shallow spread footings bearing in bedrock can be used to support vertical loads when bedrock is shallow. Where bedrock is deeper below the final ground floor elevation, vertical loads can be supported by drilled piers or longer footing elements bearing in bedrock. Lateral building loads can be resisted by a combination of friction (building weight) and passive resistance (footings or shear keys) constructed where the bedrock is shallow. Longer pier elements will have low capacity to resist lateral loads.

The five, one-story MHRC structures are anticipated to be lightly loaded and supported on continuous, perimeter, shallow footings bearing in engineered fill constructed as part of site contouring. Generally, footings will bear 24 inches below lowest adjacent soil grade and be a minimum 18 inches wide. Interior slabs-on-grade will require reinforcement for crack control but be generally non-structural. For adequate performance of these foundations, differential fill thickness for each pad should be limited to 5 feet.

The proposed site grading requires several retaining structures, some varying between 0 and 10 feet in retained height, and one wall a with retained height on the order of 50 feet. Soldier-pile-and-lagging cantilever retaining walls are expected for retained heights less than 10 feet and a tieback retaining structure is expected for the cut slopes higher than 10 feet. All retaining structures should be back-drained to reduce potential for hydrostatic pressure buildup.

Rock fall and flooding geohazards can be managed during detailed design. Management measures include a rock fall net at the top of the cut slope to prevent colluvial material falling onto the buildings below, and adequate sizing and protection of the culvert entrances for flood protection. Natural occurring asbestos, if encountered, can be dealt with during construction by implementation of best management practices including dust control.

The proposed reconstruction does warrant further study during a design-level geotechnical and engineering geological investigation and analysis. The conclusions and recommendations developed from the investigation and analysis will rely on having on-site geologic or geotechnical engineering presence during construction, particularly for demolition of the existing subgrade structures and valley slope cut operations. For the placement and compaction of the proposed site fills, full-time inspection and testing of the earthwork compaction should be anticipated.

*See Appendix E for the complete Geology and Geotechnical Report*
3.2 Biological Constraints

TRA Environmental Sciences conducted a Biological Constraints Analysis for the project. We addressed potential impacts to special-status plant and animal species, and regulatory and mitigation requirements that could affect decisions regarding the feasibility of the project. The special-status species in the region include federal and state listed species, as well as state species of special concern. The project site contains waters of the state and United States, namely Cordilleras Creek and its adjacent riparian zone, but does not contain freshwater emergent wetlands.

Cordilleras Creek has a well-defined channel that currently flows intermittently. Based on observations of both vegetation and woodrat houses in the creek channel, the Creek has possibly not had high flows for several years.

The project will impact the San Francisco dusky-footed woodrat, a California species of special concern, and will require mitigation to address those impacts. In the case of this species, the mitigation can be provided on the project site. The project may impact San Francisco collinsia, a rare plant that occurs on the property. Follow up surveys to document the location of these species are recommended.

The project has a very low potential to impact special status species, California red-legged frog, San Francisco garter snake, and western pond turtle, which are known to occur on the other side of I-280 from the project. These species are not expected to occur on the project site, but best management practices are recommended to avoid impacts. Without state and federal authorization (a lengthy process), the discovery of these species during construction would halt the project until state and federal wildlife agencies are consulted and concur with how to move forward.

The project will impact the riparian zone of Cordilleras Creek, but will not directly impact the creek bed, bank or channel. In order to comply with zoning the project will need to be designed to avoid significant impacts to the creek and riparian zone by having a setback from the top of the creek bank, by protecting creek water quality from stormwater runoff (e.g., minimizing hardscape and other measures), and by incorporating riparian plant species in the landscaping. Restoration actions, such as removing invasive non-native plant species from the property or enhancing creek vegetation in previously disturbed areas, could also offset the impacts of development in the riparian zone to avoid violating the zoning code.

The project may need to remove trees that are protected by local zoning regulations, and should have a tree removal and replacement plan to address the removal of trees with a diameter at breast height of 17 inches or more (circumference 55 inches) for local regulations and 4 inches or more for California Department of Fish and Wildlife recommendations. The agencies will require that several new trees be planted for each tree that is removed, and this may require finding offsite locations within the watershed for tree planting. It will also require a 5-10 year monitoring period and replacement of dead trees if necessary. It may be necessary to work with the Midpeninsula Regional Open Space District regarding the possibility of planting trees in the adjacent Pulgas Ridge Open Space Reserve to meet the replacement ratios which range from 1:1 for removal of non-native trees to 6:1 for removal of oak trees greater than 4 inches in diameter.
It is anticipated that the project will require the following permits/authorizations:

- Lake and Streambed Alteration Agreement for effects on Cordilleras Creek and its tributaries;
- U.S. Army Corps of Engineers permit under Section 404 of the Clean Water Act for replacement of culverts and if any fill is proposed in Cordilleras Creek;
- California Regional Water Quality Control Board Water Quality Certification under Section 401 of the federal Clean Water Act, for replacement of culverts and if any fill is proposed in Cordilleras Creek.

See Appendix F for the complete Biological Constraint Analysis

### 3.3 Cultural Resources

In order to evaluate potential constraints to the project due to the presence of cultural resources on the Cordilleras site, the County engaged Basin Research Associates to conduct a Cultural Resources Review. The intent of this Cultural Resources Review is to provide a constraint analysis of archaeological and historic properties within the project area which may be listed, determined, or potentially eligible for inclusion on the California Register of Historical Resources (CRHR) and that could be affected by the proposed project. Lead agencies must evaluate any listed or potential cultural resources in accordance with the criteria of the CRHR. The CRHR is a listing of properties that are to be protected from substantial adverse change, and it includes properties that are listed, or have been formally determined to be eligible for listing in the National Register of Historic Places, State Historical Landmarks, and eligible Points of Historical Interest. A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or cultural heritage of California or the United States
2) It is associated with lives of persons important in our past
3) It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values
4) It has yielded or has the potential to yield information important in the prehistory or history of the local area, California, or the nation.

Basin’s Cultural Resources Review included:

- Records Search by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC)
- Limited Literature Review
- Native American Consultation to determine if historic properties are located in or adjacent to the proposed project
- Preliminary Built Environment Review of the facility by an Architectural Historian

No archaeological field review was conducted since the property is developed with buildings and/or introduced landscaping.
Records Search and Literature Review

An initial 1998 review of records and literature on file at BASIN, completed for an adjacent project, was negative.

An updated prehistoric and historic site record and literature search was commissioned for this constraints analysis. In addition, reference material from the Bancroft Library, University of California, Berkeley and Basin Research Associate was also consulted. Several specialized listings and their updates on the *Historic Properties Directory for San Mateo County* were also reviewed including updates of the National Register of Historic Places, California Landmarks, and Points of Interest; *California History Plan*, *California Inventory of Historic Resources*, *Five Views: An Ethnic Sites Survey for California*, *Historic Properties Directory*, *Historic Civil Engineering Landmarks of San Francisco and Northern California*, list of *Historic Civil Engineering Landmarks*, *Archaeological Determinations of Eligibility*; and, other local inventories and lists. Archival research by Mr. Hill included reviewing original building plans and other documents on file with San Mateo County Public Works; consulting the online archives of the *San Francisco Chronicle* and *The San Mateo Times*; and reviewing the *Pacific Coast Architecture Database* online for biographical background on architects Douglas Stone and Louis Mulloy.

Findings:

- No prehistoric, Hispanic or American era historic archaeological sites have been recorded in, adjacent to, or within 0.25 miles of the project.
- None of the known late 19th and/or early 20th century "Indian Mounds" have been reported or mapped in or adjacent to the project.
- No known ethnographic, traditional, or contemporary Native American resources have been identified in or adjacent to the project.
- No known historic era trails, roads, or dwellings or structures dating to the 19th or early 20th century were located in or adjacent to the project.
- No historic resources listed on the *Historic Properties Directory* or other lists/inventories of historic resources are located in or adjacent to the project or area adjacent.

Native American Consultation

The Native American Heritage Commission was contacted for a review of the Sacred Lands Files and results were negative.

Built Environment Review

Mr. Ward Hill, a consulting architectural historian meeting the Standards of the Secretary of the Interior, completed a preliminary built environment review of the facility. He conducted a field survey of the Cordilleras Mental Health Center on May 22, 2014.

The former San Mateo County Tuberculosis Hospital retains historic integrity from its original construction in 1950. The hospital's contractor was Palo Alto builder, Howard J. White, and the
Part 3: Site Assessments and Recommendations

architects were Douglas Dacre Stone and Louis B. Malloy. The architectural team of Stone and Mulloy designed many major hospitals in the Bay Area in the Post World War II years and were known for their hospital designs.

Conclusions and Recommendations

This review suggests a very low sensitivity for prehistoric and/or historic era archaeological resources within the project. It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried archaeological resources appears necessary. However, if any significant prehistoric or historic cultural resources or cultural materials are exposed or discovered during site preparation or subsurface construction activities, operations should stop within 50 feet of the find and a qualified professional archaeologist contacted for evaluation and further recommendations. Treatment of any Native American burials exposed during construction should be in accordance with the State of California Public Resources Code in consultation with the Native American Heritage Commission.

An architectural historian should be retained to formally evaluate the building including the development of a suitable context. The historic context would provide the necessary background to evaluate the architectural team and building with respect to CRHR criteria 1, 2 and 3. A revised and enhanced DPR 523 form should be completed.

See Appendix G for the complete Cultural Resources Constraint Analysis

3.4 Site Utilities

Water Systems

Existing Water System
Potable water service to the site is provided by the San Francisco Public Utility Commission via a 6-inch public water main in Edmonds Road. At this time, the static pressure and available flow of the offsite water system is not known. However, domestic and fire water for the site is provided from a tank with a storage capacity of 150,000 gallons. The assumption is that the water from SFPUC does not have adequate pressure for the needs of the site. Water from the 6-inch public main is pumped up to the tank with a base elevation of approximately 414’. The pump station is located at the southeast corner of the site at an elevation of 285’. A 4-inch line from the tank provides domestic water to the buildings. A separate 6-inch line from the tank provides fire water to a dedicated fire system and fire hydrants. The upper one-third of the tank provides storage for domestic water. The lower two-thirds of the tank is a reserve for fire water. Recent fire hydrant flows tests show that the system can provide 1,000 gpm with a residual pressure of 20 psi. This flow rate does not meet current California Fire Code requirements of 1,500 gpm.
Proposed Water System
There are two options being considered for the new water system.

Base Case – Maintain the Existing Tank for Domestic and Fire Water
For this option, the existing 150,000 gallon storage tank and pump station will continue to be used for both fire and domestic water. The 4-inch feed line to the tank will be replaced. The existing 6-inch and 4-inch discharge lines from the tank down the slope to the site will be replaced with a new 8-inch pipe for the fire line and a 4-inch pipe for the domestic line. New domestic and fire water mains will be installed around the site to serve the buildings and fire hydrants. New fire hydrants will be installed that conform to current San Mateo County standards. Each new building will have a dedicated domestic water service with a meter and reduced pressure backflow preventer. Each building will also have a fire service with a reduced pressure detector assembly and fire department connection.

To increase the pressure and available flow in the site fire system, a booster pump(s) will be installed on the new 8-inch discharge line from the tank. The electric pump will be sized so the system can provide 1,500 gpm with a minimum residual pressure of 20 psi. The pumps will be installed above ground, within a small enclosure. The booster pumps will also have backup power supply from the emergency generator.

Sustainable Design Alternate – Use the Existing Tank for Greywater and Fire Water
For this option, the 150,000 gallon tank would be used to store runoff collected from building roofs and reused for non-potable uses, irrigation water and fire water. Runoff from the building roofs would first be filtered in each building to remove large debris and solids. It would then be piped and collected in an underground tank. The water would be treated by a chlorine chemical injection system to ensure a minimum CT of 450 mg-min/L and filtered by a pressure filtration system at a rate that does not exceed 5 GPM/ft2 to reduce turbidity to less than a daily average of 2 NTU. The treated water would then be pumped up to the large tank. From the tank, three discharge lines (one each for non-potable, irrigation and fire water) would deliver water via gravity to the site. Each building would have a separate plumbing system for non-potable water that would likely serve toilet flushing within the building. As with Option 1, a booster pump(s) would be installed on the fire water discharge line from the tank to increase the pressure. The existing pump station would be removed.

For the domestic water system, a new 4-inch service line would be connected to the existing 6-inch water line in Edmonds Road. A booster pump(s) would be installed on the 4-inch line to increase the pressure in the domestic system. The 4-inch line would be routed through the site and provide domestic water to each building.

Impact of Phasing
For either option, while the two western most MHRC buildings are being constructed and the existing Cordilleras Mental Health Center is in service, it may be required to temporarily relocate the existing water system to maintain domestic water and fire water service to the existing buildings while the proposed improvements are constructed. The temporary water relocation would occur near the east fire access road at the existing pump station. Approximately 200’ of the 4” domestic water line and 200’ of the 6” fire water line would need to be rerouted to allow construction of the east fire access road and walls.
Natural Gas Systems
Gas service will enter the site with a main gas meter, a regulator, and an earthquake valve located outside of the Campus Center/ARF building. The individual MHRC buildings will not require gas supply. The design goal of achieving Zero Net Energy is better met with electrical power generation and electrical equipment, like stoves and hot water heaters.

Electrical Systems
The main electrical service for the entire campus will be fed via a new PG&E pad mounted transformer located at the site in the vicinity of the ARF building. One main PG&E kWh meter will be installed for the campus. The main switchboard will be installed at the ARF building main electrical room. The ARF-DP distribution board will be installed in the ARF building main electrical room. This will serve the ARF building and site electrical loads. Step-down transformers will be installed in the ARF building to provide 120/208V, 3 phase power for the branch circuit panelboards. The five MHRC-DP distribution panels will be installed in the five MHRC buildings’ electrical rooms.

3.5 Storm Drain and Sanitary Sewer System

Storm Drain System

Existing Storm Drain System
The main storm drain collection system on the site is Cordilleras Creek. The creek flows southeasterly through the site and eventually parallels Edmonds Road. From elevation 310’ to about 300’, the creek is daylighted with a well-defined bed and bank. A concrete headwall, with a trash rack, directs the creek in to a 30-inch diameter concrete pipe that flows along the west side of the mental health care building. A small tributary creek flows west to east near the Canyon Oaks facility. Another concrete headwall collects the tributary in to a 30-inch diameter concrete pipe. Both 30-inch pipes combine at a manhole where a 42-inch pipe exits and flows easterly where it discharges at a concrete spillway into the creek at the south east corner of the site at elevation 275’. Another smaller tributary from the northeast is intercepted along the existing access road and conveyed by a pipe to the spillway. Runoff from the site and building roofs is collected and conveyed to the large diameter storm drain pipes that run throughout the site.

The County has reported some known issues with the headwalls and trash racks being blocked by debris and preventing flow from the creeks and tributaries from entering the pipes. This has caused some flooding at the site. However, the flooding is not likely caused by lack of capacity in the pipes.

Proposed Storm Drain System
The new storm drain system will consist of a network of 8 to 42 inch diameter pipes, catch basins manholes, and trash racks to collect surface runoff and convey it to one of the existing, large diameter pipes. The existing 30-inch and 42-inch diameter pipes will need to be relocated around the new building footprints which will create a system with fewer bends than the existing system. The straightened alignment will allow the transport of more debris through the system. However, routine maintenance is required to ensure the storm drain system will perform as intended.
Part 3: Site Assessments and Recommendations

The existing headwalls and spillway at the Canyon Oaks Center (south tributary) will not be modified. The eastern tributary will be intercepted at the northern end of the fire access road and equipped with a trash rack and overflow riser. The trash rack of the main tributary of Cordilleras Creek will be modified and equipped with an overflow riser pipe.

San Mateo County standards require that runoff from new and replaced impervious surfaces must be treated prior to entering the storm drain system. Runoff from the new building roofs and access roads will be directed to storm water treatment areas. There will be several storm water treatment areas located throughout the site at low points, and other natural areas to collect runoff.

Typically, the surface area of the storm water treatment areas is 4% of the area draining to it. The treatment areas will consist of an 18-inch layer of highly permeable soil over 12-inches of drainrock with a perforated subdrain pipe. Each treatment area will have an overflow drain to handle the large storm events. The overflow drains will connect the site storm drain system.

San Mateo County drainage design standards require the existing peak runoff rate for a 10-year storm event not exceed the pre-construction rate. Typically a new development project would increase the area of impervious surfaces which would increase the rate of runoff. To control the rate of runoff from the site to pre-construction conditions, a detention system might be required. A detention system typically consists of large, oversized pipes to store runoff. On the downstream side of the pipes, a weir structure with a small opening in the bottom is sized to control the discharge rate from the pipes. The diameter of the opening is calculated so the discharge rate does not exceed the pre-construction rate. For larger storm events, runoff will collect in the large pipes and eventually overtop the weir.

Impact of Phasing
While the two western most MHRC buildings are being constructed and the existing Cordilleras Mental Health Center is in service, approximately 150’ of 15” storm drain line and one manhole will be installed to connect the storm drain system for the west fire access road to the storm drain system for the south tributary.

Sanitary Sewer System

Existing Sanitary Sewer System
A 6-inch sewer line in Edmonds Road provides sanitary sewer service to the site. The 6-inch sewer line flows easterly in Edmonds Roads and connects to a manhole that is part of the Scenic Heights County Sanitation District which is owned and maintained by San Mateo County. Onsite a network of 6-inch and 4-inch sewer lines convey sewage to the main sewer line in Edmonds Road.

Proposed Sanitary Sewer System
The existing 6-inch sewer line on the south side of the site (that currently serves the Canyon Oaks building and fire station) will be used to provide sanitary sewer service to the new buildings. A new 6-inch sewer line will be installed in the west fire access road to serve the five MHRC buildings. Each building will have a 4-inch sewer lateral. Another 6-inch sewer line will be installed in the east fire access road to serve the support building. The new 6-inch sewer lines will connect to a manhole on the existing 6-inch sewer line at the southeast corner of the site.
**Impact of Phasing**
While the two western most MHRC buildings are being constructed and the existing Cordilleras Mental Health Center is in service, approximately 220’ of temporary 6” sewer line and one temporary manhole will be installed between the existing Cordilleras Mental Health Center and the San Mateo County Fire Station. The temporary sanitary sewer features will be removed in subsequent phases.

*See Appendix K for the Site Utilities Diagram*
Part 4

Existing Building Assessment and Recommendations
Part 4 - Existing Building Assessment and Recommendations

Introduction

Opened in 1952, the Cordilleras Mental Health Center originally served as the San Mateo Tuberculosis Hospital. With the discovery of new anti-biotic drugs in the 1950’s, and the consequent reduction of tuberculosis cases in the following decades, the hospital closed and sat unused for several years before being repurposed in 1978 for its current use. Designed in a generic modern style common for the times, the building is a three-story concrete structure with a full basement. At 62 years old, it has served out its intended useful life and is currently being maintained in serviceable condition at a significant cost. As you can see in our financial analysis Section 8.2, the current yearly cost to maintain the facility is $473,000, and an additional $3.9 in upgrades is being deferred. As mentioned previously, the building is not well-suited for the current best practice in behavioral health and rehabilitative care. And as you will read in the following narratives, it is also in much need of building systems upgrades and repairs.

Being that this is a feasibility study, our evaluation of the existing building is intended to give a broad overview of the conditions impacting the use, re-use, and replacement of the existing building and its site. Our evaluations have been largely based on site visit observations and historic document review. We have also provided a rough-order-of-magnitude cost estimate for the various options and recommendations discussed here (see Section 8.1).

4.1 Building Structure

The existing Cordilleras Center building is documented on drawings prepared by Douglas Dacre Stone and Lou B. Mulloy Architects, dated November 1, 1949. The structural drawings were prepared by W. Adrian, L. Graham & W. Hayes Associated Structural Engineers. Site observations were also made on March 12, 2014 by HGA.

The building is a three story cast-in-place concrete structure with a basement. From observations made on the recent site visit, the condition of the exposed concrete structure appeared to be in good shape, with no significant cracks due to movement, thermal expansion/contraction, or corrosion. Observed cracks are hair-line in nature. As observed, the building matches the geometry represented in the construction documents. There is no apparent remodel that has changed the structural system. As discussed with the facility maintenance individual at the site visit, in his opinion there were not any structural concerns that he was aware of.

The building material properties noted on the drawings are:

- Concrete equals 2500 psi at 28 days for all elements
- The reinforcing steel is noted to be Intermediate Grade with an allowable working stress of 20,000 psi. This is equivalent to 40,000 psi yield strength.
- Footings are based on a dead load allowable capacity of 7300 psf and a combined dead plus live load allowable capacity of 10,000 psf.
- Pile foundations are based on a dead load capacity of 40 tons, and a combined dead plus live load capacity of 50 tons.
The buildings structural frame is a concrete structure, with a basement level and three elevated decks above grade, and locally a penthouse structure. The plan shape of the building is a “Y”. Above the grade level slab the building is separated into three distinct structures with expansion joints. The width of the expansion joint is 8-inches. The Roof and Floor systems are composed typically of 5-1/2” wide pan joist by 13-inch deep at the roof and 11-inches deep at the floors. Joist depths do range in depth, with the deepest sections equal to 17-inches, and widths do increase to 7-1/2”. The pan joist spacing is typically around 3-feet. When the joist spacing is greater, the joist depth and width are modified accordingly. The slab thickness over the pan joist is 2-1/2” at the roof and 3” at the floors. The pan joist typically span to concrete beams supported by concrete columns that increase in size from the top-down. The lateral system is composed of concrete shear wall elements. The structure is typically supported by piles with pile caps.

**Gravity System**

- The elevated floor beams and girders appear to be efficiently designed to code minimum loads. The live loads used for the check were 20 psf for the roof and 50 psf for the floor. It is not apparent that there is any reserve capacity.
- The columns below the First Floor, ground level, elevated deck exceed the minimum load criteria of the elevated decks and would be capable of supporting larger loads.
- The pile foundation capacity for the typical conditions exceeds the minimum load criteria of the elevated decks and would be capable of supporting larger loads.

**Lateral System**

- Remedial work and a thorough analysis would be required to address the seismic performance of the existing structure. The items that are preliminarily identified as irregularities or having insufficient capacities are:
  - In the patient room wings the exterior concrete wall in the longitudinal direction are discontinuous below the Second Level. Per current practice and code requirements there are numerical penalties for such irregularities.
    - In the patient room wings in the direction of the longitudinal walls, there are added corridor walls to address the discontinuity noted above. The top of these walls start at the Second Level. It appears that these walls are underdesigned. Effectively they carry all the lateral load in the longitudinal direction between the First and Second Levels. Also for the resulting high shear loads, there should be two curtains of wall reinforcement, not the single layer as detailed on the provided drawings, per the current code requirements.
    - For the seismic loads noted, these loads would be transferred through the 3” concrete slab with relatively light welded wire fabric. There appears to be insufficient capacity to transfer these loads.
    - Collectors along the corridor would be required as part of the transfer of loads. There is not sufficient capacity in the beams along the same grid as the added corridor walls to transfer these loads.
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- Basement Walls:
  - It appears that the Equivalent Lateral Pressure used for the design of the basement wall out-of-plane design is roughly 35 psf. This is relatively low. There is no distress noted for the existing condition. The concern would be to not add any new adjacent super-imposed loads next to the basement walls at the grade level.
  - There appears to be sufficient in-plane lateral capacity at the basement walls.

Recommendation for Building Reuse

In our effort to explore a range of approaches to the replacement and improvement of the Cordilleras Center, we evaluated the existing structure for its potential to be reused as a generic adult mental health residential facility.

Regarding the building structure, seismic improvements to existing buildings that do not have a change in use typically are considered voluntary and have more latitude in what is acceptable for improvements. For existing buildings which have a change of use, specifically occupancy use, the level of improvements need to be justified to meet current code requirements or be based on an acceptable standard. The acceptable standard that is typically used is ASCE-41, “Seismic Rehabilitation of Existing Buildings”. We would recommend that ASCE 41 be used to evaluate the existing building for any considered upgrade.

As part of the analyses, two levels of seismic events are considered, one that is equivalent to a design level force used per current codes, and a second seismic event that is considered the maximum considered earthquake. Associated with these two levels of seismic events are different performance objectives, Immediate Occupancy, Life Safety and Collapse Prevention. The Immediate Occupancy performance objective is normally associated with essential facilities. We would recommend a Life Safety performance objective for the design level force, and Collapse Prevention for the maximum considered earthquake.

In the Building Evaluation Section the most significant item to be address is the offset lateral walls in the longitudinal direction that is created by the discontinuous exterior walls immediately above ground level. The most direct way of resolving this condition is to add a continuous longitudinal wall between the ground level and the second level, which would be detailed to have window openings. The long continuous wall would keep the overturning forces low, and resolve any slab collector issues at these locations. For the existing added longitudinal walls that start at the second level we would anticipate some remedial work to create collector lines. The next challenge would be to numerically justify that no added piles are required, specifically for the transverse walls. We believe that the capacity is close to the demand and a more detailed analysis and criteria from a geo-technical engineer may be enough to justify the existing condition.
In summary we would estimate the following minimum corrective work:

- New longitudinal walls between the Second and Ground Levels at each of the three wings, that will require extensive epoxy doweling.
- Added shotcrete walls to the interior longitudinal walls with a single layer of reinforcement that start at the second level.
- Added Collector reinforcement and added concrete cover with epoxied hair-pens for the beams in-line with the interior longitudinal walls noted above.
- Conservatively assume six new 12-inch thick by 18-feet long full building height transverse walls to reduce diaphragm loads and reduce loads to existing transverse walls.
- Increase these assumptions by 50 percent to account for unknown costs.

Normally a lot of the costs for remedial seismic work are associated with replaced architectural finishes, roofing patching or replacement and impacts to existing utilities. These costs should be considered separately, but we are also anticipating any re-use would involve the total replacement of these elements.

## 4.2 Building Systems

Interface Engineering performed an assessment and examination of the existing mechanical, electrical, plumbing, and fire/life safety systems (MEP/FLS) serving the Cordilleras Mental Health Center. The assessment and examination was performed with the intent of determining the existing MEP/FLS systems’ conditions, operations, reliability and capacity. Investigations include a site visit and an examination of existing as-built drawings of the facility. The sections below describe both the existing conditions of the various systems and the recommendations for future work if a decision was made to renovate and reuse the existing building.

For more detail, see Appendix H: Building Systems Reports.

### Mechanical Systems

#### Heating Plant System

The heating plant consists of two natural gas-fired steam generating boilers located in the basement level of this main building. The boiler flue appeared to be in good condition with no evidence of corrosion. The flue extends through the exterior wall and connects to a stucco enclosed stack on the east side of the building. Some cracking of the plaster was noted in the exterior finish. Each boiler has the capacity to maintain the heating requirements for the entire building during peak heating demand. The secondary boiler is activated to ensure the primary boiler is not operating at full capacity for any great length of time. The boiler nameplate data indicates the boilers were manufactured in 2003. Although the boilers appear to be in good working condition with routine maintenance, they do not meet the current regional air quality requirements. The boiler service life is approximately 25 years with another 15 years of operation available. This type of system requires a greater amount of maintenance and can encounter premature equipment failures and poor steam system efficiency.
The piping, blow-off and flash tanks, including some of the valves in the Mechanical Room are original to the 1949 construction. The estimated piping service life is approximately 30 years from the time of installation, so these components have served more than double their expected life.

The steam and condensate return piping system is original to the 1949 building construction and has exceeded its useful service life.

According to the facilities staff, except for the piping, the individual patient room radiators, associated steam traps and room controls have been replaced within the last 5 years.

**Recommendation for Building Reuse**
The existing hydronic steam and condensate return piping, and associated appurtenances within the Boiler Room are original and should be replaced with new piping, insulation and piping supports, valves and tanks. The Boiler Plant is in good working condition but does not meet current air quality requirements. Although it’s grandfathered in, any renovation or expansion that will result in alteration to the Boiler Plant will require upgrades that meet current codes. This includes adding code-mandated outdoor ventilation.

The existing hydronic steam piping and condensate return piping routed within the building and connecting to the individual room heating coils is original and should be replaced. The coils, steam traps and controls have been recently replaced and shall remain. The vacuum and feed-water pumps, valves, controls and all associated shall be replaced.

**Fans and Supply/Exhaust Air Distribution Systems**
The Basement Level Mechanical Room contains the buildings 100% outside air and supply fan system. The four individual supply air fans and duct distribution serving the First, Second, Third Floors and Kitchen areas are original to the 1949 construction. The fan motors and belts have been refurbished. The supply fans and associated casework have exceeded their life expectancy.

The supply air distribution system serves the individual floor corridors with no air discharged directly into the patient rooms. Outside ventilation air to the individual patient rooms was intended to be through the operable windows, however due to safety reasons, a number of these windows have been secured. The rooms are not ventilated and do not meet code compliance.

The heating air handling system consists of a 100% outside air arrangement with a single outside air louver connected to a plenum. The record drawings do not indicate that an outside or individual fan damper has been installed. This is a code violation that should be remedied. The air is relieved through a number of exhaust fans located on the roof in a Mechanical Room. The fans are original to the 1949 building construction; however the motors and belts have been replaced. The fans and associated casework and duct system has exceeded their life expectancy. The air distribution for both supply and exhaust systems located throughout the building is original and has passed its life expectancy.

The kitchen exhaust fan and duct system serving the hood does not meet current code requirements and should be replaced.
The Lobby and Third Floor Pharmacy areas have dedicated roof mounted packaged heat pump units with duct distribution system routed on the roof level. These units have been installed within the last 5 to 10 years and have a life expectancy of 15 years. The Pharmacy unit appeared to have insufficient supply airflow capacity and an inline booster fan was incorporated into the system to compensate for airflow required in this area.

**Recommendation for Building Reuse**

The supply and exhaust fans and casework are original and should be replaced with new units of equal performance capacity. These components have exceeded their service life. All associated control components should be replaced with new.

The existing resident rooms do not have the necessary ventilation required per code. A method of providing the code-required outside air must be provided. HVAC options to consider would include either a dedicated outside air fan with a distribution system and heating coil, or exterior/interior wall louvers at each resident room.

The entire air distribution system including supply and exhaust ductwork and associated appurtenances have exceeded their useful service life and should be replaced with new. This includes all new duct insulation and support systems to meet current code requirements.

**Plumbing Systems**

**Sanitary Waste and Vent System**

The majority of the sanitary waste is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what is visible on the Ground Floor and Boiler Room. The sanitary waste lines for the building appear worn-out and outdated; the pipes and fittings are hub spigot type with lead joints. The existing sump pump in the Boiler Room appears to be worn-out and outdated. It has a broken cover and its associated piping needs to be replaced.

**Recommendation for Building Reuse**

All corroded piping should be replaced with new piping. All hub spigot-type pipes should be replaced with hub-less piping joined together with couplings. Existing sump-pump in the Boiler Room should be cleaned. Replace the sump-pump discharge pipes and fittings with new piping and fittings. Also replace the sump-pit cover.

**Domestic Cold Water System**

6” City incoming water main splits into two 2-1/2” domestic water lines at the Pump House. The two domestic water lines are connected to two water transfer pumps and are pumped to a single 4” common header in order to supply water to the existing steel tank located on nearby hill. The domestic cold water supply to the building is fed by gravity from the existing steel tank. The piping from the tank to the building is underground and therefore its condition could not be determined. It is assumed the piping has reached its useful service life and should be replaced.
**Recommendation for Building Reuse**
The existing water transfer pumps located in the pump house need to be fixed along with their bases. Flexible connections should be installed in the suction and the discharge of the pumps. All corroded cold water supply piping should be replaced with new piping.

**Domestic Water Heating System**
The majority of the domestic hot water distribution system is in the ceiling or concealed and was not visible for the site observation. The hot water is supplied by the existing gas water heater which appears to be in good condition. Hot water (140 degree F) to the kitchen dishwasher is also supplied by an existing gas water heater which appears to be in fair condition.

**Recommendation for Building Reuse**
All corroded hot water supply piping should be replaced with new piping.

**Storm and Overflow Drainage System**
The majority of the storm water piping is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what was visible in the Ground Floor and the Boiler Room. Rainwater lines for the building appear to be original with a hub spigot type fitting with lead joints. When it rains, underground water rises up and enters into the trenches of the Boiler Room. Building maintenance staff places a single sump pump to lift and discharge the water to the main sewer. Sometimes single pump is not able to accommodate all of the water, and so they place a second pump to get rid of all underground water. The sump pump discharge piping in the trench is rusty and needs to be replaced.

The roof drains located on the roof appear to be undersized. There is a scupper system in place to accommodate overflow.

**Recommendation for Building Reuse**
All corroded piping should be replaced with new piping. All hub spigot-type pipes should be replaced with hub-less piping joined together with couplings. A new sump-pit with duplex pumps should be installed for underground water, discharging to the storm-water system. Roof drains need to be installed as per the square footage requirements of the CPC for 2-inch rainfall. Overflow drains should be installed for the roof.

**Plumbing Fixtures**
Most of the plumbing fixtures in the building have exceeded their service life and do not meet current low flow standards and ADA requirements. The Janitor sinks located in a few places look in fair condition.

**Recommendation for Building Reuse**
Plumbing fixtures need to be replaced to meet the current low-flow standards and meet ADA requirements.
Part 4: Existing Building Assessment and Recommendations

Kitchen
Most of the kitchen equipment is in good condition. Grease interceptor located in the Boiler Room appears to be worn-out and outdated. The equipment has probably reached the end of its effectiveness and needs to be replaced.

Recommendation for Building Reuse
The existing grease interceptor located in the Boiler Room needs to be replaced with a new grease interceptor.

Natural Gas
The majority of the natural gas piping is above the ceiling or concealed and not visible for the site observation. The only piping visible was limited to what was visible in the existing Boiler Room at ground floor. There are two gas meters and regulators for the building. One gas regulator/meter is for the kitchen. The second regulator/meter is for the mechanical equipment.

Recommendation for Building Reuse
All corroded piping should be replaced with new piping.

Fuel Oil System
The main fuel oil storage tank installed in 1988, with a capacity of 2000 gallons, is located outside underground. Oil pumped from main tank to the day tank installed at the ceiling of the Boiler Room which directly supplies oil to the generator.

Fire Protection Systems
The building is partially sprinklered with only the Basement Level currently sprinklered at this time. The current code requires this type of building occupancy to be fully sprinklered. Although the installed fire sprinkler system is grandfathered in, a renovation or change of occupancy will trigger a complete building Fire Sprinkler System upgrade in compliance with the latest codes.

Electrical Distribution Systems

Normal Distribution System
Utility power for the building is derived from a PG&E pad-mount transformer located in an indoor dry vault in the basement level. The building is served by Main Switchboard located in the Main Electrical room adjacent to the PG&E’s vault. The Main Switchboard supplies various distribution and branch-circuit panel boards located strategically in various electrical rooms in the building. The majority of the electrical equipment, including the Main Switchboard, is original equipment installed in 1949. The equipment is outdated and past the manufacturer’s 25 year recommended life span. The manufacturer is no longer in business and parts are obsolete and will be difficult to obtain. Existing antiquated equipment is difficult and costly to maintain, replacement parts and service may not be readily available. Furthermore, the installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and is no longer compliant with the Utility Company standards and regulations.
Recommendation for Building Reuse
Due to the age of the existing distribution equipment, the majority of the original distribution equipment will require replacement. Replacement of the distribution equipment will provide long term benefits, such as equipment reliability, and cost savings from repairs, maintenance, and utilizing outdated components. The majority of feeders and branch-circuit feeders (conduit and wires) are also assumed to be an original installation. Replacement of these feeders and branch-circuit feeders will provide long term reliability. The grounding system should be tested to confirm integrity and ensure reliability. The grounded resistance should be tested to ensure compliance with the requirements of the California Electrical Code. The replacement of the Main Switchboard will require coordination with the Utility Company having jurisdiction. The installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and no longer compliant with the Utility Company standards and regulations. A new exterior pad-mounted utility transformer might be required. Allowance should be provided for the replacement of the existing utility transformer including new primary and secondary feeders. Wiring devices that has reached the end of useful life due to age and deterioration needs replacement. Due to age and use, receptacle outlet contact loses tension to securely hold inserted plugs and wiring termination loosen. Majority of wiring devices are mounted 12 inches above finished floor which is no longer compliant with ADA. These devices should be replaced and mounted 15 inches above finished floor per ADA requirements. This holds true for any light switches mounted at 52 inches above finished floor. These switches should be replaced or relocated to 48 inches above finished floor.

Emergency Distribution System
There is an existing diesel driven indoor emergency generator with a 60 gallon sub-base fuel tank serving the building. It has a 225A supply to an emergency panel board via an automatic transfer switch. The system currently serves life safety and other various loads but is not designed to support the entire electrical loads for the Center. The emergency system distribution equipment is within the manufacturer’s recommended lifespan. The installed location of the equipment is not in compliance with the current code requirements for essential/emergency systems. Also, the generator is located in the basement level that is at risk for flooding during a heavy rainfall. Critical equipment like a generator should not be located in area that may cause it to fail during an emergency situation.

Recommendation for Building Reuse
Due to the age of the existing emergency panel board and automatic transfer switch, the emergency distribution equipment will require replacement as part of the conversion. Replacement of the emergency equipment will provide long term benefits, such as equipment reliability, and cost savings from repairs, maintenance, and utilizing outdated components. The majority of feeders and branch-circuit feeders (conduit and wires) are also assumed to be an original installation. Replacement of these feeders and branch-circuit feeders will provide long term reliability. Critical equipment like a generator should not be located in area that is prone to flooding and may cause it to fail during an emergency situation. The generator should be relocated to a new location at the ground level. It is recommended that a separate electrical room dedicated for essential/emergency system be provided.
Lighting System
Lighting luminaires being utilized in the center uses a mixture of both fluorescent and incandescent lamps. Majority of the luminaires are outdated and not energy efficient. Both lighting and associated controls are outdated and no longer comply with the latest requirements of Title 24.

Recommendation for Building Reuse
There are some luminaires that are already utilizing T-8 lamps and can be reused in order to minimize cost. Luminaires that are not energy efficient should be replaced with luminaires with more energy efficient lamp and ballast; or with LED luminaires. Discolored lenses for luminaires to remain should be replaced. Majority of the lighting controls are outdated and no longer complies with the latest requirements of California Title 24. Replace lighting controls with newer technology that will meet the requirements of California Energy Efficiency Standards. If architectural remodeling of the interior is necessary to accommodate the new architectural layout, new luminaires and controls should be provided as required suit the new architectural layout.

Fire Alarm System
The existing fire alarm system is by Siemens. The main fire alarm control panel is located in the Second Floor and is fairly new, approximately 5 years old. The existing fire alarm system currently provides smoke detection and audio/visual coverage.

Recommendation for Building Reuse
Fire alarm system for a residential care facility is less restrictive than for a psychiatric care facility. The conversion will require a change from a private-mode notification to a public-mode notification. No other changes for fire alarm detection and controls are expected.

4.3 Hazardous Materials
As part of the existing building assessment, SCA Environmental conducted an investigation for hazardous materials, which would require abatement if the building were to be renovated or demolished. The investigation included the following efforts:

- An inspection and survey of all areas of the Cordilleras Center, including the nearby Pump House and Water Tower.
- Sampling and non-destructive testing for lead-containing coatings, polychlorinated biphenyls, and asbestos-containing materials (ACM).
- Assessment to quantify possible polychlorinated biphenyl (PCB) lighting ballasts and mercury-containing fluorescent lighting fixtures.
- Visual identification of possible PCB-containing transformers.

Asbestos Hazards
Certain existing building components or materials are known or presumed to contain asbestos. Asbestos-containing material (ACM) is defined by EPA regulations as those substances containing greater than 1% asbestos. Friable ACM with greater than 1% asbestos must be abated prior to demolition or renovation, and is required to be disposed of as asbestos waste.
Note that as the survey was non-destructive, various materials were assumed asbestos containing and not sampled. Furthermore, as the building is still in use, we did not perform destructive sampling to inspect wall cavities, above ceilings, etc. As destructive testing was excluded from the scope of work, the following items were to be assumed asbestos-containing during the survey: vapor barriers under concrete slab/restrooms, fire doors, ceramic tiles, etc. We have listed these materials as assumed asbestos-containing items in Appendix I. Asbestos-containing material was found and confirmed through testing in some elements on the property, including duct insulation, floor tiles, caulkimg, and asphalt.

**Lead Hazards**

Certain existing painted or coated surfaces to be impacted by the proposed renovation or demolition of the facility are known or suspected to contain lead. Since elemental lead is a suspect carcinogen and known teratogen and neurotoxic in high doses, lead-containing materials need to be identified prior to the on-set of demolition activities.

We collected a number of bulk samples for analysis to determine the lead content of these materials. Materials included lead paints and coatings and 9”x9” vinyl floor tiles. Lead was detected in these paint samples and floor tiles. Lead sheeting is also known to be present in the existing Offices Area on the 2nd Floor of the building. This area was formerly used as X-ray clinics and dental areas, and visual evidence of lining within the walls and doors was noted during the inspection. As the survey was non-destructive in nature, removal of wall sections to access the sheeting was not performed. We recommend that destructive sampling be performed prior to renovation or demolition of the building to determine the presence and lead content of this material.

**PCB & Mercury-Containing Items**

We collected representative samples of caulks and putties to determine PCB content. No PCBs were identified in any caulks or putties. We also quantified lighting ballasts that were observed in conjunction with mercury-containing, fluorescent lighting fixtures in various locations. We found quantities of both PCB ballasts and fluorescent tubes in various locations. To reduce liability concerns, many building owners opt to have PCB ballasts incinerated, with a record of destruction generated. A slightly less expensive approach involves recycling of the components (and incineration of the small amount of PCBs separately). However, this method may pose liability concerns for building owners. Various mercury-containing fluorescent tubes were identified throughout the building. Recycling vendors for reclaiming the mercury vapor are commonly available.

We also noted three (3) transformers at the property. These transformers are owned by PG&E. As the units were functioning at the time of the investigation, sampling of transformer fluids to determine PCB content was not performed. No visual evidence of staining was noted during the investigation. As the units are owned by PG&E, disposal of the PCB-containing fluids, if present, would be the responsibility of PG&E.

*See Appendix I: Hazardous Materials Investigation for the full report*
4.4 Function

Existing Building Functionality

Building Stacking
Originally a tuberculosis hospital, the existing 3-story Cordilleras building has been repurposed with a 68-bed licensed secured (locked-down) Mental Health Rehabilitation Center (MHRC) located on Level 3 and a 49-bed Adult Residential Facility (ARF), “The Suites” located on Level 2. Support services such as loading dock, dietary, rehab therapy services and administration comprises Level 1. Engineering/ Facilities, Housekeeping and building support functions are located in the basement. The stacking diagram below illustrates the basic organization of the building as it currently stands. Inefficiencies and inconveniences exist; one example is the split of MHRC programmatic space on two levels with The Suites in between. Group rehab, staff office and activity space is located on level one while the bedrooms and other spaces are located on Level 3. This organization leads to increased need for policies and procedures surrounding staff scheduling, safety and security.
Building Block plans
The “Y-Shaped” plan was designed for an acute care hospital function that allows a large capacity within an efficient floor plate. Levels 2 and 3 are the patient bedroom floors and relatively the same. Today there exists a different consumer population with different needs that has adapted to the acute care planning model. There is a double loaded corridor of semi-private bedrooms with shared toilet rooms and community showers down the hall. Each wing is considerably long with little to no visibility between wings and no daylight other than the window in the stair door at the end of the corridor. The third leg of the Y-Shaped has quad bedroom in the MHRC and some support rooms. Staff support, group activity rooms and other consumer support spaces are centrally located near the core of the floor. Safe and secure outdoor roof tops and balconies are also available.
Part 4: Existing Building Assessment and Recommendations

[Diagram of building layout]
Although the facility available at the time served the need, the overall functionality of the current building is not ideal as it was not designed for the current functions. The two levels of security coexisting in the same building utilizing one designed entry point is not optimal. The front door identity for the ARF is lost and has been delegated to the exit stairway. The ARF’s level of non-secure residential housing is different than the high secure treatment facility of the MHRC and both need a different planning and design response.

The feasibility design team conducted on-site tours and interviews with directors, managers, therapists, clinicians, physicians, administrators, and facilities. This is also known as “Gemba Walks” in Lean design. Facility and programmatic opportunities for improvement and constraints that were captured include:
The Cordilleras building no longer meets the optimal residential and treatment needs and best practices of both the MHRC and the ARF programs.

4.5 Demolition

Upon review of the assessments discussed in the preceding sections, as well as the cost estimated to upgrade the existing building (Section 8.1) and the missed opportunity for federal reimbursement (Section 5.4), this Feasibility Study recommends the demolition of the existing building and the development of a strategy to provide the required program on this site.

The demolition of the building is considered a ways and means decision to be made in consultation with a specialist demolition contractor. We would anticipate that the reinforcing steel within the cast concrete structure would be recycled, and the concrete itself could potentially be used on site for road beds or fill. The recyclability of the concrete may be impacted by the findings of a detailed hazardous material investigation to occur in a later phase.

To construct a new building over the area of the demolition, it will be necessary to remove the top portion of the existing basement retaining walls a minimum of 5-feet below the final site grade. For the basement floor slabs it will be necessary to puncture and rip the slab in pieces no larger than 2-feet in maximum dimension. This material can be left at the basement level, but must be incorporated into a maximum 1-foot soil lift that can be re-compacted. The backfill of the basement shall consist of non-expansive material. Within the upper 5-feet the soil shall be compacted to 95% relative compaction with material no larger than 4-inches in lifts not greater than 8-inches. The balance of the fill shall be compacted to 90% relative compaction with material no larger than 8-inches in lifts not greater than 12-inches.

It will be important to establish a threshold for sound levels that the contractor must adhere to during demolition. Sound levels can be mitigated, not only by the type of method selected, but with the use of sound barriers as well, for example:
• Starting demolition on the opposite side of the building from the occupied MHRC’s and ARF allows the existing building being demolished to act as its own “noise barrier” during the majority of the demolition activity.
• Temporary sound barriers can be installed adjacent to the new buildings. Large timber walls draped with sound blankets can reduce noise significantly.
Part 5

Regulatory Assumptions and Reviews
Part 5 – Regulatory Assumptions and Reviews:

Introduction

The replacement of Cordilleras offers many improvement opportunities for care, rehabilitation, treatment as well as reimbursements. Multiple licensing agencies, building and planning reviews and complex reimbursement strategies are investigated and described below.

5.1 State Licensing

The contracted providers who operate the programs located on the new Cordilleras site will have the responsibility for appropriately licensing and maintaining licensure for each program. The licensure categories that will be used are for Mental Health Rehabilitation Centers (MHRCs) and Adult Residential Facilities (ARF). These are the existing licensure categories in use at Cordilleras. There is a possibility that one or more programs would be licensed as Social Rehabilitation for transitional residential treatment in the future.

The State licensing authority for the Mental Health Rehabilitation Centers is the Mental Health Licensing and Certification section of the California Department of Health Care Services (DHCS). This office also has related monitoring and oversight responsibilities for MHRCs. The requirements for MHRC licensure are authorized by Welfare and Institutions Code 5768 and contained in Title 9, Division 1—Department of Mental Health, Chapter 3.5 Mental Health Rehabilitation Center regulations that became effective in 1995 as a result of SB 2017 (1994) that originally provided for this level of care in California. More information about the licensure requirements is contained at the following website: http://www.dhcs.ca.gov/services/MH/Documents/95-05.pdf. After construction, the process for licensure involves completion of an initial application and an initial site survey. After completion of the site survey, the State completes their process and provides licensure.

The State licensing authority for Adult Residential Facilities and Social Rehabilitation Programs for people with mental illness is the California Department of Social Services, Community Care Licensing Division (CCL). This office also has related monitoring and oversight responsibilities. The requirements for Adult Residential Facility and Social Rehabilitation Program licensure are authorized by Health and Safety Code 1530 and Welfare and Institutions Code 1501 and 1502 and contained in Title 22, Division 6. More information about these licensure requirements is contained on the following websites: http://www.cdss.ca.gov/cdssweb/entres/forms/English/LIC281.PDF http://www.cahwnet.gov/ord/entres/getinfo/pdf/srfman.PDF http://www.dss.cahwnet.gov/ord/entres/getinfo/pdf/artfman.pdf

The mental health program aspects of Mental Health Rehabilitation Centers and Social Rehabilitation Programs are also certified by the Department of Health Care Services to provide adult residential treatment services and reviewed annually. Licensure of Social Rehabilitation Programs by Community Care Licensing is conditioned on certification. (The Adult Residential Facility (ARF) does not provide mental health services and thus does not require certification.)

The requirements for this certification are authorized by Welfare and Institutions Code Sections 5670, 5670.5 and 5671. The regulations pertaining to the certification are contained in Title 9, Division 1, Chapter 3, Article 3.5, 531 et seq. The certification is necessary for claiming for
reimbursement to the extent possible under the Medi-Cal program. The process includes an on-site review of operations, clinical practice standards, policies and procedures and treatment modalities. Once the fire clearance, head of service and initial provider request have been submitted and approved, which takes a few weeks, the State sets a date for the on-site review of operations. This may take 4 months to occur, but services can be provided during this time. Once the State visits and certifies the program, they will make the effective date of certification the date the initial provider request was approved.

Mental Health Rehabilitation Centers with no more than 16 beds may be certified to provide adult residential treatment under regulations contained in Title 9, Division 1, Chapter 11, Subchapter 4, Article 3, 1840.332 *Adult Residential Treatment Service Contact and Site Requirements*. This provision has been used rarely in California because most facilities are large institutions. Certification alone does not make a program eligible to receive Medi-Cal reimbursement but it is one necessary component.

### 5.2 Building Codes

To analyze the building code requirements for the potential replacement of the Cordilleras Center, it is critical to first identify the assumptions used by the design team. Findings from the 3P events, Gemba Walks with the staff, State Licensing Requirements, and reimbursement and funding criteria identified by Behavioral Health Recovery Services (BHRS), all helped the team to identify clear programmatic needs of the replacement center and the site. The program needs, including bed counts, safety measures, support spaces, and licensing helped determine the area of the proposed buildings and their relationships to one another, which in turn defines the Occupancy Type of each building. Establishing the Occupancy Type of a building under the California Building Code is the first step in identifying other code requirements.

For detailed information regarding the program for the Cordilleras Center replacement project, see *Part 6: Program*.

The 2013 *California Building Code (CBC)* and the 2012 *Zoning Code: Planning and Building Department of County of San Mateo* were used for the code analysis in this section.

The list of assumptions the design team used to drive their code analysis is as follows:

- The Cordilleras site is zoned as RM (Resource Management District) by San Mateo County
- All 117 licensed beds currently on site will be retained on site. Additional beds may be added in the future. Program findings in the following section of this report dictate that the bed mix count (ARF vs. MHRC) can change.
- Five free-standing 16-bed MHRC buildings are included in this Feasibility Study
- The ARF/Suites beds will be located in a separate building on site, above the ground-level Campus Center
### Building Occupancies - Basis of Feasibility Study

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Occupancy</th>
<th>Construction Type</th>
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<tr>
<td>Mental Health Rehabilitation Center (MHRC)</td>
<td>I-3, Condition 2</td>
<td>Type V-A</td>
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<tr>
<td>Adult Residential Facility (ARF)</td>
<td>R-2.1</td>
<td>Type V-A</td>
</tr>
<tr>
<td>Campus Center</td>
<td>B</td>
<td>Type V-A</td>
</tr>
</tbody>
</table>

### Mental Health Rehabilitation Center (MHRC) Code Findings and Reasoning

The program calls for five, single-story, 16-bed MHRC buildings of roughly 10,500 square feet each. This Feasibility Study assumes the ability to have exterior exits of the MHRC buildings locked at all times. Therefore, the residents cannot leave by their own will and will need assistance. The MHRC buildings, which have a locked egress operational model, will be classified as I-3 (Institutional), Condition 2 Occupancy, per the 2013 CBC. Though having 16-residents in a single building can also be permitted as an R Occupancy (Residential), the CBC stipulates that “restraint within a building (by binding an individual and/or by locked exit egress) is not allowed in any R classification.” The CBC further states that “restraint shall not be permitted in any building except in Group I-3 occupancies constructed for such use.” Because of this, the locked MHRC buildings are required to be Group I-3 Occupancy. Under the I-3 Occupancy, a “condition” must also be identified to help further establish the type of restraint being practiced in the building. I-3 Condition 2 is the basis of design for the MHRCs. The CBC lists I-3, Condition 2 as including “buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one of more other smoke compartments. Egress to the exterior is impeded by locked exists.” In other words, the occupants have free movement within the building, but are unable to exit the building due to locked exits.

A building with an I-3, Condition 2 occupancy type is held to strict construction standards as they relate to combustibility and fire egress safety due to the locked egress exits. Type I-A or I-B construction is required for I-3 buildings per the CBC. Type I-A or I-B construction is fire resistant construction, such as fireproofed steel and concrete. It can be heavy and expensive to build, especially for a series of separate, smaller buildings. There is an exception in the building code applying to I-3 Occupancy and the construction type. Construction Type II-A, III-A, or V-A is permitted in a single-level building if the floor area does not exceed 5,200 square feet between fire walls of 2-hour fire-resistive construction with 1-hour or 1.5-hour rated openings. We recommend using this exception in the code for the MHRC buildings to construct Type V-A, wood frame, buildings for cost effectiveness and the anticipated reduction in construction duration. The MHRC buildings are already planned to be single story for programmatic reasons, so that requirement is satisfied. In addition, each MRHC building interior would be designed to create smoke compartment zones of less than 5,200 square feet. These zones can be designed in such a way, with hold-open doors, that occupants will not be impacted by the 2-hour rated separation. Using this exception in the code will allow for a more cost-effective and timely construction process while maintaining the safety and security of the occupants.
Adult Residential Facility (ARF) and Campus Center
Code Findings and Reasoning

From the exercises in program exploration conducted with the County, Cordilleras staff, residents, and family members, and other experts, it was concluded that a Campus Center “support” building be provided as part of the Cordilleras Center replacement plan. From exercises conducted with the same participants, it was also concluded that the Adult Residential Facility (ARF or “The Suites”) would be best served in a single building, with all ARF residents living together with easy access to support services. These findings, in conjunction with site restraints and opportunities, lead the team to decide to combine the Support building and the ARF into a single building with the support program on the bottom level and the ARF occupying 2 additional levels above the support. Please see Part 6: Program of this report for additional information regarding this decision.

From a code perspective, the support area and the ARFs are classified as different occupancy types, but they can be combined into the same building.

The Campus Center portion of the building is classified as a B Occupancy (Business) per the CBC. Type V-A or Type V-B Construction is permitted by code for B Occupancies. The programmatic requirements for the support portion of this building are approximately 17,000 square feet on one level. We recommend the use of Type V-A construction as it allows up to 18,000 square feet per level in a B Occupancy, versus Type V-B, which only allows for 9,000 square feet per level.

The upper two levels of this proposed 3-story support/ARF building will contain 37 ARF beds currently licensed on the site. The ARFs are classified as an R-2.1 Occupancy (Residential Occupancy) per the CBC. It is important to point out that no restraint (by binding of an individual and/or by locked egress doors) of occupants is permitted in an R Occupancy or B Occupancy building. Type V-A (or stricter) construction is permitted in an R-2.1 Occupancy with a maximum of 16,500 square feet of area per floor. This meets the programmatic requirements for the ARF. We recommend Type V-A construction since it can be uniformly used in this building for both the B Occupancy of the support floor at the ground level and the R-2.1 Occupancy of the ARF floors. Because this will be a licensed Residential Care Facility, the CBC also requires that individual floors of R-2.1 Occupancy with more than 6,000 square feet per floor be broken into smoke compartments of no more than 6,000 square feet in size. This is similar in concept to the MHRC requirement of 5,200 square foot compartments. Since a maximum of 16,500 square feet is permitted per floor, then each ARF floor could contain a maximum of 3 compartments or zones of no more than 6,000 square feet each. Again, this requirement can be integrated into the design so that it is not noticeable by the building occupants.

The entire ARF / Campus Center building will be a single building of Type V-A construction throughout, designed not to exceed the code-listed maximum square footages per floor based on occupancy type listed above. One additional CBC requirement worth noting for Type V-A construction is the height limitations. Type V-A construction can accommodate a maximum of 3-stories at a height of no greater than 50 feet for B and R Occupancies. The support/ARF building as proposed in this Feasibility Study meets this requirement.
County RM Zoning, Site Access, Parking Requirements

In addition to the CBC, we will also need to follow local codes pertaining to parking, fire access, building height, and property line set-backs. Items that would influence decisions in this feasibility study were investigated. A more in-depth study will be needed during the design phase. Below is a list of local requirements considered in this Feasibility Study.

- Max Height in RM is 3 Stories/36 feet, except as allowed by use permit provisions. The building design proposed in this Feasibility Study can be accommodated to fit this parameter. A use permit provision is an option if needed.
- Setbacks: Front: 50 feet, Side: 20 feet, Rear: 20 ft. This may be reduced if provisions of Section 6319C are satisfied. We do not anticipate set-backs to be a concern due to topography of this site.
- Parking: Min. 1 spot per 5 beds based on licensed number of beds. This is roughly 24 spots. Cordilleras reported they currently have 65 spaces and request 20 additional spaces.
- Fire access must be provided w/in 150 ft of all portions of the facility.
- Emergency access road minimum is 26 ft wide. Parking is not permitted along access roads less than 26’ wide. Parking permitted on one side if 26-32’ wide or on both sides if greater than 36’ wide.
- Min. 96’ diameter turn-around for emergency vehicles.
- Surface of finish is dependent on slope of access. 15% or less grade is permitted. 15%-20% grade is permitted only for a distance of 150’. Slope greater than 20% is not permitted for emergency access. This will need to be more thoroughly studied as the site is developed further.

5.3 Agency Reviews

Federal Reviews
As this project will likely propose alterations – however slight – to the Cordilleras Creek inlet or culvert, it is anticipated that it will require a review and approval by the US Fish and Wildlife Service.

State Reviews
Due to the presence of a creek, forested areas, and wildlife habitat on the site, the California Department of Fish and Wildlife will also need to review and approve any proposed project. A Stream Bed Alteration Agreement will need to be granted from DFW for any work associated with modifications to Cordilleras Creek. For further a description and evaluation of the environmental conditions associated with the site, see Part 3, Sections 3.1 - 3.5 of this Feasibility Study.

Office of Statewide Health Planning and Development (OSHPD) review is not required or anticipated as this is not considered intermediate care and will not fall under their jurisdiction.
County Reviews
DPW and the architect, HGA, met with Lisa Aozasa of the County Planning Department to discuss required reviews and approvals for the project. As this is a County project on County property, it will not require a formal Planning permit review process.

The California Environmental Quality Act (CEQA) requires that we identify the significant environmental impacts of the project and develop strategies to avoid or mitigate those impacts. The compliance with CEQA Guidelines will occur as a part of the environmental review, conducted through coordination with the County. As the project does not propose new or added uses on the site, it is believed that a Negative Declaration of the environmental impacts may be achievable, and therefore a full Environmental Impact Report and hearing process would not be required.

The Planning Department has agreed to interface with the County Historic Resources Advisory Board to confirm that the existing building is not deemed significant from the standpoint of historical value.

A Building Permit will be required from the County.

Review and approvals with the County Fire Marshall and the Sheriff’s office is anticipated. Discussions with these agencies have begun.

5.4 Federal Reimbursement Opportunities

The California Department of Health Care Services has an agreement with the federal Centers for Medicare and Medicaid Servicer (CMS) that establish various services for mental health care that are eligible for Medi-Cal reimbursement when provided to Medi-Cal beneficiaries who meet clinical criteria. Certification of a program offering adult residential treatment by the State is required as described above.

The current configuration of services provided at Cordilleras does not offer federal Medi-Cal reimbursement because it exceeds 16 beds and meets criteria for the federal Institutes for Mental Disease (IMD) exclusion. BHRS currently spends more than $8 million per year for MHRC and ARF services provided at Cordilleras, including medical care and mental health services, none of which is currently federally reimbursable as a result of the federal IMD exclusion.

The replacement of Cordilleras with a campus comprised of smaller, 16 bed facilities would allow for up to 50% federal reimbursement of certain costs associated with the locked Mental Health Rehabilitation Center units on the campus, as well as provide for more effective programs for seriously mentally ill residents so that they can successfully transition back to community living. This opportunity would require compliance with a number of other federal criteria to avoid the IMD exclusion. The proposal is to seek certification by the State of the MHRC programs as adult residential treatment providers as allowed under regulation. The methodology for determining the reimbursement rate for Federal Financial Participation under the Medi-Cal program involves establishing an interim daily rate with the State based on projected actual costs. The initial reimbursement would be based on this interim rate times the units of service for eligible Medi-Cal beneficiaries that are submitted electronically by BHRS through the State’s Short Doyle Medi-Cal claiming process. Excluded from reimbursement are all costs associated with room and board such
as food, household supplies, furnishings, utilities, telephone, and television. Ultimately there is a retrospective settlement based on a cost report that limits reimbursement to 50% of the audited eligible costs.

The Adult Residential Facility housing units on the campus are not eligible for federal reimbursement under any circumstances. However the consumers served in these units receive outpatient, medication, and other physical health services provided by other providers that would be reimbursable. The current IMD status of Cordilleras has resulted in the exclusion from federal reimbursement all of the medical and mental health services provided to all residents even when they are off-campus at other clinics. The proposed model for replacement of Cordilleras would no longer result in exclusion from federal reimbursement of all of these services.

The Financial Analysis section of this report is based on these assumptions about reimbursement.
Part 6

Program
Part 6 – Program

Introduction

Both the Mental Health Rehabilitation Center and Adult Residential Facility levels-of-care serve a diverse group of consumers, whose demographics (age, gender, culture, language), diagnoses and treatment needs vary widely. It can be challenging to house so many diverse consumers in the existing Cordilleras, a large facility where the recreation and dining spaces bring everyone together. The design of the replacement facilities will provide for improved ability to group patients more compatibly to promote healthy interactions. This may include smaller more separate buildings versus a large facility, availability of single occupancy rooms, flexible space that may be repartitioned to change groupings including common areas indoors and outside. All residents will have serious mental illness but there are specific sub populations that present with varied needs that may warrant specific design considerations. These include:

- Mentally ill people and frail older adults with the added complexity of comorbid medical conditions;
- People with histories of criminal justice involvement and potential risk of negative behaviors such as violence;
- People likely to leave against medical advice (AWOL);
- People who struggle with active addictions or in recovery from addictions;
- Young adults with relatively recent onset of mental illness;
- People with histories of trauma/abuse/victimization;
- People whose diagnoses may suggest specific risks that would impact design. Examples: people with psychogenic polydipsia presenting excessive, self-destructive thirst;
- People at high risk for self-destructive behaviors or suicide;
- People with developmental delays or cognitive impairments;
- People with borderline personality disorder/antisocial behaviors.

The overall project program consists of spatial and functional criteria for the design of the replacement of Cordilleras into multiple facilities on the same site. Programmatic requirements were developed with feedback from stakeholders during our three part integration event and reviewed by project team. The site, building and functional program are preliminary documents that are the basis of design for this feasibility report.
**6.1 Site Program**

The site program developed by the project team accommodates the needs and ideas of project stakeholders including requirements related to site access, planning code, licensing, and the environment. Listed below is the site program requirements discussed and used as the basis of feasibility.

- Footprint for five MHRC buildings each housing 16 consumers in approximately 10,500 gross square feet (GSF)
- Footprint for one ARF/Campus Center at approximately 35,000 GSF with the Campus Center components on the ground level and the 37 Suites residents split among 2 floors above. Each of the 2 ARF floors will be approximately 9,500 GSF. Plus provisions for supplemental ARF placements provided as an additional floor on the Campus Center (18 beds).
- Secured Recreation Yard of approximately 10,000 SF for use of all staff, residents, and their guests, and includes, but not limited to, the following:
  - Basketball court
  - Community therapeutic vegetable and flower garden of approximately 1,500 SF
  - Walking paths with sitting area and gazebos
  - Clear definition between private and public space
  - Emergency gathering area
- Bus stop with shelter
- Parking and access including
  - Parking for 85 cars (20 more than currently available) including 1 van-accessible space, and 4 additional accessible spaces to accommodate staff and guests
  - Fire truck access route of no less than 26 feet wide to allow fire access within 150 feet of all buildings on site
  - Loading dock and maneuvering area to accommodate 2 semi-trailer truck docks
  - Passenger drop-off and loading areas at Campus Center and “The Suites” front door.
- Emergency areas including
  - Emergency generators
  - Emergency supply storage shed
  - Emergency storage tanks for water and generator fuel
- Trash area with 3 dumpsters for trash, recycling, and compost
- Areas for potential alternative energy installations

**6.2 Space Program**

The baseline space program for Cordilleras is based on the replacement of 117 licensed consumer beds. In order to maximize reimbursement potential, optimize treatment opportunities and create a more comfortable and safe residential living environment the Mental Health Rehabilitation Center (MHRC) and the Adult Residential Facility (ARF) as known as “The Suites” is proposed to exist in separate structures on the site. This plan proposes to modify the existing 117 bed capacity as follows:
<table>
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<tr>
<th>Licensed Bed Capacity</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
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<td>MHRC</td>
<td>68</td>
<td>80</td>
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<tr>
<td>ARF</td>
<td>49</td>
<td>37</td>
</tr>
<tr>
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<td>18</td>
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<tr>
<td>Total</td>
<td>117</td>
<td>135</td>
</tr>
</tbody>
</table>

The proposed increase in Mental Health Rehabilitation Center (MHRC) beds will assist in expanding placement capacity for treatment beds within the County. This will allow the county to reduce the number of consumers that will need to be treated in MHRCs outside of the County by 12 and help with the flow of consumers among levels of care. This includes facilitating discharges for people ready but unable to leave San Mateo Medical Center (SMMC) inpatient psychiatry units due to the lack of available MHRC beds or because that most providers reject them. Currently the high administrative day and unreimbursed day rate for SMMC inpatient psychiatry is partially the result of consumers waiting for MHRC beds. If consumers were able to be timely discharged, SMMC beds costing $1800 a day would be available for acute Medi-Cal patients whose services would be reimbursed by Medi-Cal.

The reimbursement criteria (described in Section 5.4) limit facilities to 16-bed households. That is the main criteria for the exact size of the proposed MHRCs. In addition, smaller more residential like structures also help support the County’s Vision of wellness, dignity, respect, livability, community and healing. See Part 2 for Vision Statement.

There is consensus to provide a mix of 75% private bedrooms and 25% semi-private bedrooms for the MHRC. This allows flexible accommodations for various consumer personalities, gender-matching, and medical and treatment needs. Five approximate 10,500 gross square feet (GSF) 16-bed MHRC’s are planned on the site.

An Adult Residential Facility (ARF) at approximately 19,000 gsf, or if expanded 28,500 gsf, is also planned on site. The ARF, similar in the residential component, is quite different from the MHRCs. The ARF is licensed differently under the State Department of Social Services and serves a population that can live independently. The focus of the “The Suites” is a place where residents can transition to and live in a place offering a supportive independent living residence for consumers who are ready to begin living on their own. Although most residents transition into the community to other residential programs, some stay for a very long time making it their home. The transition back into the community is important and requires support. Most of the residential programs in the community consist of consumer placements with semi-private rooms. In order to help prepare residents for that reality, a bedroom mix of 75% semi-private rooms and 25% private rooms are programmed for The Suites. This also helps economically meet the need for more residential beds capacity on and off site.

Although one option addressed by the study is to reduce the number of ARF beds by 12 in order to add 12 MHRC beds, there is a need for more ARF beds for consumers ready to leave the more intensive MHRC level of care. The Health System BHRS and Aging and Adult Services report that ARF beds are increasingly difficult to find in the community for consumers stepping down from MHRCs. The lack of availability results in consumers remaining at more intensive and costly levels...
of care and prevents placements of other consumers who need beds at those higher levels of care. For estimating purposes, we have included a separate cost to add an additional 18-bed ARF floor onto the building (see Part 8 – Financial Analysis).

The collaborative and community building vision of the County’s Behavioral Health Recovery Services (BHRS) spurred the idea of a Campus Center which acts the central hub and can act as the front door to the campus. Services and functions in the Campus Center include opportunities for a centralize food preparation kitchen, primary care services, individual and group therapy, group activity space such as gymnasium, art, fitness center, spa services and other retail services yet to be determined. Other support services are intended to be located here that serve both programs and the site such as Administrative offices, Training, Conference center, central loading dock, central utility plant, engineering, housekeeping and maintenance shop.

The Campus Center will be the hub of the campus for the consumers and staff and a location for the San Mateo community to attend activities, events and to be involved with the consumers living in their community. The center will serve multiple uses for the campus as noted in the following paragraphs.

Visitors will be able to visit with their family members in visitation lounges and common areas. They may also visit at picnic tables located on the grounds or in visitor areas located on the part of the campus where their family members are residing.

There will be a number of staff offices located in the Campus Center for staff to complement office space designated in MHRC’s and the ARF. One of the offices will be for the BHRS Adult Resource Management Department who work closely with the services for and the flow of consumers throughout the San Mateo County Behavioral Health Services System. Office and assessment space is also included for basic medical services.

An industrial kitchen will serve multiple purposes. It will produce meals for consumers living in the residential floors above the Campus Center and will be a place where meals can be prepared for large events taking place on the campus. This kitchen will also serve as a life skills training area and for gourmet cooking classes for consumers. The kitchen will also be tied in with the organic gardening program on campus as the next step in putting to use the crops harvested.

The central data system and electrical systems for the campus will be housed in and routed through this building. It will have a County staff person assigned to monitor these systems such as IT/telecommunications and also include space for county facilities and maintenance services.

There will be a large auditorium that will be available for group fitness classes, group rehab therapies, indoor sports, movies, theatre productions, special Cordilleras campus events, community events and other social gatherings. The auditorium will be shared by all campus programs and be available for use by community organizations.

Conference space and activity rooms will be available for regular scheduled use by Cordilleras and other organizations/programs located in the greater community. The types of programs include: Heart and Soul, NAMI, Supported Education, Supported Employment, Twelve Step Meetings, and staff/consumer training, to name a few.
The Campus Center events and activities that involve the extended San Mateo community will help to decrease stigma and increase the understanding of the challenges of living with mental illness.

There will be other programs and services present in the Campus Center. Some of these programs will be: a yoga/dance studio; a secondhand store; an art studio and gift shop.

See Appendix D for the detailed space program used as a basis of the feasibility report.

6.3 Functional Relationships

The relationships of space with the building and of the buildings on site strive to meet a variety of needs and perspectives including consumers, consumer’s families/friends, staff, facilities, county and the community.

The following relationships should continue to be considered through site and building design:

Site:
- Maintain building separation between MHRC structures and between MHRC structures and ARF structure(s).
- Due to the secured locked down requirement of the MHRC, situate MHRC’s on site close to each other to optimize the use of recreation land and secured perimeter strategies such as fencing and building walls.
- Create a centralized open area of land for therapies and activities such as gardening, group sports, exercise, walking paths and contemplative sitting areas that can be used and securely divided amongst the MHRC and ARF consumers.
- Place the MHRC’s along a vehicle pathway for visitor access, fire truck access as well as supply deliveries.
- Arrange MHRC’s in a way that can utilize the walls of the building as a secure courtyard between buildings.
- Avoid relocation, redirection or further undergrounding of the existing creek by arranging structures outside the creek easement.
- Create a physical connection between the ARF and the Campus Center whether side by side or stacked on top. Stacking program on top of each other generating a multi-story building allows more efficient use of the site with less disruption. The ARF and Campus Center building connection provides efficient staff support to the ARF and convenient access to the Campus Center by ARF residents. Combining these two programs also may provide further efficiencies related to food preparation, dining, therapy and group activity spaces.
- Direct vehicle and pedestrian access to a separate and distinct front door for each MHRC, the Campus Center and The Suites (ARF).
- Decentralized on-grade self-parking dispersed between MHRC’s, the Campus Center / ARF, Fire Station and Canyon Oaks structures.
- Orient structures on site to maximize potential photovoltaic solar cell placements that may be located on top of or the side of these structures.
- Place structures on the site to minimize hillside cut, retaining walls, and minimize vehicle and pedestrian slope paths where possible.
Building:

- Allow for consumer and staff choice in the building spaces. A choice between semi-private and private rooms offers less conflict. Choice in activity, dining or social interaction space offers some control of one’s environment and how to spend time; alone or with others, inside or outside or in an activity or not.
- Zone the building between “on-stage” and “off-stage”. Primary (“Front” door) and secondary entries, centralize staff workroom, dining room, and activity rooms are considered “on-stage” while bedrooms and living rooms would be considered “off-stage”. Visitors and staff should not have to walk “through” or past consumer bedrooms for daily activities.
- Centralize social areas (“on-stage”) and decentralize quiet/ private areas (“off-stage”).
- Create zones that break down the long double loaded narrow dimly lit corridors. Open corridors with access to natural views and daylight are preferred.
- Locate similar type functions closer together to allow for multiple functionality of space.
- For safety reasons and collaboration reasons, a centralized staff zone is preferred.
- Clear uninterrupted line of sight between the staff zones and consumer bedrooms, activity rooms, dining, and entry points is critical for safety.
- Locate support rooms close to the staff zone for easy access and deliveries from outside.
- Locate kitchen/ dining close to an entry for deliveries and waste removal.
- Consider dining and multi-purpose room adjacency for flexibility. Moveable partitions may be used to sub-divide the multi-purpose room and/or between dining and the multi-purpose room for larger group activities.
- Locate group activity and dining spaces with outdoor access opportunities.
- Create smaller “living room” spaces that allow medium sized semi-intimate areas closer to bedrooms.
- Locate toilet room adjacent to each other for efficient use of plumbing.
- Standardize MHRC buildings to allow flexibility in consumer placement. This offers opportunities for improved consumer placement which can lead to a faster recovery, creating potential vacancies for others in the acute care system.
- Standardize rooms such as bedrooms and toilet rooms into single units or multiple room units that allows the flexibility of consumer placement or off-site mass production opportunities.
Part 7

Conceptual Design Recommendations
Part 7 - Conceptual Design Recommendations

Introduction

The design of the replacement facilities for Cordilleras Mental Health Center should support the types of treatment, social, health and wellness, spiritual/mindfulness, vocational/employment experiences and activities residents may employ in order to achieve their goals for recovery including recovery from the symptoms of acute mental illness. The facilities’ design should enhance residents’ experience practicing the skills, making choices, and feeling the accomplishment and empowerment that will be critical for their successful re-integration into community living situations after they are discharged. The site has many positive attributes that should be leveraged for the residents’ recovery experience including peace and quiet, gardens and access to healthy food and activities, light, air, and space.

The design of the replacement facilities should support the work flow of all of the staff involved in the new campus including those involved with treatment and other activities with residents, and the flow of residents from point of admission to discharge.

The new campus should also be designed to welcome visitors and incorporate space for the many different interactions that occur between visitors and residents. Visitors may include family and friends, providers and staff from other programs who may be involved in treatment, discharge planning, recreation, social or health and wellness activities.

As previously discussed as part of the Existing Building Assessment, the recommendation of this Feasibility Study is to demolish the existing 1950’s era building and develop a new campus comprised of specialized programs in separate buildings on this site. This strategy provides the best opportunity to improve the care provided to the residents, to receive the highest levels of financial reimbursement, and to take better advantage of the natural setting of the site.

To explore the feasibility of placing new buildings on the site, the County and the architectural team orchestrated a multi-day series of collaborative workshops, with participation from several dozen stakeholders. The goal of the workshops was to develop both an optimal site plan and building block diagrams for the Feasibility Study (see Appendix B: 3P Events Artifacts).

The sections that follow contain our Conceptual Design Recommendations for a new Cordilleras Mental Health Center.
7.1 Site Plan

Drawing from the Vision Statements and Goals developed during the Visioning Session, we identified several key criteria by which to evaluate the site plan studies generated during the collaborative workshops. These criteria included:

- **Campus Organization**
  - Clarity to the pattern of buildings on site
  - Opportunity for strong and welcoming arrival sequences
  - Hierarchy of outdoor spaces

- **Convenient Access**
  - Proximity of the Campus Center to the MHRC’s
  - Access to the building entries from parking areas
  - Fire access routes
Part 7: Conceptual Design Recommendations

- Integrate nature
  Preserve and provide access to natural areas
  Retain views to nature from bedrooms
  Minimize impact to Cordilleras Creek

- Flexibility
  Maintain ability to convert the ARF’s to MHRC’s in the future
  Maximize federal reimbursement with the size and number of MHRC’s

As previously discussed in Part 6, the proposed program comprises five single-story Mental Health Rehabilitation Center (MHRC) buildings of approximately 10,500 square feet each. In addition, a three-story Adult Residential Facility (ARF) contains a Campus Center of 15,000 square feet on the first floor, and two floors of residents above at 9,500 square-feet each.

The MHRC buildings are set in a radial line along the southern side of the site. Courtyards of 3000 square feet, located between the MHRC buildings, are secured with fences and are accessible from the dining areas inside. Also along this southern edge, a large retaining wall will hold back the hillside and create buildable area to accommodate a 26’ wide service and fire access road. This retaining wall briefly reaches a height of 50’ along its run. The concrete wall is proposed to have a natural appearance, created through a combination of patterned formwork and planting on its surface – such as vines or ivy. The access road is considered an extension of Edmonds Road, with the five new MHRC buildings addressing onto it. The MHRC buildings have entry doors facing Edmonds Road, but they will generally be used only by staff and maintenance. This access road terminates at the western corner of the site, with a 96’ diameter turn-around bulb to accommodate fire trucks. Several smaller parking lots are accessed from this extension of Edmonds Road, providing 46 parking spaces. To limit storm water run-off, the access road and parking lots are proposed to be built of pervious concrete. Access to the Canyon Oaks Youth Center and the Fire Station must be maintained at all times during construction.

The MHRC buildings are all accessible by the residents and staff coming from the main recreation yard which sits between the Campus Center and the MHRC’s. The recreation yard contains a basketball court and community garden. The yard will be fenced in for security, but several large gates will be required to allow for fire truck access through. Turf block will be used in large areas of the recreation yard to reduce run-off.

At the northern side of the site, another 26’ wide access road follows the slope of the site upwards and terminates in another turn-around for use by fire trucks. This turn-around is proposed to occur at the same elevation as the first floor of the ARF, thereby creating an opportunity for a separate identity and front door entry for the ARF building. The ARF/Campus Center building is proposed to be set into the hillside, with retaining walls forming the northern and western sides of the ground level Campus Center. The main front door to the Campus Center at the ground level will occur off of the access road, and will be configured with a drop-off and parking for 40 cars. A bus stop and sidewalk are also provided for the ARF residents on this side of the site.

The exposed area of the Cordilleras Creek, in the western portion of the site, will be maintained in its current location and general condition. The north bank of the Creek currently contains several large trees and an access road/walking path. This area, which can be reached from the
ARF/Campus Center building, is proposed to serve as an accessible nature area for the staff, residents, and their families.

7.2 Block Diagrams - Building

In order to determine the capacity of the site for the replacement of Cordilleras, the project team developed basic building configurations with the help of county, staff, consumer, and community stakeholders through a series of three integration events also known as “3P event”. See appendix B for more detail on the event. Through these events, the team developed an understanding of the basic size, configuration and functional relationships of a typical MHRC and a typical ARF floor plate.

For the MHRC, the consensus of the group proposes a four-wing plan connect on one end to a centralized staff and support core. Each wing holds four consumers; two wings have all privates and the other two wings have a mix of semi-private and privates. The four-wing “cross” responds to the programmatic and functional criteria set by the stakeholders.

- Flexibility through standardization of basic design elements, safety features and lean work flow practices is important. Each household will be programmed to meet the needs of the specific consumer population served, allowing for placement flexibility and grouping like consumer population types. Consumer type groupings could consist of:
  - Young Adults (Often with Co-Occurring Substance Abuse Disorders)
  - Trauma Survivors
  - Older Adult/ Medically Fragile
  - Severely Mentally Ill (Primarily with Schizophrenia and Schizoaffective Disorders)
  - Short Term Stabilization and Reentry to Community

In addition, each bedroom module is standardized.

- Safety and Security is a priority. The central care team station has visibility and proximity to all wings, to each entry point, to support and to group areas like dining and multi-purpose room. Locked or Delayed Egress electronic hardware can be applied to respective household requiring more or less level of containment. Also, side by side toilets create bedroom configurations that visibility of the entire room from the corridor door.

- Having just four consumers in each of these wings will also help to reduce the noise levels as part of the effort to improve security/safety in the MHRCs.

- A mix of private (75%) and semi-private (25%) bedrooms with en-suite toilets and showers help meet the higher level of care needed for MHRC consumers. More single rooms in separate podded wings help with increased level of consumer matching, placement and isolation for medical and rehabilitation purposes.

- Access to nature and daylight is critical to the project’s vision of wellness and healing through nature. With side by side toilets, each bedroom has an opportunity for large windows. Opportunities at the end of each bedroom wing exist for large amount of exterior glazing for views and daylight. Single story structures allow skylights or clerestory windows to be incorporated. There are opportunities for multiple doors at the end of each wing and through dining and multi-purpose room for controlled access to the outdoors.
Mental Health Rehabilitation Center (MHRC) Conceptual Block Diagram

The Adult Residential Facility (ARF)/ The Suites has a reduced level of care need. It is the place consumers can “graduate” to after receiving treatment in the MHRC. For some, it may be considered a place to work towards in one’s treatment process. Consumers are able to come and go as they choose and the focus is supportive residential living rather than treatment. Therefore the bedrooms, dining, group activity, and living rooms are more central rather than the care team areas.

Although safety and security is always a concern, safety and security is not at an increased level as in the MHRC’s. The building planning configuration responds differently than the MHRC’s as the purpose is housing and support rather than intensive clinical care. The ARF is preferred to be connected to the community building to conveniently share and utilize the campus amenities propose in that program. Residential living with supportive social resources is a driver of the Community Building / ARF integration.

The planning for the ARF evolved into a linear scheme with bedrooms on the ends separated by a central activity/dining core with entry points. Though not shown vertical circulation (2 stairs and 2 elevators) will be incorporated during design of the 3 story building.
The same level of standardization as the MHRC’s is not required yet a similarly planned floor will be of benefit. The planning diagram of the Community Building / ARF below is a basic concept of one floor of the ARF.

**Adult Residential Facility/ “The Suites” Typical Floor Conceptual Block Diagram**

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### 7.3 Architecture and Building Systems

**Mental Health Rehabilitation Center (MHRC)**

**Structure**

Based on our code research, the single-story MHRC buildings should be built of construction Type V-A or II-A. Type V allows for combustible construction, typically of wood framing. Type II requires the building’s structure to be non-combustible, which includes concrete, masonry and steel. The “A” prefix associated with the construction types requires the building’s structure to have a one-hour fire rating. Structural systems were proposed for both a Type II and V building type. Preliminary cost estimates indicate that a Type V structure to be the most cost effective, which will be the basis of design for the MHRC’s. The buildings will be designed for a lifespan of at least 50 years, and if properly maintained, will last much longer.

For documentation purposes the Type II structure proposed had tapered insulation over a flat 3-1/2” thick regular weight concrete fill over a 3” metal deck supported by composite beams. The underside of the deck would not require fire-proofing, but the beams would. The supporting columns were proposed to be steel tube columns either with fire-proofing or gypsum board wraps. The lateral system would be relatively narrow concentric braced frames. A suspended or metal ceiling joist gypsum board ceiling is added to conceal the MEP and fire-sprinkler distribution.
systems. The underside of the gypsum board ceiling to the top of the concrete filled deck is estimated at a minimum to be 4-feet for an overall dimension. For comparison purposes the equivalent wood framed roof/ceiling assembly would be roughly 18-inches deep. The foundation system will be localized spread footings at the columns, grade beams at the braced frames, and a downturned slab edge to provide a moisture barrier.

The Type V-A basis of design is proposed to be an I joist assembly with ½” plywood on top and two layers of ½” gypsum panels on the bottom. Over the patient areas it is proposed to use tapered I joist to help facilitate the roof drainage, and sloped framing within the common areas. For insulation R-30 batt insulation between the joists with resilient channels will be used. Within the patient rooms it is intended to use the bottom of the gypsum panels as the finished ceiling. For one-hour fire design considerations the I joist assembly is restrictive, which does not have an allowance for mechanical service penetrations at the membrane, the two-layers of gypsum panels. The mechanical system proposed uses small units that occur at each of the patient rooms with nominal distribution requirements. Within the bathroom and along the wall it is proposed to use dropped soffits to conceal the mechanical system. To help conceal the mechanical unit it is proposed to create a recessed space within the depth of the joist framing to allow for more depth at the unit. The fire-sprinkler and electrical services can be distributed through the I joist, and penetrate the membrane as allowed by CBC Section 714.4.1.2. For the fire-sprinkler heads at the ceiling it is proposed to use a recessed head with a metal cover plate and metal escutcheon. The vertical support of the I joist will typically be 2x6 stud bearing walls, and the lateral system will be composed of plywood sheathed shear walls. The foundation will be continuous strip footings. For feasibility cost estimating purposes, we can assume 18” wide x 24” deep extension below adjacent exterior grade. The ground level is proposed to be a 5” thick concrete slab-on-grade reinforced with #4 bars at 24-inches on center over a 15 mil vapor barrier over 6” of free draining rock.

For the wood stud walls, it is necessary to be 8-inches above exposed earth and wood finishes shall not be less than 6-inches above exposed earth or 2-inches from concrete surfaces. For plaster finishes the weep screed should be 4-inches above exposed earth and 2-inches above concrete surfaces. Since walkways must be accessible at exists with a ½” maximum step, concrete curbs around a portion of the exterior wall should be considered in the cost estimates.

Due to the elevation changes between adjacent buildings, typically 5’ of difference between finish floor heights, our cost estimates have accounted for exposed vertical footing faces of up to 18” on the uphill pad side and keystone retaining walls at and around the courtyards between buildings.

**Exterior Architecture**

The Type V construction allows for combustible materials to be used for the exterior cladding. For the purposes of this Feasibility Study, we propose a material like Ipe wood siding. Nicknamed “iron wood”, Ipe is an incredibly strong hardwood with a long life expectancy and little required maintenance. It can be sourced as a sustainable material, with FSC (Forest Stewardship Council) certification. This natural wood exterior expression will be compatible with the forested surroundings of the site, and add to the project’s Vision of healing through nature. The windows are proposed as aluminum-clad wood frames, with high performance glazing – including insulated laminated glass (for security) with a low E-coating to limit heat gain. The windows will not be operable for reasons of security.
The buildings are conceived as having flat roofs (shallow slopes to drain) with a parapet for protection and to hide the rooftop equipment, fans and vents. Roof drains and overflow drains will be positioned near the exterior walls. An architectural expression for the building roof form will be created by a steel trellis that both provides shading to the courtyards and supports the photovoltaic (PV) panels.

**Photovoltaic Panel Support Trellis**
The plan area of this steel trellis frame is roughly 65-feet by 130-feet. The supporting columns could be integral with the wood framing and strapped into the roof diaphragm. For cost estimating purposes we’ve assumed transverse PV supporting steel tube beams that are hollow structural section (HSS) 8x6x 5/16” that do not span more than 27-feet. For the perimeter beams and supporting girders that do not span more than 37-feet, we’ve assumed a HSS 16x8x 3/8” tube section, and for the columns a minimum 16 columns that are HSS 8x8x 5/8” and do not extend more than 8-feet above the MHRC roof. Additional costs shall include spread footings and an increase for wood strapping and hold-downs.

**Pre-fabricated Units**
At the MHRC buildings, pre-fabricated modules may be an option for the bedrooms and bathrooms, with the common spaces in-filled with storefront windows or curtainwall on site. Built in a shop and transported to the site, these repetitive modules could potentially save construction time and cost, allowing the residents to move back more quickly. Each module could consist of two bedrooms and two bathrooms, at an overall size of roughly 13’ x 40’. With five MHRC buildings, with 16 bedrooms and bathrooms each – or 8 modules each, the 40 identical modules could create an economy of scale. Since the pre-fabricated modules will need to be transportable, the floor will need to be constructed with the walls and roof. The site foundation and walkways will need to be adjusted accordingly to accommodate this raised floor. A raised floor would help to create a more comfortable interior environment, as the occupants are not walking on a surface material over a cold concrete slab, but rather on a raised potentially insulated floor. The PV Panel Support Trellis may not be easily incorporated into the prefabricated framing, and an alternate PV support solution may be required.

**Adult Residential Facility (ARF) / Campus Center**

**Structure**
The ARF/Campus Center building will be a combination of a concrete structure at the lowest ground level and a wood frame structure at the upper residential levels (similar to the MHRC’s).

Since the first level backs into a hillside, and there is a need for an area separation between the occupancies between the first level and upper levels, we proposed an all concrete structure. However, as was previously discussed in Part 5 regarding building codes, this residential type building is only required to meet a Type V-level construction (wood frame) and we therefore propose that it be classified as such.

Regarding the concrete structure, generally post-tensioned slabs are used locally to create flat slab profiles that are thinner than conventionally reinforced concrete slabs. The challenge with conventional reinforced slabs is the increased slab weight for gravity and lateral design considerations, and the much larger immediate and long-term deflections due to creep, as well as the
reduced effective sections due to concrete cracking. Post-tensioned slabs in comparison are practically deflection free. The concern associated with post-tensioned slabs is the addition of penetrations at a later date and the installation of post-installed anchors that may hit and damage the post-tensioned cables. For a residential use that is pre-planned, the concerns associated with post-installed anchors and penetrations should not be an issue. The post-tensioned slab thickness for preliminary assumptions, supporting two levels of wood framed construction above, is 11 inches thick. To address punching shear concerns due to gravity loads, penetrations close to columns, and lateral drift, we propose to use drop caps. If desired, the location of post-tensioned cables can be marked by stapling short ½” chamfer strips to the form, which leaves a permanent impression. This can assist with the location of cables for post-installed anchors.

The lateral system at the lowest level of the ARF will be concrete shear walls. The upper levels, constructed with wood framing, would have plywood shear walls with hold-downs as required.

We propose that the minimum slab-on-grade thickness at the ARF be 7” since it will be needed to resist basement wall loads. With open sided basement wall conditions, the sliding force can become quite large. It will be necessary to grab all the frictional weight of the building to resist sliding, which will be transferred by the slab-on-grade. The foundation is assumed to be conventional spread footings and grade beams that are supported by underlying rock. At the south side, the spread footing may be deeper, and so should be accounted for in the cost estimate. At the southeast corner, assume that shallow piers may be required, anticipating that the rock layer may follow the contours of the existing grade.

**Exterior Architecture**

In order to create a cohesive campus-like environment, the exterior architecture of the ARF/Campus Center building will be similar or compatible with that of the MHRC buildings with regard to forms and materials.

**Building Systems**

(See Appendix H: Building Systems reports for detail on proposed systems, including design and equipment selection criteria)

**Heating, Ventilating and Air Conditioning Systems**

We are proposing a highly efficient mechanical system design, ideally suited to the program, scale, and setting of the new treatment programs. The mechanical design involves all mechanical HVAC systems and controls serving individual buildings. The system includes air-cooled variable refrigerant volume system (VRV/VRF) units including air-cooled condensers and indoor fan coil units. Motorized louvers/windows and exhaust fan will provide natural ventilation to the common areas in the individual buildings. In addition fan coil systems will be provided. Each residence room will be designed with dedicated HVAC system and control. Outside air ventilation (OSA) for the residence rooms shall be delivered by an energy recovery unit (ERV) dedicated to OSA only and fed directly to all fan coil units serving residence rooms. One ERV will be used for each building. Control of temperature in individual resident rooms will not be directly available to resident; however central administration control of temperature in individual resident rooms will be verified during design. The kitchen area in each building pod will be served by a 100% OSA make-up air unit with water
coil. The water coil will be used for tempering the OSA during both winter and summer. The water coming to the make-up air unit shall come from the VRF system via a hydronic heat exchanger.

Building automation system is BACNET over Ethernet, with web access and pager alarming.

The domestic hot water needs shall be served by a hydronic heat exchanger with booster compressor. The hydronic heat exchanger shall be directly tied to the VRF system and provide 140 degree water for domestic hot water use.

Alternate Concept
A second mechanical option was considered that includes a VRF System for comfort Cooling/Heating with a hot water heat pump chiller for hot water generation. A Variable Refrigerant Flow (VRF) System will serve both corridor common areas as well as the residence rooms. These will be provided by a VRF System with Heat Recovery for simultaneous heating and cooling in all zones. OSA ventilation for the residence rooms shall be delivered by an ERV dedicated to OSA only and fed directly to all fan coil units serving patient rooms. One ERV will be used for each building. In addition to the VRF system, a natural ventilation system will be used for the common areas as a method of providing non compressorized cooling. This will be the first stage of cooling with the VRF supplementing as needed. The Kitchen area in each building pod will be served by a 100% OSA Make up air unit with water coil. The water coil will be used for tempering the OSA during both winter and summer. The water coming to the MUA shall come from the VRF system via a hydronic heat exchanger.

The domestic hot water needs for the entire campus shall be served by a heat pump chiller. The chiller will deliver 140 degree water. Provide a hot water piping system from heat pump chiller for all buildings that require domestic hot water.

Plumbing / Fire Protection Systems

The plumbing design involves all domestic cold and recycled water, domestic hot water, storm, sanitary sewer, and vent systems. The scope of work also includes the testing of all plumbing equipment and systems associated with the new construction.

Sanitary Sewer
A gravity sanitary sewer and vent system will be provided for all new buildings. A sanitary sewer service will be shown up to 5 feet outside each building with a clean-out. Any floor drains or floor sinks that will receive intermittent waste will be provided with automatic trap primers. Access panels will be provided for the trap primers. Piping service below grade will be cast iron

Storm Drainage System
The building will be provided with a storm drainage system. Storm drain piping will be drained by gravity through a storm drain main to terminate 5 feet from the building with a clean-out. The secondary (overflow) drainage piping will also be drained by gravity and will be terminated from the building’s exterior with a downspout nozzle at 12-inches above grade.
Domestic Cold and Recycled Water System
Domestic water piping will be copper type K (for underground installations) and type L (for above ground installations) hard drawn copper. A secondary zone backflow preventer will be provided for areas that can cause low or high hazard backflow at domestic water main.

Domestic Hot Water System
All buildings will have their own electric water heaters. Domestic hot water supply and return lines will be tied to the water heater. The domestic hot water system will provide 120 degree F water to all lavatories, showers and kitchen sinks with scald protection. The domestic hot water system will provide 140 degree F water to the dishwashers and the triple sinks. A circulating pump will be provided to the hot water return line and will be connected to the electric water heater.

Drain Systems
The condensate drain system will drain all clean water drainage from any mechanical cooling equipment. All equipment requiring condensate removal will be equipped with a secondary drain pan and visible overflow piping. The primary condensate will be tied into the sanitary sewer system as an indirect waste with an air gap fitting. Condensate is required to be insulated as specified.

Natural Gas System
Gas service will enter the site with a main gas meter, a regulator, and an earthquake valve. Gas will be supplied only to the main central kitchen equipment.

Plumbing Fixtures and Equipment
Plumbing fixture selection will be based first and foremost for the safety and security of the occupants, and will include features like anti-ligature handles or infrared sensors. The project will be LEED certified and water conserving low-flow fixtures will be selected to satisfy sustainable design goals.

Sustainable Design Options
Sustainable and Zero Net Energy design strategies are also being considered for this project. Design considerations for the plumbing include rainwater treatment system, gray water system, and solar thermal domestic water heating system.

Rainwater Treatment System
Rain water runoff will be collected from the roof of each building and then piped through a filter located on the ground floor of each building. Rain water from each building will be connected to the external storm water main which will discharge rain water to the under-ground rain water collection tank with the option of by-passing to the city storm water main. The water is treated by a chlorine chemical injection system and filtered by a pressure filtration system. At the end of conveyance, storage, filtering, and treatment, the recycled water will be stored in the recycled water break tank and pumped to the 150,000 gallon existing steel tank located on the hill. The recycled water will be used for irrigation and flushing water closets and urinals. Recycled water may be used for the external fire hydrants and the fire protection system of the building subject to the Fire Marshal’s approval.
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Gray Water System
Gray water will be collected from the lavatories and showers of each building and connected to the external gray water system which will discharge gray water into an underground storage tank. A gray water treatment system shall be installed and will provide recycled water which will be pumped to the 150,000 gallon steel tank located on the hill.

Solar Thermal Domestic Water Heating System
A Solar Thermal Domestic Water Heating System will be installed for each building and will generate hot water for the building.

Electrical/Lighting/Fire Alarm Systems
The Electrical design involves all power, lighting, lighting controls, fire alarm, and testing of all electrical equipment. One new main power utility service for the entire complex will be installed at the ARF building, the power distribution will feed both ARF building and each MHRC building. An emergency standby diesel engine generator unit will be installed near the ARF building to provide 12 hours back-up power for 80 percent electrical load of the entire facility. Light fixtures to be specified will utilize fluorescent, LED, and HID lamps. Lighting controls will be provided. Fire alarm will be designed with full coverage area detection. Telephone and data system conduit rough-ins will be designed for service and distribution.

Normal Distribution
The main electrical service for the entire facility will be fed via a new PG&E pad mounted transformer located at the site in the vicinity of the ARF building. One main PG&E kWh meter will be installed for the entire facility. The main switchboard MSB will be installed at the ARF building main electrical room to serve the entire facility. The ARF-DP distribution board will be installed in the ARF building main electrical room. This will serve the ARF building and site electrical loads. Step-down transformers will be installed in the ARF building to provide 120/208V, 3 phase power for the branch circuit panelboards. The five MHRC-DP distribution panels will be installed in the five MHRC buildings electrical room. Step-down transformers will be installed in the MHRC buildings to provide 120/208V, 3 phase power for the branch circuit panelboards. Where receptacles are provided within occupant rooms, they will be tamper-resistant, hospital-grade, and provided with GFCI protection. Cover plates will be made of polycarbonate materials and secured with tamper-resistant screws. A dedicated circuit will be required for each occupant room and bath to allow remote shut-off if necessary for occupant’s safety.

Emergency Distribution
An emergency standby diesel-engine generator with sound attenuated weatherproof outdoor type enclosure will be installed outside the ARF building to provide back-up power for the entire facility. The generator capacity will support 80 percent electrical loads of both ARF building and the five MHRC buildings. The diesel fuel tank capacity will provide emergency back-up power for 12 hours at generator full load capacity. The main emergency distribution board EDB will be installed in the ARF building main electrical room.
Lighting Systems
A complete lighting system for all indoor, outdoor and building mounted illumination will be installed. The indoor lighting system will consist primarily of energy-efficient fluorescent and LED sources. Incandescent lighting will not be used. In general, fluorescent lamps will be high output ‘Super T8’ lamps with energy efficient electronic ballast. The outdoor lighting system will consist of HID and LED sources. Luminaires will use optical systems and sources that are in compliance with local lighting ordinances.

In general, indoor lighting controls will consist of a combination of low voltage relay based lighting control panels and local occupancy sensors. Outdoor lighting controls will consist of a low voltage relay based lighting control panel with astronomical time clock function.

Fire Alarm System
An automatic, addressable, fire alarm system will be supplied to meet the requirements of the adopted editions of the California Building Code, California Fire Code, and NFPA 72. The fire alarm system will require system alarm, supervisory and trouble signal monitoring, and alarm notification for the building. Any power supplies will have batteries to provide a secondary power source in case of primary power loss to the control panel or any remote power supply. The system will be manufactured by Simplex or Siemens and will be connected to the existing Simplex or Siemens campus network, via the local or wide area network infrastructure. Activation of system smoke detectors or manual pull stations will initiate alarm signals on the fire alarm control panel (FACP) and fire alarm annunciator (FAA), and activate the audible and visual notification appliances throughout the building. Manual pull stations will be supplied at building exits. Automatic smoke detection will be supplied throughout, in lieu of duct mounted smoke detectors at fire/smoke dampers and air handling units. Heat detectors will be supplied where the environment is not suitable for smoke detectors. Audible and/or visual alarm devices will be supplied throughout the building.

Telecommunication System
Telecommunication rooms will be located on each level of the ARF. The Level 1 room will be the main point of entry (MPOE) for telephone and data services. Each MHRC will have a telecommunications room (TR) to provide a connection point to the facility backbone and support horizontal distribution in each building. A cable runway system will be provided in each telecommunications room to serve as backbone raceway infrastructure. The MPOE will be served via new conduits to the property and will be coordinated with the consumer and service provider’s requirements. Conduits will run from each MHRC building back to the ARF for connection to facility telecommunication services. Wire-basket cable tray system will be located in the main corridors to serve as the raceway infrastructure. A comprehensive backbone cabling system consisting of multi-strand fiber optic and multi-pair copper and coax cabling will be provided originating in the MPOE room to support each TR throughout the facility. Voice and data network cabling will be provided. Wireless access point locations will be coordinated and designed per consumer requirements.

Photovoltaic System
As a sustainable design solution for achieving a Zero Net Energy (ZNE) solution, a 496 kW photovoltaic (PV) system is proposed for the project. This includes installation of PV systems on the roofs of the ARF and five MHRC buildings. The normal panel board in the ARF and each
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MHRC building will include a circuit breaker for PV system connection, and the bus rating of the normal panelboard will be in accordance with the electrical code requirement for PV systems.

The PV system will consist of standard efficiency modules (approximately 16-17% efficiency) mounted to the roof using a permanently attached racking system. The PV arrays will be located to avoid shade from roof mounted equipment, trees, etc. The PV modules will be equipped with optimizers to limit the effects of shade, and compatible utility grid-interactive inverters will be located in an easily accessible but secure location. Additional interconnection equipment will be provided as required by PG&E as a condition of interconnection. The PV system will be interconnected via PG&E’s Net Energy Metering program.

Detailed solar exposure studies and energy modeling will need to be conducted in order to validate the viability of the PV system on the buildings in this site. The PV system size was estimated by calculating the annual energy usage by assigning an energy use intensity (EUI) to each building occupancy type. The estimated simple payback period is 16 years, and the PV system cost is $1.7 million. Accounting for fuel escalation of 3.0%, this number reduces to approximately 12 years. Web-enabled monitoring system will graphically display the energy output of the PV system for educational purposes.

A 20 kW fuel cell may be needed in addition to the photovoltaic system to achieve ZNE Basis of Design due to the presence of high energy use intensity cooking and process loads as allowed by the National Renewable Energy Laboratory (NREL) definition of ZNE.

### 7.4 Sustainability

In 2001, the County of San Mateo Board of Supervisors adopted a Sustainable Building Policy that requires all new buildings over 5000 square feet to be built to the highest practicable LEED rating, and to be certified through the U.S. Green Building Council (USGBC).

In 2004, the County published the San Mateo Countywide Sustainable Buildings Guidelines and Checklist to help guide new construction projects towards building green.

In 2013, California revised its Building Standards Code for energy efficiency, Title 24. The revisions, which take effect on July 1, 2014, put in place a mandate for all residential buildings to be designed and built to achieve Zero Net Energy (ZNE) performance standards by 2020 (non-residential by 2030). To build a ZNE building, the amount of energy provided by on-site renewable energy sources must be equal or greater to the amount of energy used by the building over the course of a year.

To meet the challenges of these guideline and laws, and to realize Cordilleras’ vision to **heal through nature – to be environmentally conscious**, the Feasibility Study proposes the ZNE standard as a basis-of-design. We developed a feasibility framework that achieves ZNE, but does so in a way that does not render the Feasibility Study useless if that status cannot be achieved during the actual design phase. So for instance, while a large photovoltaic panel array may be proposed to achieve ZNE, if it cannot be accommodated for the actual project, our Feasibility Study also identifies how the base systems would need to be upsized or augmented to accommodate the additional energy demand.
By pursuing a ZNE strategy, the project will also meet many of the requirements necessary to achieve a rating in the Leadership in Energy & Environmental Design program (LEED), which is a requirement of the County Sustainable Guidelines.

Cordilleras has a sensitive population of residents who will benefit from a healthy built environment. A strong sustainable design approach, combined with the site’s serene natural setting, provides an opportunity to create a truly exemplary residential campus. Some of the sustainable design strategies proposed throughout this Study include:

- Rain water catchment and treatment to conserve water and reduce impacts to the County storm water system
- Rooftop photovoltaic arrays and fuel cell systems for on-site energy production
- High-efficiency heating and cooling systems, such as Variable Refrigerant Flow (VRF)
- The use of extensive daylighting and natural ventilation to take advantage of the site’s built-in conditioning systems

### 7.5 Consumer Relocation Planning

The purpose of this section is to address whether it will be necessary to relocate the Cordilleras and nearby Canyon Oaks residents during the period of demolition and construction of the new programs. To the extent relocation will be necessary, this section outlines recommended solutions. All decisions regarding relocation will be guided by consumers’ quality of life and safety. A sub-committee will be formed to plan for the transitions of any consumers from one location to another as necessitated for the project. Every effort will also be made to consider continuity of care and reducing the number of transitions necessary for consumers as well as staff.

There are three distinct populations of consumers whose needs must be considered during the construction project. One group of 68 consumers lives in the locked MHRC portion of Cordilleras on the 3rd floor. A second group of 49 consumers lives in the unlocked, or residential, portion of Cordilleras known of as “The Suites,” located on the second floor of Cordilleras. A third group of 12 consumers live in Canyon Oaks which is a nearby residential treatment program for adolescents.

Before identifying recommended solutions for consumer relocation, the project team considered the cost and availability of relocation options; the feasibility of phasing construction at the site in order to minimize relocations; and the extent to which the following disturbances at the site would detract from consumer quality of life or could be mitigated:

- Dust/dirt particles in the air
- Noise from the construction/demolition
- Safety issues related to having heavy equipment and sharp objects accessible to consumers.
- Adequate space to build next to the existing structures
In order to best understand the needs of each of the consumer groups, we met with the clinical and administrative experts who are currently working with them.

**Challenges to relocation of ARF consumers**
We explored the following options for relocation of the 49 consumers residing at the Adult Residential Facility portion of Cordilleras:

- Availability of rooms in existing Adult Residential Facilities (ARF’s)
- ARF’s that would need to be developed and licensed from current housing stock
- ARF’s that would need to be built

San Mateo County has very limited ARF bed availability that has worsened due to increasing cost of housing and dwindling supply of provider operators. There are already consumers waiting for ARF openings in order to be able to move to a less restrictive level of care. In order to better understand the options for relocating consumers, we surveyed surrounding counties to learn their what they are paying for this level of care; surveyed ARF operators in San Mateo County to learn their vacancy rates, what they are charging, and who they are serving; and talked to many operators about the barriers to serving more people.

Through our surveys we learned the following:

- We are paying half of the rates that Santa Clara and San Francisco Counties pay. We have likely lost capacity to those counties as a result. Maintenance of our current inventory let alone expansion will likely require increasing to rates that are more competitive with neighboring counties.
- The overwhelming majority of licensed ARF providers in San Mateo County work with the Regional Center for developmentally disabled consumers, which also pays significantly more than we pay.
- The vacancy rates are almost non-existent thus there is not a supply of underutilized licensed ARF beds in San Mateo County.
- While there are organizations that would be interested in developing large new ARFs in San Mateo County that could house 15 – 40 consumers, it is challenging and costly to locate vacant buildings in tolerant neighborhoods and refurbish them.

This information led us to conclude that our best plan would be to design phasing of construction in such a way as to avoid relocation of the majority of ARF consumers. In addition, this information supported the option of adding to the number of ARF beds planned for the project.
Challenges to relocation of MHRC consumers

We explored the following options for relocation of the 68 consumers residing in the locked MHRC portion of Cordilleras:

- Repurposing the now vacant ground floor of San Mateo Medical Center
- Rental of another vacant building or portion of a building in the Bay Area that could be converted to a temporary MHRC
- Available beds in other MHRCs operated by Telecare and other organizations

We could not find a reliable solution for relocation of the entire group of 68 consumers that would be available on the timeline required for this project. The most reliable solution appears to be contracting for MHRC beds in other facilities outside of San Mateo County, and possibly using a portion or all of the ground floor at San Mateo Medical Center. The use of the ground floor at San Mateo Medical Center is under exploration with the licensing agencies that have oversight of the services that would be impacted. This option would reduce the need to identify MHRC beds in other facilities. Vacant MHRC beds are not plentiful and we already struggle to place consumers out of San Mateo Medical Center. However the San Mateo Medical Center option may not come to fruition. Thus we have concluded that our best plan would be to design phasing of construction in such a way as to avoid relocation of as many MHRC consumers as possible, completing two MHRC’s with capacity for 32 people and to plan for attrition and sufficient time and resources needed to move the remaining 36 consumers to other facilities while the remaining facilities are constructed.

Challenges to relocation of Canyon Oaks consumers

The third group of 12 adolescents, located at Canyon Oaks residential treatment program, was considered for temporary relocation to another existing vacant building or program. Canyon Oaks is located on the other side of the fire station from Cordilleras. We determined there were no appropriate solutions inside or outside San Mateo County. We also explored what the impact would be of leaving Canyon Oaks occupied during demolition and construction and whether there are strategies for mitigating potential problems.

The project team consulted with local providers and providers around the United States with whom we visited to see what their experience was with similar challenges during construction of new facilities. We learned that many organizations have successfully managed consumer services while construction is underway:

- Construction and demolition next to structures where consumers are currently living was not viewed as untenable for consumers either by the clinical staff working with the consumers or by the consumers themselves.
- Consumers often took interest in the construction/demolition.
- Construction/demolition work was more concern to staff than consumers, although continuous communication was effective in mitigating concerns.
- Project staff holding regular meetings with staff and consumers to keep them briefed and getting their feedback was beneficial in other projects.
- Mitigating procedures and techniques to decrease noise and dust were useful. These include keeping the construction area watered down and the use of sound walls.
• Specially designed fencing, established safety protocols, and the use of security personnel were techniques used to manage the safety of the consumers near construction sites.

Consideration of Alternate County Owned Sites
The project team also performed due diligence in assessing potential alternate County owned sites for the replacement project with the idea that some of the buildings could be completed without temporary relocation of consumers. The project team conferred with the County’s Real Property division and obtained a list of all available County parcels. Each of these sites was evaluated for adequacy of size for the programs, zoning, appropriate location in a therapeutic environment, central access to medical and other essential services that are frequently required by MHRC consumers, and compatibility with the surrounding neighborhood.

None of the available County owned parcels met all of the program criteria as well as the existing site on Edmonds Road. Therefore, the project team focused on developing a phased replacement program on the existing site.

Recommended Solution for Consumer Transition
The Cordilleras project staff, representatives from HGA architects and engineers and Telecare leaderships thoroughly assessed the feasibility of allowing consumers to remain in place on campus during the phased construction of new facilities. The results of the assessment showed that it was possible to allow most consumers to remain on site during the demolition, earthwork, and construction phases.

Though the Feasibility Study proposes a phasing plan with most consumers remaining onsite for the duration of the project, there is a 16 month period that up to 36 MHRC consumers will need to be temporarily relocated to allow for the demolition of the existing building, and the construction of the final three MHRC facilities. A feasible project phasing plan would be as follows:

Phase 1A (Earthwork and Utilities) and 1B (Construction)
Phase 1A is scheduled April 1 through October 1, 2017 and Phase 1B is scheduled from October 1, 2017 to September 1, 2018. During these initial phases all Cordilleras consumers in the MHRC, ARF and Canyon Oaks will remain in place.

First Consumer Move
At the conclusion of Phases 1A and 1B on September 1, 2018 the new ARF and two 16-bed MHRCs could be completed. At this time all ARF consumers and 32 MHRC consumers will move into these new facilities. The remaining 36 MHRC consumers will temporarily relocate to other MHRC’s and remain in these locations for 16 months until January 1, 2020, when the new facilities are completed. See the Cost of Relocation below.

Demolition of Existing Cordilleras Building, Phase 2A (Earthwork and Utilities) and 2B (Construction)
After all consumers vacate Cordilleras on September 1, 2018, the General Contractor will proceed with demolishing that building, performing earth work and utility installation (Phase 2A) and
constructing the final 3 MHRC buildings (Phase 2B) which are scheduled for completion January 1, 2020.

**Final Consumer Move**
Upon completion of the final 3 MHRCs on January 1, 2020, the MHRC consumers in the other settings will return to the new facilities.

**Cost of Relocation**
The estimated costs for the alternate temporary relocation strategies are contained in the following tables. The project team will continue refining the detailed costs of each option and present the results to leadership for action and inclusion in the planning for the FY 18-19 and 19-20 budget cycles.

**Summary of Estimated Costs for Consumer Relocation**

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per diem for MHRC placements @ $275, 36 consumers, up to 20 months</td>
<td>$6,022,500</td>
</tr>
<tr>
<td>Transportation / moves</td>
<td>$51,720</td>
</tr>
<tr>
<td>Placement specialists to identify and arrange placements 12 months</td>
<td>$358,800</td>
</tr>
<tr>
<td>Total</td>
<td>$6,433,020</td>
</tr>
<tr>
<td>Offset by existing sources for placements</td>
<td>$1,865,211</td>
</tr>
<tr>
<td>Net required for placements</td>
<td>$4,567,809</td>
</tr>
</tbody>
</table>

(Note: All costs expressed in 2014 dollar values and will be escalated as required)

**7.6 Phased Construction**

The Feasibility Study included input from a California licensed general contractor - located outside of the Bay Area. The contractor addressed the feasibility of phasing the project, and other construction-related concerns. The contractor proposed the following conceptual strategy for phased construction *(see the proposed preliminary phasing diagrams at the conclusion of this Part 7)*:

**Phase 1 – Sequence 1**
- Clear and grub the site moving from the South to the North in order to start the South retaining wall first. From that point on, construct the South and North retaining walls at the same time. This will lend itself well to the incremental approach necessary to build these walls as the equipment will move back and forth between the two areas as they work down in elevation
- Completion of building pad for first two MHRC structures.
- Construction Access to the site during this Phase will utilize the existing North service road and wrap around the existing dirt road to the West to access the South retaining wall area.
Phase 1 – Sequence 2
• Building construction of first two MHRC’s begins with foundations and underground utilities in the building pad.
• North retaining wall and rough grade of the adjacent road completed (prior to South retaining wall being complete).
• Begin the underground utility installation on the North road, starting on the West side and moving clockwise.
• Pave the North road as soon as the utility work is complete.
• Construction Access would be moved to the South road for this phase of the project to allow the utility and paving on the North road.

Phase 1 – Sequence 3
• MHRC building construction continues.
• As soon as the North road is complete, construction site access can be moved back to the North.
• Underground utility installation will continue around the site in a clockwise fashion all the way to the new MHRC buildings.
• Ingress and Egress to the existing buildings can be managed during this installation with coordination and trench plating.
• Final patching of the existing road and paving of the South road can be completed after the fire loop is tested.

Phase 1 – Sequence 4
• MHRC building construction continues.
• ARF building pad begins and the building is constructed and completed.
• The ARF will cut off construction access to the MHRC area, so Construction Access will shift back down to the South road for this work.

This process will produce the building pads quickly and allow the construction of the new buildings to begin as soon as possible. It also creates a stagger in the work flow allowing crews to move from one building to the other. The focus on the underground utilities brings the fire protection system on-line so the fire department can grant the project “staff and stock” of the buildings.

Phase 2 – Sequence 1
• Demolition of existing building.
• Installation of the underground utilities and new creek diversions.
• Construction of remaining MHRC building pads and South road continuation through the old hospital footprint.
• Completion of underground utility trench along this new portion of the South road.
• Construction Access can be handled immediately at the main entrance to the campus and utilizing the North road.

Phase 2 – Sequence 2
• Construction of remaining three MHRC buildings along South road.
• Construction access focused immediately at the main entrance to the campus.
Site Access
According to the contractor, the phasing diagrams as shown will allow for the adequate construction access to the project site. It will be important to maintain access to the Canyon Oaks Center and the Fire Station on the site during construction. The access to the existing buildings can be maintained utilizing fairly routine construction practices. There will be some traffic on the road in front of these buildings, but only during the period of constructing the North retaining wall and access road. The other impact will be the installation of the underground utilities in front of these buildings. The contractor will be required to maintain access to the existing buildings during this work.

Site Safety
Based on the layout of the site, it appears that it will be manageable to isolate the construction area with fencing and keep people from casually entering the project site. If there is a concern that consumers may attempt to enter the site, it would be worthwhile engaging a private security company to patrol the fenced area off hours and observe the entrance gates during operations. It is the General Contractor’s responsibility to maintain a safe project site.

The strategy and successful execution of this phasing plan requires the following program elements:

- A superb communication plan between the project team and all consumers and staff on the new campus. Regular project briefings will occur for all constituents to include an overview of the project schedule and key milestone dates, the safety and security program, and discussion of the logistics and impacts of the project.
- The continuous provision of security fences where needed to separate the construction area from the consumer/staff areas to assure safety and security for all.
- The provision of “sound walls” which buffer noise where needed during the most intense periods of construction and demolition.
- The project team will require the General Contractor to continuously provide dust control by water spray or other measures during all phases of the project that may create airborne dust and dirt. This requirement will be monitored and enforced by the project team.

The project team will continue to improve and refine this plan during the design phase of the project to assure a safe, secure and comfortable environment of care for all consumers and staff throughout the duration of the project.
Part 7: Conceptual Design Recommendations
Part 7: Conceptual Design Recommendations

Feasibility Study to Replace Cordilleras Mental Health Center

SITE PLAN Demolition September 2018 - December 2018

San Mateo County Behavioral Health Services
HGA Architects and Engineers
Part 8

Financial Analysis
Part 8 – Financial Analysis

Introduction

The financial analysis for this feasibility study includes an estimate of the capital costs to replace the existing Cordilleras Center with a campus of new buildings, as well as an estimate for the annual operating costs for the proposed replacement project. In addition, for comparison purposes we have estimated the cost to renovate and upgrade the existing Center.

8.1 – Capital Costs

Please see the Predesign (Feasibility) Construction Cost Model on the following pages. The model includes a cost estimate for a replacement campus of new buildings, as well as an estimate for the reuse of the existing building.
## San Mateo County - Cordilleras Center

### Predesign Construction Cost Model - NEW BUILDINGS (Design-Build Delivery)

#### Design-Build Delivery

<table>
<thead>
<tr>
<th>COST MODELING SUMMARY</th>
<th>MHIC</th>
<th>520,000 SF</th>
<th>5/16</th>
<th>ARF and Support Bldg</th>
<th>33,144 GSF</th>
<th>5/16</th>
<th>Site Development</th>
<th>6.33 acres</th>
<th>5/16</th>
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<tbody>
<tr>
<td>Building Core &amp; Shell</td>
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<td>$1,415,303</td>
<td>$100</td>
<td>$1,415,303</td>
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<td>$1,415,303</td>
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<td>Interior Architectural Fit-out</td>
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<td>$565,704</td>
<td>$03</td>
<td>$565,704</td>
<td>$03</td>
<td>$565,704</td>
<td>$03</td>
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<tr>
<td>Furniture/Equipment &amp; Special Constructions</td>
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<td>$12</td>
<td>$810,704</td>
<td>$12</td>
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<td>$12</td>
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<td>Mechanical</td>
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<td>Site Development Costs</td>
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<tr>
<td>Temporary Site Controls, Grading &amp; Utilities for Phased Construction</td>
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<td></td>
<td></td>
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<tr>
<td>DB Team General Requirements</td>
<td>19.8%</td>
<td>$342,231</td>
<td>$43</td>
<td>$1,374,907</td>
<td>$32</td>
<td>$1,719,586</td>
<td>$32</td>
<td>$1,719,586</td>
<td>$32</td>
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<tr>
<td>DB Team Construction Fee/Bond/Insurance</td>
<td>4.0%</td>
<td>$21,116</td>
<td>$00</td>
<td>$817,653</td>
<td>$00</td>
<td>$899,268</td>
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<td>$00</td>
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<tr>
<td>DB Team Design Fee</td>
<td>3.0%</td>
<td>$162,487</td>
<td>$10</td>
<td>$520,916</td>
<td>$10</td>
<td>$621,890</td>
<td>$10</td>
<td>$621,890</td>
<td>$10</td>
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<tr>
<td>Phasing Premium for Occupied Site</td>
<td>2.0%</td>
<td>$64,971</td>
<td>$5</td>
<td>$211,524</td>
<td>$5</td>
<td>$246,770</td>
<td>$5</td>
<td>$246,770</td>
<td>$5</td>
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<tr>
<td>Design Contingency</td>
<td>10.0%</td>
<td>$410,941</td>
<td>$39</td>
<td>$1,337,800</td>
<td>$39</td>
<td>$1,615,780</td>
<td>$39</td>
<td>$1,615,780</td>
<td>$39</td>
</tr>
<tr>
<td>Construction Contingency</td>
<td>3.0%</td>
<td>$234,471</td>
<td>$20</td>
<td>$668,945</td>
<td>$19</td>
<td>$792,834</td>
<td>$19</td>
<td>$792,834</td>
<td>$19</td>
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<td>MHRC Building SubTotal (1 BM)</td>
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<td>$4,733,824</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Building &amp; Site Construction Cost</strong></td>
<td>$23,629,119</td>
<td>$452</td>
<td>$15,385,737</td>
<td>$438</td>
<td>$1,363,560</td>
<td>$438</td>
<td>$2,223,643</td>
<td>$438</td>
<td>$2,223,643</td>
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</tbody>
</table>

### Notes:
- **Part 8: Financial Analysis**
- **Notes:**
  - 1. Preliminary phasing plan diagram.
  - 2. Final cost for construction of one single MHRC building would incrementally increase as the number of MHRC buildings included in the project scope decreases.
  - 3. Annualized escalation rate of 3.50%
  - 4. SubstantialActivate & incentives would likely be available for PV and Fuel Cell installations, but are not included in this pricing assessment.
# San Mateo County Cordilleras - MHRC

## Predesign Construction Cost Model

### Part 8: Financial Analysis

**Total Building GSF**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT $</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUILDING CORE &amp; SHELL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Pad Prep &amp; FG Excavation</td>
<td>Typical, subsoil correction included w/ site work</td>
<td>10,452 sqft</td>
<td>$2.50</td>
<td>$26,130</td>
</tr>
<tr>
<td>Grade Beam Footing Foundations</td>
<td></td>
<td>1,400 linft</td>
<td>$65.00</td>
<td>$110,000</td>
</tr>
<tr>
<td>Slab on Grade</td>
<td>Typical, 6&quot; or Rein. sand, VB</td>
<td>10,452 sqft</td>
<td>$7.50</td>
<td>$78,390</td>
</tr>
<tr>
<td>Concrete Curbs @ exterior wall</td>
<td>Typical</td>
<td>620 linft</td>
<td>$25.00</td>
<td>$15,500</td>
</tr>
<tr>
<td>Exterior Wood Stud Bearing Walls</td>
<td>2x6 w/ bracing, high parapet/screen wall, 15' tall</td>
<td>9,300 sqft</td>
<td>$6.00</td>
<td>$55,800</td>
</tr>
<tr>
<td>Interior Wood Stud Bearing Walls</td>
<td>2x6 w/ bracing, 9' tall</td>
<td>7,029 sqft</td>
<td>$5.50</td>
<td>$38,610</td>
</tr>
<tr>
<td>TJI Joist Roof Framing</td>
<td>Allowance</td>
<td>1 lsm</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Gypsum Ceiling Sheeting on TJIs</td>
<td></td>
<td>10,452 sqft</td>
<td>$6.50</td>
<td>$67,938</td>
</tr>
<tr>
<td>Lam. Wood Beams</td>
<td>2 layers for fire rating</td>
<td>7,452 sqft</td>
<td>$5.25</td>
<td>$33,699</td>
</tr>
<tr>
<td>Wood Platform for Mech Units</td>
<td>Special framing locations</td>
<td>368 linft</td>
<td>$15.00</td>
<td>$5,520</td>
</tr>
<tr>
<td>Steel Support Canopy for PV</td>
<td>Structured over roof</td>
<td>600 sqft</td>
<td>$15.00</td>
<td>$9,000</td>
</tr>
<tr>
<td>Exterior Enclosure - Carpentry/Metals/Sealants/etc.</td>
<td>Independent footings, steel structure over roof</td>
<td>1 lsm</td>
<td>$150,000.00</td>
<td>$150,000.00</td>
</tr>
<tr>
<td>Enclosure Wall Construction</td>
<td>Allowance</td>
<td>9,300 sqft</td>
<td>$2.50</td>
<td>$23,250</td>
</tr>
<tr>
<td>Ipe Wood Siding</td>
<td>Ext. gyp sheathing/glywood, air barrier, insulation</td>
<td>7,890 sqft</td>
<td>$5.00</td>
<td>$39,450</td>
</tr>
<tr>
<td>Stucco Finish on Back of Parapet</td>
<td>Incl. finish</td>
<td>7,450 sqft</td>
<td>$8.00</td>
<td>$59,600</td>
</tr>
<tr>
<td>Aluminum Storefront</td>
<td>Typical</td>
<td>2,480 sqft</td>
<td>$10.00</td>
<td>$24,800</td>
</tr>
<tr>
<td>Punched Opening Windows, 5x5'</td>
<td>Typical, 9' tall</td>
<td>900 sqft</td>
<td>$75.00</td>
<td>$67,500</td>
</tr>
<tr>
<td>Aluminum &amp; Glass Entry Doors</td>
<td>Aluminum clad, operable w/ security</td>
<td>20 each</td>
<td>$2,200.00</td>
<td>$44,000</td>
</tr>
<tr>
<td>Exterior Material Accents/Trim</td>
<td>3x7, typical w/ security</td>
<td>10 each</td>
<td>$2,750.00</td>
<td>$27,500</td>
</tr>
<tr>
<td>MISC. Exterior Elements</td>
<td>Allowance</td>
<td>1 lsm</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Membrane/Built-Up Roofing System Complete</td>
<td>Building lighting, skylights, signage, etc.</td>
<td>10,452 sqft</td>
<td>$10.50</td>
<td>$109,748</td>
</tr>
</tbody>
</table>

**Total** | | | $1,125,963 | $107,731 | $1,233,694 |

### Interior Architectural Fit-Out

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT $</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior Metal Stud Partition Walls</td>
<td>2 side, 1 layer gyp, acoustical insulation, 9' tall</td>
<td>8,100 sqft</td>
<td>$5.50</td>
<td>$68,650</td>
</tr>
<tr>
<td>Gypsum Sheeting on Wood Stud Walls</td>
<td>Taped &amp; sanded</td>
<td>19,020 sqft</td>
<td>$2.50</td>
<td>$49,050</td>
</tr>
<tr>
<td>Metal Stud Drop Soffits</td>
<td>Aluminum for MEP</td>
<td>2,000 sqft</td>
<td>$15.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>Interior Doors</td>
<td>HM frame, wood door, security hardware</td>
<td>42 each</td>
<td>$1,500.00</td>
<td>$63,000</td>
</tr>
<tr>
<td>Interior Glazing</td>
<td>Borrowed lite frame &amp; glass</td>
<td>864 sqft</td>
<td>$65.00</td>
<td>$56,580</td>
</tr>
<tr>
<td>Custom Casework</td>
<td>Reception desk, amoarite</td>
<td>72 linft</td>
<td>$350.00</td>
<td>$25,200</td>
</tr>
<tr>
<td>Typical Storage Casework</td>
<td>Base, upper shelving, c-top</td>
<td>176 linft</td>
<td>$165.00</td>
<td>$29,040</td>
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</table>

### Finishes

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT $</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception/Waiting</td>
<td>Upgraded finishes - opt., vwc, accents</td>
<td>563 sqft</td>
<td>$40.00</td>
<td>$22,520</td>
</tr>
<tr>
<td>Public Restroom</td>
<td>Upgraded finishes - full tilt, specialties</td>
<td>168 sqft</td>
<td>$70.00</td>
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<tr>
<td>Bedroom - Private</td>
<td>Durable finishes, security finishing</td>
<td>2,352 sqft</td>
<td>$30.00</td>
<td>$70,650</td>
</tr>
<tr>
<td>Bedroom - Semi-Private</td>
<td>Durable finishes, security finishing</td>
<td>616 sqft</td>
<td>$30.00</td>
<td>$18,480</td>
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<tr>
<td>Private Bathroom</td>
<td>Durable finishes, security finishing</td>
<td>1,372 sqft</td>
<td>$50.00</td>
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</tr>
<tr>
<td>Meditation / Library</td>
<td>Upgraded finishes - opt., vwc, accents</td>
<td>574 sqft</td>
<td>$40.00</td>
<td>$22,960</td>
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<tr>
<td>Care Team Station / Workroom / Meds</td>
<td>Durable finishes</td>
<td>644 sqft</td>
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<tr>
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<td>Living Room</td>
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<td>672 sqft</td>
<td>$40.00</td>
<td>$26,880</td>
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HGA: 3433-001-00

2 of 8

10/16/2014
## San Mateo County Cordilleras - MHRC

### Predesign Construction Cost Model

#### Part 8: Financial Analysis

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>Total Building GSF</th>
<th>QUANTITY</th>
<th>UNIT $</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KITCHEN / FOOD PREP / SERVERY</strong></td>
<td>Food safe finishes, not incl. equipment</td>
<td>10,452 sq ft</td>
<td>580 sq ft</td>
<td>$50.00</td>
<td>$29,400</td>
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<td><strong>OFFICE / CONFERENCE</strong></td>
<td>Typical finishes</td>
<td>10,452 sq ft</td>
<td>504 sq ft</td>
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<td>$10,080</td>
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<td><strong>STAFF LOCKER ROOM / BREAK</strong></td>
<td>Typical finishes</td>
<td>10,452 sq ft</td>
<td>364 sq ft</td>
<td>$20.00</td>
<td>$7,280</td>
</tr>
<tr>
<td><strong>STAFF RESTROOM</strong></td>
<td>Typical finishes</td>
<td>10,452 sq ft</td>
<td>168 sq ft</td>
<td>$50.00</td>
<td>$8,400</td>
</tr>
<tr>
<td><strong>STORAGE/WORKMEP ROOMS</strong></td>
<td>Basic finishes, durable</td>
<td>10,452 sq ft</td>
<td>467 sq ft</td>
<td>$10.00</td>
<td>$4,672</td>
</tr>
<tr>
<td><strong>FURNISHINGS/ EQUIPMENT &amp; SPECIAL CONSTRUCTIONS</strong></td>
<td>Fire separations within building</td>
<td>10,452 sq ft</td>
<td>200 lin ft</td>
<td>$250.00</td>
<td>$50,000</td>
</tr>
<tr>
<td><strong>SECURITY EQUIPMENT UPGRADES</strong></td>
<td>Allowance</td>
<td>10,452 sq ft</td>
<td>12 room</td>
<td>$7,500.00</td>
<td>$90,000</td>
</tr>
<tr>
<td><strong>KITCHEN EQUIPMENT</strong></td>
<td>Small commercial</td>
<td>10,452 sq ft</td>
<td>1lin</td>
<td>$60,000.00</td>
<td>$60,000</td>
</tr>
<tr>
<td><strong>MECHANICAL</strong></td>
<td>Typical, concealed heads</td>
<td>10,452 sq ft</td>
<td>10,452 sq ft</td>
<td>$4.00</td>
<td>$41,808</td>
</tr>
<tr>
<td><strong>DOMFIRE WATER EQUIPMENT</strong></td>
<td>Pumps, meters, H/W heater, etc.</td>
<td>10,452 sq ft</td>
<td>1lin</td>
<td>$20,000.00</td>
<td>$20,000</td>
</tr>
<tr>
<td><strong>PLUMBING SYSTEMS - TYPICAL</strong></td>
<td>Typical, per fixture</td>
<td>10,452 sq ft</td>
<td>14 loc</td>
<td>$3,000.00</td>
<td>$42,000</td>
</tr>
<tr>
<td><strong>PLUMBING SYSTEMS - SECURITY</strong></td>
<td>Security, per fixture</td>
<td>10,452 sq ft</td>
<td>36 loc</td>
<td>$4,000.00</td>
<td>$144,000</td>
</tr>
<tr>
<td><strong>ROOF DRAINAGE SYSTEM</strong></td>
<td>Internally piped drainage, tied to storm system</td>
<td>10,452 sq ft</td>
<td>1 lin</td>
<td>$7,500.00</td>
<td>$7,500</td>
</tr>
<tr>
<td><strong>VARIABLE REFRIGERANT SYSTEM</strong></td>
<td>Condensers (+/-5) and fan units (+/-20)</td>
<td>10,452 sq ft</td>
<td>30 tons</td>
<td>$2,200.00</td>
<td>$66,000</td>
</tr>
<tr>
<td><strong>HVAC PIPING DISTRIBUTION &amp; CONNECTIONS</strong></td>
<td>VRF connections</td>
<td>10,452 sq ft</td>
<td>10,452 sq ft</td>
<td>$3.50</td>
<td>$36,502</td>
</tr>
<tr>
<td><strong>DUCT DISTRIBUTION &amp; TERMINALS</strong></td>
<td>From fan coil units</td>
<td>10,452 sq ft</td>
<td>10,452 sq ft</td>
<td>$8.50</td>
<td>$87,938</td>
</tr>
<tr>
<td><strong>HEAT PUMPS</strong></td>
<td>100% OA, roof mounted, minimal ducting</td>
<td>10,452 sq ft</td>
<td>6 each</td>
<td>$6,500.00</td>
<td>$32,500</td>
</tr>
<tr>
<td><strong>EXHAUST FANS</strong></td>
<td>Kitchen and general exhaust, minimal ducting</td>
<td>10,452 sq ft</td>
<td>7,500 cfm</td>
<td>$3.50</td>
<td>$26,250</td>
</tr>
<tr>
<td><strong>NATURAL VENTILATION FANS</strong></td>
<td>At operable windows</td>
<td>10,452 sq ft</td>
<td>8 each</td>
<td>$1,500.00</td>
<td>$12,000</td>
</tr>
<tr>
<td><strong>HVAC CONTROLS</strong></td>
<td>BAS to control location</td>
<td>10,452 sq ft</td>
<td>65 pnts</td>
<td>$850.00</td>
<td>$55,250</td>
</tr>
<tr>
<td><strong>SPECIAL MECHANICAL EQUIP &amp; SYSTEMS</strong></td>
<td>Allowance</td>
<td>10,452 sq ft</td>
<td>1lin</td>
<td>$20,000.00</td>
<td>$20,000</td>
</tr>
<tr>
<td><strong>ELECTRICAL</strong></td>
<td>Feeder &amp; transformer, 300A</td>
<td>10,452 sq ft</td>
<td>1 lin</td>
<td>$15,000.00</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>ELECTRICAL SERVICE CONNECTION</strong></td>
<td>Distribution and sub-panels, incl. 480v for mech equip</td>
<td>10,452 sq ft</td>
<td>1lin</td>
<td>$15,000.00</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>PV POWER PRODUCTION EQUIPMENT</strong></td>
<td>Panels, inverter, etc.</td>
<td>10,452 sq ft</td>
<td>82,250 watts</td>
<td>$4.50</td>
<td>$370,125</td>
</tr>
<tr>
<td><strong>FUEL CELL POWER PRODUCTION EQUIPMENT</strong></td>
<td>Allocated cost allowance</td>
<td>10,452 sq ft</td>
<td>$8,500.00</td>
<td>$8,500</td>
<td></td>
</tr>
<tr>
<td><strong>MECHANICAL &amp; EQUIPMENT CONNECTIONS</strong></td>
<td>Typical application, security</td>
<td>10,452 sq ft</td>
<td>$5.00</td>
<td>$52,250</td>
<td></td>
</tr>
<tr>
<td><strong>LIGHTING SYSTEMS</strong></td>
<td>Incl. kitchen, some 480v</td>
<td>10,452 sq ft</td>
<td>40 loc</td>
<td>$500.00</td>
<td>$20,000</td>
</tr>
<tr>
<td><strong>FIRE ALARM SYSTEM</strong></td>
<td>High level lighting, LED, controls, security</td>
<td>10,452 sq ft</td>
<td>$8.50</td>
<td>$88,842</td>
<td></td>
</tr>
<tr>
<td><strong>TELECOM SYSTEMS</strong></td>
<td>Typical application</td>
<td>10,452 sq ft</td>
<td>$3.00</td>
<td>$31,356</td>
<td></td>
</tr>
<tr>
<td><strong>SECURITY SYSTEMS</strong></td>
<td>Pathways, cabling, devices, equipment, wireless system</td>
<td>10,452 sq ft</td>
<td>$3.00</td>
<td>$31,356</td>
<td></td>
</tr>
<tr>
<td><strong>SECURITY SYSTEMS</strong></td>
<td>Pathways, cabling, devices, equipment</td>
<td>10,452 sq ft</td>
<td>$4.00</td>
<td>$41,808</td>
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</tbody>
</table>

**Total Cost:** $654,052

**$66.40 / sq ft of bldg**

**$62.83 / sf total**
## San Mateo County Cordilleras - ARF & Support
### Predesign Construction Cost Model

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT ($)</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUILDING CORE &amp; SHELL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUILDING PAD PREP &amp; FTG EXCAVATION</td>
<td></td>
<td>35,114 sqft</td>
<td>$2.50</td>
<td>$87,775</td>
</tr>
<tr>
<td>SPREAD FOOTING FOUNDATIONS</td>
<td>On imported fill, included w/ site work</td>
<td>35,114 sqft</td>
<td>$15.00</td>
<td>$526,710</td>
</tr>
<tr>
<td>DEEP/ROCK FOOTINGS</td>
<td></td>
<td>1 item</td>
<td>$75,000.00</td>
<td>$75,000.00</td>
</tr>
<tr>
<td>SLAB ON GRADE</td>
<td>Typical, 7” w/ reinf. sand, VB</td>
<td>15,983 sqft</td>
<td>$10.00</td>
<td>$159,630</td>
</tr>
<tr>
<td>CONCRETE RETAINING WALLS @ LOWER LEVEL</td>
<td>Hill side on first floor, WP and drainage</td>
<td>4,800 sqft</td>
<td>$50.00</td>
<td>$240,000</td>
</tr>
<tr>
<td>CONCRETE SHEAR WALLS @ LOWER LEVEL</td>
<td></td>
<td>2,320 sqft</td>
<td>$42.00</td>
<td>$97,440</td>
</tr>
<tr>
<td>CONCRETE COLUMNS @ LOWER LEVEL</td>
<td>Typical</td>
<td>1 item</td>
<td>$200.00</td>
<td>$200.00</td>
</tr>
<tr>
<td>CONCRETE POST-TENSIONED FLOOR SLAB @ LOWER LEVEL</td>
<td>11” thickness</td>
<td>15,983 sqft</td>
<td>$28.00</td>
<td>$446,884</td>
</tr>
<tr>
<td>MISC. STRUCTURAL OPENINGS</td>
<td>Shafts &amp; penetrations, etc.</td>
<td>1 item</td>
<td>$35,000.00</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>CONCRETE CURBS @ EXTERIOR WALL</td>
<td>ARF floors</td>
<td>680 in</td>
<td>$25.00</td>
<td>$17,000</td>
</tr>
<tr>
<td>EXTERIOR WOOD STUD BEARING WALLS</td>
<td></td>
<td>2x6 w/ bracing, high parapet/screen wall, 16' ht</td>
<td>20,600 sqft</td>
<td>$8.00</td>
</tr>
<tr>
<td>INTERIOR WOOD STUD BEARING WALLS</td>
<td></td>
<td>2x6 w/ bracing, 9' ht</td>
<td>16,500 sqft</td>
<td>$5.50</td>
</tr>
<tr>
<td>MISC. SHEAR WALL SHEETING, STRAPPING, BRACING</td>
<td></td>
<td>1 item</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
</tr>
<tr>
<td>TJI JOIST FRAMING</td>
<td>Floor &amp; roof framing, incl. plywood deck</td>
<td>19,151 sqft</td>
<td>$7.50</td>
<td>$143,633</td>
</tr>
<tr>
<td>GYP CEILING SHEETING ON TJIS</td>
<td>2 layers for fire rating</td>
<td>19,151 sqft</td>
<td>$3.25</td>
<td>$62,241</td>
</tr>
<tr>
<td>LAM/WOOD BEAMS</td>
<td>Special framing locations</td>
<td>2,400 in</td>
<td>$15.00</td>
<td>$36,000</td>
</tr>
<tr>
<td>WOOD PLATFORM FOR MECHE UNITS</td>
<td>Structural over roof</td>
<td>1,500 sqft</td>
<td>$15.00</td>
<td>$22,500</td>
</tr>
<tr>
<td>STEEL SUPPORT CANOPY FOR PV</td>
<td>Independent footings, steel structure over roof</td>
<td>1 item</td>
<td>$150,000.00</td>
<td>$150,000.00</td>
</tr>
<tr>
<td>EXTERIOR ENCLOSURE - CARPENTRY/METALS/SEALANTS/ETC.</td>
<td>Allowance</td>
<td>30,100 sqft</td>
<td>$2.50</td>
<td>$75,250</td>
</tr>
<tr>
<td>ENCLOSURE WALL CONSTRUCTION - PODIUM</td>
<td>Metal stud backup, gyp, M, insulation</td>
<td>9,500 sqft</td>
<td>$2.50</td>
<td>$23,750</td>
</tr>
<tr>
<td>ENCLOSURE WALL CONSTRUCTION - ARF</td>
<td>Ext gyp sheathing/plywood, air barrier, insulation</td>
<td>15,400 sqft</td>
<td>$5.00</td>
<td>$77,000</td>
</tr>
<tr>
<td>IPE WOOD SIDING</td>
<td></td>
<td>1 item</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
</tr>
<tr>
<td>STUCCO FINISH ON BACK OF PARAPET</td>
<td>Ind. finish</td>
<td>2,200 sqft</td>
<td>$18.00</td>
<td>$40,200</td>
</tr>
<tr>
<td>ALUMINUM STOREFRONT</td>
<td>Typical, 9' ht</td>
<td>4,000 sqft</td>
<td>$75.00</td>
<td>$300,000.00</td>
</tr>
<tr>
<td>PUNCHED OPENING WINDOWS, 5’x5’</td>
<td>Alum clad, operable w/ security</td>
<td>48 each</td>
<td>$2,200.00</td>
<td>$105,600</td>
</tr>
<tr>
<td>EXTERIOR MATERIAL ACCENTS/TRIM</td>
<td>Allowance</td>
<td>1 item</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
</tr>
<tr>
<td>MISCEXTERIOR ELEMENTS</td>
<td>Building lighting, skylights, signage, etc.</td>
<td>1 item</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
</tr>
<tr>
<td>ENTRY LOCATIONS</td>
<td>Alum entry systems w/ security</td>
<td>4 item</td>
<td>$35,000.00</td>
<td>$140,000.00</td>
</tr>
<tr>
<td>VERTICAL CIRCULATION</td>
<td>1 elevator, 2 stairs</td>
<td>9 item</td>
<td>$35,000.00</td>
<td>$315,000.00</td>
</tr>
<tr>
<td>MEMBRANE/BUILT-UP ROOFING SYSTEM COMPLETE</td>
<td>Typical application</td>
<td>15,983 sqft</td>
<td>$15.00</td>
<td>$259,445</td>
</tr>
<tr>
<td>CANOPY/SOFFIT CONSTRUCTION</td>
<td>Allowance - metal panel or plaster</td>
<td>1 item</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
</tr>
</tbody>
</table>

**Total** | | | | | **$4,311,497**

**$122.79 /sf total**

---

### INTERIOR ARCHITECTURAL FIT-OUT

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT ($)</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERIOR SPACE FIT-OUT</td>
<td>Partitions, doors, finishes, casework, specialties, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RECEPTION/WATING</td>
<td>Upgraded finishes, custom casework</td>
<td>552 sqft</td>
<td>$80.00</td>
<td>$44,128</td>
</tr>
<tr>
<td>STAFF/PUBLIC RESTROOM</td>
<td>Upgraded finishes</td>
<td>672 sqft</td>
<td>$120.00</td>
<td>$80,640</td>
</tr>
<tr>
<td>SPA/TUB ROOM</td>
<td>Durable finishes, specialties</td>
<td>168 sqft</td>
<td>$150.00</td>
<td>$25,200</td>
</tr>
<tr>
<td>BEDROOM - PRIVATE</td>
<td>Built-in furnishings, durable finishes, security</td>
<td>178 sqft</td>
<td>$20.00</td>
<td>$3,560</td>
</tr>
</tbody>
</table>

HGA : 3433-001-00  4 of 8  10/16/2014
## San Mateo County Cordilleras - ARF & Support
### Predesign Construction Cost Model

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT $</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEDROOM - SEMI-PRIVATE</td>
<td>Built-in furnishings, durable finishes, security</td>
<td>4,312 sqft</td>
<td>$60.00</td>
<td>$258,720</td>
</tr>
<tr>
<td>PRIVATE BATHROOM</td>
<td>Built-in furnishings, durable finishes, security</td>
<td>2,254 sqft</td>
<td>$110.00</td>
<td>$247,940</td>
</tr>
<tr>
<td>MEDITATION / LIBRARY</td>
<td>Interior glazing, upgraded finishes, casework</td>
<td>448 sqft</td>
<td>$60.00</td>
<td>$33,840</td>
</tr>
<tr>
<td>CARE / EXAM / THERAPY / MEDS</td>
<td>Upgraded finishes, casework</td>
<td>1,036 sqft</td>
<td>$75.00</td>
<td>$57,700</td>
</tr>
<tr>
<td>SHARED ACTIVITY</td>
<td>Durable finishes</td>
<td>5,187 sqft</td>
<td>$55.00</td>
<td>$285,285</td>
</tr>
<tr>
<td>LIVING ROOM</td>
<td>Durable finishes, furnishings</td>
<td>872 sqft</td>
<td>$80.00</td>
<td>$53,760</td>
</tr>
<tr>
<td>KITCHEN / FOOD PREP / SERVERY</td>
<td>Food safe finishes, not incl. equipment</td>
<td>3,178 sqft</td>
<td>$100.00</td>
<td>$317,800</td>
</tr>
<tr>
<td>OFFICE / CONFERENCE</td>
<td>Typical finishes</td>
<td>4,172 sqft</td>
<td>$50.00</td>
<td>$208,600</td>
</tr>
<tr>
<td>STAFF LOCKER ROOM / BREAK</td>
<td>Typical finishes</td>
<td>362 sqft</td>
<td>$65.00</td>
<td>$23,980</td>
</tr>
<tr>
<td>STORAGE/WORK/MEP ROOMS</td>
<td>Basic finishes, durable</td>
<td>10,307 sqft</td>
<td>$40.00</td>
<td>$412,290</td>
</tr>
<tr>
<td><strong>FURNISHINGS/ EQUIPMENT &amp; SPECIAL CONSTRUCTIONS</strong></td>
<td>Fire separations within building</td>
<td>1 lsm</td>
<td>$100,000.00</td>
<td>$100,000</td>
</tr>
<tr>
<td>FIRE DOOR &amp; FIRE RATED PARTITION CONSTRUCTION</td>
<td>Allowance</td>
<td>37 room</td>
<td>$75,500</td>
<td>$2,775,500</td>
</tr>
<tr>
<td>SECURITY / DOOR HARDWARE EQUIPMENT</td>
<td>Small commercial</td>
<td>1 lsm</td>
<td>$250,000</td>
<td>$250,000</td>
</tr>
<tr>
<td><strong>MECHANICAL</strong></td>
<td>Typical, concealed heads</td>
<td>35,114 sqft</td>
<td>$4.00</td>
<td>$140,456</td>
</tr>
<tr>
<td>FIRE PROTECTION SYSTEM</td>
<td>Pumps, meters, HW heater, etc.</td>
<td>1 lsm</td>
<td>$65,000</td>
<td>$65,000</td>
</tr>
<tr>
<td>DOM-FIRE WATER EQUIPMENT</td>
<td>Typical, per fixture</td>
<td>26 loc</td>
<td>$3,000</td>
<td>$78,000</td>
</tr>
<tr>
<td>PLUMBING SYSTEMS - TYPICAL</td>
<td>Security, per fixture</td>
<td>84 loc</td>
<td>$4,000</td>
<td>$126,000</td>
</tr>
<tr>
<td>PLUMBING SYSTEMS - SECURITY</td>
<td>Internally piped drainage, tied to storm system</td>
<td>1 lsm</td>
<td>$35,000</td>
<td>$35,000</td>
</tr>
<tr>
<td>ROOF DRAINAGE SYSTEM</td>
<td>Condensers and fan units</td>
<td>90 tons</td>
<td>$2,200</td>
<td>$198,000</td>
</tr>
<tr>
<td>VARIABLE REFRIGERANT SYSTEM</td>
<td>VFR connections</td>
<td>35,114 sqft</td>
<td>$5.00</td>
<td>$175,570</td>
</tr>
<tr>
<td>HVAC PIPING DISTRIBUTION &amp; CONNECTIONS</td>
<td>From fan coil units</td>
<td>35,114 sqft</td>
<td>$12.00</td>
<td>$421,336</td>
</tr>
<tr>
<td>DUCT DISTRIBUTION &amp; TERMINALS</td>
<td>100% OA, roof mounted, minimal ducting</td>
<td>10 each</td>
<td>$10,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>HEAT PUMPS</td>
<td>Kitchen and general exhaust, minimal ducting</td>
<td>20,000 cfm</td>
<td>$3.50</td>
<td>$70,000</td>
</tr>
<tr>
<td>EXHAUST FANS</td>
<td>At operable windows</td>
<td>24 each</td>
<td>$1,500</td>
<td>$36,000</td>
</tr>
<tr>
<td>NATURAL VENTILATION FANS</td>
<td>BAS to central location</td>
<td>250 pnts</td>
<td>$350.00</td>
<td>$212,500</td>
</tr>
<tr>
<td>HVAC CONTROLS</td>
<td>Allowance</td>
<td>1 lsm</td>
<td>$100,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>SPECIAL MECHANICAL EQUIP &amp; SYSTEMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Building GSF**

<table>
<thead>
<tr>
<th>Community / Support</th>
<th>15,963 sqft</th>
<th>1st flr</th>
<th>19,151 sqft</th>
<th>2nd &amp; 3rd flr</th>
<th>Total Building GSF 35,114 sqft</th>
</tr>
</thead>
</table>

**$2,179,229**

$62.06 / sf total

**$627,500**

$17.87 / sf total

**$1,967,894**

$56.04 / sf of bldg
## San Mateo County Cordilleras - ARF & Support
### Predesign Construction Cost Model

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<tr>
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<tr>
<td><strong>ELECTRICAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELECTRICAL SERVICE CONNECTION</td>
<td>Feeder &amp; transformer, 1000A</td>
<td>1 lsum</td>
<td>$50,000.00</td>
<td>$50,000</td>
</tr>
<tr>
<td>ELECTRICAL SERVICE EQUIPMENT</td>
<td>Distribution and sub-panels, incl. 480v for mech equip</td>
<td>1 lsum</td>
<td>$85,000.00</td>
<td>$85,000</td>
</tr>
<tr>
<td>PV POWER PRODUCTION EQUIPMENT</td>
<td>Panels, inverter, etc.</td>
<td>84,750 watts</td>
<td>$4.50</td>
<td>$381,375</td>
</tr>
<tr>
<td>FUEL CELL POWER PRODUCTION EQUIPMENT</td>
<td>Allocated cost allowance</td>
<td>3.33 kw</td>
<td>$8,500.00</td>
<td>$28,305</td>
</tr>
<tr>
<td>POWER DISTRIBUTION &amp; DEVICES - TYPICAL</td>
<td>Typical application, security</td>
<td>35,114 sqft</td>
<td>$6.00</td>
<td>$210,884</td>
</tr>
<tr>
<td>MECHANICAL &amp; EQUIPMENT CONNECTIONS</td>
<td>Incl. kitchen, some 480v</td>
<td>100 loc</td>
<td>$500.00</td>
<td>$50,000</td>
</tr>
<tr>
<td>LIGHTING SYSTEMS</td>
<td>High level lighting, LED, controls</td>
<td>35,114 sqft</td>
<td>$9.50</td>
<td>$333,563</td>
</tr>
<tr>
<td>FIRE ALARM SYSTEM</td>
<td>Typical application</td>
<td>35,114 sqft</td>
<td>$3.00</td>
<td>$105,342</td>
</tr>
<tr>
<td>TELECOM SYSTEMS</td>
<td>Pathways, cabling, devices, equipment, wireless system</td>
<td>35,114 sqft</td>
<td>$3.00</td>
<td>$105,342</td>
</tr>
<tr>
<td>SECURITY SYSTEMS</td>
<td>Pathways, cabling, devices, equipment</td>
<td>35,114 sqft</td>
<td>$4.00</td>
<td>$140,456</td>
</tr>
<tr>
<td><strong>Total Building GSF</strong></td>
<td></td>
<td></td>
<td></td>
<td>$1,490,087</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$42.44 lsf of bldg</td>
</tr>
</tbody>
</table>

**Part 8: Financial Analysis**
San Mateo County Cordilleras - Sitework
Predesign Construction Cost Model

### Total Site Area

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Comments &amp; Clarifications</th>
<th>QUANTITY</th>
<th>UNIT $</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SITWORK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazardous Materials Abatement</td>
<td>Existing Cordilleras building</td>
<td>90,000 sqft</td>
<td>$21.67</td>
<td>$1,950,000</td>
</tr>
<tr>
<td>Building Demolition</td>
<td>Existing Cordilleras building</td>
<td>90,000 sqft</td>
<td>$10.00</td>
<td>$900,000</td>
</tr>
<tr>
<td>Excavation &amp; Fill @ Demo</td>
<td>Removal of basement &amp; fill</td>
<td>15,000 cuyd</td>
<td>$12.00</td>
<td>$180,000</td>
</tr>
<tr>
<td>Misc Demolition/Removals</td>
<td>Fence, lighting, furnishings, signage, etc.</td>
<td>1 lsm</td>
<td>$50,000.00</td>
<td>$50,000</td>
</tr>
<tr>
<td>Habitat Restoration</td>
<td>Allowance</td>
<td>1 lsm</td>
<td>$100,000.00</td>
<td>$100,000</td>
</tr>
<tr>
<td>Tree Preservation</td>
<td>Allowance</td>
<td>1 lsm</td>
<td>$100,000.00</td>
<td>$100,000</td>
</tr>
<tr>
<td>Site Clearing/Demo/Grub</td>
<td>Demo paving, clear site</td>
<td>6.13 acres</td>
<td>$3,500.00</td>
<td>$21,464</td>
</tr>
<tr>
<td>Site Controls</td>
<td>Temp fence, E&amp;S, temp drainage, etc.</td>
<td>6.13 acres</td>
<td>$6,500.00</td>
<td>$39,661</td>
</tr>
<tr>
<td>Major Site Retention Wall</td>
<td>Soil nail, incl. excavation, multiple lifts</td>
<td>20,000 sqft</td>
<td>$40.00</td>
<td>$800,000</td>
</tr>
<tr>
<td>Minor Site Retention Wall</td>
<td>Soil nail, incl. excavation, single lift</td>
<td>8,000 sqft</td>
<td>$35.00</td>
<td>$280,000</td>
</tr>
<tr>
<td>Retaining Wall Finish</td>
<td>Assumes fill applied to soil nail</td>
<td>28,000 sqft</td>
<td>$15.00</td>
<td>$420,000</td>
</tr>
<tr>
<td>Mass Excavation</td>
<td>Cut and redistribute on site</td>
<td>69,000 cuyd</td>
<td>$6.50</td>
<td>$390,000</td>
</tr>
<tr>
<td>R&amp;F Site Grading</td>
<td>Allowance</td>
<td>6.13 acres</td>
<td>$7,500.00</td>
<td>$45,994</td>
</tr>
<tr>
<td>Imported Fill @ Building Foundations</td>
<td>Assumes 5' of fill</td>
<td>12,000 cuyd</td>
<td>$20.00</td>
<td>$240,000</td>
</tr>
<tr>
<td>Existing Utility Removal</td>
<td>Allowance</td>
<td>1 lsm</td>
<td>$50,000.00</td>
<td>$50,000</td>
</tr>
<tr>
<td>Domestic Water Piping</td>
<td>Distribution from existing water tower and mains</td>
<td>1,000 lft</td>
<td>$55.00</td>
<td>$55,000</td>
</tr>
<tr>
<td>Fire Water Piping</td>
<td>Distribution from existing water tower and mains</td>
<td>1,000 lft</td>
<td>$85.00</td>
<td>$85,000</td>
</tr>
<tr>
<td>Fire Hydrants</td>
<td>New</td>
<td>6 each</td>
<td>$5,000.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>Fire &amp; Domestic Water Booster Pumps</td>
<td>New</td>
<td>2 each</td>
<td>$35,000.00</td>
<td>$70,000</td>
</tr>
<tr>
<td>Sanitary Sewer Piping &amp; Manholes</td>
<td>6&quot;, 4&quot;, Connect to existing main</td>
<td>1,400 lft</td>
<td>$85.00</td>
<td>$119,000</td>
</tr>
<tr>
<td>Existing Storm Pipe Relocation</td>
<td>30&quot; &amp; 42&quot; creek diversion pipes, reloc to avoid bridges</td>
<td>600 lft</td>
<td>$150.00</td>
<td>$90,000</td>
</tr>
<tr>
<td>Storm Sewer Piping &amp; Structures</td>
<td>8&quot;-10&quot; piping and structures</td>
<td>2,000 lft</td>
<td>$85.00</td>
<td>$130,000</td>
</tr>
<tr>
<td>Storm Water Infiltration Areas</td>
<td>Special fill areas for treatment, 4% of impervious</td>
<td>6,416 sqft</td>
<td>$12.00</td>
<td>$76,992</td>
</tr>
<tr>
<td>Stormwater Harvesting &amp; Reuse System</td>
<td>FP. Irrigation &amp; Sewage Conveyance uses</td>
<td>1 lsm</td>
<td>$300,000.00</td>
<td>$300,000</td>
</tr>
<tr>
<td>Main Electrical Service &amp; Gear</td>
<td>2500A MCB in ARF bldg</td>
<td>1 lsm</td>
<td>$100,000.00</td>
<td>$100,000</td>
</tr>
<tr>
<td>Emergency Generator</td>
<td>Generator and associated equipment, fuel tank</td>
<td>1,200 kw</td>
<td>$450.00</td>
<td>$540,000</td>
</tr>
<tr>
<td>Electrical Site Distribution</td>
<td>MHRB building and site</td>
<td>850 lft</td>
<td>$150.00</td>
<td>$127,500</td>
</tr>
<tr>
<td>Telecom Site Distribution</td>
<td>Service connections, MHRB/ARF building connections</td>
<td>850 lft</td>
<td>$100.00</td>
<td>$85,000</td>
</tr>
<tr>
<td>Road Construction</td>
<td>Paving &amp; base, curbs, drainage, etc.</td>
<td>65,000 sqft</td>
<td>$5.00</td>
<td>$325,000</td>
</tr>
<tr>
<td>Parking Area Construction</td>
<td>Paving &amp; base, curbs, drainage, etc.</td>
<td>15,000 sqft</td>
<td>$4.00</td>
<td>$60,000</td>
</tr>
<tr>
<td>Pedestrian Surfacing</td>
<td>Sidewalks, patios, etc.</td>
<td>9,000 sqft</td>
<td>$10.00</td>
<td>$90,000</td>
</tr>
<tr>
<td>Site Security Fencing</td>
<td>Picket style, 6'-8' fit</td>
<td>1,000 lft</td>
<td>$85.00</td>
<td>$85,000</td>
</tr>
<tr>
<td>Site Lighting</td>
<td>Allowance, vehicular and pedestrian</td>
<td>1 lsm</td>
<td>$80,000.00</td>
<td>$80,000</td>
</tr>
<tr>
<td>MHRB Courtyards</td>
<td>Surfacing, landscaping, furnishings</td>
<td>12,800 sqft</td>
<td>$10.00</td>
<td>$128,000</td>
</tr>
<tr>
<td>Landscape Retaining Walls</td>
<td>Minor retaining, Keystone block</td>
<td>350 lft</td>
<td>$150.00</td>
<td>$52,500</td>
</tr>
<tr>
<td>Recreational Areas</td>
<td>Allowance, sport court, garden, shelters</td>
<td>1 lsm</td>
<td>$100,000.00</td>
<td>$100,000</td>
</tr>
<tr>
<td>Walking Path Areas</td>
<td>Path, gazebos, etc.</td>
<td>1 lsm</td>
<td>$100,000.00</td>
<td>$100,000</td>
</tr>
<tr>
<td>Landscaped Areas</td>
<td>Green space, sod, planting</td>
<td>85,000 sqft</td>
<td>$3.50</td>
<td>$297,500</td>
</tr>
<tr>
<td>Restoration Areas</td>
<td>Landscape repair, seeding</td>
<td>45,000 sqft</td>
<td>$0.50</td>
<td>$22,500</td>
</tr>
<tr>
<td>Irrigation System</td>
<td>All landscaped areas</td>
<td>85,000 sqft</td>
<td>$1.50</td>
<td>$127,500</td>
</tr>
</tbody>
</table>

**Total Cost:** $8,873,817
## San Mateo County - Cordilleras Center

### Predesign Construction Cost Model - EXISTING BUILDING REUSE

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit $</th>
<th>Reuse of Existing Cordilleras Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Materials Abatement</td>
<td>90,000 sqft</td>
<td>$21.67</td>
<td>$1,950,000</td>
</tr>
<tr>
<td>Interior &amp; Exterior Selective Building Demolition</td>
<td>90,000 sqft</td>
<td>$8.00</td>
<td>$720,000</td>
</tr>
<tr>
<td>Structural Upgrades and Modifications</td>
<td>90,000 sqft</td>
<td>$25.00</td>
<td>$2,250,000</td>
</tr>
<tr>
<td>Exterior Enclosure Improvements</td>
<td>86,000 sqft</td>
<td>$50.00</td>
<td>$2,800,000</td>
</tr>
<tr>
<td>Re-Roofing</td>
<td>30,000 sqft</td>
<td>$20.00</td>
<td>$600,000</td>
</tr>
<tr>
<td>Interior Architectural Fitout</td>
<td>90,000 sqft</td>
<td>$65.00</td>
<td>$5,850,000</td>
</tr>
<tr>
<td>Furnishings/Equipment &amp; Special Constructions</td>
<td>90,000 sqft</td>
<td>$20.00</td>
<td>$1,800,000</td>
</tr>
<tr>
<td>Mechanical System Replacement</td>
<td>90,000 sqft</td>
<td>$50.00</td>
<td>$4,500,000</td>
</tr>
<tr>
<td>Electrical System Replacement</td>
<td>90,000 sqft</td>
<td>$25.00</td>
<td>$2,250,000</td>
</tr>
<tr>
<td>Site Re-Development Costs</td>
<td></td>
<td></td>
<td>$2,600,000</td>
</tr>
<tr>
<td>Contractors General Conditions/OH&amp;P</td>
<td>15.00%</td>
<td></td>
<td>$3,708,000</td>
</tr>
<tr>
<td>Design Contingency</td>
<td>10.00%</td>
<td></td>
<td>$2,842,800</td>
</tr>
<tr>
<td>Construction Contingency</td>
<td>5.00%</td>
<td></td>
<td>$1,421,400</td>
</tr>
<tr>
<td><strong>Building &amp; Site Construction Cost</strong></td>
<td></td>
<td></td>
<td><strong>$32,692,200</strong></td>
</tr>
<tr>
<td>Pre-Construction/Development Costs</td>
<td>2.00%</td>
<td></td>
<td>$653,844</td>
</tr>
<tr>
<td>Permits, Inspections, Testing, Hazmat Admin</td>
<td>2.00%</td>
<td></td>
<td>$817,305</td>
</tr>
<tr>
<td>Professional Service Fees</td>
<td>8.00%</td>
<td></td>
<td>$2,615,376</td>
</tr>
<tr>
<td>IT Technology Equipment</td>
<td>3.00%</td>
<td></td>
<td>$990,786</td>
</tr>
<tr>
<td>Furniture, Fixtures, and Equipment</td>
<td>10.00%</td>
<td></td>
<td>$3,269,220</td>
</tr>
<tr>
<td>LEED / Commissioning</td>
<td>2.00%</td>
<td></td>
<td>$817,305</td>
</tr>
<tr>
<td>Owner Management Costs, Moving, Storage</td>
<td>4.00%</td>
<td></td>
<td>$1,307,688</td>
</tr>
<tr>
<td><strong>Project Soft Costs</strong></td>
<td>32.00%</td>
<td></td>
<td><strong>$10,461,504</strong></td>
</tr>
<tr>
<td>Over-all Project Contingency (Renovation)</td>
<td>15.00%</td>
<td></td>
<td>$6,473,056</td>
</tr>
<tr>
<td>Escalation to Contr. Mid-point (Q1 2018) ***</td>
<td>13.71%</td>
<td></td>
<td>$5,942,102</td>
</tr>
<tr>
<td><strong>TOTAL PROJECT COSTS</strong></td>
<td></td>
<td></td>
<td><strong>$55,568,861</strong></td>
</tr>
</tbody>
</table>
8.2 – Operating Costs

The future operating costs for replacing Cordilleras were modeled by Dale Jarvis & Associates for Behavioral Health and Recovery Services as part of the Study and are included in Appendix L. The operating costs were modeled based on assumptions about the number, size, occupancy rate, licensure and required staffing for each facility. Costs were modeled based on information about current expenditures by Behavioral Health and Recovery Services for similar services in the broader market as well as information provided by Telecare. In addition, revenues were projected based on current Medi-Cal reimbursement rules for Specialty Mental Health. The analysis evaluated potential reimbursement that is now unavailable for treatment provided to residents of Cordilleras, even when they are in the unlocked section and travel off-site for services in the community.

<table>
<thead>
<tr>
<th>Number of Facilities</th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Beds per Facility</td>
<td>16</td>
<td>16</td>
<td>37</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Beds</td>
<td>64</td>
<td>16</td>
<td>37</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Days</td>
<td>23,360</td>
<td>5,840</td>
<td>13,505</td>
<td>42,705</td>
<td>49,275</td>
</tr>
<tr>
<td>Occupancy Rate</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>Occupied Days</td>
<td>22,192</td>
<td>5,548</td>
<td>12,830</td>
<td>40,570</td>
<td>46,811</td>
</tr>
<tr>
<td>Total Staffing FTEs</td>
<td>105.20</td>
<td>18.95</td>
<td>21.00</td>
<td>145.15</td>
<td>155.37</td>
</tr>
<tr>
<td>Staff FTE per Bed</td>
<td>1.64</td>
<td>1.18</td>
<td>0.57</td>
<td>1.24</td>
<td>1.15</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>$11,671,094</td>
<td>$2,355,531</td>
<td>$2,168,670</td>
<td>$16,195,295</td>
<td>$17,250,324</td>
</tr>
<tr>
<td>Less On-Campus Revenue</td>
<td>-$5,200,837</td>
<td>-$1,062,072</td>
<td>-$477,219</td>
<td>-$6,740,128</td>
<td>-$6,972,288</td>
</tr>
<tr>
<td>Less Off-Campus Revenue</td>
<td>-$1,300,271</td>
<td>-$262,428</td>
<td>-$44,245</td>
<td>-$1,606,944</td>
<td>-$1,606,944</td>
</tr>
<tr>
<td>Savings from Avoiding Purchase of Other Beds</td>
<td>-$601,265</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Project Net BHRS Costs</td>
<td>$7,246,959</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Net BHRS Costs</td>
<td>$7,505,208</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decrease in Costs</td>
<td>-$258,249</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Project Net BHRS Cost per Day</td>
<td>$178.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Net Cost per Day</td>
<td>$185.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decrease in Cost per Day</td>
<td>-$6.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While the total expenses for the services provided are projected to increase in the proposed model from $9.8 million to $17.3 million as a result of more intensive staffing and programming in the new facilities tailored to the residents, the projected net costs to BHRS would be less as a result of revenue to offset the costs. The projected total net costs to BHRS ($7.5 million) are $0.5 million lower than the current net costs ($8 million). Similarly, the cost per day decreases from $198.46 to $160.72. The addition of another floor containing 18 beds to the Adult Residential Facility adds $0.7 million to the total operating costs, but is more than offset by a reduction in other beds that would not have to be purchased privately and an increase in Medi-Cal reimbursement.

See Appendix L for the complete Financial Analysis Reports
Part 9

Schedule
Part 9 – Schedule

Introduction

The new Cordilleras project can be completed in approximately 5 years. If the Board of Supervisors approves proceeding with the project, the design process could begin immediately with a brief Bridging effort to develop a schematic design and begin the CEQA environmental review process. The proposed schedule reflects a Design-Build project delivery method, with the selection of the Design-Build contractor and team occurring in early April 2015. The design and documentation process would continue through summer of 2016, and run concurrently with the required environmental review and a sequenced permitting process. The issuance of permits is estimated to occur in early 2017. As discussed in Part 7, under Consumer Relocation Planning, the Feasibility Study proposes a phased approach to the project, to allow for the occupation of the existing Cordilleras building as long as possible - to minimize the need to temporarily relocate the Cordilleras residents.

The project divides into two main phases, each with two sub phases, and with the demolition of the existing Cordilleras building occurring between the two main phases.

- Phase 1A – April to October 2017
  - Earthwork and Site Utilities for the western portion of the site
- Phase 1B – October 2017 to September 2018
  - Construction of two MHRC buildings and the ARF/Campus Center
- Demolition – September 2018 to December 2018
  - Demolish the Existing Building and Site
- Phase 2A – December 2018 to April 2019
  - Earthwork and Site Utilities for the eastern portion of the site
- Phase 2B – April 2019 to January 2020
  - Construction of three MHRC buildings and associated site work

The project schedule durations are based on history of similar projects, agency review discussions, and projections for desired date of opening. The project schedule will continue to be refined, with more detail added, when the project moves forward into a design phase.

Some points of note on the schedule:

- In order to begin the agency review process, a schematic design of approximately 30% complete, will be required for submittal. We are showing this as a separate Bridging effort on the schedule.
- We are showing a 24 month parallel review period for all of the various agencies. This was determined through a conversation with a representative of the California Department of Fish and Wildlife – being the agency with the longest anticipated review period.
- This schedule assumes that a certain amount of financial risk has been accepted for the production of design and construction documents during the agency review period. This allows building permits to be obtained proximate to the completion of agency reviews.

See the Overall Project Schedule on the following page.
Cordilleras Mental Health Center Replacement Project
Overall Project Schedule


FEASIBILITY STUDY

APPROVAL AND PERMITTING
- Environmental Review
- Cal Fish & Wildlife
- Fed Fish & Wildlife
- Planning Review & Building Review
- Potential Client Relocation Planning

PHASE 1A
- Earthwork
- Utilities

PHASE 1B
- Construction

DEMO LI TION
- Earthwork
- Utilities

PHASE 2A
- Construction

PHASE 2B
- Construction

MOVE IN SEP 1
MOVE IN JAN 2
NOVEMBER 18
Appendix A

Visioning Session Artifacts
Cordilleras Mental Health Rehabilitation Center
Visioning Session

Meeting Agenda

1:00 pm  Welcome
1:10 pm  Start-Up
1:25 pm  Historic Timeline
1:35 pm  Onboarding
  Overview of Project History and Schedule
  Overview of the Feasibility Study Process & Approach
1:45 pm  Strategy Presentation
2:05 pm  Headlines Exercise
2:15 pm  Break (15 min.)
          Guiding Principles Exercise
2:30 pm  Headline Themes
2:50 pm  Subgroup Visioning
3:40 pm  Report Out
4:10 pm  Break (10 min.)
4:20 pm  Vision Statement
4:50 pm  Next Steps
4:55 pm  Plus / Delta – Evaluation of Visioning Session

Ground Rules

• Group effort: share responsibility for success of meeting
• Respect and encourage each person’s input
• Listen, don’t interrupt
• Explore and examine differences in perspective
• No idea is too big or too small
• Think outside the box
• Use the “parking lot” for relevant off-topic ideas
• Respect time constraints
• Be focused and attentive
• Please turn off mobile devices

 Desired Outcomes

• Develop the vision statements, goals, and design criteria
• Align stakeholder values
• Gain support from constituencies
• Establish next steps
• Create excitement

San Mateo County Health System
Behavioral Health and Recovery Services
February 21, 2014
CORDILLERAS VISIONING SESSION AGENDA

Date: Friday February 21, 2014
Location: Cordilleras Assembly Hall

Purpose: Develop a project vision and determine the guiding principles to direct the feasibility study and inform potential future work.

1) Welcome (10 min.) – Louise Rogers, Stephen Kaplan, Supervisor Don Horsley

2) Start-Up (10 min.) – Mark & (SMHS)
   a) Introductions of team
   b) Review Agenda
   c) Ground Rules for the Session
   d) Desired Outcomes

3) Onboarding (15 min.) – Vince & (SMHS)
   a) Overview of Project History and Schedule
   b) Overview of the Feasibility Study Process & Approach

4) Historic Timeline Perspective (10 min.) – Kevin & (SMHS)
   Help solidify an understanding of common legacy and shared future.
   We will have a large banner documenting the historic timeline of Cordilleras and the important events in Mental Health care in the modern era. Participants will be invited to discuss and add key milestones.

5) Best Practices and Benchmarks Discussion (25 min.) – Vince & (SMHS)
   Share topics relevant to the successful future of the institution. Reading material will be submitted in advance to help inform participants.

6) Headlines Exercise (10 min.) – Kevin & (SMHS)
   This is a warm-up exercise to identify broad-based aspirations and values. We will imagine that the newly completed facility is featured as a cover story in a major publication. Participants will offer suggestions for the article’s headlines from their perspectives.

   Break (10 min.)

7) Guiding Principles Exercise – 3 Facilitator Groups
   This exercise will facilitate the development of a vision, goals, and design and planning criteria.
   a) Headline Themes (20 min.)
      The facilitators will organize the headline topics into main themes and ask the group to

b) Subgroup Visioning (50 min.)
   We will break into three groups. Each group will be asked to elaborate on the main themes identified earlier, to develop goals and design and planning criteria for the project.

c) Report Out (30 min.)
   Each group will take 10 minutes to present their work, highlighting a few of their strongest themes - vision, goals, and design criteria.

Break (10 min.)

8) Vision Statement (30 min.) – Kevin and Vince & (SMHS)
   Develop a statement or statements, to define the overarching vision for this project.
   The discussions from earlier in the day will inform this exercise.

9) Next Steps (5 min.) – Mark & (SMHS)

10) Plus / Delta - Evaluation of Visioning Session (5 min.) – Mark & (SMHS)

identify any important missing themes.
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<td>Parents of Adult Schizophrenics (PAS) is formed</td>
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<td>Local PAS groups form in neighborhoods</td>
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<td>Mental health consumer/survivor movement</td>
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<td>Increase in homelessness and incarceration associated with deinstitutionalization of the mentally ill</td>
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<td>Failures of deinstitutionalization</td>
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<td>1963, the mental health field gets its first federal law with the Mental Health Planning Act of 1963</td>
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<td>Medicaid and Medicare are created</td>
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<td>California Health and Human Services Agency</td>
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<td>California Healthy People 2010</td>
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<td>California passes Mental Health Parity Act</td>
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Cordilleras Mental Health Rehabilitation Center

Proposed Planning Organization

January 2014  Feasibility Study Phase  To CMO/BOS June 2014
July 2014  Design and Bid Phase  To CMO/BOS 2015
November 2015  Construction Phase  Complete in early 2018

Stakeholders for Visioning, 3P event, targeted meetings, and other input during feasibility phase:

- Cordilleras Stakeholder Group
  - Consumers/Family
  - Providers
  - Health Division and other Department Reps involved in day to day

- Neighbors/Cities

- MHSA Recovery Commission, Commission on Disabilities

For questions or comments, please contact Terry Wilcox-Rittgers at twilcox-rittgers@smcgov.org
“Best” Practices

1. Change Drivers
2. Built Environment Response
3. Best Practice methods
Changes brought about by . . .

- Culture changes in behavioral health
- Advanced Treatments
- Smarter safety measures and technology
- Design oriented healing environments
- Reducing barriers (Financial, Facility and Societal)
- Education to better understand behavioral health
- Community support
- Engagement in recovery

. . . **Growth in Mental Health Services driven by**

**A Community in Need**

Cordilleras Visioning
Continuum of Care

E-Visits
- Telepsychiatry that links patients in PCP offices, OP clinics, the ED and even the home to behavioral health providers

Emergency Department
- ED staff trained in behavioral health screenings and availability of behavioral health specialists for triage.

Hospital Inpatient
- Acute care that addresses both the medical and physical needs of patients before discharge

Hospital PHP
- Acute behavioral health treatment setting that screens for medical issues

Hospital Outpatient
- Intensive ambulatory services that provide both mental health and substance abuse treatment along with physical wellness activities

Office and Clinic
- Integrated medical and mental health services within the PCP office, the FQBHC and the CMHC

Home and Community
- Combined medical and mental health screening programs

Residential Services
- Long-term services that support the medical, mental and social needs of the patient

Source: Sg2 2013 Behavioral Health: Creating an Integrated System of Care

Cordilleras Visioning
System Thinking

Levels of Care

- Inpatient Acute Care (Hospital)
- MHRC & Adult Residential Treatment
- Residential Crisis
- Residential Board and Care

Cordilleras Visioning
<table>
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<th>Safe</th>
<th>Timely</th>
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<td>avoiding injuries to patients</td>
<td>Reducing waits and sometime harmful delays for both those who receive and those who give care</td>
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<th>Effective</th>
<th>Efficient</th>
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<td>Providing services based on scientific knowledge to all who could benefit</td>
<td>Avoiding waste, in particular waste of equipment, supplies, ideas and energy</td>
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<th>Patient Centered</th>
<th>Equitable</th>
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<td>Providing care that is respectful of and responsive to individual patient preferences, needs and values and ensuring that patient values guide all clinical decisions</td>
<td>Providing care that does not vary in quality</td>
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A shift in programmatic and cultural beliefs

- Holistic and Integrated Care
- Patient Centered Care vs. Controlled Centered
- Education and Wellness focus
- Transparency/ Open discussions
- Data, Reporting and Research
- Community and Agency Partnerships
- From “institutional facilities” to home-like environments

Environment Response

Cordilleras Visioning
Aesthetic Expression

Fife Stratheden Hospital
Stratheden, Scotland

An organization’s values can be evident through the building design

Cordilleras Visioning
Scale of Space

Proper use of scale can be effective in creating sense of place

Worcester Recovery Center
Worcester, MA

Cordilleras Visioning
Flexibility

- **Bed Mix**: shared and single bedrooms respond to client populations
- **Flex Beds** between pods
- **Universal Design and Planning**
- **Site, Building, Room**
- **Anticipate growth and change**

Avera Behavioral Health
Sioux Falls, SD

Photo: Whitepaper, Enhancing Mental Health Care Delivery
2011 BWBR Knowledge Series

Cordilleras Visioning
Visibility and Control

- Focal points
- Open corridors
- Centralized vs Decentralized

Avera Behavioral Health Center
Sioux Falls, SD

William Sharpe Jr. Hospital
Weston, WV

Cordilleras Visioning
Balance of Privacy and Social Interaction

A variety of spaces from private to very social and open may help with transitioning and anxieties.

1. Private
2. Intermediate
3. Group

United Hospital District Adolescent Treatment Center
Winnebago, MN

Bed 1
Living Room Closed (Quiet)
Bed 2
Living Room Open (Noisy)
Bed 3
Bed 4
Community Room
Care Team

Cordilleras Visioning
Safety and Security

Three Zones of Safety

- Passive and Active Security
- Zoning and Planning
- Design
- Technology
- People Balance Seeing and Knowing

Photos: AIA AAH Mental Health 101, architecture +

Cordilleras Visioning
Zoning and Pod Organization

House
Comfort

Neighborhood
Therapy/Activity close to home

Downtown
Practice Integration

Cordilleras Visioning
Circulation

On-Stage vs. Off-Stage

Building as a Village:
Boulevards
Streets
Squares

“Main Street”

Cordilleras Visioning

Images: AIA AAH Mental Health 101, architecture +
Natural Daylight

Comfortable, Inviting and calm spaces

Hazelden Adolescent and Young Adult Treatment Center
Plymouth, MN

Cordilleras Visioning
Open Spaces

Integrated Design
Visible and Safe
Inviting

Cordilleras Visioning
The Best Way?

By . . .

- Benchmarking and research. Examine a sample of successfully implemented concepts
- Utilizing historic lessons learned
- *Engage* stakeholders with focused perspectives
- Balancing needs vs. wants. Be flexible.
- Challenge the status quo through a collaborative process
- Understand what is of value

Cordilleras Visioning
Imagine that the new Cordilleras Center has just opened its doors after several years of planning and development. It is being featured in a major national news or trade publication - like Time or Behavioral Healthcare Magazine. Take a few minutes to think about it, and write the headline or opening line of the article - reflecting your own personal perception of a successful project.
Appendix B

3P Event Artifacts
Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 1

Meeting Agenda

9:00 am  Welcome
9:20 am  Vision Session Report Out
         -Vision Statement
         -Goals
         -Design/Planning Criteria
9:40 am  Current State, Constraints & Opportunities
10:40 am Break (10 min.)
10:50 am Typologies
         -Bedroom
         -Household Configuration
11:35 am Proposed Functional and Space Program
         -Site
         -Building
12:20 pm Lunch Break (45 min.)
1:05 pm  Benchmark Site Visit Report Out
1:25 pm  Workshop: Onboarding
1:40 pm  Workshop: Break Out
2:40 pm  Workshop: Report Out
3:40 pm  Next Steps
3:50 pm  Plus / Delta

Ground Rules

- Group effort: share responsibility for success of meeting
- Respect and encourage each person’s input
- Listen, don’t interrupt
- Explore and examine differences in perspective
- No idea is too big or too small
- Think outside the box
- Use the “parking lot” for relevant off-topic ideas
- Respect time constraints
- Be focused and attentive
- Please turn off mobile devices

Desired Outcomes

- Validate Vision Statements and Goals
- Evaluate Room and Unit Typologies
- Validate Needs and Program
- Determine the Constraints and Opportunities of the site
- Develop relationship diagrams for extreme scheme perspectives
- Gather feedback to inform Design and Planning Criteria

San Mateo County Health System
Behavioral Health and Recovery Services
March 28, 2014
3P - 1 AGENDA (March 28th, 2014 - 9am)

1) Gather and Onboarding (20 min) – SMC rep, Mark, Vince
   a) Introduction of all Participants
   b) Review Agenda
   c) Intro to 3P process

2) Vision Session Report Out (20 min) – SMC rep, Kevin
   a) Vision Statement
   b) Goals
   c) Design/ Planning Criteria

3) Current State, Constraints and Opportunities (60 min) – Louise, Kevin, Vince
   a) Regulatory / Reimbursement
   b) Site
   c) Building / Services (Gembas)

Break (10 min)

4) Typologies (45 min) – Vince
   a) Bedroom
   b) Household Configurations

5) Proposed Functional and Space Program (45 min) – Kevin, Vince
   a) Site
   b) Building

Lunch Break (45 min)

6) Benchmark Site Visit Report Out (20 min) – Terry, Larry, Vince

7) Workshops – Relationship diagramming – Kevin, Vince, Demetrios, Bianca, Kirsten
   a) Onboarding (15 min)
   b) Perspective Breakout (60 min)
      (1) Site – Client/ Staff
      (2) Site – County/ Flexibility
      (3) Building – Client
      (4) Building – Staff/ Admin
      (5) Building – County/ Flexibility
   c) Report Out (60 min)

8) Next Steps (10 min) – Mark, Terry

9) Plus / Delta (10 min) – Vince
3P Process

Define
Steps
Agenda

San Mateo County Behavioral Health and Recovery Services, Cordilleras
March 14, 2014
What is 3P?

Production Preparation Process (3P) focuses on eliminating waste through process design.

This method typically involves:
- a diverse group of individuals in a multi-day creative process
- identifying several alternative ways to meet the customer's needs
- Learn as much as possible about design and implementation before committing to it

Ultimately, 3P offers the potential to make "quantum leap" design improvements that can improve performance and eliminate waste to a level beyond that which can be achieved through the continual improvement of existing processes.

Cordilleras “3P”
3P Steps for Cordilleras Feasibility

1. Capture applicable Design Objectives
   Understand customer needs to be met

2. Validate Current State and Proposed Space Program

3. Understand Constraints and Opportunities

4. Diagram Ideal State
   Demonstrate flow and relationships

5. Evaluate and vote on extreme perspectives

6. Collaborate on developing a Hybrid balance

Cordilleras “3P”
Proposed Agenda

Day 1: Current State & Ideal State Diagramming

Day 2: Extreme Scheme Perspectives

Day 3: Hybrid Balance

Cordilleras “3P”
Day 1: Current State and Ideal State Diagramming

- Understand Vision and goals
- Understand current state
- Understand program need
- Understand constraints and opportunities (incl. reimbursements)
- Break into Stakeholder Perspectives
- Understand ideal state
- Develop relationship diagrams

Set a foundation for future work

Cordilleras “3P”
Generate Extreme Schemes

Cordilleras “3P”
Day 2: Extreme Scheme Perspectives

- Present Extreme Schemes
- Vote
- Report out

Designing to one perspective allows valued design responses to surface . . . And how does that stack up to the collective goals and criteria of ALL the stakeholders.

Cordilleras “3P”
Generate Hybrid Scheme(s)

Cordilleras “3P”
Day 3: Hybrid Scheme Balance

- Present Hybrid Scheme
- Report out
- Refine
- Outstanding Issues

Extreme schemes only meet the needs of one group and need to be understood before balancing group perspectives into one or two balanced solution strategies.

Cordilleras “3P”
Synthesis

From Individual Perspectives

PARTICIPANT VOTING AND INPUT

To a more collective understanding

Cordilleras “3P”
Vision Statements

Focus on Wellness - *to be healthy*
The new Cordilleras Center will be dedicated to the whole health and wellness of its clients. The environment of the Center will support and reflect a productive individualized wellness path for all clients.

Promote Respect - *to be livable*
The new Cordilleras Center will provide a strong foundation of assuring dignity and respect for its clients and staff. The Center will emphasize client’s choice, in a safe environment that inspires pride, motivates the spirit, accommodates diversity in culture and beliefs, instills optimism for personal growth and improves quality of life.

Build Community - *to be collaborative*
The new Cordilleras Center will build strong communities - amongst its own clients, families, staff, and visitors, and add value to the local community. The Center will become an integral part of its social surroundings, with its programs and services valued as innovative assets and its residents respected as citizens.

Heal through Nature - *to be environmentally conscious*
The new Cordilleras Center will capitalize on its beautiful serene natural setting to complement the process of wellness, rehabilitation and recovery. The Center will incorporate progressive sustainable design strategies, efficient building systems, and natural materials to the benefit of healthy people, place, and planet.

Strive for Recovery - *to flourish*
The new Cordilleras Center will help clients realize their full potential. We will develop a world-class model of care that sets a new standard for excellence, by drawing from current best practices and anticipating future advances in behavioral health care.

Focus on Wellness - *to be healthy*
Goals:
- Plan for client-centered treatment with a greater focus on whole health
- Provide specific care for variety of populations
- Create a more inclusive and supportive environment
- Integrate flexible spaces

Promote Respect - *to be livable*
Goals:
- Promote client empowerment through the environment
- Foster pride in the facility
- Provide a strong aesthetically pleasing design that sets a tone of respect
- Develop a clear separation and transition between public and private spaces

Build Community - *to be collaborative*
Goals:
- Build community on all levels - from client to County
- Seamlessly integrate the facility into the local community
- Create an inviting environment for all
- Become a learning center for consumers

Heal through Nature - *to be environmentally conscious*
Goals:
- Design an environmentally sustainable facility, that touches lightly on the earth
- Integrate nature into public and private spaces and health and wellness activities
- Develop the Center to be a therapeutic modality

Strive for Recovery - *to flourish*
Goals:
- Be Innovative
- Rethink Medication Process
- Create an effective and accessible environment
- Facilitate each consumer’s success to progress out of Cordilleras facility
Site Assumptions & Constraints

1. The existing Cordilleras Center building should be considered for re-use only as a course of last resort. Its age, condition, scale, and institutional design make it costly to operate and maintain, and inappropriate for the therapeutic environment trying to be achieved.

2. It is possible, but not desirable, to find temporary housing locations for the MHRC and Suites clients during phased construction and then move them back.

3. It is possible to locate the Suites Buildings on another site.

4. Dividing the Suites into two separate buildings provides the flexibility to convert them into MHRC’s in the future.

5. In order to provide service to the newly constructed and occupied MHRC’s, the Support Building needs to be built at the same time, and cannot be a part of a later phase renovation or new construction.

6. The Support Building should serve as the public front door for the overall Campus. The Suites buildings can have separate entries for clients and visitors.

7. Each MHRC licensed building must be a separate structure and functionally should be single-story structures, to avoid the added cost of elevators and stairs, and the operational costs of additional staff to operate on two floors.

8. The Suites buildings and the Support building can be considered as a multi-story structure.

9. The individual MHRC and Suites buildings will be served by kitchen and support services located in the Support Building, so close proximity between buildings is desirable to reduce travel time and walking distance outside.

10. All MHRC outdoor spaces, such as recreation yard, garden and smoking court, must have a secured perimeter by way of walls, buildings and/or fences.

11. This property is zoned as a RM district, and as such requires a front yard setback of 50’ and side yard setbacks of 20’. Ancillary buildings must be 30’ away at a minimum.

12. The existing parking and access route from Edmonds Road to both the Fire Station and Canyon Oaks Youth Center should be functionally maintained as existing through construction. The fire station and Canyon Oaks will remain as is on the site. The relocation, reuse or demolition of those buildings is not being considered.

13. The amount of buildable land on site is limited by the steeply sloped terrain on three sides of the property. Site retaining walls, holding back the steeply sloped terrain, will be considered as a viable strategy to increase the area of buildable land.

14. A 30’ wide easement from the centerline of Cordilleras Creek should initially be maintained for above ground portion of the creek.

15. Cordilleras Creek may be able to be diverted into an underground pipe, but doing so may present a significant challenge for project approval.

   From the Creek Flood Protection Evaluation (2011):
   Maintenance or construction activities in or adjacent to Cordilleras Creek and its tributaries would require a 401 Water Quality Certification from the San Francisco Bay Regional Water Quality Control Board (Regional Board), a Streambed Alteration Agreement from the California Department of Fish and Game (DFG), and potentially an individual permit or maintenance exemption from the U.S. Army Corps of Engineers (Corps).

16. The access road to the water tank must be maintained.

17. Tree removal, particularly Heritage Trees, will present a challenge for the project approval, and may require tree put-back on the property (potentially of a ratio as high as 3:1). It may be possible to negotiate put-back on the adjacent Pulgas Ridge Open Space Preserve.

18. No other sites alternative or expanded sites options are known or secured at this time. Following the feasibility phase, alternate site options may be identified and addressed.
Pod & Room Configurations

San Mateo County Behavioral Health and Recovery Services, Cordilleranas

March 28, 2014
PODS: Double Loaded Rooms (No courtyard)

T-Bar

L-Shape

Cross

Y-Shape

Cordilleras 3P Day 1
PODS: Single Loaded Rooms (No courtyard)

Bar

Z-Bar

Cordilleras 3P Day 1
BEDROOMS: Private Rooms

Inboard Toilet

Outboard Toilet

Stacked Toilet

Jack & Jill Toilet

Cordilleras 3P Day 1
**ARF**  
**Adult Residential Facility**
- 1 Lobby Area
- 1 Visitation/Interview Room
- 4 Private Bedrooms + Bathrooms w/ Showers
- 7 Semi-Private Bedrooms + Bathrooms w/ Showers
- 1 Meditation/Library
- 1 Living Room
- 1 Care Team Workroom
- 1 Medication Room
- 1 Kitchen + Storage
- 1 Dining/Activity Room
- 1 Rehab & Activity Space + Storage
- 1 Resident Laundry
- 1 Clean Supply Storage
- 1 Clean Linen Storage
- 1 Soiled Holding
- 1 General Storage
- 1 Facility Director Office
- 1 Staff Break/Locker Room
- 4 Toilets
- 1 Housekeeping Closet

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**Support**  
**Support Services Building**
- 1 Reception Area w/ Waiting
- 1 Exam/Assessment Room
- 1 Therapy/Interview Room
- 1 Spa/Tub Room
- 1 Gymnasium/Auditorium + Storage
- 1 Art Room
- 1 Retail + Storage
- 1 Fitness Center + Storage
- 1 Kitchen (Food Prep)
- 7 Staff Private Offices
- 12 Shared Offices
- 1 Large Conference Room
- 1 Medium Conference Room
- 1 Staff Break
- 1 Locker Room
- 1 Housekeeping Closet
- 1 Clean Supply Room
- 1 Clean Linen Holding Room
- 1 Soiled Holding Room
- 1 General Storage
- 1 Housekeeping Storage
- 1 Maintenance Shop
- 8 Toilets

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**MHRC**  
**Mental Health Rehabilitation Facility**  
**16 Bed Household**
- 1 Reception Area w/ Waiting
- 1 Visitation/Interview Room
- 12 Private Bedrooms + Bathrooms w/ Showers
- 2 Semi-Private Bedrooms + Bathrooms w/ Showers
- 1 Meditation/Library
- 1 Living Room
- 1 Open Care Team Area (2 workstations)
- 1 Care Team Workroom
- 1 Medication Room
- 1 Servery Kitchen + Storage
- 1 Dining/Activity Room
- 1 Rehab & Activity Space + Storage
- 1 Resident Laundry
- 1 Clean Supply Storage
- 1 Clean Linen Storage
- 1 Soiled Holding
- 1 General Storage
- 1 Facility Director Office
- 1 Staff Break/Locker Room
- 4 Toilets
- 1 Housekeeping Closet

---

**Cordilleras 3P Day 1**  
**Building Space Program**

(5) 16 Bed MHRCs (10,000 GSF ea.)
(2) 18 Bed ARFs (10,000 GSF ea.)
(1) Support (17,000 GSF)
Site Program

- (5) Secure MHRC licensed (“Rehab”) buildings @ 10,000 gsf
- (2) Unsecured Adult Residential Facility licensed (“Suites”) buildings @ 10,000 gsf
- (1) Support Building @ 17,000 gsf
- Recreation yard, including basketball court @ approx. 10,000 sf
- Community therapeutic vegetable and flower garden @ approx. 1,500 sf
- Outdoor smoking court(s) for Suites @ approx. 400 sf total
- Walking paths with sitting areas and gazebo(s)
- Loading dock maneuvering area to accommodate (2) semi-trailer truck docks
- Trash area with (3) dumpsters (Waste, Recycle and Compost)
- Emergency supplies storage shed
- Parking spaces for 85 cars (current 65 spaces + additional 20)
  - 4 required as accessible spaces
  - 1 required as van accessible space
- Fire truck access route (26’ wide) adjacent to all buildings
- Bus stop with shelter
- Areas for potential alternative energy installations including geothermal fields and photovoltaic arrays
- Area for emergency generators
- Area for emergency storage tanks (potable water, fire water, waste holding, diesel fuel, other?)

San Mateo County Health System
Behavioral Health and Recovery Services
March 28, 2014
Rehab (MHRC)

**Big Ideas**
- Closer proximity (virtual) to Rehab & group areas
- POD organization
- Smaller activities at each POD - common area
- Bigger central group rooms
- Add occupational therapies
- Add spiritual programs & chapel in pod, common area
-Zoom sport facilities outside
- Trails with gate
- More structured + free time outside
- Gymnasium

**Constraints**
- Currently Rehab is disconnected from bedrooms, dayroom, and clients
- No place for indoor team sports
- Nature walks now require supervision
- Commingle license issues between MH & suites
- Upgraded outdoor recreation from central care team
- Money management / access to banks in each pod or community area

**Site Program Feedback**
- Smoking discussion table (set aside)
- Incorporate ponds/pools/liner framing in landscaping and site design
- Consider saving part of existing cordilleras
- New buildings and undergrounding creek impacts wildlife and habitats
- Community feedback expected
- Outdoor access for staff mental health
Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 2

Meeting Agenda

9:00 am Gather and Onboarding
- Welcome
- Introductions
- Review agenda

9:30 am Extreme Schemes & Voting
- Onboarding
- Site
- Building

11:30 am Lunch Break (45 min.)

12:15 pm Extreme Scheme Voting Results and Advantages Discussion

1:45 pm Staff Break-Out Session
- Onboarding and break
- Work Session
- Report Out

2:45 pm Next Steps

2:55 pm Plus / Delta

Ground Rules

- Group effort: share responsibility for success of meeting
- Respect and encourage each person’s input
- Listen, don’t interrupt
- Explore and examine differences in perspective
- No idea is too big or too small
- Think outside the box
- Use the “parking lot” for relevant off-topic ideas
- Respect time constraints
- Be focused and attentive
- Please refrain from using mobile devices

Desired Outcomes

- Understand site and building opportunities
- Collaborate on possible alternatives and diagram refinements
- Gather feedback to inform planning of Hybrid Schemes

San Mateo County Health System
Behavioral Health and Recovery Services
April 9, 2014
# ARF
**Adult Residential Facility**

- 1 Lobby Area
- 1 Visitation/Interview Room
- 4 Private Bedrooms + Bathrooms w/ Showers
- 7 Semi-Private Bedrooms + Bathrooms w/ Showers
- 1 Meditation
- 1 Library/ Computer Room
- 1 Living Room
- 1 Care Team Workroom
- 1 Medication Room
- 1 Kitchen + Storage
- 1 Dining/Activity Room
- 1 Rehab & Activity Space + Storage
- 1 Resident Laundry
- 1 Clean Supply Storage
- 1 Clean Linen Storage
- 1 Soiled Holding
- 1 General Storage
- 1 Director Office
- 1 Staff Break/Locker Room
- 4 Toilets
- 1 Housekeeping Closet

---

# Support
**Support Services Building**

- 1 Reception Area w/ Waiting
- 1 Exam/Assessment Room
- 1 Therapy/Interview/ Visitation Room
- 1 Spa/Tub Room
- 1 Gymnasium/Auditorium + Storage
- 1 Art Room
- 1 Retail + Storage
- 1 Fitness Center + Storage
- 1 Kitchen (Food Prep)
- 7 Staff Private Offices
- 12 Shared Offices
- 1 Large Conference Room
- 1 Medium Conference Room
- 1 Staff Break
- 1 Locker Room
- 1 Housekeeping Closet
- 1 Clean Supply Room
- 1 Clean Linen Holding Room
- 1 Soiled Holding Room
- 1 Propane Tank Storage
- 1 General Storage
- 1 Housekeeping Storage
- 1 Maintenance Shop
- 8 Toilets

---

# MHRC
**Mental Health Rehabilitation Facility**

- 16 Bed Household

- 1 Reception Area w/ Waiting
- 2 Visitation/Interview Rooms
- 12 Private Bedrooms + Bathrooms w/ Showers
- 2 Semi-Private Bedrooms + Bathrooms w/ Showers
- 1 Meditation
- 1 Library/ Computer Room
- 1 Living Room
- 1 Open Care Team Area (2 workstations)
- 1 Care Team Workroom
- 1 Medication Room
- 1 Servery Kitchen + Storage
- 1 Dining/Activity Room
- 1 Rehab & Activity Space + Storage
- 1 Resident Laundry
- 1 Clean Supply Storage
- 1 Clean Linen Storage
- 1 Soiled Holding
- 1 General Storage
- 1 Director Office
- 1 Staff Break/Locker Room
- 4 Toilets
- 1 Housekeeping Closet

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**Cordilleras 3P Day 2**

**Building Space Program**

- 16 Bed MHRCs (10,000 GSF ea.)
- 18 Bed ARFs (10,000 GSF ea.)
- Support (17,000 GSF)
Site Program

- 5 Secure MHRC licensed (“Rehab”) buildings @ 10,000 gsf
- 2 Unsecured Adult Residential Facility licensed (“Suites”) buildings @ 10,000 gsf
- 1 Support Building @ 17,000 gsf
- Recreation yard, including basketball court @ approx. 10,000 sf
- Community therapeutic vegetable and flower garden @ approx. 1,500 sf
- Outdoor smoking court(s) for Suites @ approx. 400 sf total
- Walking paths with sitting areas and gazebo(s)
- Loading dock maneuvering area to accommodate (2) semi-trailer truck docks
- Trash area with (3) dumpsters (Waste, Recycle and Compost)
- Emergency supplies storage shed
- Parking spaces for 85 cars (current 65 spaces+ additional 20)
  4 required as accessible spaces
  1 required as van accessible space
- Fire truck access route (26’ wide) adjacent to all buildings
- Bus stop with shelter
- Areas for potential alternative energy installations including geothermal fields and photovoltaic arrays
- Area for emergency generators
- Area for emergency storage tanks (potable water, fire water, waste holding, diesel fuel, other?)

San Mateo County Health System
Behavioral Health and Recovery Services
March 28, 2014
Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 3

Meeting Agenda

9:00 am  Gather and Onboarding
          -Welcome
          -Introductions
          -Review agenda

9:20 am  Present and Review Hybrid
          -Site
          -Buildings

11:20 am  Review Outstanding / Parking Lot Issues

11:40 am  Next Steps

11:50 am  Plus / Delta

Ground Rules

• Group effort: share responsibility for success of meeting
• Respect and encourage each person’s input
• Listen, don’t interrupt
• Explore and examine differences in perspective
• No idea is too big or too small
• Think outside the box
• Use the “parking lot” for relevant off-topic ideas
• Respect time constraints
• Be focused and attentive
• Please refrain from using mobile devices

Desired Outcomes

• Reach consensus on pre-design Hybrid scheme
• Collaborate on possible alternatives and diagram refinements
• Gather feedback for further refinement
• Gather outstanding site issues to be addressed in report

San Mateo County Health System
Behavioral Health and Recovery Services
April 11, 2014
ARF
- 18 Beds
- Bar Shape
ARF
-36 Beds
-Cross Shape
ARF
- 18 Beds
- L Shape
MHRC
-16 Beds
-Bowtie Shape
MHRC
-16 Beds
-Cross Shape
MHRC
- 16 Beds
- T Shape

KITCHEN/DINING ROOM
MULTI-PURPOSE ROOM
CARE TEAM AREA
LIVING ROOM
Appendix C

Best Practices/ Benchmarking Site Visits
1. Adolescent Treatment Center of Winnebago  
United Hospital District/United Hospital District  
2012  
Adolescent Residential Treatment (12-18)/Supervised Living Facility  
Intermediate program; open facility; Assessment/intake (shower); DBT groups; Outreach/G.P. Therapist to schools; Education; residential; dining; fitness; individual & group therapy.  
Rural residential setting, Large educational and classrooms. Single and double rooms. Indoor and outdoor rec areas. State of the art kitchen and dining facilities.  
SEED Certified 6/26/14  
Integrate offices. Prefer larger gym, entry/reception visualization to waiting and check in window not ideal.  
Lessons Learned: Link  
http://uhd-atcw.com

2. Avera Behavioral Health  
4400 West 69th Street  
Avera/ Avera Behavioral Health (part of the Benedictine and Presentation Sisters)  
2006  
Part of the Avera Medical Center  
112 beds/ 75% singles  
Inpatient Acute Care Psych  
5 Units (Children, Adolescent, Adult, and Seniors); alliance with NAMI, NMAP research outreach program; regional facility, hospitalist model. Crisis ED/Assessment (24/7), full services, double corridor system for patient privacy; central dayroom encourages interaction, flexible/swing rooms, on-stage/ off stage plan.  
overall planning, mix of private and semi private rooms.  
http://www.avera.org/behavioral-health-center/#Take-a-Tour-Online

3. Broderick Street Adult Residential Facility  
3421 Broderick St.  
(Aujourd'hui) Adult Residential Facility (ARF)/Community Care License (CCL)  
2001  
Stand Alone  
15 beds/ 17 rooms (all doubles; one single)  
Medical and Psychiatry services. No Sepsis. Psychiatric. Individual and group therapies (pat assist, movement, poetry, drama, singing), medical mgmt. assessment, case mgmt, med dispensing (1 med room on each floor). Paycheck money not available (only contract S, B, SSI for rent), reimbursed for medical. ALOS: 2-3 years. - long term care. county placed beds.  
One dining area (staggered dining), two doubles share one toilet. Community showers. Skylights. Activities scheduled. Van driver.  
Hard to place clients, not locked facility, many are homeless, age: 16-59.  
http://www.ramsinc.org/programs/88

4. Casa de Esperanza & Hillmont House  
2750 C South Lawns Road  
San Mateo County/Telecare (ARFs) and Anka (MHRC)  
mid 90's  
Casa de Esperanza  
75 beds in 5 buildings/ 75 rooms (all singles)  
House of Transition & Long Term Residential/ MHRC and ABH  
Adults with SMI. focus on community integration and skill development. 18 month max stay. Funding: SSI for rent, federal and state, CMS and county benefits and county patch. IMD Exclusion: No. residents clean households.  
open space between buildings. Shaded gazebos. Casas are individually licensed with a separate director.  
http://www.telecarecorp.com/programs/88

5. Contra Costa County Hope House  
300 Ilene Street  
Contra Costa County/Telecare  
2014  
Stand Alone on medical center campus  
16 beds  
Crisis Residential Facility/ Social Rehabilitation Community Care License  
Crisis intervention, voluntary, short-term services, ALOS 7 to 30 days for dual diagnosis, employs peer counselors and licensed professionals (clinicians, psychiatry, nursing and residential care). Recovery-centered model. Individual/group treatment and family counseling. medication administration. assistance with community services.  
residential, two stories, very tight sight (retaining wall). Housing spaces open to corridor. Open kitchen dining. Living and dining spaces double as group activities/ therapies.  
16 bed facility  
http://www.telecarecorp.com/programs/152
<p>| # | Facility Name | Location (Contact) | Owned/ Operated | Year Open | Campus Design? | # Beds/ # Rooms | GSF | Facility Type / License | Programs &amp; Services | Design &amp; Planning Relevant Attributes | Sustainable Features | Lessons Learned | Site Visit Date | Lessons Learned | Link |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Hazelden Addiction Treatment Center (addition and renovation) | 11505 36th Ave, Plymouth, MN 55441 | Hazelden/ Hazelden (part of the Betty Ford Foundation) | 2014 | Campus | 94 beds total (including addition) | 49,000 | Young Adult Residential Addiction Treatment | Patients 15-25 yrs old. Addiction Treatment services. added services for co-occurring disorders (i.e. drug addiction and bi-polar disorder), sleep issues, mental health, trauma, addiction. No primary care, no eating disorders, 9 day evaluation program, CORE 12 program. | separate male and female quarters, new indoor recreation space, redesigned admissions area, and designated space for family programs and mental health services. 3 units (2 male/ 1 female), integrated offices, &quot;units&quot; / pods separated by gender. | Daylight, operable windows | 6/26/14 | <a href="http://www.hazelden.org/leks/public/plymouth_mn_substance_abuse_treatment_center_youth.page">http://www.hazelden.org/leks/public/plymouth_mn_substance_abuse_treatment_center_youth.page</a> |
| 9 | Millbrae Manor | 1001 Hemblock Ave Millbrae, CA 94030 | ANC/ ANC | 2007 | Stand alone | 48 beds/ 24 rooms (all doubles) | 20,000 | Residential Care Facility for Elderly (RFFCE) Assisted Living/ Community Care License (DSS) | No medical care, meds dispensed/ not administered. No social work. Case manager on site. Total wellness/nutrition programs. No van services. No RN or licensed staff. Organized music programs, films, exercise classes, and field trips. | Converted SNF. Two story. Double loaded long narrow corridors. | 3/12/14 | millbraemillbrae.html |
| 10 | Nueva Vista | 18225 Yale Avenue Morgan Hill, CA 95037 | Psychnergy/ Psychnergy | 2004 | Acquired adjacent properties/ sold multiple bldgs. Multiple site system. | 46 beds with singles, doubles and quads. Converting to doubles | 18,280 | Adult Residential Facility (ARF) | Unlocked facility. Residential model key to success. Programs: Health and wellness, equine therapy, life skills. ALGOS: 7 months. Modified therapeutic community model. Client development, residential treatment, live-in and live out re-entry. | converted SNF. Single story. Hve transitional studio apartments. New rooms will have shared toilets. | level of care and achievement at 560 - $125 per day (residential services and support). cost-effective approach. Cascaded rate system. Well-designed space will promote respect. | 3/19/14 | <a href="http://www.psychnergy.org/residences/cielo_vista/">http://www.psychnergy.org/residences/cielo_vista/</a> |</p>
<table>
<thead>
<tr>
<th>#</th>
<th>Facility Name</th>
<th>Location (Contact)</th>
<th>Managed / Operated</th>
<th>Year Open</th>
<th>Campus Design?</th>
<th># Beds / # Rooms</th>
<th>GSF</th>
<th>Facility Type / License</th>
<th>Programs &amp; Services</th>
<th>Design &amp; Planning</th>
<th>Relevant Attributes</th>
<th>Sustainable Features</th>
<th>Site Visit Date</th>
<th>Lessons Learned</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Redwood Place</td>
<td>36949 Redwood Road Castro Valley, California 94046 (510) 881-1606</td>
<td>Telecare / Telecare 2012 renovation</td>
<td>stand alone 15 beds / 15 rooms (all singles)</td>
<td>MHRC / CHCS</td>
<td>Delayed egress; Voluntary program; Telecare’s Recovery-Centered Clinical System (RCCS); Regional Center. Ages: over 18. Primary Care. Med dispense; Social Work; Rehab; Dual Diagnosis (Developmental and mental illness). Converted SHF. Removed nurse station.</td>
<td>Pod design with mostly all semi-privates. 3-story courtyard. Separate entries for different levels of care.</td>
<td>Pod design, flexible standard design helps accommodate change of programs / levels of care over time.</td>
<td>Pod design, flexible standard design helps accommodate change of programs / levels of care over time.</td>
<td>3/17/14</td>
<td>could use more outdoor space</td>
<td><a href="http://www.telecarecorp.com/programs/68">http://www.telecarecorp.com/programs/68</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SF Petrova Avenue, 1st Floor San Francisco, CA 94110 415-206-6300</td>
<td>SF DPH / SF DPH 1996 building on SF General Medical Center campus</td>
<td>45 bed ARF + 59 bed SHF + 47 bed MHRC (split 23 MHRC + 23 Psych)</td>
<td>MHRC / CHCS</td>
<td>Pod design with mostly all semi-privates. 3-story courtyard. Separate entries for different levels of care.</td>
<td>Pod design, flexible standard design helps accommodate change of programs / levels of care over time.</td>
<td>Pod design, flexible standard design helps accommodate change of programs / levels of care over time.</td>
<td>Pod design, flexible standard design helps accommodate change of programs / levels of care over time.</td>
<td>3/10/14</td>
<td><a href="http://sanfrancisco.net/worklife/veteranservices/services/agencies.asp?oid=101&amp;sf=SanFranciscoBehavioralHealthCenterforMentallyIl/index.html">http://sanfrancisco.net/worklife/veteranservices/services/agencies.asp?oid=101&amp;sf=SanFranciscoBehavioralHealthCenterforMentallyIl/index.html</a></td>
<td><a href="http://www.telecarecorp.com/programs/122">http://www.telecarecorp.com/programs/122</a></td>
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<tr>
<td>13</td>
<td>Sanger Place</td>
<td>2511 Jensen Avenue Sanger, California 93657 (510) 333-1234 (Cliff Morrison)</td>
<td>Telecare / Telecare 2011 Stand Alone</td>
<td>15 beds / 15 rooms (all singles)</td>
<td>MHRC / CHCS</td>
<td>Delayed egress; Regional center. Sub-acute secure facility serving adults with SMI and developmental disability. Client council.</td>
<td>Tenant improvement, single story, perimeter rooms with open central day room. No nurse station. Not institutional looking, no seclusion. Locked perimeter.</td>
<td>16 bed program; open day room.</td>
<td>-</td>
<td>3/19/14</td>
<td>prefer offices integrated into the center</td>
<td><a href="http://www.telecarecorp.com/programs/117">http://www.telecarecorp.com/programs/117</a></td>
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</tr>
<tr>
<td>14</td>
<td>VA Palo Alto Mental Health Center</td>
<td>3801 Miranda Avenue Palo Alto, CA 94304 650.493.5000</td>
<td>VA / VA Campus 2013</td>
<td>80 beds (singles and semi-private)</td>
<td>MHRC / CHCS</td>
<td>Women’s, Geriatric, Psych; access to gardens, recreation yard, daylight to all staff, patient areas. Units can flex from 18-22 beds, facility became basis for VA design guide for mental health facilities</td>
<td>Flexible unit sizes and pod design. Salle port interview room with toilet.</td>
<td>LEED Silver Equivalent</td>
<td>-</td>
<td>3/17/14</td>
<td><a href="http://www.paloalto.va.gov/construction">http://www.paloalto.va.gov/construction</a> mhcenter.asp</td>
<td><a href="http://www.paloalto.va.gov/construction">http://www.paloalto.va.gov/construction</a> mhcenter.asp</td>
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<tr>
<td>15</td>
<td>Ventura Crisis Residential Treatment Center</td>
<td>250 Hillmont Ave Ventura, CA 93003</td>
<td>Ventura County / Anka 2013 Building on Ventura County Medical Center campus</td>
<td>35 beds</td>
<td>MHRC / CHCS</td>
<td>Cross Residential (attached to Ventura County Medical Center) / Short Term Social Rehab</td>
<td>Voluntary short term; up to 30 days. ADLOS = 16 days. Unlocked. 91% discharged to home. &quot;Vision for a more welcoming and inviting environment.&quot; All private bedrooms, open living rooms and dining rooms, outdoor sports court.</td>
<td>Walking gardens, central group / dining spaces. Integrated staff workrooms overlooking group spaces. Modular construction. Short construction time.</td>
<td>-</td>
<td>3/19/14</td>
<td><a href="http://www.ankabehavioralhealth.wordpress.com/2013/07/16/county-fulfills-its-promise-for-crisis-center/">http://www.ankabehavioralhealth.wordpress.com/2013/07/16/county-fulfills-its-promise-for-crisis-center/</a></td>
<td><a href="http://www.ankabehavioralhealth.wordpress.com/2013/07/16/county-fulfills-its-promise-for-crisis-center/">http://www.ankabehavioralhealth.wordpress.com/2013/07/16/county-fulfills-its-promise-for-crisis-center/</a></td>
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Benchmarking & Facility Site Visits
(Visited between March 2014 and June 2014)
CA Sites

San Francisco Bay Area
• Broderick St, SF
• Laguna Honda, SF
• Millbrae Manor, Millbrae
• Redwood Place, Castro Valley
• VA Palo Alto
• SF General, SF
• Contra Costa Hope House

Out Side the Bay Area
• Nueva Vista, Morgan Hill
• CA Pysch Treatment, Delhi
• Sanger Place, Sanger
• Ventura Crisis Residential Treatment, Ventura
• Case de Esperanza, Camarillo
Midwest Sites

Minnesota
- Adolescent Treatment Center of Winnebago, Winnebago, MN
- Hazelden, Plymouth, MN

South Dakota
- Avera Behavioral Health, Sioux Falls, SD
Broderick Adult Residential Care - Stats

- San Francisco, CA
- Urban Residential Area
- Remodeled SNF
- Community Care License as Adult Residential Facility
- Operator: RAMS (Richmond Area Multi-Services)
- Since 2005
- 33 placements
- All semi-private & 1 Private
Broderick Adult Residential Care Observations

- Shared Toilet ("Jack and Jill")
- Daylight through Skylights
- Double loaded bedroom corridors
- 2 stories – Safety concerns
- Very limited outdoor space
- Culturally diverse
- Staff skills/ care culturally diverse
Broderick Adult Residential Care

Dining

Corridor and Skylights
Broderick Adult Residential Care

Living Room/ Recreation Area

Semi-Private Bedroom
Laguna Honda Rehabilitation - Stats

- San Francisco, CA
- Urban Residential Area
- New SNF
- Operator: SF DPH
- Open 2010
- 60 Behavioral Health beds (780 total)
- Mix of singles, doubles and triples
Laguna Honda Rehabilitation Observations

• Space for a variety of outdoor programs and recreation
• Paths, gardens, views, animals and greenhouse
Laguna Honda Rehabilitation: Observations

Organized as Communities, Neighborhoods and Households
Laguna Honda Rehabilitation: Observations

• Advanced Security and Safety measures – Technology
• Access to outdoors from units – Balconies
• Amenities such as retail gift shop, library with computer stations and hair salon in the community center
Laguna Honda Rehabilitation: Observations

- Double loaded bedroom corridors
- “Front Door” recesses – allows relief in corridor
- Bedroom suites sharing toilets
- Toe to Toe semi-private configuration with curtains – less privacy
Millbrae Manor- Stats

- Millbrae, CA
- Suburban
- Licensed as a RCFE
- Operator: A&C
- Renovated SNF
- Since 2007
- 40 Placements
- No medical care
- All doubles
- Two stories
Millbrae Manor: Observations

• Lobby Entry and Open Reception with enclosed staff workroom behind

• Good size dining and activity space with lots of daylight. Group tables.
Millbrae Manor: Observations

Double loaded bedroom corridor

Outdoor patio mainly for smoking
VA Palo Alto: Stats

- Palo Alto, CA
- Suburban
- Licensed as: Inpatient Acute
- Operator: VA
- New
- 2012
- (4) 20 bed pods
- Mix on Doubles and Singles
- One story
VA Palo Alto: Observations

• 4 Connected Pods with courts

• Abundant natural light
• Semi-Open nurse station with glass
VA Palo Alto: Observations

- Open TV Room
- Acoustic concerns
- Bedroom off open gathering area
VA Palo Alto: Observations

- View of corridor from Nurse station

- Daylight into Dining. Variety of seating.
VA Palo Alto: Observations

Exercise room (no view to outdoors)  Outdoor Recreation  Laundry Room (1 W/ 1 D for 20)
Redwood Place: Stats

- Castro Valley, CA
- Suburban
- Licensed as: MHRC (delayed egress)
- Operator: Telecare
- Renovated SNF
- 2012
- 15 Placements
- Converted all double rooms to Private Suites
- One story
Redwood Place: Observations

Cove lighting and wainscot

Single bedroom suites & living rooms

Wardrobe units vs built in closets
Redwood Place: Observations

Teaching kitchen with activity room

Living room with daylight

Outdoor space
Nueva Vista: Stats

- Morgan Hill, CA
- Suburban
- Licensed as: ARF
- Operator: Psynergy
- Renovated SNF
- 2004
- 66 Placements
- Building campus with multiple levels of care
- Mix of Singles, Doubles and Quads
- One story, residential model
Nueva Vista: Observations

Contemporary Bedrooms

Tile toilet rooms, community showers

Wardrobe closet with desk
Nueva Vista: Observations

Activity Room with Kitchenette

Care team area with meeting table

Outdoor gathering
Nueva Vista: Observations

1 bedroom transitional studios

Living room with dining

Kitchen
California Psychiatric Treatment: Stats

- Delhi, CA
- Rural
- Licensed as: MHRC
- Operator: CPT
- Renovated ARF with newly added MHRC buildings
- 2002
- 98 Placements
- Forensics
- Disruptive Behavior Unit

- All doubles as suites
- One story
California Psychiatric Treatment: Observations

Secure enclosed care team stations with glass

Sally port for forensics

Glass enclosed care team areas
California Psychiatric Treatment: Observations

Large group rooms with daylight
California Psychiatric Treatment: Observations

- Med rooms with windows
- Care station
- Relaxation chair
California Psychiatric Treatment: Observations

Outdoor recreation

Outdoor exercise

bikes

Walking path
Sangar Place: Stats

- Sangar, CA
- Rural
- Licensed as: MHRC
- Operator: Telecare
- New Storefront
- 2011
- 15 Placements
- 15,000 gsf
- ALOS: 18 months
- All singles
- One story
Sangar Place: Observations

Carpet corridors and neutral tones

Bedrooms off of open gathering space
Sangar Place: Observations

Raised gardens

Outdoor seating with shade
Sangar Place: Observations

Refreshment bar in Dining room

Dining with pass through window
Case de Esperanza & Hillmont House: Stats

- Camarillo, CA
- Rural
- Licensed as: ARF/MHRC
- Operator: Telecare/Anka
- Campus with Casitas
- 1998
- (5) Casitas of 15 Placements each
- ALOS: 12-13 months
  - All singles
  - One story
Case de Esperanza & Hillmont: Observations

Well landscaped outdoor space with gazebos

Outdoor reflective or gathering nodes between Casitas
Case de Esperanza & Hillmont: Observations

Raised gardens and tool sheds

Residential architecture with sloped roofs
Case de Esperanza & Hillmont: Observations

Narrow Corridors, no artwork

Split living rooms and kitchens

U-Shaped planning, long corridors
Case de Esperanza & Hillmont: Observations

Terry Wilcox-Rittgers
Supervisor Horsley

Hillmont House (MHRC) – Separate casa and operator

Open kitchen/ dining
Ventura Crisis Residential Treatment: Stats

- Ventura, CA
- Suburban
- Licensed as: ARF/ SRF
- Operator: Ventura County Behavioral
- On Medical Campus close to Acute
- 2013
- 15 Placements
- ALOS: 2 weeks max.
- All singles
- One story
Ventura Crisis Residential: Observations

Reception Desk & enclosed workroom

Pass meds through dutch door

Belonging lockers
Ventura Crisis Residential: Observations

Durable and neutral finishes

Combined dining, living room and activity room with interior glazing
Ventura Crisis Residential: Observations

Skylights

Production kitchen with pass through
Ventura Crisis Residential: Observations

Staff workroom with conferencing

Dividable group activity, education, art room with storage
Ventura Crisis Residential: Observations

Bedroom doors set back from corridor

Raised gardens & long overhangs

Modular Construction
Ventura Crisis Residential: Observations

Outdoor paths landscaping and gazebo
San Francisco General “MHRF”: Stats

- San Francisco, CA
- Urban
- Licensed as: MHRC & ARF
- Operator: SF DPH
- Repurposing SNF on Medical Campus close to Acute
- 1996
- 147 Placements
- ALOS: 7 months (MHRC)
- All Doubles
San Francisco General MRHF: Observations

Community Artwork  Raised gardens  Courtyard
San Francisco General MHRF: Observations

General Store/ Vocational work

Library

Group Activity/ Art Room
San Francisco General MHRF: Observations

Dining with visual access and daylight

TV rooms

Gymnasium
San Francisco General MHRF: Observations

Living Room with court views

Color themes identifying pods

Double Bedrooms
San Francisco General MHRF: Observations

Open care team areas, no glass

Dining Room with laundry alcove

Variety of furniture
Contra County Hope House: Stats

- Martinez, CA
- Suburban
- Licensed as: Crisis Residential
- Operator: Telecare
- New Facility
- 2014
- 16 Placements
- ALOS:
- Mix of doubles and singles
<table>
<thead>
<tr>
<th>Contra Costa Hope House: Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very tight/ narrow site</strong></td>
</tr>
<tr>
<td><strong>Residential design,</strong></td>
</tr>
<tr>
<td><strong>fit into environment</strong></td>
</tr>
<tr>
<td><strong>Natural Materials</strong></td>
</tr>
</tbody>
</table>
Contra Costa Hope House: Observations

Arrival/ Entry / Lobby zone

Interior Mechanical

Two level structure with open stair
Contra Costa Hope House: Observations

- Long corridor relief and lots of daylight
- Community toilet. Prefer shower/no tub
- Mix of doubles and single rooms
Contra Costa Hope House: Observations

Living room small/open to corridor

Open residential kitchen.

Open dining/kitchen space.

Limited group space. Used for groups.

Limited group space. Used for groups.
Adolescent Treatment Center of Winnebago: Stats

- Winnebago, MN
- Rural
- Licensed as: Supervised Living Facility
- Operator: United Hospital District
- New Facility
- 2010
- 24 Placements
- ALOS: 40 days
- Mostly doubles
ATC of Winnebago: Observations

4 Distinct Zones

- Entry/ Admin/ Support
- Dining/ Gathering
- Sleeping, TV/ Entertainment
- Offices/ Education classrooms/ group rooms/ Exercise
ATC of Winnebago: Observations

Enclosed check-in/limits views to waiting
Assessment/ Intake Room at entry
Adjoining exam/toilet with shower
ATC of Winnebago: Observations

Wide corridors with open central dining
Cafeteria style dining, open kitchen
Dining: natural materials/ daylight
ATC of Winnebago: Observations

Commercial Kitchen

Classrooms for 10

Use of color and natural materials
ATC of Winnebago: Observations

Exercise room (800sf)

Large staff station and pool tables

Variety of seating: lounge and work
ATC of Winnebago: Observations

Open entertainment area with daylight

Doubles: side by side, inboard toilet/sink

Sink outside toilet room, flexible
ATC of Winnebago: Observations

Entrance, residential

Outdoor court areas with shading

Outdoors recreation

“Trespa” type system
Avera Behavioral Health: Stats

• Sioux Falls, SD
• Rural
• Licensed as: Inpatient Acute Care
• Operator: Avera Health Systems
• New Facility
• 2006
• 112 Placements
• ALOS: 7-14 days
• Mostly singles
Avera Behavioral Health: Observations

Separate Inpatient side; glass; open feel

Outpatient and Inpatient separated by atrium/ public spine

Entrance, public spine, daylight/ open
Avera Behavioral Health: Observations

Religious, chapel, water, light, intimate

Integrated artwork

Distinct Unit entry/arrival, recessed
Well planned:
• “on-stage/ off-stage” support
• Flex rooms
• Wings create outdoor courts

Flex rooms are all doubles and can flex incrementally by using corridor doors. 14 bed wing can flex to 34.

Dual axis support rooms (clean, soiled, pharmacy, pantry)
Avera Behavioral Health: Observations

- Group rooms w/ Borrowed light
- Patient room entry distinction/ transition
- Open corridor/ TV area; glass for sound
Avera Behavioral Health: Observations

End of corridor daylight; seating area

Toilet door anti-ligature alternative/magnet/foam

Open corridor/ TV area; glass for sound & observation
Avera Behavioral Health: Observations

Outdoor court, meditation garden

High fence at end of wings; custom design

Indoor gym/ large gatherings/ video training

Fitness room
Avera Behavioral Health: Observations

Retail/ Amenity: The Bistro coffee bar

Connected to satellite kitchen/ closeable after hours

Inpatient fresh cook kitchen; available to visitors; small counter
Hazelden: Stats

- Plymouth, MN
- Suburban
- Licensed as:
- Operator: Hazelden/ Betty Ford Foundation
- 94 Placements
- ALOS: 25-30 days
- Mostly quads
Hazelden: Observations

Warm feel materials, generous drop off

Main reception; open; both outpatient and residential intake

Meditation; comfortable, daylight

Private waiting rooms

Retail: bookstore
Hazelden: Observations

Group and activity spaces; education/ fitness/ creative outlet

Gym

Exercise Room

Lecture Hall

Computer Lab

Art Room

Music Room
Hazelden: Observations

Campus Setting:
- Multiple buildings
- Additions over time

New Addition:
- 16 beds (3 quads + 2 doubles)
- Open circulation
- Staggered organization

- Sinks inside and outside toilet room
- tubs; clients like
Hazelden: Observations

Unit entry, daylight

Unit gathering areas; variety in size, location and seating; fireplace, multi-level

On unit kitchenette

Unit Lounge/groups

Unit Lounge/TV
Client bedrooms:

- quads each with private decks
- Partial height partition privacy dividers
- Wood materials; warm
- Individuals desks
- Shared toilet/shower
Appendix D

Draft Space Program
Baseline Assumptions

1. Licensed beds/ placements & Bed Mix
   - Maintain total of licensed beds = 117. The existing mix: 68 Mental Health Rehab Center (MHRC) and 49 Adult Residential Facility (ARF) is not required to be maintained.
   - Program for (5) separate 16- bed MHRC’s (households) = 80 secure beds. With a 75% single/ 25% double mix.
   - Program for 37 non-secure ARF (The Suites) beds within a 3 story structure with Campus Center. With a 25% single/ 75% double mix.

2. Hours of Operations: 24/7/365

3. Regulatory
   - Each MHRC to comply with California Code of Regulations Title 9; Subchapter 3.5.
   - Space located in the facility or internally connected to a licensed facility shall be considered a part of the facility and shall be subject to licensing regulations. (CCR T9, 3.5, 784.55)
   - MHRCs shall provide, at a minimum, the following services; physician, nursing, pharmaceutical, and dietary services. If a service cannot be brought into the facility, the facility shall assist the client in arranging for transportation to and from a service location. (CCR T9, 3.5, 785.00)

4. Operational Model
   - Electronic Medical Records are assumed to be implemented in the future. Plan infrastructure for EMR. No medical record bulk storage is required. Archive files stored off site.
   - Decentralize food service to each MHRC and ARFs for licensing and operator organizational purposes. Food service consultant to verify program.
   - Decentralize clean supplies, linen and food deliveries to each MHRC and ARFs for licensing and operator organizational purposes.
   - Supply delivery in smaller box trucks with multiple stops and no 55 ft. semi-trailers on site.

5. Design and Planning Criteria
   - Campus Center program includes duplicative space for a centralized food preparation as a flexible placeholder until further direction is provided in Design.
   - No group bathrooms or shower rooms.
   - 6 ft corridors

6. Staffing and Administrative Model
   - No dedicated office space in household except for the required facility director.
   - Provide minimum number of offices to each MHRC per Title 9, to the ARF and maintain administrative and visiting personnel offices in the community building. Office program space to be reviewed and finalized.
## SPACE PROGRAM (Baseline)

### Summary

11/1/14

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Program</th>
<th>NSF (1)</th>
<th>Multiplier (2)</th>
<th>GSF (1 X 2)=(3)</th>
<th>Blgs (4)</th>
<th>Total (3x4)=(5)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Rehabilitation Facility (MHRC) - 16 Bed Household (75% private)</td>
<td>7,742</td>
<td>1.35</td>
<td>10,452</td>
<td>5</td>
<td>52,259</td>
<td>single story buildings</td>
<td></td>
</tr>
<tr>
<td>Sub Total</td>
<td>7,742</td>
<td>10,452</td>
<td></td>
<td></td>
<td></td>
<td>52,259</td>
<td></td>
</tr>
<tr>
<td>Campus Center</td>
<td>10,642</td>
<td>15,963</td>
<td></td>
<td></td>
<td></td>
<td>includes fresh prepared food preparation for 117 clients. excludes supply chain accommodations for MHRC. Multistory building</td>
<td></td>
</tr>
<tr>
<td>Adult Residential Facility (ARF) - 37 beds (25% private)</td>
<td>12,767</td>
<td>19,151</td>
<td></td>
<td></td>
<td></td>
<td>2 level ARF on top of Community Building</td>
<td></td>
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<tr>
<td>Sub Total</td>
<td>23,409</td>
<td>35,114</td>
<td></td>
<td></td>
<td></td>
<td>35,114</td>
<td></td>
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<tr>
<td>Total</td>
<td>6</td>
<td>87,372</td>
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<td></td>
<td></td>
<td>87,372</td>
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</table>
## SPACE PROGRAM (Baseline)

**Mental Health Rehabilitation Facility (MHRC) - 16 Bed Household (75% private)**  
11/1/14

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Req'd by CCR</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty.</td>
<td>Area (NSF)</td>
<td>Net Square Feet (NSF)</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(1 X 2)=3</td>
</tr>
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</table>

### VISITOR AREAS

<table>
<thead>
<tr>
<th>Area</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>T9</th>
</tr>
</thead>
<tbody>
<tr>
<td>VISITOR AREAS</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Reception Desk</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Waiting Space</td>
<td>4</td>
<td>25</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Locker Alcove</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>
| Toilet/ Lav, Visitor, Accessible | 2 | 60 | 120 | | 1 person, may be integrated with care team station

### CLIENT AREAS

<table>
<thead>
<tr>
<th>Area</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>T9</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIENT AREAS</td>
<td>12</td>
<td>140</td>
<td>1680</td>
<td>Y</td>
</tr>
<tr>
<td>Bedroom, Private</td>
<td>2</td>
<td>220</td>
<td>440</td>
<td>Y</td>
</tr>
<tr>
<td>Bedroom, Semi-Private</td>
<td>14</td>
<td>70</td>
<td>980</td>
<td>Y</td>
</tr>
<tr>
<td>Bathroom, Accessible</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td>Y</td>
</tr>
<tr>
<td>Storage, Client Belongings</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td>Y</td>
</tr>
<tr>
<td>Meditation/ Seclusion</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td>Y</td>
</tr>
<tr>
<td>Library/ Computer Room</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td>Y</td>
</tr>
<tr>
<td>Visitation/ Assessment/ Interview Room</td>
<td>2</td>
<td>120</td>
<td>240</td>
<td>Y</td>
</tr>
<tr>
<td>Therapy/ Interview Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Exam/ Vitals Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
| Phone Room | 1 | 50 | 50 | | includes bed, desk, chair, wardrobe unit.  
| Act as medical isolation. True negative pressure not required.  
| includes bed, desk, chair, wardrobe unit.  
| Lav, Toilet, roll in shower  
| Meditation or Seclusion depending on household population/ level of care.  
| shared for visitation, TB screening, assessment/ intake, interview, consult, individual therapy, exam. Provide dual egress  
| shared with Visitation/ Assessment above  
| shared with assessment above. Clinical exam room(s) provided in community bldg.  
| accessible |

### CLINICAL CARE SUPPORT AREAS

<table>
<thead>
<tr>
<th>Area</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>T9</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLINICAL CARE SUPPORT AREAS</td>
<td>2</td>
<td>40</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Care Team Station, Open</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Work Station(s) (4 LF)</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Alcove, Accessible Hand Sink &amp; receptacle</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Alcove, Medication (4 LF)</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Alcove, Nourishment (4 LF)</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Care Team Workroom</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Work Station(s) (4 LF)</td>
<td>6</td>
<td>25</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Meeting Table</td>
<td>1</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Copy/ Print/ Office Supply Alcove</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>Y</td>
</tr>
<tr>
<td>Medication Room</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copy/ Print/ Office Supply Alcove</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting Table</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Team Workroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Station(s) (4 LF)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Alcove, Accessible Hand Sink &amp; receptacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcove, Medication (4 LF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcove, Nourishment (4 LF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Team Station, Open</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Station(s) (4 LF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting Table</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copy/ Print/ Office Supply Alcove</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medication Room</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# SPACE PROGRAM (Baseline)

## Mental Health Rehabilitation Facility (MHRC) - 16 Bed Household (75% private)

11/1/14

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Req'd by CCR</th>
<th>T9</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(1 X 2)=3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen/ Servery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiving and Breakdown Area</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td></td>
<td>Y</td>
<td>used for fresh meal preparation and required Access to nourishment at all times, ADL, snacks. Fresh meal preparation will NOT occur in community bldg. staging alcove</td>
</tr>
<tr>
<td>Storage, Dry Food</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
<td>Y</td>
<td>includes emergency storage</td>
</tr>
<tr>
<td>Storage, Supplies</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
<td></td>
<td>paper products, seasonal decorations</td>
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<tr>
<td>Storage, Meat Refrigerator</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td></td>
<td></td>
<td>walk-in</td>
</tr>
<tr>
<td>Storage, Dairy Refrigerator</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td></td>
<td></td>
<td>walk-in</td>
</tr>
<tr>
<td>Storage, Vegetable Refrigerator</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td></td>
<td></td>
<td>walk-in</td>
</tr>
<tr>
<td>Cold Prep Station</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
<td>ranges with ovens</td>
</tr>
<tr>
<td>Cook Prep Station</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
<td>in range, part of cook prep area for all meat, diary and vegetables</td>
</tr>
<tr>
<td>Oven</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
<td></td>
<td>in refrigerator part of dishwashing sink station</td>
</tr>
<tr>
<td>Refrigerator, Reach In</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
<td>includes dishwashing</td>
</tr>
<tr>
<td>Ice Machine Alcove</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
<td>dishwasher waste, compost, recycle</td>
</tr>
<tr>
<td>Handwash Alcove</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
<td>in community building</td>
</tr>
<tr>
<td>Assembly &amp; Cart Staging</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Dishwashing</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
<td>includes potwash</td>
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<td>Potwash</td>
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<td>25</td>
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<td></td>
<td>potwash</td>
</tr>
<tr>
<td>Soiled Holding</td>
<td>1</td>
<td>25</td>
<td>25</td>
<td></td>
<td></td>
<td>in community building</td>
</tr>
<tr>
<td>Dietary Director Office</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Dietsician Workroom</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Lounge/ Conference</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Locker Room, Male, Accessible</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Locker Room, Female, Accessible</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Toilet, Lav, Shower; Male, Accessible</td>
<td>0</td>
<td>70</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Toilet, Lav, Shower; Female, Accessible</td>
<td>0</td>
<td>70</td>
<td>0</td>
<td></td>
<td></td>
<td>see shared support</td>
</tr>
<tr>
<td>Housekeeping Closet</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td></td>
<td></td>
<td>shared with building</td>
</tr>
<tr>
<td>Dining Room/ Activity Room</td>
<td>16</td>
<td>25</td>
<td>400</td>
<td>Y</td>
<td></td>
<td>Shared for dinning and group activities</td>
</tr>
<tr>
<td>Storage, Activity</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
<td>for structured and non-structured therapies (movement, group discussion, music, education, etc.), may be divided with moveable partition.</td>
</tr>
<tr>
<td>Rehab/ Activity Space</td>
<td>16</td>
<td>25</td>
<td>400</td>
<td>Y</td>
<td></td>
<td>TV, sofa, chairs, coffee table, 4 person; may centralize</td>
</tr>
<tr>
<td>Storage, Rehab</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
<td>1 washer/ 1 dryer, lockable storage for nursing service</td>
</tr>
<tr>
<td>Living Room</td>
<td>4</td>
<td>120</td>
<td>480</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## STAFF & GENERAL SUPPORT

<table>
<thead>
<tr>
<th>STAFF &amp; GENERAL SUPPORT</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Req'd by CCR</th>
<th>T9</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laundry, Residents</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>Y</td>
<td></td>
<td>1 washer/ 1 dryer, lockable storage for nursing service</td>
</tr>
<tr>
<td>Storage, Clean Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire Shelving (5H; 48” x 24&quot;)</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage, Clean Linen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional Area and Room Components</td>
<td>Qty. (1)</td>
<td>Area (NSF) (2)</td>
<td>Net Square Feet (NSF (1 X 2)=3</td>
<td>Req'd by CCR T9</td>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>----------</td>
<td>----------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Wire Shelving (5H; 48” x 24”)</td>
<td>3</td>
<td>25</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soiled Holding</td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible hand sink and Counter (6 LF)</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste/ Compost Receptacle</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biohazardous Waste Receptacle</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycle Receptacle</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soiled Linen Receptacle</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire Shelving</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage, General</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office, Facility Director</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>Y</td>
<td>desk with meeting table</td>
<td></td>
</tr>
<tr>
<td>Office, Shared, Nursing/ Physicians</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
<td>2 person, see support building</td>
<td></td>
</tr>
<tr>
<td>Office, Shared, Social Work/ Rehab</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
<td>2 person, see support building</td>
<td></td>
</tr>
<tr>
<td>Conference Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
<td>see Care team workroom and support building</td>
<td></td>
</tr>
<tr>
<td>Staff Break/ Locker Room</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet/ Lav, Staff, Accessible</td>
<td>2</td>
<td>60</td>
<td>120</td>
<td>Y</td>
<td>male/ female</td>
<td></td>
</tr>
<tr>
<td>Housekeeping Closet</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td>Y</td>
<td>floor sink, cart, supplies</td>
<td></td>
</tr>
</tbody>
</table>
## SPACE PROGRAM (Baseline)

**Mental Health Rehabilitation Facility (MHRC) - 16 Bed Household (75% private)**

11/1/14

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty. (NSF)</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Req'd by CCR T9</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building Support</strong></td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiving/ Staging Area</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage, Maintenance</td>
<td>1</td>
<td>100</td>
<td>100</td>
<td></td>
<td>to be verified</td>
</tr>
<tr>
<td>Technology Room</td>
<td>1</td>
<td>100</td>
<td>100</td>
<td></td>
<td>to be verified</td>
</tr>
<tr>
<td>Electrical Room</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td></td>
<td>incl AHU, boilers, pumps, fire protection; to be verified</td>
</tr>
<tr>
<td>Mechanical Room</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Household</strong></td>
<td></td>
<td></td>
<td><strong>7,742</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grossing Factor</strong></td>
<td></td>
<td></td>
<td><strong>1.35</strong></td>
<td></td>
<td>single story, no internally dedicated courtyard, 6ft corridors</td>
</tr>
<tr>
<td><strong>Total Building GSF</strong></td>
<td></td>
<td></td>
<td><strong>10,452</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### SPACE PROGRAM (Baseline)

#### Campus Center

**11/1/14**

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VISITOR AREAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reception Desk</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td>1 person, may be integrated with administration</td>
</tr>
<tr>
<td>Waiting Space</td>
<td>4</td>
<td>25</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Locker Alcove</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>4 high</td>
</tr>
<tr>
<td>Visitation/ Assessment/ Interview Room</td>
<td>0</td>
<td>120</td>
<td>0 in each household</td>
<td></td>
</tr>
<tr>
<td>Toilet/ Lav, Accessible</td>
<td>2</td>
<td>60</td>
<td>120</td>
<td>male/ female</td>
</tr>
<tr>
<td><strong>CLINICAL CARE SUPPORT AREAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Team Workroom/ Conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Station(s) (4 LF)</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>shared by physicians, nursing, social work, charting, computers</td>
</tr>
<tr>
<td>Meeting Table</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>for 6-8, staff mtgs, in-service training.</td>
</tr>
<tr>
<td>Copy/ Print/ Office Supply Alcove</td>
<td>0</td>
<td>60</td>
<td>0</td>
<td>copy, printer, fax, supplies, forms</td>
</tr>
<tr>
<td>Exam/ Vitals Room</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>in each household</td>
</tr>
<tr>
<td>Medication Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td>shared, used as consult room (4-5 per).</td>
</tr>
<tr>
<td>Therapy/ Interview Room</td>
<td>2</td>
<td>120</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td><strong>Shared Activity Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spa/ Tub Room</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>used for sports, large group movement, group exercise classes, dance, large dining, etc.; may be subdivided.</td>
</tr>
<tr>
<td>Gymnasium/ Auditorium</td>
<td>1</td>
<td>2000</td>
<td>2000</td>
<td>equipment/ stacking chairs/ tables</td>
</tr>
<tr>
<td>Storage, Gym</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>to be determined</td>
</tr>
<tr>
<td>Artroom</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Retail</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Storage, Retail</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Fitness Center</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>cardio machines and strength training equipment</td>
</tr>
<tr>
<td>Library</td>
<td>0</td>
<td>200</td>
<td>0</td>
<td>in each household</td>
</tr>
<tr>
<td>Toilet/ Lav, Staff/ Client, Accessible</td>
<td>2</td>
<td>60</td>
<td>120</td>
<td>male/ female</td>
</tr>
<tr>
<td>Alcove, Drinking fountain</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>Dietary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiving and Breakdown Area</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>in each household. Servery only for special events.</td>
</tr>
<tr>
<td>Storage, Dry Food</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>includes emergency storage</td>
</tr>
<tr>
<td>Storage, Supplies</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>paper products, seasonal decorations</td>
</tr>
<tr>
<td>Storage, Meat Refrigerator</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Storage, Dairy Refrigerator</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Storage, Vegetable Refrigerator</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Cold Prep Station</td>
<td>1</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Cook Prep Station</td>
<td>2</td>
<td>60</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>
## SPACE PROGRAM (Baseline)

### Campus Center

**11/1/14**

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty.</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(1 x 2)=3</td>
<td></td>
</tr>
</tbody>
</table>

- **Oven (s)**
- **Refrigerator, Reach In**
- **Ice Machine Alcove**
- **Handwash Alcove**
- **Assembly & Cart Staging**
- **Dishwashing**
- **Potwash**
- **Soiled Holding**
- **Dietary Director Office**
- **Dietician Workroom**
- **Lounge/ Conference**
- **Locker Room, Male, Accessible**
- **Locker Room, Female, Accessible**
- **Toilet, Lav, Shower; Male, Accessible**
- **Toilet, Lav, Shower; Female, Accessible**
- **Housekeeping Closet**
- **Dining**

### Staff / Administrative Offices

<table>
<thead>
<tr>
<th>Office, Facility/ Program Director</th>
<th>0</th>
<th>120</th>
<th>0</th>
<th>in each household</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office, Administrator</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>desk with meeting table</td>
</tr>
<tr>
<td>Office, Business</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>desk with meeting table</td>
</tr>
<tr>
<td>Office, HR</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>desk with meeting table</td>
</tr>
<tr>
<td>Office, Medical Director</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Office, Nursing Director</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Office, Rehab/ Program Director</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Office, Training Director</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Office, Shared, Nursing</td>
<td>3</td>
<td>120</td>
<td>360</td>
<td>2 person</td>
</tr>
<tr>
<td>Office, Shared, Social Work</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>2 person; one shared between social work/ rehab in each household</td>
</tr>
<tr>
<td>Office, Shared, Rehab</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>2 person; one shared between social work/ rehab in each household</td>
</tr>
<tr>
<td>Dietary Director Office</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td>see Dietary</td>
</tr>
<tr>
<td>Dietician Workroom</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td>shared 2 person; see Dietary</td>
</tr>
<tr>
<td>Office, Facilities/ Engineering Director</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Copy/ Print/ Office Supply Alcove</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td>copy, printer, fax, supplies, forms</td>
</tr>
</tbody>
</table>

### Shared Support

| Conference Room, large             | 1 | 400 | 400 | 20-25 person |
| Conference Room, medium            | 1 | 200 | 200 | training, 2 computer stations |
| Conference Room, small             | 0 | 120 | 0  | see therapy/ interview/ consult room above and director offices with meeting tables |
## SPACE PROGRAM (Baseline)

**Campus Center**

11/1/14

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Break Room</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Locker Room, Accessible</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Toilet/ Lav, Staff, Accessible</td>
<td>4</td>
<td>60</td>
<td>240</td>
<td>equal male/ female</td>
</tr>
<tr>
<td>Housekeeping Closet</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td>floor sink, cart, supplies</td>
</tr>
<tr>
<td>Laundry, Housekeeping</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>1 washer/ 1 dryer, storage</td>
</tr>
<tr>
<td>Storage/ Holding, Clean Supplies</td>
<td>0</td>
<td>200</td>
<td>0</td>
<td>in each household.</td>
</tr>
<tr>
<td>Storage/ Holding, Clean Linen</td>
<td>0</td>
<td>200</td>
<td>0</td>
<td>in each household.</td>
</tr>
<tr>
<td>Soiled Holding</td>
<td>1</td>
<td>140</td>
<td>140</td>
<td>accessible handwash sink, linen, biohazard, shelf, large metal bins are located in service yard for waste, recycle and compost</td>
</tr>
<tr>
<td>Storage, Propane Tanks</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td>verify need</td>
</tr>
<tr>
<td>Storage, General</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>equipment, furniture, donations</td>
</tr>
<tr>
<td>Storage, Housekeeping</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>equipment, bulk supplies</td>
</tr>
<tr>
<td>Engineering/ Maintenance Shop</td>
<td>1</td>
<td>300</td>
<td>300</td>
<td>maintenance shop, storage</td>
</tr>
</tbody>
</table>

### Building Support

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty</th>
<th>Area (NSF)</th>
<th>Net Square Feet (NSF)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading Dock Bay</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>area for receiving, excludes outdoor space</td>
</tr>
<tr>
<td>Technology Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Electrical Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Main Technology Room</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>includes work station</td>
</tr>
<tr>
<td>Main Electrical Room</td>
<td>1</td>
<td>200</td>
<td>200</td>
<td>incl AHU, boilers, pumps, fire protection</td>
</tr>
<tr>
<td>Mechanical Room</td>
<td>1</td>
<td>500</td>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

Sub Total NSF: 10,642

Grossing Factor: 1.5

Total Building GSF: 15,963
San Mateo County Cordilleras  
Adult Residential Facility & Mental Health Rehabilitation Center

**SPACE PROGRAM (Baseline)**  
**Adult Residential Facility (ARF) - 37 beds (25% private)**  
11/1/14

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Qty. (NSF)</th>
<th>Area (NSF) (1)</th>
<th>Net Square Feet (NSF) (2)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VISITOR AREAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reception Desk</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>1 person</td>
</tr>
<tr>
<td>Lobby/ Entry Area</td>
<td>4</td>
<td>25</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Lockers</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>4 high</td>
</tr>
<tr>
<td>Visitation Room</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>may also be used for therapy or family consult</td>
</tr>
<tr>
<td>Toilet/ Lav, Accessible</td>
<td>2</td>
<td>60</td>
<td>120</td>
<td>male/female</td>
</tr>
<tr>
<td><strong>CLIENT AREAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedroom, Private</td>
<td>9</td>
<td>140</td>
<td>1260</td>
<td>includes bed, desk, chair, wardrobe unit.</td>
</tr>
<tr>
<td>Bedroom, Semi-Private</td>
<td>14</td>
<td>220</td>
<td>3080</td>
<td>includes bed, desk, chair, wardrobe unit.</td>
</tr>
<tr>
<td>Bathroom, Accessible</td>
<td>23</td>
<td>70</td>
<td>1610</td>
<td>Lav, Toilet, roll in shower</td>
</tr>
<tr>
<td>Storage, Belongings</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Meditation</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td><strong>CLINICAL CARE SUPPORT AREAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care Team Workroom/ Conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Station(s) (4 LF)</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td>computers</td>
</tr>
<tr>
<td>Meeting Table</td>
<td>6</td>
<td>25</td>
<td>150</td>
<td>for 6-8, staff mtgs, in-service training.</td>
</tr>
<tr>
<td>Copy/ Print/ Office Supply Alcove</td>
<td>1</td>
<td>60</td>
<td>60</td>
<td>copy, printer, fax, supplies, forms</td>
</tr>
<tr>
<td>Exam/ Vitals Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Medication Room</td>
<td>1</td>
<td>120</td>
<td>120</td>
<td>hand sink, computer, work counter, med storage, under counter ref., dispensing</td>
</tr>
<tr>
<td>Therapy/ Interview Room</td>
<td>0</td>
<td>120</td>
<td>0</td>
<td>shared with Visitation</td>
</tr>
<tr>
<td><strong>Group Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen/ Servery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiving and Breakdown Area</td>
<td>1</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Storage, Dry Food Pantry</td>
<td>2</td>
<td>100</td>
<td>200</td>
<td>includes emergency storage, sub divide portion to other floor.</td>
</tr>
<tr>
<td>Storage, Supplies</td>
<td>2</td>
<td>80</td>
<td>160</td>
<td>paper products, seasonal decorations. One on each floor.</td>
</tr>
<tr>
<td>Storage, Meat Refrigerator</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td>walk-in</td>
</tr>
<tr>
<td>Storage, Dairy Refrigerator</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td>walk-in</td>
</tr>
<tr>
<td>Storage, Vegetable Refrigerator</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td>walk-in</td>
</tr>
<tr>
<td>Cold Prep Station</td>
<td>3</td>
<td>25</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Cook Prep Station</td>
<td>3</td>
<td>25</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Oven (s)</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Refrigerator, Reach In</td>
<td>4</td>
<td>20</td>
<td>80</td>
<td>for all meat, diary and vegetables</td>
</tr>
<tr>
<td>Ice Machine Alcove</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Handwash Alcove</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>part of dishwashing sink station</td>
</tr>
<tr>
<td>Assembly &amp; Cart Staging</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
## San Mateo County Cordilleras
Adult Residential Facility & Mental Health Rehabilitation Center

### SPACE PROGRAM (Baseline)

**Adult Residential Facility (ARF) - 37 beds (25% private)**  
11/1/14

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
<th>Area (NSF) Qty. (1)</th>
<th>Net Square Feet (NSF) (2)</th>
<th>(1 X 2)=3</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dishwashing</strong></td>
<td>1 60</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Potwash</strong></td>
<td>1 60</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Soiled Holding</strong></td>
<td>1 60</td>
<td>60</td>
<td></td>
<td>waste, soiled linen, compost, recycle</td>
</tr>
<tr>
<td><strong>Dietary Director Office</strong></td>
<td>0 120</td>
<td>0</td>
<td>in community building</td>
<td></td>
</tr>
<tr>
<td><strong>Dietician Workroom</strong></td>
<td>0 120</td>
<td>0</td>
<td>in community building</td>
<td></td>
</tr>
<tr>
<td><strong>Lounge/ Conference</strong></td>
<td>0 120</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Alcove, Lockers</strong></td>
<td>1 20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Toilet, Lav, Shower; Male, Accessible</strong></td>
<td>1 70</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Toilet, Lav, Shower; Female, Accessible</strong></td>
<td>1 70</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Housekeeping Closet</strong></td>
<td>1 50</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dining Room</strong></td>
<td>37 25</td>
<td>925</td>
<td></td>
<td>may subdivide; Shared for dinning and group activities</td>
</tr>
<tr>
<td><strong>Rehab/ Activity Space</strong></td>
<td>37 25</td>
<td>925</td>
<td></td>
<td>may subdivide; for structured and non-structured therapies (movement, group discussion, music, education, etc.)</td>
</tr>
<tr>
<td><strong>Storage, Rehab/ Activity</strong></td>
<td>1 50</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Living Room</strong></td>
<td>4 120</td>
<td>480</td>
<td></td>
<td>TV, sofa, chairs, coffee table, 4-6 person</td>
</tr>
</tbody>
</table>

### STAFF & GENERAL SUPPORT

**1545**

| **Laundry, Residents**             | 2 120              | 240                      |          | 1 washer/ 1 dryer, lockable storage |
| **Storage, Clean Supplies/ Linen** |                   |                          |          |                                    |
| **Wire Shelving (5H; 48" x 24")**  | 3 25               | 75                       |          |                                    |
| **Clean Linen Cart**               | 6 25               | 150                      |          |                                    |
| **Soiled Holding**                 |                    |                          |          |                                    |
| **Accessibility hand sink and Counter (6 LF)** | 1 30    | 30                       |          |                                    |
| **Waste/ Compost Receptacle**      | 2 10               | 20                       |          |                                    |
| **Biohazardous Waste Receptacle**  | 1 10               | 10                       |          |                                    |
| **Recycle Receptacle**             | 1 10               | 10                       |          |                                    |
| **Soiled Linen Receptacle**        | 1 10               | 10                       |          |                                    |
| **Wire Shelving**                  | 2 20               | 40                       |          |                                    |
| **Storage, General**               | 1 120              | 120                      |          | equipment, furniture                |
| **Office, Facility/ Program Director** | 1 120          | 120                      |          | desk with meeting table             |
| **Office, Shared, Nursing/ Physicians** | 0 120      | 0                        |          | 2 person, see support building      |
| **Office, Shared, Social Work/ Rehab** | 2 120      | 240                      |          | 2 person, see support building share with Care team workroom. See support building |
| **Conference Room**                | 0 120              | 0                        |          |                                    |
| **Staff Break/ Locker Room**       | 1 140              | 140                      |          |                                    |
| **Toilet/ Lav, Staff, Accessible** | 4 60               | 240                      |          | male/ female                        |
| **Housekeeping Closet**            | 2 50               | 100                      |          | floor sink, cart, supplies          |

### Building Support

**700**

| **Technology Room**                | 2 100              | 200                      |          |                                    |
| **Electrical Room**                | 2 100              | 200                      |          |                                    |
## SPACE PROGRAM (Baseline)

**Adult Residential Facility (ARF) - 37 beds (25% private)**

<table>
<thead>
<tr>
<th>Functional Area and Room Components</th>
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<th>Net Square Feet (NSF)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Room</td>
<td>2</td>
<td>150</td>
<td>300</td>
<td>incl AHU, boilers, pumps, fire protection</td>
</tr>
</tbody>
</table>

- **Total Household**: 12,767
- **Grossing Factor**: 1.5
  - two story, no internally dedicated courtyard, 6ft corridors

- **Total Building GSF**: 19,151
Appendix E

Geotechnical Report
This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 236594

Arup North America Ltd
560 Mission Street, Suite 700
San Francisco, California 94105
United States of America

www.arup.com
## Document Verification

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<th>Job number</th>
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<td>Document title</td>
<td>Preliminary Engineering Geology and Geotechnical Engineering Feasibility Report</td>
<td>File reference 4-05</td>
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<tr>
<td>Document ref</td>
<td>236594</td>
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<tr>
<td>Revision Date</td>
<td>Filename</td>
<td>Description</td>
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<td>Draft 1</td>
<td>2014-06-06 Report_Prelim Geo Feasibility.docx</td>
<td>First draft</td>
</tr>
<tr>
<td>Prepared by</td>
<td>Checked by</td>
<td>Approved by</td>
</tr>
<tr>
<td>Tom Curran / Cheyenne Waldman</td>
<td>Martin Walker</td>
<td>Jeff Dunn</td>
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<td>Issue 2</td>
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<td>Includes reviews by CEGs</td>
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## Contents

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<tr>
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<th></th>
</tr>
</thead>
<tbody>
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<td>Project Description</td>
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</tr>
<tr>
<td>1.2</td>
<td>Scope of Work</td>
<td>1</td>
</tr>
<tr>
<td>1.3</td>
<td>Sources of Information</td>
<td>2</td>
</tr>
</tbody>
</table>

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Attachments

Attachment A Photograph Log
1 Introduction

Arup North America Ltd. (Arup) has been commissioned by the County of San Mateo, Facilities Planning, Design and Construction (Client) to undertake a preliminary engineering geology and geotechnical study to facilitate a feasibility level evaluation of engineering geological and geotechnical engineering conditions in the vicinity of the Cordilleras Mental Health Center Reconstruction project.

1.1 Project Description

From the draft Site Plan, dated May 23, 2014, and conversations with the design team representatives, Arup understands that the project will comprise the reconstruction of the existing Cordilleras Mental Health Center (Center) at 200 Edmonds Road in San Mateo County, California. The existing structure will be replaced and a total of six new structures will be built with associated utilities, retaining walls, pavements, landscaping, a creek culvert modification or relocation, and exterior flatwork improvements. Five of the new structures will each comprise one-story 10,500-square-foot structures of modular, wood frame construction.

The sixth structure will be the three-story Community Center building, with an approximate footprint of 15,000 square feet, and likely consist of a reinforced-concrete podium structure built into the hillside with a two-story, wood-frame structure above.

The existing Center is located partially within the footprint of the proposed buildings. The five single-story buildings are orientated west to east traversing the north valley floor and protected by a freestanding retaining structure cut into the valley slope. The main multi-story building is located immediately north of the central single-story building, and is cut into the north valley slopes. Cut slopes on the order of 55 feet high are proposed. Fill prisms on the order of 15 feet are proposed to contour the site the valley slope and reduce off-haul of spoils or import of fill.

Besides the building construction, the main feature of the proposed site reconstruction will be a curved retaining wall cut into the south wall of the valley. The overall length of wall will be on the order of 900 feet, with retained heights from less than 5 feet to over 50 feet.

1.2 Scope of Work

Arup (with the contribution of subconsultant Lettis Consultants International, Inc. [LCI]) has undertaken a preliminary engineering geologic study of the site, including geologic desktop study of existing information, site reconnaissance walkover survey, geotechnical evaluation, and development of preliminary recommendations.

The desk study and site reconnaissance walkover survey of the proposed site is to establish a general understanding of feasibility-level geological hazards and geotechnical conditions that could impact project costs. The site reconnaissance consisted of three geologists on site for one day surveying the site to map the local
geological features and investigating the potential for geological hazards to affect the proposed construction.

For the feasibility level preliminary geotechnical engineering evaluation, Arup focused on geotechnical design approaches considering the geological hazards and conditions at the site, incorporating information from historical boring and soil report data from nearby sites. No new ground investigation was conducted as part of this feasibility study. Although key geotechnical recommendations are proposed for the new Center, these should be considered preliminary and not be considered for final design of foundations or other geotechnical aspects of the project.

1.3 Sources of Information

Arup reviewed a variety of sources of information during the compilation of this feasibility report, including but not exclusive to:

- United States Geological Survey (USGS)
- California Geological Survey (CSG)
- County of San Mateo

For a complete list of references refer to Section 8 of this report.

The client made the following geotechnical reports available to Arup:

2 Site Information

2.1 Site Location

The site is located at 200 Edmonds Road in San Mateo County, California, Latitude 37.4736 north, Longitude 122.2862 west. The site is located about a half mile from the western outskirts of Redwood City. Figure 1 shows the location of the site in relation to the local area.

2.2 Site Description

Figure 2 is a detailed site plan locating the proposed building in the context of the immediate surrounding area.

The site is located in the confluence of two valleys roughly orientated west to east that are associated with Cordilleras Creek. Two, steeply-sided valley features to the west merge to form one valley to the east, and the site is bounded to the north and the south by the valley slopes. To differentiate the locations of site features, the valleys are herein described as the north and south valleys, and are labeled in Figure 2. Edgewood Road follows the southerly valley wall and Edmonds Road is constructed on the valley floor to provide access to the site from the east.

The valley elevations rise steeply to the west and drop gently to the east. The topographic variation is shown to be up to 250 feet from the valley floor to high points in the surrounding ridges. The valley floor is heavily vegetated with mature trees and the high-relief valley sides are vegetated with mature trees and low level scrub.

Historical topographic information and site photographs indicate the historical course of Cordilleras Creek traversed the axis of the northern valley. Utility plans for the existing Center show the creek is diverted south of the existing Center. There are a number of incised cuts into the valley slopes where north-south orientated ephemeral streams are located, each a tributary of Cordilleras Creek.

Edgewood Road, located to the south and east of the site, connects Redwood City to Highway 280. This road is located on a raised embankment as it passes to the south of site. To the west and southeast of the site Edgewood Road is cut into bedrock comprising the steep hillsides. While no mesh or rock bolts were noted in these cut slopes, a boundary fence was located at the base of the cut slopes that could collect falling rocks.

Northwest of the site a bench is cut in the hillside. A water tank occupies the bench. The water tank provides service to the existing center. An access road leads up the northern valley slope to the water tank. Neighboring the Center to the southwest are the San Mateo County Fire Station and the Canyon Oaks Youth Center structures, about 100 and 200 feet from the existing Center, respectively.
2.3 Historical Map Review

Arup reviewed historical topographic maps and available historical photographs for the site. The earliest available historical map is circa 1902. The scale and the resolution of the maps vary and detailed interpretation is limited to identifying the presence of structures and highways. Table 1 presents the maps reviewed during this study and provides a summary on the development of the area.

Table 1 Summary of Reviewed Historical Maps and Aerial Photography

<table>
<thead>
<tr>
<th>Date</th>
<th>Scale (ft)</th>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1902</td>
<td>1:125,000</td>
<td>Santa Cruz, CA, Historical Map</td>
<td>Low resolution – No development on the site, Cordilleras Creek shown to cut through center of the site, close to the northern valley slope. The orientation of Cordilleras Creek changes from ESE trending as it runs down the valley to NE trending as it runs towards San Francisco Bay. Edgewood Road bounding the site to the south and east has been constructed.</td>
</tr>
<tr>
<td>1948</td>
<td>N/A</td>
<td>Google Earth Pro Historical Aerial Photography</td>
<td>Cordilleras Mental Health Center shown on the site, under construction, San Mateo County Hospital located to the south and west of the site has been constructed. Edmonds Road providing access to the Cordilleras Mental Health Center shown as a track. Hassler Health Home located north of the site on the hill has been constructed.</td>
</tr>
<tr>
<td>1953</td>
<td>1:24,000</td>
<td>Woodside, CA, Historical Map</td>
<td>Cordilleras Creek shown to have been diverted to the south of the Mental Health Center and the County Sanitorium, which has also been constructed. Edmonds Road is shown. In the wider area Pulgas Tunnel located approximately one mile north and east of the site has been constructed.</td>
</tr>
<tr>
<td>1956</td>
<td>1:250,000</td>
<td>San Francisco, CA, Historical Map</td>
<td>Reviewed – Low resolution, no discernible information for the site.</td>
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<tr>
<td>1957</td>
<td>1:250,000</td>
<td>San Francisco, CA, Historical Map</td>
<td>Reviewed – Low resolution, no discernible information for the site.</td>
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<tr>
<td>1960</td>
<td>1:250,000</td>
<td>San Francisco, CA, Historical Map</td>
<td>Reviewed – Low resolution, no discernible information for the site.</td>
</tr>
<tr>
<td>1961</td>
<td>1:24,000</td>
<td>Woodside, CA, Historical Map</td>
<td>Reviewed – high resolution. No change noted on the site or in the immediate surrounding area.</td>
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<tr>
<td>1964</td>
<td>1:250,000</td>
<td>San Francisco, CA, Historical Map</td>
<td>Reviewed – Low resolution, no discernible information for the site.</td>
</tr>
<tr>
<td>1982</td>
<td>1:100,000</td>
<td>Palo Alto, CA, Historical Map</td>
<td>Reviewed – Medium resolution, no discernible change noted on the site. Highway 280 noted on the map.</td>
</tr>
<tr>
<td>1991</td>
<td>N/A</td>
<td>Google Earth Pro Historical Aerial Photography</td>
<td>Hassler Health Center located north of the site has been demolished, believed to have been demolished in 1985. The remaining roadways form the trails for the Pulgas Ridge Open Space Reserve. No change noted on the site.</td>
</tr>
<tr>
<td>2002</td>
<td>N/A</td>
<td>Google Earth Pro Historical Aerial Photography</td>
<td>Reviewed – No change noted on the site or in the immediate surrounding area.</td>
</tr>
</tbody>
</table>
Figure 3 presents the site with the historical features highlighted during the review of the historical land use.

### 2.4 Site Reconnaissance

On May 27, 2014, a site reconnaissance survey was performed by a team of three geologists, including a licensed Certified Engineering Geologist (CEG) and a licensed Professional Geologist (PG). A licensed Geotechnical Engineer (GE) was on site during the site safety briefing, which also included a representative from San Mateo County Facilities Planning, Design & Construction. Arup also collaborated with the Engineer of the Cordilleras Mental Health facility to obtain historical site-specific documents stored at the facility.

The purpose of the site reconnaissance was to identify local geological features (bedrock and Quaternary geology) and presence or absence of potential geological hazards (e.g., landslides, liquefiable deposits, faulting) relative to the proposed site development. Figure 4 is a site location plan showing the area reviewed during the field reconnaissance and key field observations (see Table 2 for notations). The field observation notes are summarized in Section 2.4.1 of this report, and select photographs from our site reconnaissance are included in Attachment A. Corresponding photographs of the observations are also listed in Table 2.

<table>
<thead>
<tr>
<th>Figure 4 Key</th>
<th>Photograph Log Reference No (Attachment A)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Sandstone outcrop – highly weathered, highly fractured, fine to medium grained sandstone. Structure varies from blocky to disintegrated on a 6-foot scale. Three fracture sets present.</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Highly weathered sandstone exposed along water tank access road – highly to completely weathered sandstone, friable and intermixed with slope colluvium.</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Rock cut exposure directly south of water tower. Shows a concrete patch within the bedrock that is assumed to cap a water delivery pipe.</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Cut slope beneath water tank consists of highly weathered, disintegrated to highly fractured sandstone that is commonly very friable and intensely fractured. Slope inclination of approximately 70° is relatively stable and reaches an approximate height of 8 feet.</td>
</tr>
</tbody>
</table>

Table 2 Summary of Field Observations and Photographs
<table>
<thead>
<tr>
<th>Figure 4 Key</th>
<th>Photograph Log Reference No (Attachment A)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3 and 4</td>
<td>Rock cut located directly north of water tank is 10 to 20 feet high and exposes blocky to disintegrated graywacke sandstone; same material as observed at location 1 and generally contains similar fracture orientations.</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>Culvert within tributary to Cordilleras Creek – creek has incised approximately 6 to 8 feet into artificial fill, colluvium and alluvium. Base of culvert is rusted and compromised with water accessing fill. Fill to the south of the weir appears to have been placed in the former drainage and used for the water tank access road. It appears to form, in part, a 15 to 20 feet high slope at the rear of the existing building.</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>Cut slope near building loading area – outcrop of highly weathered sandstone intermixed with loose and friable colluvium.</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>Cordilleras Creek – dry during reconnaissance, contains fluvial banks comprised of silty, gravelly sand with cobbles (alluvium). The southern creek bank is topographically higher in places due to presence of artificial fill. The creek valley widens to the south near the mental health center where it enters a culvert and is re-directed.</td>
</tr>
<tr>
<td>9 and 10</td>
<td>8 and 9</td>
<td>South slope of northern valley containing Cordilleras Creek – three distinct, northeast-facing, steep colluvial hollows intersect this slope. The slopes are inclined approximately 40 to 45° and are mantled with shallow, loose soil and sandstone clasts. No rock outcrops were noted in the main slope, but slope colluvium consisted nearly entirely of sandstone, consistent with regional mapping.</td>
</tr>
<tr>
<td>11</td>
<td>N/A</td>
<td>Sandstone outcrop, base of valley slope adjacent to fire station – sandstone outcrop is same sandstone material seen elsewhere on site, highly weathered and fractured, with blocky and closely spaced fractures.</td>
</tr>
<tr>
<td>12</td>
<td>N/A</td>
<td>North slope of northern valley – cobbles of igneous intrusive dioritic/ granitic rock noted, source of material not located. Quartz, biotite, small crystals – potentially a building material/dumped, few cobbles noted.</td>
</tr>
<tr>
<td>13</td>
<td>N/A</td>
<td>Sandstone outcrop on north slope of northern valley – disintegrated, structureless, fractures spacing of 2 to 5 inches.</td>
</tr>
<tr>
<td>14</td>
<td>N/A</td>
<td>Center recreation area boundary fence – engineered fill slope used for access road and burial of former tributary constructed from reworked alluvium and colluvium.</td>
</tr>
<tr>
<td>15</td>
<td>N/A</td>
<td>North slope of southern valley (behind fire station and youth center) – heavily vegetated slope, with no readily accessible rock outcrops due to access restrictions and dense vegetation.</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
<td>Trail north of Edmonds Road – outcrop of Whiskey Formation, red fine to medium grained massive sandstone outcrop, fractured with apparent bedding.</td>
</tr>
<tr>
<td>17</td>
<td>N/A</td>
<td>Trail north of Edmonds Road – Franciscan Complex, same as the site sandstone, large block noted, not in-situ., Boulder covered in lichen, not from recent movement – highlights the potential for rock fall.</td>
</tr>
</tbody>
</table>
2.4.1 Discussion of Observations

General Site Setting

The existing and proposed Center is located in the valley floor between two steep-sided valleys orientated west to east and southwest to northeast. The valley slopes are heavily vegetated with a mixture of juvenile and mature trees and low level shrubs. The following tree species were noted during the walkover: Oak, Bay, Laurel, and Maple. Poison oak was noted throughout all undeveloped areas of the site. Underfoot, the valley slopes were covered with loose material, comprising dry soil, leaves, and gravel- to cobble-sized weathered sandstone.

LiDAR Observations

We obtained LiDAR topographic imagery of the site from the USGS to assist in our desktop review. Shallow depressions on the southern slope of the north valley were noted in the LiDAR imagery, and confirmed to be colluvial hollows during the field reconnaissance survey. The hollows were vegetated with small trees and shrubs. No youthful headscarp was evident; however, any potential landslide-related features were masked by the organic debris, vegetation, and slope colluvium. These features are not believed to be historical based on appearance.

On the hillside, a northwest-southeast trending linear scar marks the location of a PG&E gas line located directly offsite. The northern valley wall was not traversed due to the thick covering of poison oak. Review of the LiDAR topographic imagery of the northern valley slope, west of the property line indicates the presence of
geomorphic expressions similar in nature to the shallow depressions noted in the southern valley slope. The features indicate the potential for slope instability up the valley from the property on both the northern and southern valley slopes.

**Hydrologic Setting**

Cordilleras Creek, an ephemeral creek, incises the northern valley immediately adjacent to a man-made track cut into the northern valley slope. The topography in this area is variable, as the creek has incised through the valley and some fill has been placed immediately south of the creek in localized area. The topographic variation between the creek base and the valley floor is in excess of 15 feet in some locations. The thickness of the surficial deposits, were not constrained in this location, but were estimated to be up to 30 feet in some areas of the valley floor. Immediately west of the site Cordilleras Creek is culverted beneath the existing Center through a weir structure, and then passes to the south of the existing building where it connects to a pumping station located at the east/northeast boundary of the existing site. An unnamed ephemeral creek located immediately north/northeast of the site is also culverted into the pumping station, the steel culvert pipe had eroded and water will flow freely within the surficial material. The pumping station pumps water into the water tower located northwest of the site at a level of approximately 150 feet above the site.

A PG&E natural gas distribution pipeline traverses the steep slopes and Cordilleras Creek valley directly north of the site boundary. The pipeline traverses the creek on an elevated platform approximately 8 feet above the channel thalweg and in places has been undermined by channel bank incision. It does not appear to be at immediate risk of instability.

During the site reconnaissance survey, the facilities engineer for the Center indicated that the existing building basement floods seasonally in winter water occasionally enters the boiler room. The boiler room is a subgrade portion of the existing Center’s basement structure in the approximate location of the historical channel.

**Surficial Deposits**

Surficial deposits encountered at the site consist of artificial fill, colluvium and alluvium. Mapping of the surficial and bedrock geology was completed during field reconnaissance. The mapping results and interpretation of topographic and LiDAR were compiled to generate Figure 4. A brief description of the observed deposits is as follows:

- **Artificial Fill:** The artificial fill appears to have been predominantly derived from reworked alluvium, colluvium, and local bedrock. The fill occupies the previous creek valleys and thalwegs, is used for road base on various access roads, and also forms discrete mounds within the valley bottoms.

- **Colluvium and Alluvium:** Quaternary alluvium and colluvium are derived from Cordilleras Creek and hillslope processes. Where exposed, the colluvium appears to have been derived from the weathering of the shallow graywacke sandstone and consists of silty sand and angular gravel. Limited exposures of the alluvium
indicate the presence of poorly bedded to massive silty sand and gravel. The modern thalweg contains abundant subangular to subrounded cobble-sized clasts, suggesting winnowing of adjacent fluvial deposits coupled with periodic high flow conditions. The modern day creek channels are incised into older Quaternary deposits ranging from five to ten feet in depth. In the valley floor, within the footprint of the proposed mental health center, the alluvial material is considered to be in excess of 20 feet in certain locations.

For reference, a vicinity geologic map is included as Figure 5.

**Bedrock Material**

Rock outcrops were mapped in the valley margins surrounding the site and in road cuts alongside Edmonds and Edgewood Roads. The geological map by Brabb et al. (1998) indicates the site is underlain by sheared mélange of the Franciscan Complex (KJfsr) that is in fault contact with the Whiskey Hill Formation (Tw; a sandstone interbedded with shale) 300 feet east of the current Center structure. Brabb et al. (1998) describe the bedrock material as:

- **Franciscan Complex sheared rock (mélange) (KJfsr)** – “Predominantly graywacke, siltstone and shale, substantial portions of which have been sheared, but includes hard blocks of all other Franciscan rock types. Total thickness of unit is unknown, but is probably several tens of meters”.

- **Whisky Hill Formation (middle and lower Eocene) (Tw)** – “Light gray to buff coarse-grained arkosic sandstone, with light-gray to buff silty claystone, glauconitic sandstone and tuffaceous siltstone. Sandstone beds constitute about 30 percent of map unit. Tuffaceous and silty claystone beds are expansive. Locally, sandstone beds are well cemented with calcite. In places within this map unit, sandstone and claystone beds are chaotically disturbed. The formation is as much as 900 meters thick”.

The outcrops investigated on the site are recorded on Figure 4 and in Table 2. The observed bedrock outcrops at the site typically occurred at topographic protrusions at the base of the valley slopes. The northern valley had more rock exposures, noted along the access road to the water tank and in the cut behind the watertank.

The rock outcrops encountered during the field reconnaissance confirmed the presence of Franciscan Complex graywacke sandstone (KJfsr in Brabb et al., 1998). Where encountered, the graywacke typically consisted of a massive brown to mottled grey and orange, fine-to-medium-grained, sandstone. Arup and LCI interpret that the sandstone encountered on the site is part of the sheared mélange of the Franciscan Complex. No bedding was observed, nor were distinct shear zones evident. The sandstone quality ranged from blocky (widely spaced fractures) to closely-spaced and disintegrated, friable sandstone. Several fracture sets were recorded within the few exposures observed during the reconnaissance, with three relatively common fracture orientations. The following structural information (strike in azimuthal direction and dip direction) were recorded in the northern valley slope rock outcrops and few observed southern valley outcrops near the fire station:

- 330°/85°E (Dominant)
Franciscan Complex mélange and sandstone of unit KJfsr were noted in road cuts from Edgewood Road to the east of the site. The following observations were made about both of the materials:

- Weathered fractured sandstone cut of approximately 70°. A boundary fence at the base of the slope was present. Limited raveling and debris were observed at the base of the slope. No netting or nailing was observed in the slope.
- The mélange in the road cut, was sloped to approximately 60°. At the base of the slope, loose debris and cobbles were noted, indicative of slope erosion and raveling.

The contact between the Franciscan Complex mélange and Whiskey Hill Formation as mapped by Brabb et al. (1998) was not identified during the reconnaissance; however, Whiskey Hill (Tw) graywacke sandstone was observed in the valley slopes northeast of the site along Edmonds Road and the sheared sandstone and shale (KJfs) was noted at the junction between Edgewood Road and Edmonds Road. The following observations were made regarding the above materials:

- The Whiskey Hill Formation is a massive, red, fine-to-medium-grained sandstone. Apparent bedding orientation of 030º (strike) and 23ºNW (dip) were noted. The contact between the Whiskey Hill Formation and the Franciscan Complex is shown as a fault contact located 300 feet east of the site.
- The sandstone and shale (KJfs) of the Franciscan Complex was evident in an engineered cut slope with an angle of approximately 55-60°. The exposed face was completely weathered and disintegrated. The slope was supported with temporary netting and straw wattles.

As mapped by Brabb et al. (1998), these formations do not intersect the site. Similar material was not observed in the limited exposures during the site walkover survey.

### 2.4.2 Summary of Site Reconnaissance

The following key observations were made during the site visit:

- As many as three swales or colluvial hollows are present along the southern hillside of the north valley directly above the proposed development. These features do not appear to have moved recently, however their geomorphic expression suggests shallow slope movement may have occurred in the past.
- Bedrock consists predominantly of Franciscan Complex graywacke sandstone. The bedrock is highly weathered, and ranges from large blocks to finely fractured, disintegrated and friable angular clasts. Low cut slopes of relatively limited lateral extent were observed at the water tank, access roads, and along Edgewood Road indicate that this sandstone is capable of maintaining relatively steep slopes without additional support.
• Surficial deposits of colluvium, alluvium and artificial fill occupy much of the site and may approach thicknesses greater than 25 feet. It is presumed that some or most these deposits are saturated within the valley floor.

• Cordilleras Creek flows within the north valley and enters a culvert at the northwestern margin of the existing development. A tributary to Cordilleras Creek located to the north of the existing site also enters a culvert. The historical Cordilleras Creek is mapped as intersecting the center of the present-day site and would have intersected the boiler room of the existing building.
3 Site Geology

The site reconnaissance survey confirmed the observations from the desktop review and added specific geologic and geotechnical observations relevant to the site.

3.1 Geological Setting

3.1.1 Regional Geologic Setting

The proposed site is located within the Coast Ranges geomorphic province (CGS Note 36, 2002) on the San Francisco Peninsula. The site is situated on the San Francisco Bay structural block located to the east of the San Andreas Fault (Nilsen and Brabb, 1979). The site is located within the Franciscan Complex basement, specifically shear mélange (Unit KJfsr). Pampayen et al. (1994) notes that in the San Francisco Bay block sheared rock is the most dominant unit. This unit also contains inclusions of greenstone, graywacke, glaucophane schist and chert. Younger Cenozoic coarse- to fine-grained sedimentary units overlay much of the San Francisco Peninsula.

3.1.2 Local Geologic Setting

Geological Map Review

Review of the USGS map publication Geology of the onshore part of San Mateo County, California (Brabb et al., 1998)' indicates that the site is underlain by ‘Sheared rock (Franciscan Complex mélange) (KJfsr)’. The geological map includes the following note regarding this unit comprises “predominantly graywacke, siltstone, and shale, substantial portions of which have been sheared, but includes hard blocks of all other Franciscan rock types. Total thickness is unknown, but is probably at least several tens of meters” (1998).

The geological map indicates that surficial material is located within the valley, and is described as, “Alluvial fan and fluvial deposits (Pleistocene)” (Unit Qpaf) or out studies (QT). The geologic map includes the notation that this material comprises “brown dense gravelly and clayey sand or clayey gravel that fines to sandy clay. All Qpaf [inferred as Pleistocene] deposits can be related to modern stream courses and display variable sorting” (Brabb et al., 1998).

An excerpt of the Brabb et al. (1998) geological map is shown in Figure 3 indicating the site location. The site is located approximately 1 mile east-northeast of the San Andreas Fault zone. The geologic map indicates that there are many faults within close proximity of the site although none directly intersect the site. The faulting in the area has led to complex bedrock structures and the juxtaposition of different units within close proximity of the site. The geologic map (Brabb et al., 1998) indicates the presence of the following units within 5 miles of the site:

- Tw – Whiskey Hill Formation (middle and lower Eocene) sandstone, siltstone and claystone beds,
• KJfs – Sandstone, coarse grained graywacke sandstone, with interbedded siltstone and shale,
• KJsp – Serpentine (cretaceous and/or Jurassic) sheared serpentine, enclosing variably abundant,
• KJfg – Greenstone, altered basaltic rocks.

**Historical Ground Investigation Reports**

Review of the historical ground investigation reports for sites within close proximity of the Center (listed in Section 1.3) provide very limited ground investigation data. In general, these data suggest variable alluvial materials overlying bedrock.

The surficial deposits (fill, alluvium and colluvium) are shown to range in thickness from 1 foot to greater than 21.5 feet and are expected to be thickest within the center of the valley. This is partly due to the presence of the historical location of Cordilleras Creek and where fill has been placed as part of the creek’s diversion into a buried culvert. The placement and type of fill used for the culvert and creek diversion are not described in the historical investigation data available for this review. Quantitative determination of the depth of existing fill or alluvial material in the proposed building footprints was beyond the scope of this feasibility-level investigation.

The historical exploratory borehole logs from the site vicinity describe the surficial material as:

**Artificial Fill:** The artificial deposits are reported to a depth of 5.5 feet and typically consist of – ‘moist gray brown loose to dense clayey to sandy GRAVEL (Base Rock)’ scattered charcoal is occasionally reported in the borehole logs’. This material has a USCS classification of SC.

**Alluvial Deposits:** The alluvial deposits are reported to a depth in excess of 21.5 feet and are typically described as – ‘clayey GRAVEL to sandy CLAY, moist, brown medium stiff/dense grading to stiff/dense with depth’. The proportion of the minor soil constituent varies between the fine-to coarse-grained soil classification from GC to CL. This description of the variation in the minor soil constituent is consistent with the depositional environment for recent narrow creeks and the USGS geological map (Jo Crosby & Associates, 1998).

**Bedrock:** The depth to bedrock increases in the center of the valley in the location of the existing Center. The bedrock material is reported as fractured shale and sandstone of the Franciscan Complex. The bedrock is also noted to have closely spaced fractures that are clay-lined. These findings are consistent with the USGS geologic map (Brabb et al., 1998).

**Existing Building Plans**

Arup reviewed the architectural and structural plans for the existing building, which included a plan with bedrock contours based on the Dames and Moore (1949) ground investigation. The bedrock contour plan indicates that bedrock is highly variable.
beneath the site to a depth of 245 feet elevation, with the current ground surface surveyed between 290 and 300 feet elevation. This indicates the potential for surficial deposits to be approximately 50 feet thick (Douglas Dacre Stone Architects, 1949).

### 3.2 Walkover Survey Information

The walkover survey, summarized in Section 2.4 of this report resulted in the following observations regarding the Quaternary and bedrock geology of the site:

- **Quaternary Geology:**
  - Surficial deposits of colluvium and alluvium are present in the valley floor and hillsides and appear to be in excess of 20 feet thick.
  - Man-made fill comprised of reworked colluvium and alluvium is present in the location of the existing building and water tank access road.

- **Bedrock:**
  - Limited exposures of bedrock indicate the presence predominantly of a brown, mottled grey to orange, fine-to medium-grained sandstone of the Franciscan Complex that ranges from competent to highly weathered and friable, blocky to disintegrated.
  - Limited structural information available indicate variable fracture orientations such as: 330°/85°E (dominant/low population of sampling data), with intersecting orientations of 050°/88°SE and 020°/25°NE. These generally developed a blocky structure to the bedrock.

### 3.3 Hydrogeological Setting

Arup has reviewed CDWR Bulletin 118 (2003), which indicates that the site is not located in a groundwater basin. The site and surrounding area is characterized by small ephemeral creeks occupying narrow steep-sided valleys. The depth to bedrock is often shallow, with bedrock recorded at surface in many of these locations.

Cordilleras Creek, dry during the site visit, is understood to contain flow following precipitation events. The site is understood to experience seasonal, localized flooding. The groundwater level is considered to fluctuate seasonally. As noted previously, the creek is culverted across much of the site. The depositional history of the valley may have resulted in interbedded granular and cohesive deposits, which could result in perched groundwater. It is understood that artesian conditions are possible during the wet season.
4 Site Geological Hazards

This desktop study, supplemented by field reconnaissance, has identified several potential geologic hazards at the site. Section 4 briefly summarizes the hazard and provides commentary on the associated risks and consequences. Qualitative magnitudes of the risk are provided in a risk register in Section 5.

4.1 Faulting and Seismicity

The site is located within the San Francisco Bay structural block, an area traversed by a series of northwest trending faults, including the San Andreas Fault, Pilarcitos Fault, San Gregorio Fault, and Seal Cove Fault (Pampeyan 1994). Figure 6 shows the known active and potentially active fault traces within a 50-mile radius of the site. The closet active fault to the site is the San Andreas Fault (Canada Fault splay) that is 1 mile west of the site.

Arup has reviewed USGS, CGS, and County of San Mateo information on active fault locations and prepared Table 3 summarizing information on the faults located within 50 miles of the site.

The following fault activity definition has been applied for the compilation of Table 3:

- CGS defines an active fault as displaying evidence of movement within the Holocene Epoch (past 11,000 years) and a potentially active fault as displaying evidence of movement within the Quaternary Period.

The following fault activity definition has applied for the compilation of Figure 6:

- USGS Quaternary active faults are defined as faults that have slipped within the Quaternary Period (past 1,800,000 years).
### Table 3  Fault Properties of Active Faults within 50 miles of the Site

<table>
<thead>
<tr>
<th>Fault Name/ Zone</th>
<th>Fault Type</th>
<th>Slip Rate (mm/yr)</th>
<th>Distance and Bearing to Cordilleras Site</th>
<th>*Maximum Predicted Earthquake</th>
<th>*Estimated Recurrence Interval (yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moment (Mw)</td>
<td>MMI Shaking</td>
</tr>
<tr>
<td><strong>Faults with ground rupture within recorded history – since 1776</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Andreas Fault (including Canada Fault)</td>
<td>Right-Lateral Strike-Slip</td>
<td>&gt;5</td>
<td>2 miles west</td>
<td>8.4</td>
<td>XI</td>
</tr>
<tr>
<td>Hayward Fault Zone</td>
<td>Right-Lateral Strike-Slip</td>
<td>&gt;5</td>
<td>20 miles east</td>
<td>6.9</td>
<td>IX</td>
</tr>
<tr>
<td>Greenville Fault</td>
<td>Right Lateral Strike-Slip with Normal movement</td>
<td>1-5</td>
<td>45 miles east</td>
<td>6.9</td>
<td>IX</td>
</tr>
<tr>
<td>Butano Fault</td>
<td>Right Lateral Strike-Slip</td>
<td>&lt;0.2</td>
<td>40 miles south</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td><strong>Faults with Holocene activity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seal Cove-San Gregorio</td>
<td>Right-Lateral Strike-Slip</td>
<td>0.75</td>
<td>15 miles north-west</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>San Gregorio Fault</td>
<td>Right-Lateral Strike-Slip</td>
<td>0.75</td>
<td>12 miles west</td>
<td>7.1</td>
<td>IX</td>
</tr>
<tr>
<td>Calaveras Fault Zone</td>
<td>Right-Lateral Strike-Slip</td>
<td>1</td>
<td>25 miles east</td>
<td>6.9</td>
<td>IX</td>
</tr>
<tr>
<td>Greenville Fault</td>
<td>Right Lateral Strike-Slip with Normal movement</td>
<td>1-5</td>
<td>45 miles east</td>
<td>6.9</td>
<td>IX</td>
</tr>
<tr>
<td>Green Valley Fault</td>
<td>Right-Lateral Strike-Slip</td>
<td>0.75</td>
<td>50 miles north-east</td>
<td>7.0</td>
<td>IX</td>
</tr>
<tr>
<td>Concord Fault</td>
<td>Right-Lateral Strike-Slip</td>
<td>0.75</td>
<td>50 miles north-east</td>
<td>7.0</td>
<td>IX</td>
</tr>
<tr>
<td>Rodgers Creek Fault</td>
<td>Right-Lateral Strike-Slip</td>
<td>&gt;5</td>
<td>50 miles north-east</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>Mount Diablo Thrust Fault</td>
<td>Thrust Fault</td>
<td>Unknown</td>
<td>42 miles north-east</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>Sargent Fault</td>
<td>Normal with Right Slip movement</td>
<td>0.3</td>
<td>40 miles south east</td>
<td>6.4</td>
<td>VIII</td>
</tr>
</tbody>
</table>
### Fault Name/Zone

<table>
<thead>
<tr>
<th>Fault Name/Zone</th>
<th>Fault Type</th>
<th>Slip Rate (mm/yr)</th>
<th>Distance and Bearing to Cordilleras Site</th>
<th><em>Maximum Predicted Earthquake</em></th>
<th><em>Estimated Recurrence Interval (yr)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monte Vista Fault</td>
<td>Thrust Fault with Right Lateral movement</td>
<td>0.2-1</td>
<td>15 miles south-east</td>
<td>7.1</td>
<td>IX</td>
</tr>
<tr>
<td>Pleasanton</td>
<td>Right-Lateral Strike-Slip</td>
<td>&lt;0.2</td>
<td>40 miles north-east</td>
<td>5.5</td>
<td>VII</td>
</tr>
<tr>
<td>Verona Fault</td>
<td>Thrust</td>
<td>N/A</td>
<td>35 miles east</td>
<td>6.8</td>
<td>IX</td>
</tr>
<tr>
<td>Los Politas Fault</td>
<td>Left Lateral Strike-Slip</td>
<td>Unknown</td>
<td>38 miles east</td>
<td>6.3</td>
<td>VIII</td>
</tr>
</tbody>
</table>

Source: USGS, CGS 2010

*Maximum predicted earthquake and recurrence interval based upon cumulative damage potential from earthquake ground shaking memoir accompanying map I-1257-I (Perkins, 1987).
Seismicity refers to the frequency, distribution, and intensity of earthquakes in a specific geographic area. Historical seismicity has been reviewed using the Modified Mercalli Intensity (MMI) scale of 1930. The USGS provides quantitative measurement of earthquake moment magnitude (Mw) and Peak Ground Accelerations (PGA) and relates the qualitative MMI scale to PGA, as shown in Table 4.

Table 4  MMI v PGA Empirical Correlation (from USGS Website)

<table>
<thead>
<tr>
<th>PERCEIVED SHAKING</th>
<th>Not felt</th>
<th>Weak</th>
<th>Light</th>
<th>Moderate</th>
<th>Strong</th>
<th>Very strong</th>
<th>Severe</th>
<th>Violent</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTENTIAL DAMAGE</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Very light</td>
<td>Light</td>
<td>Moderate/Heavy</td>
<td>Heavy</td>
<td>Very Heavy</td>
<td></td>
</tr>
<tr>
<td>PEAK ACC (g)</td>
<td>&lt;0.1</td>
<td>0.1-1.1</td>
<td>1.1-3.4</td>
<td>3.4-9.2</td>
<td>9.2-18</td>
<td>15-34</td>
<td>34-60</td>
<td>60-124</td>
<td>&gt;124</td>
</tr>
<tr>
<td>PEAK VEL (cm/s)</td>
<td>&lt;0.1</td>
<td>0.1-1.1</td>
<td>1.1-3.4</td>
<td>3.4-9.2</td>
<td>9.2-18</td>
<td>15-34</td>
<td>34-60</td>
<td>60-115</td>
<td>&gt;115</td>
</tr>
<tr>
<td>INSTRUMENTAL INTENSITY</td>
<td>I</td>
<td>II-III</td>
<td>IV</td>
<td>V</td>
<td>VI</td>
<td>VII</td>
<td>VIII</td>
<td>IX</td>
<td>X</td>
</tr>
</tbody>
</table>

4.1.1 Surface Rupture

Surface rupture occurs when movement on a fault causes an offset in the Earth’s surface and is addressed in the Alquist Priolo Act of 1972. The Alquist Priolo fault zone maps developed by the CGS (formerly the California Division of Mines and Geology [CDMG]) delineate the surface location of known active and potentially active fault traces using 7.5-minute quadrangle maps. The Cordilleras Mental Health Center is located within the Woodside quadrangle (CDMG, 1974). Review of this map indicates that there are no known active or potentially active faults crossing the site. Review of the USGS Quaternary fault map (Sleeter et al 2004) and the USGS geological map of San Mateo quadrangle (Brabb et al., 1998) indicates that no known faults cross through the site. Figure 6 shows the known active and potentially active fault traces within close proximity to the site. The desk-based review did not indicate the presence of active fault traces intersecting the site. During the site reconnaissance and based on limited exposures, no fault-related geomorphic features were noted.

The majority of the site is steep and rugged and covered with dense vegetation, and culturally modified, all of which greatly reduce the likelihood of preserving evidence of recent surface-fault rupture. The site is located approximately 2 miles to the east of the active San Andreas fault zone, so there could be a remote possibility of potentially unmapped fault traces within the site vicinity. However, based on an overall review of available published and unpublished information, there is a low risk of fault rupture at the site.

4.1.2 Historical Ground Shaking

The USGS and CGS have published multiple maps and databases categorizing historical earthquakes (CGS, 2014 and USGS, 2014). These databases typically include information on epicenter location, earthquake magnitude, causative fault, rupture length and area. These widely available published maps and databases have been reviewed to evaluate the frequency, distribution and intensity of historical earthquakes in relation to the site. Table 5 is a selected list of significant earthquakes (>6.0 and MMI Zone Value >III) recorded in the region.
Table 5  Selected Historical Earthquakes near Cordilleras Mental Health Center

<table>
<thead>
<tr>
<th>Date</th>
<th>Moment Magnitude (Mw)</th>
<th>MMI at the Site</th>
<th>Epicenter</th>
<th>Name or Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1838 Jun</td>
<td>7.4</td>
<td>VIII</td>
<td>37.3, -122.15</td>
<td>San Francisco to San Juan Bautista</td>
</tr>
<tr>
<td>1858, Nov 26</td>
<td>6.2</td>
<td>VI</td>
<td>37.5, -121.8</td>
<td>San Jose region</td>
</tr>
<tr>
<td>1864, Feb 26</td>
<td>6.1</td>
<td>V</td>
<td>37.2, -121.6</td>
<td>Southeast of San Jose</td>
</tr>
<tr>
<td>1864, Mar 5</td>
<td>6</td>
<td>V</td>
<td>37.6, -121.855</td>
<td>East of San Francisco Bay</td>
</tr>
<tr>
<td>1865, Oct 8</td>
<td>6.5</td>
<td>VII</td>
<td>37.2, -121.9</td>
<td>Santa Cruz Mountains</td>
</tr>
<tr>
<td>1866, Jul 15</td>
<td>6</td>
<td>II-IV</td>
<td>37.7, -121.5</td>
<td>Western San Joaquin Valley</td>
</tr>
<tr>
<td>1868, Oct 21</td>
<td>7</td>
<td>VII</td>
<td>37.7, -122.1</td>
<td>Hayward Fault</td>
</tr>
<tr>
<td>1881, Apr 10</td>
<td>6.3</td>
<td>V</td>
<td>37.3, -121.3</td>
<td>Western San Joaquin Valley</td>
</tr>
<tr>
<td>1889, May 19</td>
<td>6</td>
<td>V</td>
<td>38.1, -121.8</td>
<td>Montezuma Hills</td>
</tr>
<tr>
<td>1892, Apr 19</td>
<td>6.6</td>
<td>V</td>
<td>38.4, -122</td>
<td>Vacaville</td>
</tr>
<tr>
<td>1892, Apr 21</td>
<td>6.4</td>
<td>II-IV</td>
<td>38.5, -121.9</td>
<td>Winters</td>
</tr>
<tr>
<td>1898, Mar 31</td>
<td>6.4</td>
<td>V</td>
<td>38.2, -122.5</td>
<td>Mare Island</td>
</tr>
<tr>
<td>1903, Jun 11</td>
<td>6.1</td>
<td>V</td>
<td>37.2, -121.8</td>
<td>San Jose</td>
</tr>
<tr>
<td>1903, Aug 03</td>
<td>6.2</td>
<td>VI</td>
<td>37.3, -121.8</td>
<td>San Jose</td>
</tr>
<tr>
<td>1906, Apr 18</td>
<td>7.8</td>
<td>VIII</td>
<td>37.7, -122.5</td>
<td>Great 1906 EQ</td>
</tr>
<tr>
<td>1911, Jul 01</td>
<td>6.4</td>
<td></td>
<td>37.25, -121.75</td>
<td>Southeast of San Jose</td>
</tr>
<tr>
<td>1984, Apr 24</td>
<td>6.2</td>
<td></td>
<td>37.3, -121.676</td>
<td>Morgan Hill</td>
</tr>
<tr>
<td>1989, Oct 18</td>
<td>6.9</td>
<td></td>
<td>37.0, -121.877</td>
<td>Loma Prieta</td>
</tr>
</tbody>
</table>

Source: CGS online, 2014

Review of Table 5 indicates that the site has experienced severe shaking in historical time from a number of large earthquakes. The greatest recorded earthquake likely to have affected the site during historical time is the 1906 Great San Francisco earthquake (Mw 7.8).

The existing buildings also would have experienced severe shaking during the 1989 Loma Prieta earthquake. The USGS shakemap of the Loma Prieta earthquake shows that the site experienced an estimated PGA of 0.2g (2003). No information was provided to Arup on the performance of the building post Loma Prieta earthquake.

In 2007, The Working Group on California Earthquake Probabilities (with the USGS) revised its evaluation of the probabilities of significant earthquake occurrence in the San Francisco Bay Area. The 2007 report concludes there is a 93% probability that at least one magnitude 6.7 or higher earthquake will occur in the region in the following 30 years.
Review of the USGS and CGS databases of historical earthquakes which would have impacted the site, indicates that the site is located within a seismically active area impacted by more than 15 earthquakes Mw>6 with MMI rating >III within the historical record set. Given the frequency of earthquakes Mw>6 with MMI rating >III or higher, within the lifetime of the proposed structure it is anticipated that the site will experience significant seismic events.

4.1.3 Simplified Seismic Design Parameters

The proposed structures should be designed to resist the lateral forces generated by earthquake shaking in accordance with local design practice. This section presents seismic design criteria for use with the 2012 International Building Code (IBC, 2013) California Building Code (CBC).

The 2013 CBC refers to the design code by American Society of Civil Engineers (ASCE 7-10) for the development of site-specific response spectra. Values calculated by the USGS Design Maps website based on the 2013 CBC are tabulated below. Inputs of latitude, longitude, and soil profile type (determined in accordance with 2013 CBC §1613) are required. Site classes B and D have been selected for seismic design at this site for buildings founded on bedrock and soil, respectively, and the recommended design parameters are provided in Table 6 and Table 7 below. Final seismic design recommendations should be completed when a design-level geotechnical investigation has been completed and a foundation system has been selected. We have assumed the facility is a seismic risk category I/II/III. If the proposed structures are considered risk category IV, these recommendations should be revised during future design evaluations.

<table>
<thead>
<tr>
<th>Table 6 USGS Hazard Calculator Seismic Parameters for Site Class B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 37.4737° N  Longitude: 122.2859° W</td>
</tr>
<tr>
<td>Mapped Peak Ground Acceleration MCEG</td>
</tr>
<tr>
<td>Short-Period MCE_R at 0.2s</td>
</tr>
<tr>
<td>1.0s Period MCE_R</td>
</tr>
<tr>
<td>Soil Profile Type</td>
</tr>
<tr>
<td>PGA Site Coefficient</td>
</tr>
<tr>
<td>Short Period Site Coefficient</td>
</tr>
<tr>
<td>1.0s Period Site Coefficient</td>
</tr>
<tr>
<td>Adjusted MC Spectral Response Parameters</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Spectral Acceleration Parameters</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Long-Period Transition Period</td>
</tr>
</tbody>
</table>
Table 7  USGS Hazard Calculator Seismic Parameters for Site Class D

<table>
<thead>
<tr>
<th></th>
<th>Latitude: 37.4737° N</th>
<th>Longitude: 122.2859° W</th>
<th>ASCE 7-10 Table/Figure</th>
<th>Factor/Coefficient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mapped Peak Ground Acceleration MCEG</td>
<td>Figure 22-7</td>
<td>PGA</td>
<td></td>
<td></td>
<td>0.911g</td>
</tr>
<tr>
<td>Short-Period MCEG at 0.2s</td>
<td>Figure 22-1</td>
<td>Ss</td>
<td></td>
<td></td>
<td>2.363g</td>
</tr>
<tr>
<td>1.0s Period MCEG</td>
<td>Figure 22-2</td>
<td>S1</td>
<td></td>
<td></td>
<td>1.134g</td>
</tr>
<tr>
<td>Soil Profile Type</td>
<td>Table 20.3-1</td>
<td>Site Class D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PGA Site Coefficient</td>
<td>Table 11.8-1</td>
<td>Fpga</td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Short Period Site Coefficient</td>
<td>Table 11.4-1</td>
<td>Fa</td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>1.0s Period Site Coefficient</td>
<td>Table 11.4-2</td>
<td>Fv</td>
<td></td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Adjusted MC Spectral Response Parameters</td>
<td>Equation 11.8-1</td>
<td>PGA_M</td>
<td></td>
<td></td>
<td>0.911g</td>
</tr>
<tr>
<td></td>
<td>Equation 11.4-1</td>
<td>SmS</td>
<td></td>
<td></td>
<td>2.363g</td>
</tr>
<tr>
<td></td>
<td>Equation 11.4-2</td>
<td>Sm1</td>
<td></td>
<td></td>
<td>1.701g</td>
</tr>
<tr>
<td>Spectral Acceleration Parameters</td>
<td>Equation 11.4-3</td>
<td>SDS</td>
<td></td>
<td></td>
<td>1.575g</td>
</tr>
<tr>
<td></td>
<td>Equation 11.4-4</td>
<td>Sd1</td>
<td></td>
<td></td>
<td>1.134g</td>
</tr>
<tr>
<td>Long-Period Transition Period</td>
<td>Figure 22-12</td>
<td>T_L</td>
<td></td>
<td></td>
<td>12s</td>
</tr>
</tbody>
</table>

Based on the seismic design parameters calculated by the USGS Design Maps website, and per 2013 CBC § 1613.3.4 and § 1613.3.5, structures of Seismic Risk Category I, II, III, (defined in 2013 CBC Table 1604.5) should be designed according to Seismic Design Category “E” for both soil profiles B and D.

4.1.4  Liquefaction

The walkover survey identified surficial deposits in the footprint of the proposed Center. The surficial deposits were mapped as native alluvium and colluvium and artificial fill. The thickness of the deposits is poorly constrained but believed to be greater than 20 feet based on available historical borehole information and interpretation of the structural plans of the existing Center. There is sparse geotechnical information on the lithologic variability of these deposits; however available historical borehole logs from the Cordilleras Community Treatment Facility, located immediately south of the proposed site within the valley floor indicate that alluvial deposits exceed 21.5 feet in depth. The borehole logs identify the soil as ‘sandy CLAY and clayey sandy GRAVEL’.

Review of the liquefaction susceptibility map of San Mateo County (Perkins and Youd, 1987) indicates there is a moderate to low (0.1 to 1.0%) risk of liquefiable soils being present on the site. More recent and detailed mapping by Witter et al. (2006) map the Cordilleras Creek valley floor as having moderate susceptibility to liquefaction.

With the code-based peak ground acceleration (PGA_M) value of 0.911 g, during the design seismic event, some cyclic softening of clay soils and liquefaction of sandy soils should be anticipated. Effects of liquefaction in the alluvial or fill materials include adverse lateral loads on deep foundation elements (piles) and differential settlement beneath foundations bearing in soil.
Considering the anticipated ground shaking, and the potential for cyclic strength loss during shaking, deep foundations deriving bearing capacity and lateral force resistance in the bedrock would be the optimum foundation design concept. Retaining walls with retained heights greater than 8 feet should also be supported by foundations deriving their bearing capacity bearing in the bedrock. The low-rise structures could be founded on structural mat slabs, provided that post-earthquake settlements on the order of a few inches could be tolerated and grading for building ingress/egress could be subsequently addressed as a post-earthquake repair measure. Underground utility connections to the buildings should be flexible to permit horizontal and vertical relative movement between the structures and the soil.

4.2 Slope Stability

No active landslides are mapped at the location of the site. Based on a review of the USGS map MF-2325-H (Locations of Damaging Landslides in San Mateo County, California, Resulting from 1997-98 El Niño Rainstorms, 1999), no damaging landslides occurred within five miles of the site. USGS map OFR 97-745C (Summary Distribution of Slides and Earth Flows in San Mateo County, California, 1997) indicates that the site is located in an area classified as having few landslides. USGS map I-1257D (Hillside Materials, San Mateo County, California, 1985) shows that slopes across the site vary from 0 to 15 percent near the base of the valley and increase up to 50 percent for the valley hillsides.

The site reconnaissance covered only a small portion of accessible topography at the site and did not identify any active slope instabilities, other than the presence of colluvial hollows and a possible landslide located northeast and outside of the site boundary. Evidence of historical slope movement and potential for recurrence of such movement was identified and is described below.

4.2.1 Static Landslides

Examination of available USGS LiDAR and topographic data indicates that much of the site shows evidence for the absence of landslide related geomorphology. Static slope creep is prevalent based on bowed trees and leaning boundary fences. Published geologic maps of the region also do not show any known active landslides within the site boundary.

4.2.2 Rainfall-Induced Landslides

Water in and on a slope is a common agent that can cause erosion and slope instability. For instance, during periods of intense rainfall, coupled with high infiltration rates, water causes pore pressures in slope soils to increase, which can lead to slope failure. Active water seepage was not noted during the site reconnaissance survey (the survey was performed during a severe drought in). The existing slope colluvium appears to be shallow, loose and relatively free draining. Surface water runoff can increase the rate of erosion and potentially initiate a debris flow of already loosened material.
4.2.3 Seismically-Induced Landslides

The potential for earthquake-induced land sliding increases when shear strength of slope materials decreases and hydrostatic pressure increases due to stresses developed from seismic shaking. The site reconnaissance revealed that the majority of the slopes are very rocky with a thin soil mantle. Slopes such as these pose a lower threat of seismically-induced slope failure than slopes composed of thicker soils, particularly liquefiable, granular soils.

4.2.4 Debris Flow

The review of the LiDAR data indicated three colluvial hollows (hillside depressions) on the north-facing slope of the ridge within the southwest portion of site. These features were confirmed to be soil-mantled hollows, and could be the source for future debris flows. Currently, these hollows have juvenile deciduous trees occupying the surface that provide a degree of slope stability; however, future development of this part of the site could destabilize these features.

4.2.5 Post Fire Slope Instability

Vegetation can protect slopes by reducing erosion, strengthening soil, and inhibiting shallow landslides. Water being intercepted and slowed by foliage reduces water available for infiltration and also reduces erosion from runoff. The roots reinforce the soil and increase its shear strength. After fire events, when vegetation has been removed, the exposed slopes are more susceptible to water-induced erosion and dry raveling. Since the site is highly vegetated, the risk for dry raveling and soil erosion would increase greatly after a fire that removes or significantly damages the slope vegetation. Principal debris flow source areas in San Mateo County are shown on USGS Open-File 97-745 E Sheet 7 of 11, however the site is not located in an area containing large flow source areas, as it primarily contains smaller, localized source areas.

4.2.6 Summary of Slope Stability Hazard

Earth movement is a potential hazard at the site. The slope material at the site is loose and free draining, so the hazard of rainfall-induced slope failure appears to be low to moderate. The hazard of localized debris flows being initiated by heavy rainfall coupled with site de-vegetation is moderate to high, but there is a low potential for widespread debris flows across the site. Due to the location of the site in a highly seismic region, the potential for seismically-induced slope failure at the site is moderate, especially for the slopes with thicker soil mantles in the northeastern portion of the site.

4.3 Rock Fall

Few outcrops were available for detailed inspection and the collection of structural information for a rock mass characterization. The limited bedrock exposures identified four sets of general fracture plane orientations that are suggestive of block
and toppling failure. This data set is insufficient to develop design parameters for rock fall mitigation. However, during the site reconnaissance no large blocks or wedges were identified at the base of the current exposed cut slopes. If excavations are initiated with steeper gradients than present, and of larger lateral and vertical extent, and with variable slope intersecting orientations, there exists the potential for block, toppling and wedge failure.

Highly fractured material generally results in higher erosion rates and larger talus piles of small sized material at the toe of a slope. Massively bedded material has much lower erosion rates and thus usually a smaller volume of accumulated debris at the base of the slope. The slopes on site appear to be composed partially of talus with a thin soil mantle. Joint spacing of the sandstone encountered during the site reconnaissance varied from 2 feet to closely-spaced in exposures of up to 10 feet wide. A fence that transects the southwestern ridge at the site had a build-up of angular sandstone talus, which indicates that talus production and mobilization has occurred rather recently.

Review of the limited fracture data did not illuminate adverse fracture plane orientations. No fracture planes were identified as clearly day-lighting in slopes currently existing on site. Based on this analysis, wedge failure is a low to moderate risk on site with current slope configurations. However, with the introduction of cut slopes, the potential risk for wedge failure could increase.

4.4 Flooding

The proposed Center is located in the valley floor between two steep sided valleys. Cordilleras Creek runs through the west-east valley collecting water from the northern and southern valley slopes through a series of ephemeral tributaries, prior to being culverted and diverted to the south of the existing building. During the site reconnaissance survey an un-named creek was identified located in a valley immediately north of the proposed site. This creek is currently contained within a culvert to the north of the existing building.

4.4.1 Flash Flooding

Review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), classifies the site as Zone X (unshaded) which is defined by the FEMA Flood Zones as ‘Minimal risk areas outside of the 1% and 0.2% annual chance floodplains’. No Base Flood Elevations (BFE) or base flood zones are shown within these zones. This statement is further caveated by the FEMA Flood Zone (2014) definition as:

Areas of moderate or minimal hazard are studied based upon the principal source of flood in the area. However, buildings in these zones could be flooded by severe, concentrated rainfall coupled with inadequate local drainage systems. Local stormwater drainage systems are not normally considered in a community’s flood insurance study. The failure of a local drainage system can create areas of high flood risk within these zones. Flood insurance is available in participating
communities, but is not required by regulation in these zones. Nearly 25-percent of all flood claims filed are for structures located within these zones.

Review of National Oceanic and Atmospheric Administration (NOAA) precipitation intensity and depth predictions for the site indicates that the maximum anticipated 1:100 year 24-hour rain storm would result in 6.8 in of rainfall falling, with a peak intensity of (5-minute-duration rainfall event) of 5.3 inches/hour (NOAA, 2014). Based upon the possible conclusions from a review of the NOAA historical rainfall data for the site based upon the NOAA 2014 predictions, the site has experienced a 1:25-year, 24-hour rainstorm with 4.9 inches of precipitation falling during a 24-hour period in 1962 and a 1:10-year, 30-day rainstorm, with 12.4 inches of precipitation recorded in February 1998. The NOAA archives records date back to 1931.

Personal communication between the facilities engineer for the existing Center and Arup during the site reconnaissance indicated that the site is prone to seasonal flooding of the outdoor recreation area when high flows back up at the culvert entrance.

The proposed development involves significant earthworks in the valley floor, local de-vegetation and covering of natural soil with hard-standing all of which increases the surface runoff potential. There is therefore currently a flash flooding risk at the site, which without management could be exacerbated by the proposed development. Many of the risks posed by flooding can be mitigated during detailed design, and by planning major site earthworks to occur during dry seasons. During construction, best management practices and protection for culvert inlets would aid in flash flooding risk reduction.

4.4.2 Debris-Induced Flooding

The current drainage system diverts both Cordilleras Creek and the unnamed creek around the existing structure through buried culverts (Figure 4). Should debris or backed-up high flow dam the culvert, flooding could occur around the building. The site reconnaissance survey identified that the culvert was partially blocked by leaves and other detritus and in a poor state of repair.

De-vegetation of the valley floor or valley slopes would increase debris flow potential. There is a potential for debris flows to block the creek channel which could lead to localized flooding of the valley floor.

Review of the FEMA flood insurance risk maps and the NOAA historical data and prediction tools for the site indicates that the site is classed as Zone X (unshaded) minimal risk. Review of the historical NOAA rainfall data indicates that the site has experienced 1:25 year precipitation events. Evidence from the walkover survey indicates that the current site is prone to seasonal ponding of water, potentially related to the culvert system associated with the existing structure. This indicates that there is a potential risk associated with flooding at the site. Mitigations of this risk include re-grading the site to develop in zones further from the creek channel.
4.5 Development Hazards

Review of the proposed Center redevelopment, Option E1, dated April 2014, shows the proposed main structure and road to the overflow parking lot will cut into the northern and southern slopes of the northern valley, respectively. The western two single story buildings are located within the variable topography of the valley floor. The proposed redevelopment would require earthworks, slope cutting and potentially constructing retaining walls. This section examines the potential risks associated with this development in the context of the site.

4.5.1 Earthworks

The main earthworks identified in Section 4.5 are located in the base of the valley to the west of the existing Cordilleras Mental Health Center. The ground surface immediately south of Cordilleras Creek within the footprint of the proposed building shows a topographic rise of approximately 20 feet. We conclude from the walkover survey and historical documents that the existing topographic rise is comprised from colluvium and alluvium and some reworked fill material.

The proposed final grades require construction of a fill prism on the order of 15 feet thick. Differential constructed fill thicknesses greater than 5 feet will result in differential settlements at the surface as constructed fills consolidate over time. With no construction records of the existing site grades, it is unknown whether adequate site stripping was conducted prior to fill placement, so it is possible the existing fills are underlain by a horizon of organics. To achieve stable constructed fills, the existing site soils and fill material will require rework for acceptable site fill performance. Keying and benching of constructed fills should be required.

Generally, removal of soil or rock from the toe of an existing slope removes the support for the slope. The proposed removal of significant volumes of fill and rock to construct the proposed retaining walls increases the potential for slope instability, both for shallow debris flow and surface raveling and deeper rotational or block slope movement. This risk can be mitigated by engineering evaluation during design, and lower risk scenarios can be coupled with an “observe and react” approach during construction.

4.5.2 Slope Cutting & Retaining Structures

As identified in Section 4.5 two slope cuts are proposed into the northern valley as part of the replacement of the Center. Slope Cut 1 into the northern valley is associated with the multi-story structure and Slope Cut 2 traverses the southern slope of the northern valley for approximately 600 feet.

The area of Slope Cut 1 was examined during the site reconnaissance survey. The proposed cut slope height appears to be less than 20 feet over a distance of approximately 100 feet. The location of the slope cut aligns with the steep valley trending north to south, in which the unnamed creek is located prior to being culverted north of the existing structure. The proposed cut passes through rock outcropping at the west of the proposed cut and then through native colluvium and
alluvium and fill associated with the water tower access road. The rock at the western edge of the cut was identified as grey to brown, fine-grained sandstone, variable in fracture frequency structure, which varied from blocky to disintegrated. The outcrop was at a slope angle of approximately 75° with three fracture orientations noted, bedding was not apparent, although initial assessment based upon the fracture orientations does not appear conducive of wedge failure or sliding failure, but rock topple would be possible. Identification of the contact between the native material and non-native fill was not possible due to the boundary fence of the existing building. The engineered fill assumed to be constructed from the same material, was stable at angle of 45°.

Slope Cut 2 located within the southern valley slope was also examined during the site reconnaissance survey. The proposed cut is approximately 600 feet in length and the greatest cut height based on removal of material in the valley base is approximately 40 feet. A rock outcrop of weathered blocky sandstone with a three fracture sets spaced at approximately six inches to one foot. No other outcrops were noted along the length of the proposed cut. The existing slope surface comprised loose soil with leaf litter and cobbles of sandstone. Aside from small scale raveling there was no indication of recent slope movement. Above the level of the proposed cut three swallows indicative of historical slope movement were mapped during the walkover.

The presence of historical slope instability indicates the potential for slope instability on the southern valley slope, cutting of the slope may exacerbate this hazard.

As discussed in section 4.5 of this report, there are earthworks and slope cuttings associated with the proposed replacement Center. The principal hazards associated with the proposed development involve destabilizing the slope by remove toe support of the slope. The risks associated with this can be managed during the construction process. Additional ground investigation data would help to quantify the risk, especially in the location of the retaining structure cut into the southern valley slope, where no rock exposures were noted during the site reconnaissance and three swallows indicative of historical slope instability were noted.

4.6 Asbestos

4.6.1 Naturally Occurring Asbestos

Review of CGS Map Sheet 59 ‘Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California’ (CGS & USGS, 2011) indicates that the site is not within a known location of asbestos occurrence. The literature indicates that two areas of ultramafic rocks or serpentine are located within San Mateo County. Review of the geologic map (Brabb et al., 1998) shows serpentine outcropping approximately 0.5 miles south of the site, with the contact between the Franciscan Complex and the serpentine in the topographic high south of Edgewood Road.
During the walkover survey no outcrops of serpentinite or other ultramafic rocks were noted on the site. To the north-east of the site along Edmonds Road, a small outcrop of in-situ serpentinite was noted.

The bedrock geology for the site is mapped as Franciscan Complex sheared rock mélange (KJsfr) (Brabb et al, 1998). A literature review of the Franciscan Complex mélange indicates that serpentine is often found within the mélange material.

During the walkover, not enough of the bedrock geology of the site was observed to rule out the presence of ultramafic or serpentine rocks to be present. From the desktop information available, Arup concludes that if there are ultramafic rocks on the site, the exposures should be isolated. Typical management practices on earthwork projects with natural deposits of asbestos include dust management schemes and careful disposal.
5 Risk Register

Table 8 summarizes risks posed by the geological hazards identified during the desk study and the site reconnaissance. The risk has been determined based upon an assessment of the likelihood of hazard occurrence and the consequence of the hazard occurring. The ease of management and mitigation of each hazard has also been considered and engineering judgment used to assign the final risk rating. The risk register gives final ratings for hazards of low, medium, or high.

A designation of a high risk hazard does not imply that the proposed site reconstruction is infeasible. The qualification of a risk as high is an indication that it will require more attention during detailed design. Based on the available data and site reconnaissance regarding the site geologic conditions and geological hazards, the proposed site reconstruction project is considered feasible.
## Table 8  Risk Register Matrix

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Likelihood</th>
<th>Consequence</th>
<th>Risk</th>
<th>Management/Mitigation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faulting Hazard – Surface Rupture</td>
<td>X</td>
<td>X</td>
<td>Low to Medium</td>
<td>Detailed mapping of the site, to investigate the potential for obscured fault traces.</td>
<td>Low risk assigned due to very low likelihood.</td>
</tr>
<tr>
<td>Seismic Hazard – Ground Shaking</td>
<td>X</td>
<td>X</td>
<td>Medium to High</td>
<td>Seismic shaking to be accounted for during the detailed design stage.</td>
<td>Medium to high risk assigned due to frequency of maximum event and possibility to mitigate during design.</td>
</tr>
<tr>
<td>Seismic Hazard – Liquefaction</td>
<td>X</td>
<td>X</td>
<td>High</td>
<td>Deep foundations should support structures above one-story in height and retaining structures higher than 8 feet retained height.</td>
<td>With a PGAM of 0.911, liquefaction and cyclic strength loss in the saturated site soils above the bedrock is likely during the design (MCE) event. Note that 2013 CBC requires liquefaction be evaluated at MCE level shaking as liquefaction could be a contributor to structural collapse. However, the effects of this hazard are mitigable by using deep foundations for large structures (Community Center and large retaining walls) and mat slabs for one story structures.</td>
</tr>
<tr>
<td>Slope instability – Static Landslip</td>
<td>X</td>
<td>X</td>
<td>Medium to High</td>
<td>Additional ground investigation data will lower the risk by confirming the presence/absence of any shear planes. Risk can be mitigated during detailed design.</td>
<td>Medium risk assigned based upon the consequence and the limited information. Greater determination of the likelihood can reduce risk.</td>
</tr>
<tr>
<td>Rainfall induced Slope Instability</td>
<td>X</td>
<td>X</td>
<td>Low to Medium</td>
<td>Careful monitoring of the slope during construction. Additional GI will identify potential volumes of material. Slope protection requirements can be assessed during detailed design phase.</td>
<td>Evidence of historical slope instability on southern valley slope noted during the walkover survey. No recent movement evident. Rainfall will increase the likelihood of instability</td>
</tr>
<tr>
<td>Hazard</td>
<td>Likelihood</td>
<td>Consequence</td>
<td>Risk</td>
<td>Management/Mitigation</td>
<td>Comments</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------</td>
<td>-------------</td>
<td>-----------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Seismically Induced Slope Instability</td>
<td>X</td>
<td>X</td>
<td>X X</td>
<td>Careful monitoring of the slope during construction. Additional GI will identify potential volumes of material. Slope protection requirements can be assessed during detailed design phase.</td>
<td>Evidence of historical slope instability on southern valley slope noted during the walkover survey. No recent movement evident. No apparent instability associated with recent seismic events, principally Loma Prieta.</td>
</tr>
<tr>
<td>Debris Flow</td>
<td>X</td>
<td>X</td>
<td>X X</td>
<td>Careful monitoring of the slope during construction. Additional GI will identify potential volumes of material. Slope protection requirements can be assessed during detailed design phase.</td>
<td>Low to medium hazard assigned. Assumed thin soil mantle based upon the walkover survey.</td>
</tr>
<tr>
<td>Adverse bedding near proposed retaining structures</td>
<td>X</td>
<td></td>
<td>X X</td>
<td>Additional ground investigation will confirm the presence of adverse bedding near proposed structure.</td>
<td>Low to medium risk assigned based upon walkover survey and cuttings in the local area, assumed adverse bedding not present. Consequence of adverse bedding would result in larger structure with greater reinforcement.</td>
</tr>
<tr>
<td>Incidental Rockfall</td>
<td>X X X X</td>
<td></td>
<td>Medium</td>
<td>Detailed mapping of all rock exposure in the valley above the slopes. Support of the rock face can assessed during the detailed design stage.</td>
<td>Highly fractured bedrock within a steep sided valley.</td>
</tr>
<tr>
<td>Post-fire debris flow</td>
<td>X</td>
<td></td>
<td>X X</td>
<td>Should a fire occur in the upslope vegetation, immediate measures should be taken to stabilize the exposed de-vegetated soil before the next rainy season</td>
<td>This is a low-likelihood event as it requires two events in succession: fire (not a geohazard) followed by heavy rains (contributing to the geohazard), but the consequences can be sudden and drastic.</td>
</tr>
<tr>
<td>Flash Flooding</td>
<td>X X</td>
<td></td>
<td>Low</td>
<td>Modeling of flood potential – regarding of channel to accommodate flood waters.</td>
<td>Low risk due to ease of mitigation/management of the hazard.</td>
</tr>
<tr>
<td>Debris Flow Induced Flooding</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Mobilize equipment to clear any debris flow blockages. Design open channel replacement to reduce risk of debris blockage.</td>
<td>Low risk due to ease of mitigation/management of the hazard.</td>
</tr>
</tbody>
</table>
## Risk Management/Mitigation

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Likelihood</th>
<th>Consequence</th>
<th>Risk</th>
<th>Management/Mitigation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Hazard – activating deep-seated landslide</td>
<td>X X X</td>
<td>X</td>
<td>Medium</td>
<td>Unknown likelihood – limited information. Ground investigation to investigate the likelihood.</td>
<td>Medium risk assigned due to lack of information – risk rating can be lowered during the ground investigation and detailed design stages.</td>
</tr>
<tr>
<td>Development Hazard – Debris Flow/Slope Raveling</td>
<td>X X X</td>
<td>X</td>
<td>Medium</td>
<td>Loose material on slope, removing support at the toe could exacerbate slope instability. Monitoring and supporting of slope, phased construction could reduce the hazard.</td>
<td>Medium risk – hazard can be monitored during construction and mitigated in the specification to carry out the work.</td>
</tr>
<tr>
<td>NOA – Naturally Occurring Asbestos</td>
<td>X X</td>
<td>X</td>
<td>Low</td>
<td>Presence of asbestos unlikely, if encountered during further works, can be easily managed/mitigated through the work plan.</td>
<td>Typical mitigations include dust monitoring and continual dust reduction measures.</td>
</tr>
<tr>
<td>Construction Asbestos</td>
<td>X X X</td>
<td>X</td>
<td>Low</td>
<td>Potential for asbestos from existing building spoil, if encountered during further works, can be easily managed/mitigated through the work plan. Risk can be managed during demolition of the existing structure.</td>
<td>Earthwork observation and testing during construction of thick fill prisms will be essential to achieving a stable final grade for the single-story structures and expected performance during seismic events.</td>
</tr>
<tr>
<td>Post-construction differential settlement</td>
<td>X X</td>
<td>X</td>
<td>Low</td>
<td>Full-time earthwork observation and frequent compaction testing during fill prism construction will be vital to achieving stable final grades.</td>
<td>Earthwork observation and testing during construction of thick fill prisms will be essential to achieving a stable final grade for the single-story structures and expected performance during seismic events.</td>
</tr>
</tbody>
</table>
6 Geotechnical Conclusions and Recommendations

The following preliminary geotechnical conclusions have been prepared based on the review of the foundation plans of the existing structure, the geotechnical reports prepared for the nearby facilities, and our experience with similar types of construction.

The recommendations listed in this section are geared toward feasibility design supporting project design and construction cost estimation. The following paragraphs are not an exhaustive set of recommendations intended for final design, but include:

- Detailed recommendations for further geological and geotechnical site investigation, with an order-of-magnitude cost estimate
- Recommendations for the approach to geotechnical site demolition and clearing
- Conceptual recommendations for support of the proposed buildings
- Conceptual recommendations for support of freestanding retaining walls and retaining structures incorporated in-building structures

6.1 Key Geotechnical Considerations

The key geotechnical and engineering geological considerations for civil and structural engineering design include the following:

- A risk of unknown rock conditions at the site of the proposed high retaining structure
- Site seismicity and resulting potential for liquefaction
- Lateral loads on retaining structures in static and seismic cases
- Site grading and channel preservation to reduce flood risk for proposed facilities
- Collaboration of geotechnical and civil design to develop a site grading scheme that results in acceptable fill performance without differential fill thicknesses
- Unknown debris or obstacles in existing fill that could impede deep foundations construction
- Design of wall back drainage to prevent saturated conditions developing behind proposed subgrade building walls or exterior retaining structures
- Environmental clearances for geotechnical investigation for design and construction, if necessary
- Inclusion of rockfall netting in final design as needed to protect completed structures

The key geotechnical considerations for site clearing and grading include the following:

- Demolition of the existing development and backfill of the structures
• Puncturing and breaking the existing floor slabs so they do not impede groundwater migration
• Demolition of existing building subgrade retaining walls backfill of the resulting depressions to permit groundwater migration and provide uniform soil conditions up to the final grade
• Site clearing including removal of organics-laden soils for reuse only in the upper few feet of new landscape areas
• Excavation of existing fill and disturbed site soils to firm conditions, then construction of new fills to maintain site stability by keying new fills into existing soils
• Rock rippability will vary significantly across the site
• Careful excavation and grading of valley slopes for the Community Center podium and retaining wall construction under the observation of an engineering geologist or geotechnical engineer
• Repair and preservation of the existing Cordilleras Creek channel and culvert
• Processing of excavation and demolition spoils for reuse in site re-grading
• The existing structure could include asbestos-laden or lead-based construction materials that will be unsuitable for reuse in site fills
• Completion of site earthworks and retaining wall construction during dry season
• Flexible utility connections between site fill soils and one-story structures to permit relative static and seismic movements

The geotechnical considerations for foundation construction include the following:
• Site grading and compaction meeting specifications to provide uniform bearing for one-story structures on mat slab foundations
• Site fills and rework of existing soils containing sufficient fines and compacted to sufficient density to mitigate liquefaction potential, should saturated conditions develop
• Rock sockets construction for lateral and vertical support of the Community Center structure

6.2 Conceptual Geotechnical Design

Initial recommendations for the geotechnical design of the proposed buildings and retaining structures are included in this section. Detailed recommendations for pavement design, trenching, support of exterior flatwork, and miscellaneous site features are beyond the scope of this feasibility study.

6.2.1 Community Center

The podium structure for the Community Center will be a rigid structure relative to the wood frame construction of its upper stories. The podium will be set into the existing hillside and act as a retaining wall. Depending on the thickness of the
existing overburden, much of the excavation for the footprint of the podium could expose the bedrock material. The final foundation design will be contingent on the depth to bedrock from the ground floor elevation. Shallow spread footings bearing in bedrock can be used to support vertical loads when bedrock is shallow. Where bedrock is deeper below the final ground floor elevation, vertical loads can be supported by drilled piers or longer footing elements bearing in bedrock. Lateral building loads can be resisted by a combination of friction (building weight) and passive resistance (footings or shear keys) constructed where the bedrock is shallow. Longer pier elements will have low capacity to resist lateral loads.

The retaining structure of the podium wall should be fully back-drained and waterproofed to prevent buildup of hydrostatic pressures and to reduce the potential for groundwater migration through the retaining walls to the interior. This will reduce the potential for unsightly interior efflorescence during the wet season. The walls will have to resist the static at-rest pressure of the rock and overburden soil, dynamic soil pressures during earthquake events, and surcharge loads from vehicular parking and the hill slope to the north, west, and east of the podium. Site grading should be planned so the wood-frame uppers floors do not act as a retaining structure.

Reinforced concrete cast-in-drilled-hole (CIDH) shafts should derive their axial and resistance by bearing at least 5 feet in bedrock, but they should not be relied upon for lateral capacity if they extend through significant thickness of soil overburden. Ultimate end-bearing resistance for properly-constructed CIDH elements, 18 inches in diameter, and embedded 5 feet into weak rock (assumed low shear strength of 5 ksf), would be on the order of 80 kips.

### 6.2.2 Single-Story Housing Units

We understand the single-story structures will be relatively light, wood-frame and potentially modular construction. For best performance on the relatively thick prism, these structures can be supported by a relatively stiff, continuous, perimeter shallow foundation bearing at least 24 inches below lowest adjacent soil grade. The shallow spread footings should be a minimum of 18 inches wide. Interior slabs-on-grade will require reinforcement for crack control but be generally non-structural. For adequate performance of these foundations, differential fill thickness for each pad should be limited to 5 feet. For the shallow spread footings, ultimate bearing pressures on the order of 6,000 psf can be achieved in properly compacted fill.

### 6.2.3 Retaining Structures

The retaining structures for the large cut into the southern valley slope can be either soldier pile and lagging structure for retained heights less than 10 feet, or tieback construction for retained heights above 10 feet. Several tieback wall options are possible depending on the final aesthetic desire. At the top of the wall, the slope will continue upward, which could leave the site below exposed to rockfall and scree from above. A rock netting system either free-standing at the top of the wall or incorporated into the wall structure will be required to reduce rockfall onto the development below.
7 Design-Level Geotechnical Investigation

7.1 Additional Ground Investigation Data

For the purpose of costing, additional ground investigation data are required. The proposed ground investigation information is based upon the preliminary building layout provided to Arup by the Client in Drawing titled “Cordilleras Mental Health Facility Feasibility Exhibit” dated May 22, 2014. The key features of the plan are:

- 5 single-story buildings orientated west-east within the north valley.
- 1 multi-story building cut into the northern valley slope of the north valley.
- 1 retaining structure located in the northern valley slope of the north valley at the confluence of the north and south valleys.
- 1 retaining structure cut into the southern valley slope of the north valley.

The requirements of the additional ground investigation data will be subdivided based upon structures types and the specific requirements for each structure.

7.1.1 Community Center Building

The proposed location of the multistory Community Center building is in the northern valley slope of the north valley. Site reconnaissance information indicated that the cutting will truncate rock and surficial material. A creek tributary of Cordilleras Creek, orientated north-south, in the proposed building footprint. The key information for this structure is the depth to bedrock across the small creek valley.

Boreholes should be located in the four corners and the center of the structure to confirm the depth to bedrock. Between five and eight boreholes should terminate between 5 and 10 feet into the rock below the final floor elevation. Alternatively, one or two of the proposed borings in the Community Center footprint could be replaced by an excavated test pit. The objective of these explorations is to identify the depth and bearing capacity of the bedrock below final floor grade. The borings should also characterize the overburden to be removed (e.g. fill rubble or debris) for pricing the length and quantity of deep foundations elements.

The borings should be paired with geophysical methods to determine bedrock depth, velocity, and rippability.

7.1.2 Five Single-Story Buildings

These buildings are located within the valley floor and the flood plain of Cordilleras Creek, in the hillside cut area at the western end of the site. The key information for these buildings will be delineating the approximate depth to bedrock across the building footprints, extent of artificial fill, and characterizing the geotechnical properties of the valley alluvium. This investigation would include subsurface exploration through drilling, geophysical surveying, and shallow excavations. All
borings drilled on the site should terminate a minimum of 5 feet into bedrock and geotechnical sampling of the surficial deposits is required.

Slope instability, in particular debris flow and raveling from the northern and southern valley slopes bordering the northern valley, poses a risk to these buildings. As such, shallow soil test pits excavated into the bedrock slopes to document the surficial deposits and bedrock properties is required. Lastly, multiple geophysical soil profiles within the valley floor and along the hillsides should be collected to assess the lateral and vertical extent of the surficial deposits and bedrock properties pertaining to rippability and site construction.

7.1.3 Retaining Structures

The retaining structure proposed to be cut into the southern valley slope will feature retained heights on the order of 50 feet. To support design, the key information to gather during the drilling campaign includes:

- Depth to bedrock
- Presence/absence of slip surfaces, fractures and their orientation, and bedding
- Characterize the surficial material for debris flow and rock fall potential

The valley slopes, in particular the southern slope of the north valley, are steep, heavily vegetated and mantled with surficial loose material that require special exploration consideration.

- Boreholes to be located in line with the proposed retaining structure on the southern slope, terminated at a level 15 feet below the planned retained level, with a minimum of 5 feet penetration into rock.
- The drill rig must be capable of extracting core at the in-situ orientation, so that bedding, fractures and any potential shear surfaces are known.
- Drill rig capable of operating on a steep hillside is required.
- Vegetation clearance for the hill slope.

At least two deep borings should be planned for the length of wall above 20 feet retained height. One boring at each of the lower ends of the wall with proposed retained heights less than 10 feet should also be completed to provide data supporting design parameters for soldier pile and lagging construction.

7.1.4 Ground Investigation Summary

Table 9 summarizes the proposed ground investigation and the termination information for cost estimation.
Table 9  Summary of Additional Ground Investigation

<table>
<thead>
<tr>
<th>Structure</th>
<th>Boreholes</th>
<th>Trenches</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity</td>
<td>Depth (feet)</td>
</tr>
<tr>
<td>Five Single Story Buildings</td>
<td>6</td>
<td>5 feet into rock</td>
</tr>
<tr>
<td>Multi Story Building</td>
<td>5-8</td>
<td>10 feet into rock below the proposed final floor</td>
</tr>
<tr>
<td>South Valley Slope Retaining Structure</td>
<td>4</td>
<td>15 feet below retained level, minimum 5 feet into rock, whichever is deeper</td>
</tr>
</tbody>
</table>

7.1.5  Approximate Costs for Detailed Ground Investigation

A standard, tire-mounted drilling rig can access much of the flat land at the site to complete the on-site drilling program. However, a limited access rig would be required to gain access to boring locations in the cut slope areas. These locations are more critical to assess structural designs of the proposed retaining structures.

A track-mounted light backhoe or excavator would be required to dig into the rock sufficiently to show the bedding in excavated the test pits. Having the excavator on-site concurrent with the limited access drilling rig would facilitate access, vegetation clearing, supply delivery, and construction of a key or bench of relatively level area for drilling. Based on the investigation requirements listed and considering the engineering analyses involved, a budget of $185,000 should be allocated, with a contingency of $25,000 if the encountered conditions warrant further investigation.

This estimate assumes that the project will not be subject to critical facility review by the California Office of Statewide Health Planning and Development and CGS. Geotechnical and engineering geological construction testing and observation are also excluded, but could be on the order of 0.4% to 0.7% of the overall construction cost.
8 References


California Geological Survey (CGS)


U.S. Geological Survey


Legend

- - - - Culvered Cordilleras Creek (approximate course)
- - - Historical Stream
- - - - Cordilleras Creek (per survey)

Building

Historical Buildings

San Mateo County Fire Station
Built: 1999

Canyon Oaks Youth Center
Built: 2000

Cordilleras Water Tank
Built: 2001

Hassler Health Center
Built: 1948
Demolished: 1985

Existing Cordilleras Building
Built: 1949

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCan, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

Historical Topographic Map Courtesy of the U.S. Geological Survey 1997

Scale at 11x17
1:4,800

Historical Topographic Map

Scale at 11x17
1:4,800

Job No 236594-00
Drawing No
Drawing Status Preliminary

County of San Mateo, Facilities Planning, Design and Construction

Cordilleras Mental Health Center Replacement

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6/9/2014 10:45:29 AM

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Figure 4 - Site Reconnaissance Preliminary Geologic Map

Legend

Geologic Units Mapped by Arup
- Fill (af)
- Holocene Alluvium/ Colluvium (Ha, Qc)
- Quaternary Alluvium/Colluvium (QT)
- Sandstone (KJfsr)

USGS Geologic Units
- Fill (af)
- Franciscan Complex (KJfsr)
- Quaternary Alluvium/Colluvium (QT)
- Whiskey Hill Formation (Tw)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP.

Site Reconnaissance
Preliminary Geologic Map

Scale at 11x17

© Arup

6/6/2014 8:39:35 AM
Attachment A
Appendix 1. Site Reconnaissance Survey Photos

Photo 1: Sandstone outcrop in road cut embankment

Photo 2: Cut slope beneath water tank

Photo 3: Cut slope behind water tank

Photo 4: Sandstone outcrop behind water tank
Appendix 1. Site Reconnaissance Survey Photos

Photo 5: Culvert within tributary to Cordilleras Creek

Photo 6: Cut slope north of building loading dock

Photo 7: Cordilleras Creek - dry during site visit

Photo 8: South slope of north valley
Photo 9: Rock and organic debris accumulation against site boundary fence

Photo 10: Outcrop of Whiskey formation on trail off Edmonds Road

Photo 11: Cut slope at the junction of Edmonds Road and Edgewood Road composed of disintegrated sandstone and shale

Photo 12: Road cut on Edgewood Road (east of site) composed of melange

Appendix 1. Site Reconnaissance Survey Photos
Appendix 1. Site Reconnaissance Survey Photos

Photo 13: Road cut on Edgewood Road (southeast of site) composed of blocky sandstone

Photo 14: Road cut on Edgewood Road (south of site) composed of competent sandstone
Appendix F

Biological Constraint Analysis
Cordilleras Mental Health Center
San Mateo County, California

Biological Constraints Analysis

Prepared for:
San Mateo County
Department of Facilities Planning, Design & Construction

June 2014
Cordilleras Mental Health Center
Redwood City, California

Biological Constraints Analysis

Prepared for:
San Mateo County
Department of Facilities Planning, Design & Construction
555 County Center, 5th Floor
Redwood City, CA 94063

Prepared by:
TRA Environmental Sciences, Inc.
545 Middlefield Road, Suite 200
Menlo Park, CA 94025
www.traenviro.com

October 2014
This Biological Constraints Analysis was prepared by TRA Environmental Sciences for the San Mateo County Department of Facilities Planning, Design & Construction. This report identifies sensitive biological resources and permit and regulatory compliance requirements related to redevelopment of the existing Cordilleras Community Treatment Facility. It will be used by San Mateo County in considering project design, costs and schedule as part of a feasibility analysis for the project.

PROJECT OVERVIEW

The proposed Cordilleras Mental Health Center replacement project will be developed at the current site of the Cordilleras Mental Health Center, situated southwest of Pulgas Ridge Open Space Preserve and northwest of Edgewood Canyon Road at 200 Edmonds Road, in San Mateo County, California. The project site also contains a fire station and the Canyon Oaks Youth Facility for Mental Health. Although the existing facility will be redeveloped, a new footprint is proposed that will extend into natural habitat adjacent to Cordilleras Creek upstream of the existing facility.

The Cordilleras Mental Health Center facilities are in a multiple story building which was built in 1949 and requires updating for structural needs, mental health treatment methods, and federal regulations for reimbursement. The concept for the new facility is to extend the existing development footprint toward the west along Cordilleras Creek, changing the feel from a hospital to a residential care facility by replacing the multiple story building with several smaller buildings. The creek is undergrounded in culverts under the existing site, but natural portions of the creek extend to the west and the east of the current facility, and a tributary that is also partially undergrounded enters the creek from the north. Mature oak/bay woodland surrounds the site and there are specimen landscape trees on the grounds that will likely be preserved. In addition to new mental health facilities, the preliminary project design includes a facility community center, recreation yard, parking, and a new fire road and retaining wall. The project may result in 87,500 square feet of new construction.

SUMMARY OF RESULTS

The Biological Constraints Analysis addresses potential impacts to special-status species, and regulatory and mitigation requirements that could affect decisions about proceeding with the project. The special-status species in the region include federal and state listed species, as well as state species of special concern. The project site contains waters of the state and United States, namely Cordilleras Creek and its adjacent riparian zone, but does not contain freshwater emergent wetlands. Cordilleras Creek has a well-defined channel that currently flows intermittently, and based on observations of vegetation and woodrat houses in the creek channel, has possibly not had high flows for several years.

The project will impact San Francisco dusky-footed woodrat, a California species of special concern, and will require mitigation to address those impacts. In the case of this species the mitigation can be provided on the project site. The project may impact San Francisco collinsia, a CNPS 1B.2 plant that occurs on the property.

The project has a very low potential to impact California red-legged frog, San Francisco garter snake, and western pond turtle which are known to occur on the other side of I-280 from the project. These species are not expected to occur on the project site, but best management practices are recommended to avoid impacts. Without state and federal authorization (a lengthy
process), any discovery of these species during construction would halt the project until state and federal wildlife agencies are consulted and concur with how to move forward.

The project will impact the riparian zone of Cordilleras Creek, but will not directly impact the creek bed, bank or channel.

The project may remove trees that are protected by local zoning regulations, and should have a tree removal and replacement plan to address the removal of trees with a diameter at breast height of 17 inches or more (circumference 55 inches) for local regulations and 4 inches or more for California Department of Fish and Wildlife recommendations. The agencies will require that several new trees be planted for each tree that is removed, and this may require finding offsite locations within the watershed for tree planting. It will also require a 5-10 year monitoring period and replacement of dead trees if necessary.

The project will require the following permits/authorizations:

- Lake and Streambed Alteration Agreement for effects on Cordilleras Creek and its tributaries;
- U.S. Army Corps of Engineers permit under Section 404 of the Clean Water Act for replacement of culverts and if any fill is proposed in Cordilleras Creek;
- California Regional Water Quality Control Board Water Quality Certification under Section 401 of the federal Clean Water Act, for replacement of culverts and if any fill is proposed in Cordilleras Creek.
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1.0 Introduction and Purpose

1.1 Project Location and Setting

The County of San Mateo Facilities, Planning, Design and Construction Department proposes to demolish the existing multiple-story Cordilleras Mental Health Center (CMHC) and replace it with six smaller buildings. The project site is situated southwest of Pulgas Ridge Open Space Preserve and northwest of Edgewood Canyon Road at 200 Edmonds Road, in Redwood City, California (Figure 1 Regional Location, and Figure 2 Site Vicinity Location). The CMHC facilities are in a building which was constructed in 1949 which must be replaced in order to address safety, current mental health treatment methods, and to meet federal regulations for reimbursement. To accommodate several new, smaller structures the existing footprint will be extended upstream along the south side of Cordilleras Creek. An existing access road along the north side of Cordilleras Creek will be incorporated into the project as a walking path.

The 20.6-acre project site (APN 050-470-050) is located approximately 1,700 feet west of the intersection of Edgewood Road and Crestview Drive in Redwood City (Figure 1 Regional Location) and is surrounded on all sides by a mosaic of undeveloped oak/bay woodland, coastal scrub and grassland habitats located in Redwood City and unincorporated San Mateo County. A fire station is located adjacent to the south side of the CHMC facility, and west of the fire station the Canyon Oaks Youth Facility is located adjacent to a tributary to Cordilleras Creek. A water storage tank is situated approximate 450 feet northwest of the CMHC facility. The project site is situated approximately 0.5 miles northeast of Interstate 280, is north of Edgewood Natural Preserve and south of Pulgas Ridge Open Space, and is owned by the County of San Mateo. The parcel is zoned as Resource Management (RM). It is located on the U.S. Geological Survey Woodside Quadrangle.

The CHMC facility is located in the base of a canyon on gently sloping topography (285 msl to 315 msl across about 500 ft distance) (Figure 3). The topography of the rest of the parcel is hilly, ranging from 280 ft msl on the entrance drive to 410 ft msl at the water tank above the existing buildings. The facility built in 1949 was sited in the channel of Cordilleras Creek, and creek flows upstream, as well as two tributaries in the area of the facility are currently diverted around the facility through a culvert system and directed back to Cordilleras Creek downstream of the buildings. Changes to the creek or culvert system on the site other than culvert repair/replacement are not proposed.

The County has developed a feasibility site plan for the new facility (Figure 4). The design involves replacing the current building with five single story pinwheel-shaped buildings connected by courtyards. Three of these would be located on the existing grounds, and two would be placed along the creek upstream of the existing grounds. A new community center/support building would be built north of the existing facility where the access road to the water tank currently exists, and a recreation yard and garden would be located in between in areas that are already developed. The two buildings that result in an extension of the project footprint along the creek will also be served by a service/fire access road and turn around, and part of this road will require a retaining wall. The project will be designed with LEED measures, including solar panels on the buildings. The project will be required to meet C-3 standards, so that any additional runoff is retained on site. The use of the site as a mental health facility limits the feasibility of daylighting the creek and using it as a landscape feature in the proposed recreation yard.
1.2 Purpose of this Report

The purpose of this biological constraints analysis is to identify sensitive biological resources that could be affected by development of the property, the potential regulatory requirements related to biological resources, avoidance and minimization measures, and whether species-specific surveys will be required. The constraints analysis also addresses the California Environmental Quality Act Guidelines Initial Study Checklist questions related to biology. These responses are provided to the extent feasible based on the preliminary site plan.
2.0 Methods

This chapter describes the research and field methods used to determine biological resources present and regulatory issues.

2.1 Database Searches

A nine quad search was completed for the California Natural Diversity Database, the California Native Plant Society Inventory of Rare and Endangered Plants. The U.S. Fish and Wildlife Service website was queried for species known to occur on the Woodside Quadrangle.

2.2 Agency Consultation

The U.S. Fish and Wildlife Service website was consulted regarding the species of concern. TRA met Suzanne DeLeon of the California Department of Fish and Wildlife at the project site on May 22, 2014 to discuss the proposed projects and wildlife resource issues of concern.

2.3 Site Visits

The project site was visited in April, May and June 2014 to identify plant species and jurisdictional waters.
3.0 Biological Resources

3.1 Vegetation and Habitat Types

The Property supports five habitat types, described below in more detail. The habitat types are developed, mixed live oak woodland, creek channel/valley foothill riparian, annual grassland, and coastal sage scrub (Figure 3). The southern portion of the site is developed with the existing facility, the fire station, and the youth facility. Mixed oak woodland habitat makes up the majority of the non-developed portions of the site. Openings in the woodland canopy support annual grassland or coastal scrub habitat. Cordilleras Creek crosses the property in a west to east direction, discharging to a drop inlet structure at the northwest corner of the campus. A tributary to Cordilleras Creek flows from the north, parallel to the road that is used to access the water tank. This tributary is culverted about 75 feet upslope of the access road that borders the north side of the mental health center to where it enters Cordilleras Creek immediately downstream of the project. The culvert has collapsed in two locations near the outlet to Cordilleras Creek.

The developed portions of the site are landscaped with a variety of common native and non-native ornamentals including redwood (Sequoia sempervirens), cedar (Cedrus sp.), magnolia (Magnolia sp.), juniper (Juniperus sp.), tree of heaven (Ailanthus altissima), ornamental plum (Prunus sp.), and Monterey pine (Pinus radiata).

The mixed live oak woodland habitat is dominated by a dense canopy of coast live oak (Quercus agrifolia) and California bay (Umbellularia californica) with an understory of shrubs such as poison oak (Toxicodendron diversilobum), California blackberry (Rubus ursinus), and Himalayan blackberry (R. discolor), ferns such as western sword fern (Polystichum munitum), herbs such as bedstraw (Galium californicum ssp. californicum), hedge nettle (Stachys ajugoides var. rigida), and annual grasses and forbs including wild oat (Avena fatua), ripgut brome (Bromus diandrus). California buckeye (Aesculus californica), coyote brush (Baccharis pilularis), and blue elderberry (Sambucus nigra subsp. caerulea) also occur but are not dominant.

Riparian habitat is associated with the main channel of Cordilleras Creek. The creek was dry at the time of the site visit with no standing water or saturated conditions, and contained a stand of grassland dominated by Italian thistle at the inlet to the culvert under the existing development, as well as several well developed woodrat houses above ordinary high water but within the banks of the creek, indicating that there may not have been significant flows in the creek for a few years. The riparian canopy is dominated by California bay, with scattered coast live oak and big leaf maple (Acer macrophyllum). California blackberry was the dominant vegetation type on the banks of the creek with Italian thistle, poison hemlock (Conium maculatum) and poison oak also abundant. Other species that were present but less common in the riparian habitat were mugwort (Artemisia vulgaris), bedstraw, coastal wood fern (Dryopteris arguta), French broom (Genista monspessulana), Spanish broom (Spartium junceum), and wild cucumber (Marah sp.).

There is an area on the south side of the creek near the culvert upstream of the existing development that was filled in the past. This area is dominated by weedy species, including poison hemlock, Italian thistle, and hedge parsley (Torilis arvensis).

Coastal sage scrub occurs in openings in the mixed oak woodland. These areas are dominated by species adapted to steep slopes and dry conditions. The dominant plant species include with California sage (Artemisia californica), chemise (Adenostema fasciculatum), coyote brush (Baccharis pilularis), and sticky monkey flower (Mimulus aurantiacus).
One small patch of grassland occurs in the area where the facility’s community center is proposed to be located. The grassland was observed to contain the following native and non-native species in June 2014: needlegrass (Stipa or Nassella sp.), mule ears (Wyethia glabra), oatgrass (Avena fatua), Ithuriel’s spear (Triteleia laxa) and ripgut brome.

3.2 Common Wildlife and Wildlife Corridors

Developed areas of the site may provide breeding and foraging habitat for a variety of common urban-adapted wildlife species. Manmade structures are often used as nesting substrate by such species as black phoebe (Sayornis nigricans), and house finch (Carpodacus mexicanus), and a variety of bat species are known to take advantage of openings in buildings to gain access to roosting cavities. Landscaping is frequently used as breeding and foraging habitat for urban adapted passerine bird species. Mammals such as raccoon (Procyon lotor), Virginia opossum (Didelphis virginiana), and California vole (Microtus californicus) are likely to occur in the surrounding natural habitats and could also occur in developed areas of the site.

The mixed live oak woodland is occupied by a wide variety of bird species, and several were heard vocalizing during the site visit. These species are expected to breed and forage in this habitat including spotted towhee (Pipilo maculatus), oak titmouse (Baeolophus inornatus), Pacific slope flycatcher (Empidonax difficilis), Stellar’s jay (Cyanocitta stelleri), chestnut-backed chickadee (Poecile rufescens), and bushtit (Psaltriparus minimus).

Mammals use all habitats on the property. Black-tailed deer (Odocoileus hemionus), a fresh kill of a fawn (probably by coyote), and the stick houses of San Francisco dusky-footed woodrat (Neotoma fuscipes annectens) were found during site surveys. Coyote, raccoon, Virginia opossum, eastern grey squirrel (Sciurus carolinensis), and brush rabbit (Sylvigalus bachmani) were not seen during the site visit, but are expected to occur in the habitats available on site. Mountain lion could also occur, but is expected to be an infrequent visitor due to the proximity to human activity and the barrier created by Interstate 280 (I-280), which lies between the site and significant areas of open space in the Santa Cruz Mountains west of I-280.

Birds that use the site for forage and breeding habitat include spotted towhee, Pacific slope flycatcher, American robin (Turdus migratorius), western scrub jay (Aphelocoma californica), red-shouldered hawk (Buteo lineatus), Cooper’s hawk (Accipiter cooperii), bushtit, and California towhee (Melozone crissalis), which were observed or were heard vocalizing during site surveys. Amphibian species commonly found in riparian habitats include California newt (Taricha torosa), western toad (Anaxyrus boreas), and Pacific chorus frog (Pseudacris regilla), however none were observed during site visits and the creek channel was dry.

Patches of annual grassland habitat within the project area are limited in size and isolated from other large expanses of similar habitat. Black phoebe, California towhee, Bewick’s wren (Thryomanes bewickii), and lesser goldfinch (Carduelis psaltria) were all observed foraging in the annual grassland habitat. White-throated swift were heard vocalizing overhead and are presumed to use openings in the woodland canopy to forage for insects. Black-tailed deer, observed during the survey likely use these grassy areas as foraging habitat, along with brush rabbit, Botta’s pocket gopher (Thomomys bottae), and California vole. Common reptile species that were not observed but are found in grassland habitats include western fence lizard (Sceloporus occidentalis), gopher snake (Pituophis catenifer), and southern alligator lizard (Elgaria multicarinata).

Coastal sage scrub provides low, dense cover that is good foraging, breeding and migratory habitat for California quail (Callipepla californica), California towhee, white-crowned sparrow.
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(Zonotrichia leucophrys), wrentit (Chamaea fasciata), brush rabbit, raccoon, and black-tailed deer.

The property lies immediately north of Edgewood Road, and is slightly east of I-280. The Edgewood Natural Preserve occurs to the south, on the other side of Edgewood Road, but is separated from the property by the road and a steep roadcut. The Pulgas Ridge open space preserve surrounds the property on the west, north and east sides. While the main building is fenced, the property is generally open to wildlife movement. There are drainages and unpaved roadways that may facilitate wildlife movement, but there are no obvious or specific wildlife corridors.

3.3 Special-status Species

A summary of the special-status species that are recorded to occur within the Woodside Quadrangle and the nine surrounding quadrangles is provided in Appendix A. Each species was evaluated for the likelihood of presence within the project footprint due to habitat suitability and proximity to the project. The descriptions provided in this section (below) are for species that are of potential concern for this project.

One mammal and one plant species of concern were confirmed present on the property during site visits in May and June 2014. These are the San Francisco dusky-footed woodrat (California Species of Special Concern), and San Francisco collinsia (CNPS/CRPR 1.B.2). The project site contains potential migratory habitat for California red-legged frog (Federal Threatened, California Species of Special Concern) and San Francisco garter snake (Federal Endangered, California Fully Protected), however the likelihood of presence is judged to be very low. The project site contains suitable habitat for Western leatherwood (CNPS list 1B.2), but the project footprint does not contain Western leatherwood, based on a survey conducted in early June 2014 when the shrub would have been evident. The project site also contains nesting bird habitat and bat roosting habitat, including habitat for protected raptor and bat species.

California Red-legged Frog (CRF)

The CRF (Rana draytonii) is endemic to California and Baja California, Mexico, at elevations ranging from sea level to approximately 1,500 meters (5,000 feet). Records of CRF are known from Riverside County to Mendocino County along the Coast Range; from Calaveras County to Butte County in the Sierra Nevada; and in Baja California, Mexico. California red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the central coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (USFWS 2010b).

As a species, California red-legged frog is currently threatened by human activities: degradation and loss of its habitat through urbanization, mining, improper management of grazing, recreation, invasion of nonnative plants, impoundments, water diversions, degraded water quality and introduced predators. These factors have resulted in the isolation and fragmentation of habitats within many watersheds. This often prevents dispersal between sub-populations. The fragmentation of existing habitat, and the continued colonization of existing habitat by nonnative species, may represent the most significant current threats to CRLF (USFWS 2010b).

The California red-legged frog is the largest native frog in the western United States, ranging from 4 to 13 centimeters long (1.5 to 5 inches). The abdomen and hind legs of adults are
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Reddish. The back has small black flecks and larger irregular dark blotches. These have indistinct outlines on a brown, gray, olive, or reddish background color. The spots on the frogs’ backs usually have light centers. Lateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3 inches in length, and the background color of the body is dark brown and yellow with darker spots (USFWS 2010b).

California red-legged frog occupies a fairly distinct habitat, combining both specific aquatic and riparian components. Adults need dense, shrubby or emergent riparian vegetation closely associated with deep (greater than 2 1/3-foot deep) still or slow moving water. The largest densities of CRF are associated with deepwater pools with dense stands of overhanging willows and an intermixed fringe of cattails. Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter. California red-legged frogs estivate (enter a dormant state during summer or dry weather) in small mammal burrows and moist leaf litter. They have been found up to 100 feet from water in adjacent dense riparian vegetation (USFWS 2010b). Frogs migrate between upland habitat and breeding habitat in no particular directional order (ie, not necessarily along creek channels), and may move as far as 1.7 mile (Bulger 2003).

California red-legged frogs breed from November through March with earlier breeding records occurring in southern localities (USFWS 2010b). The diet of CRF is highly variable. Larvae probably eat algae. Invertebrates are the most common food items of adult frogs. Vertebrates, such as Pacific tree frogs and California mice, are frequently eaten by larger frogs. Juvenile frogs are active both during the day and at night, whereas adult frogs are largely nocturnal. Feeding activity likely occurs along the shoreline and on the surface of the water (USFWS 2010b).

The nearest CRF occurrences recorded in the CNDDB are reported from 2007 and include sites at the southern end of the Crystal Springs Reservoir and along Canada Road south of the intersection with Edgewood Road. These specific sites are 1.6 to 2 miles from the project, and are on the opposite side of a 6 lane freeway with median, however it is assumed that CRF occur elsewhere in the Crystal Springs watershed and could occur in drainages within 0.5 miles from the project. No ponds occur on the project site or on adjacent properties. Cordilleras Creek and nearby tributaries are intermittent streams (USGS Woodside quadrangle).

San Francisco Garter Snake (SFGS)

Historically, the SFGS occurred in scattered wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains, at least to the Upper Crystal Springs Reservoir, and along the coast south to Año Nuevo Point, San Mateo County, and Waddell Creek, Santa Cruz County. Currently, although the geographical distribution may remain the same, reliable information regarding specific locations and population status is not available. Much of the remaining suitable habitat is located on private property that has not been surveyed for the presence of the snake. Many locations that previously had healthy populations of SFGS are now in decline for the reasons described below (USFWS 2007).

Many of the threats that led to the listing of SFGS in 1967 continue to impact the species. These include loss of habitat from agricultural, commercial and urban development and collection by reptile fanciers and breeders. These historical threats to the species remain, but there are now additional threats to the species, such as the documented decline of the CRF (an essential prey species) and the introduction of bullfrogs (Rana catesbeiana) into SFGS habitat. Bullfrogs are capable of preying on both SFGS and CRF. Extirpation of CRF in SFGS habitat is likely to cause localized extinction of the snake (USFWS 2007).
San Francisco garter snake is a slender, colorful snake in the Colubridae family, which includes most of the species of snakes found in the western United States. This subspecies has a burnt orange head, greenish-yellow dorsal stripe edged in black, bordered by a red stripe, which may be continuous or broken with black blotches, and then a black stripe. The belly color varies from greenish-blue to blue. Large adults can reach 3 feet or more in length (USFWS 2007).

The snakes' preferred habitat is a densely vegetated pond near an open hillside where they can sun themselves, feed, and find cover in rodent burrows; however, considerably less ideal habitats can be successfully occupied. Temporary ponds and other seasonal freshwater bodies are also used. Emergent and bankside vegetation such as cattails (Typha spp.), bulrushes (Scirpus spp.) and spike rushes (Juncus spp. and Eleocharis spp.) apparently are preferred and used for cover. The area between stream and pond habitats and grasslands or bank sides is used for basking, while nearby dense vegetation or water often provide escape cover. Snakes also use floating algal or rush mats, if available (USFWS 2007).

Adult snakes sometimes estivate (enter a dormant state) in rodent burrows during summer months when ponds dry. On the coast, snakes hibernate during the winter, but further inland, if the weather is suitable, snakes may be active year-round. Recent studies have documented SFGS movement over several hundred yards away from wetlands to hibernate in upland small mammal burrows; the Center for Biological Diversity reports a migration distance of 1 km (0.62 mile). Although primarily active during the day, captive snakes housed in an outside enclosure were observed foraging after dark on warm evenings (USFWS 2007).

San Francisco garter snakes forage extensively in aquatic habitats. Adult snakes feed primarily on CRF. They may also feed on juvenile bullfrogs, but they are unable to feed on the larger adults. Adult bullfrogs likely prey on smaller SFGS and may be a contributing factor in their decline. Newborn and juvenile SFGS depend heavily upon Pacific treefrogs as prey. If newly metamorphosed Pacific treefrogs are not available, the young may not survive (USFWS 2007).

Females give birth to live young from June through September, with litters averaging 16 newborns. The snakes are extremely shy, difficult to locate and capture, and quick to flee to water or cover when disturbed (USFWS 2007).

The nearest recorded locations of San Francisco garter snake to the Cordilleras site are in the Crystal Springs watershed, over 0.6 mile from the project. There are no ponds or suitable breeding habitat for the garter snake on the Cordilleras property or in the adjacent Pulgas Ridge Open Space Preserve.

**Western Pond Turtle**

Western pond turtle, a California species of special concern, is the only turtle native to California (CDFG 2008). It was found historically in most Pacific slope drainages between the Oregon and Mexican borders. It is still found in suitable habitats west of the Sierra–Cascade crest. Elevation range is from near sea level to approximately 4,700 feet (1,430 meters) (Jennings and Hayes 1994).

Western pond turtle is associated with a variety of aquatic habitats, both permanent and intermittent. The name western “pond” turtle is something of a misnomer, as ponds are relatively scarce throughout most of the range of this species, and the turtles are more often associated with rivers and streams. They are usually rare or absent in reservoirs, impoundments, canals, or other bodies of water heavily altered by humans. Western pond turtle inhabits some of the larger rivers within its range (e.g., the Sacramento, Klamath, and Willamette), but is usually restricted to areas near the banks or in adjacent backwater habitats where the current is...
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relatively slow and abundant emergent basking sites and refugia exist. Western pond turtle may be found in slower moving streams where emergent basking sites are available, but generally avoids heavily shaded areas. In some areas of California, intermittent streams hold sizeable populations. Turtles are also known to use ephemeral pools. They tolerate brackish water, and along the California coast they often coexist with brackish water fish species such as sculpins (*Leptocottus armatus* and *Cottus* sp.) (Hayes *et al.* 1999).

The Western pond turtle lives up to 50 years, but reproduces relatively infrequently. Mature turtles weigh up to two pounds and measure up to 8 inches. Females take an average of eight to 10 years to reach sexual maturity and when mature, lay only 6 to 10 eggs a year. As a result, pond turtle populations can decline rapidly with the loss of only a few adults. Eggs are laid from March to August, depending on local conditions, and incubation lasts from 73 to 80 days. Females lay their eggs in underground nests on land. Western pond turtle nests have been found as far as 435 yards from a stream (Reese and Welsh 1997) in open sunny areas on hill slopes, generally with a south to southwest facing aspect. Nest sites typically occur in open areas dominated by grasses or herbaceous annuals on dry, well-drained soils with high clay/silt content and low (less than 15-degree) slope (Holland 1994). There is some indication that most nesting excursions occur at night (Rathbun *et al.* 2002). Western pond turtle also moves into upland slopes while overwintering or during periods when aquatic habitats become unsuitable (i.e., dry).

Western pond turtle is omnivorous and feeds on aquatic plant material, aquatic invertebrates, fishes, frogs, and even carrion (CDFG 2008). Common predators of nests, nested hatchlings, and adult turtles in the wild include raccoons, skunks, and coyotes; although the largest threats western pond turtle face presently are the predation of hatchlings by introduced, non-native bullfrogs, and the loss of habitat due to urbanization.

Western pond turtle is known to occur at the Crystal Springs Reservoir within about two miles of the project site. Cordilleras Creek is an intermittent creek that is wooded and heavily shaded on the project site and upstream of the project site. There are no ponds in the Pulgas Ridge Open Space Preserve or the Edgewood Natural Preserve.

*San Francisco Dusky-footed Woodrat (SFDW)*

The San Francisco dusky-footed woodrat is a California Species of Special Concern. It occurs from the Golden Gate to just inside the Santa Cruz County line and also in the east bay. It is associated with riparian, oak woodland and redwood forest. The San Francisco dusky-footed woodrat is one of 11 subspecies of dusky-footed woodrat that live in California and the arid west. San Francisco dusky-footed woodrat is a medium-sized rodent, about the size of an adult rat, with a body around 7 inches long, nose to rump, and a furred tail. Dusky-footed woodrats are relatively common and widespread in California, but their complex social structure makes them particularly vulnerable to disturbance.

San Francisco dusky-footed woodrat build mounded stick houses that may range in size from 3 to 8 feet across at the base and as much as 6 feet tall, and they tend to live in colonies of 3 to 15 or more houses. The houses can be quite complex inside, with multiple chambers for general living, nesting, latrine use, food storage, and other activities. The availability of suitably-sized sticks may limit the number of woodrat houses.

Each house is occupied by a single adult; adult females share the house with their litters for a few months until the young disperse to nearby nests. Adult females live in the same house until they die, when the house is taken over by one of the female offspring. In this manner houses may be occupied and maintained by the same family for decades. Individual houses may persist
for 20 to 30 years. Reptiles, amphibians, small mammals, and invertebrates are often commensal with the woodrats, sharing the houses for shelter. San Francisco dusk-footed woodrat houses provide protection from temperature and moisture extremes and allow animals that might not otherwise tolerate local conditions to live there, increasing the biotic diversity.

San Francisco dusk-footed woodrat is an herbivore and eats grasses, leaves, fresh fruits, small bulbs, bark, and flowers (English 1923). San Francisco dusk-footed woodrat also stores dry foods like hazel nuts and acorns (English 1923). San Francisco dusk-footed woodrat is very picky about what food it eats, but will model its diet after other members of its species (English 1923). Mammals are typically classified as generalists or specialists based on their ability to metabolize specific plant toxins on a species level. However, for the San Francisco dusk-footed woodrat, it may be possible that populations specialize based upon the most abundant food source. In the laboratory, researchers found that woodrats from a predominantly juniper-based habitat preferred to eat juniper, and woodrats from a predominantly cedar-based habitat preferred to eat cedar, even when many different kinds of food were present (McEachern et al 2006).

San Francisco dusk-footed woodrat is a popular prey item for a number of predatory species. Predators of San Francisco dusk-footed woodrat include hawks, owls, bobcat, coyote, long-tailed weasel and many others. There are number parasites that use San Francisco dusk-footed woodrat as a host including lice, fleas, and ticks.

Several stick houses built and used by SFDW are present within the project footprint and adjacent areas.

**Bats**

Two special-status bat species could occur in the project area, including pallid bat and Townsend’s big-eared bat. The trees within the project footprint provide cavities that could be used by bats for roosting, including temporary roosts or maternal roosts. The buildings that are proposed to be removed for the project could also provide roosting habitat for bats.

The pallid bat is found in a variety of habitats including all types of woodland especially oak savanna, grassland, riparian areas and wetlands, orchards, vineyards, and irrigated cropland if appropriate roosting sites are available. A very social bat, the pallid bat occupies a wide variety of habitats throughout California, including grasslands, shrublands, woodlands, and forests. The species is most common in open, dry areas with rocky areas necessary for roosting. It feeds on a variety of insects and spiders. There is moderate potential for pallid bats to use the project site for roosting.

The Townsend’s big-eared bat is found throughout most of the state in many habitat types, but its distribution is patchy and is strongly correlated with available roosting habitat, including caves or man-made structures that are cave-like. Roost requirements are fairly restrictive, with temperature being critical. It forages in edge habitats along streams in a variety of woodland types. The project site could provide foraging habitat for Townsend’s big-eared bat if it occurs in the area.

### 3.4 Heritage or Ordinance Trees

The riparian habitat and oak woodland mapped on the property contain mature trees. The project footprint could impact redwood, live oak, bay and ornamental trees that meet the RM district criteria of 55-inches circumference (17 inches DBH) and require avoidance or mitigation through planting. A tree survey was not conducted for this analysis.
4.0 Regulatory Setting

Biological resources in California are protected under federal, state and local laws and regulations. The laws that pertain to the biological resources found in the area of the CMHC include the following:

- U.S. Endangered Species Act (protecting species listed by the federal government as threatened or endangered);
- U.S. Migratory Bird Treaty Act (protecting most U.S. birds);
- U.S. Bald and Golden Eagle Protection Act (protecting these eagles);
- U.S. Clean Water Act (protecting water quality and wetland habitat);
- California Environmental Quality Act (mitigating the environmental effects of human-initiated development);
- California Endangered Species Act (protecting species listed by the state as rare, threatened, or endangered under Fish and Game Code 2050 et seq);
- California Department of Fish and Game Code (Sections 1600-1607 that protect stream bed, bank and channel; 3500-3516 that protect nesting birds and fully-protected birds; 4700 and 5050 that protect fully-protected mammals, reptiles and amphibians).
- The Significant Tree Ordinance of San Mateo County.

These are described below, with a statement as to how the law or regulation pertains to this specific project.

4.1 Federal

4.1.1 Federal Endangered Species Act

The United States Endangered Species Act (ESA) is administered by the United States Fish and Wildlife Service (USFWS) for all species but fish and NOAA Fisheries for fish species. The federal ESA provides protection for species included on the endangered species list (known as "listed species"). In particular, the federal act prohibits "take". "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a federally listed, endangered species of wildlife, or to attempt to engage in any such conduct." Federal regulations also define take to include the incidental destruction of animals in the course of an otherwise lawful activity, such as habitat loss due to development. Under those rules the definition of take includes significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR Section 17.3).

Take may be allowed under a permit by either Section 7 or Section 10(a) of the ESA. The permit is issued under Section 7 if another federal agency funds or issues a permit for the project (U.S. Army Corps of Engineers for example). The permit is issued under Section 10(a) if there is no federal involvement in the project.

4.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds.
Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not.

In short, under the Migratory Bird Treaty Act it is illegal to remove vegetation containing nests that are in active use, since this could result in killing a bird or destroying an egg. This would also be a violation of CDFG code (see section 4.2.4, below).

4.1.3 Bald and Golden Eagle Protection Act

It is unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, or their parts, products, nests, or eggs. “Take” includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by the USFWS for scientific or exhibition use, and for cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

4.1.4 Clean Water Act

The Federal Clean Water Act is the primary federal law regulating water quality. The implementation of the Clean Water Act is the responsibility of the U.S. Environmental Protection Agency (EPA). That agency depends on other agencies, such as the individual states and the U.S. Army Corps of Engineers (USACE), to assist in implementing the Act. The objective of the Clean Water Act is to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Section 404 and 401 apply to project activities that would impact waters of the U.S. (creeks, ponds, wetlands, etc). The USACE enforces Section 404 of the Clean Water Act and the California State Water Resources Control Board enforces section 401 (see below under State).

Clean Water Act, Section 404: As part of its mandate under the Clean Water Act, the EPA regulates the discharge of dredged or fill material into “Waters of the U.S.” under Section 404 of the Act. “Waters of the U.S.” include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high water marks. The EPA also regulates excavation and changes in drainage. The discharge of dredged or fill material into waters of the U.S. is prohibited under the Clean Water Act except when it is in compliance with Section 404 of the Act. Enforcement authority for Section 404 was given to the USACE, which it accomplishes under its regulatory branch.

4.2 State

4.2.1 State Porter Cologne Act and State and Federal Clean Water Act Section 401

California Porter-Cologne Water Quality Control Act. California’s Porter Cologne Water Quality Control Act (Porter-Cologne Act) regulates Waters of the State, which includes “any surface water or groundwater, including saline waters, within the boundaries of the State”. Cordilleras Creek and the tributaries to it are Waters of the State, as is any groundwater on the site. The California regional water quality control boards (RWQCB) establish Waste Discharge Requirements (WDRs) pursuant to the Porter-Cologne Act for activities involving discharges such as those to land, groundwater, or from diffused sources. Such activities require a complete Report of Waste Discharge with the appropriate RWQCB to obtain WDRs. The project is in the San Francisco Bay RWQCB and is not anticipated to involve discharges to land or groundwater; thus, WDRs are unlikely to be required.
Clean Water Act, Section 401. Any applicant for a Federal permit to impact waters of the U.S. under Section 404 of the Clean Water Act, including Nationwide Permits where pre-construction notification is required, must also provide to the USACE a certification from the State of California. The “401 Certification” is provided by the State Water Resources Control Board through the local Regional Water Quality Control Board (RWQCB).

The State Water Resources Control Board sets statewide policy related to water quality, coordinates and supports regional water quality control boards, and reviews petitions that contest regional board actions. The RWQCB sets water quality standards, waste discharge requirements for its region, determines compliance with those standards, and takes enforcement action. The RWQCB issues and enforces permits for discharge of treated water, landfills, stormwater runoff, filling of any surface waters or wetlands, dredging, agricultural activities and wastewater recycling.

The RWQCB recommends the application be made at the same time that any applications are provided to other agencies, such as the USACE, USFWS, or NOAA Fisheries. Application is not final until completion of environmental review under the California Environmental Quality Act (i.e., CEQA certification). The application to the RWQCB is similar to the pre-construction notification that is required by the USACE (see discussion of Section 404, below). It must include a description of the habitat that is being impacted, a description of how the impact is proposed to be minimized and proposed mitigation measures with goals, schedules, and performance standards. Mitigation must include a replacement of functions and values, and replacement of wetland at a minimum ratio of 2:1, or twice as many acres of wetlands provided as are removed. The RWQCB looks for mitigation that is on site and in-kind, with functions and values as good as or better than the water-based habitat that is being removed.

4.2.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA; Public Resources Code Sections 21000 et. seq.) requires public agencies to review activities which may affect the quality of the environment so that consideration is given to preventing damage to the environment. When a lead agency issues a permit for development that could affect the environment, it must disclose the potential environmental effects of the project. This is done with an “Initial Study and Negative Declaration” (or Mitigated Negative Declaration) or with an “Environmental Impact Report”. Certain classes of projects are exempt from detailed analysis under CEQA.

Under the CEQA Guidelines (Title 14 C.C.R. Sections 15000 et. seq.), Section 15303, single-family dwellings usually qualify as a Class 3 categorical exemption. Minor grading and landscaping usually qualifies as a Class 4 categorical exemption. However, under CEQA Guidelines Section 15300.2, there are exceptions to allowing Class 3 and 4 categorical exemptions. If the project is located in a sensitive environment, an ordinarily insignificant project may actually have significant effects. Thus, under the Guidelines a project is not categorically exempt if it “may impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.” The Guidelines also specifically state that projects that impact scenic highways, hazardous waste sites, or historical resources are not categorically exempt. Finally, pursuant to the Guidelines, any project contributing to significant cumulative impacts or that has a reasonable possibility of causing a significant effect on the environment due to unusual circumstances cannot be exempt. The state maintains a list of sensitive, or “special-status”, biological resources, including those listed by the state or federal government or the California Native Plant Society as endangered, threatened, rare or of special concern due to declining populations. Projects that directly impact these resources may not qualify for a categorical...
exemption. For example, grading that would remove a pond containing California red-legged frogs (federal Threatened) would not qualify for a categorical exemption under CEQA.

The CEQA Guidelines contain a checklist of questions to gauge whether a project will result in significant impacts. The questions that pertain to biological resources are as follows. If a project will have no impact related to these questions, no further CEQA action related to biological resources would be necessary:

Would the project:

a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and [Game] Wildlife or U.S. Fish and Wildlife Service?

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and [Game] Wildlife or U.S. Fish and Wildlife Service?

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy?

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The analysis of the project under CEQA includes consultation of the California Natural Diversity Database (CNDDB). The CNDDB relies on information provided by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the California Native Plant Society, as well as the public regarding the location of rare plant and animal species. Under CEQA, the lists kept by these and any other widely recognized organizations are considered when determining the biological impacts of a project.

The CEQA Guidelines Section 15380 defines endangered, threatened, and rare species for the purposes of the analysis that complies with CEQA and clarifies that CEQA review extends to other species that are not formally listed under the state or federal Endangered Species Acts but that meet specified criteria. The state and federal governments keep lists of such "special-status" species which are reflected in the CNDDB. Many of these species are not listed under either ESA but are currently tracked to determine if listing is necessary. Thus they are not specifically protected by the state and federal Endangered Species Acts. They are only protected through measures imposed as a result of CEQA review. The California Native Plant Society has a list of plants that are considered to be rare, threatened, or endangered in a portion or all of their range; these plants may not have been listed by the California Department of Fish and Game or the U.S. Fish and Wildlife Service, but they are considered sensitive under CEQA. Thus, the lead agency should consider impacts to these species when assessing the
effects of a particular project, even if the project is otherwise exempt from CEQA. The California Department of Fish and Game is a trustee agency and is solicited for its comments during the CEQA process unless a project is exempt. The state also maintains a list of fully-protected species, for which no permits for take are allowed to be issued.

4.2.3 California Endangered Species Act

The California Endangered Species Act (CESA; Fish and Game Code 2050 et seq.) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies shall not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy.

4.2.4 California Fish and Game Code

The California Department of Fish and Wildlife (CDFW) is authorized under the California Fish and Game Code, Sections 1600-1607 to develop mitigation measures and enter into Streambed Alteration Agreements with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams.

Sections 3500-3516, 4700, 5050 and 5515 address Fully Protected species. Prior to the passage of CESA, the classification of Fully Protected was the State’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Subsequently, many Fully Protected species have been listed under the state and/or federal Endangered Species Acts. The only exceptions are golden eagle, white-tailed kite, trumpeter swan, northern elephant seal, and ringtail. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Nesting birds, including raptors, are protected by the California Fish and Game Code section 3503, which reads, “It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.” In addition, under Fish and Game Code section 3503.5, “it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto”. Passerines and non-passerine landbirds are further protected under the Federal Migratory Bird Treaty Act. As such, the CDFW typically recommends surveys for nesting birds that could potentially be directly (actual removal of trees/vegetation) or indirectly (noise disturbance) impacted by project-related activities. Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “taking” by the CDFW.

The California Department of Fish and Wildlife recommends replacing trees greater than 4 inches diameter at breast height (DBH, 4.5 feet above grade) at the following ratios: 6:1 for native oaks; 3:1 for other native trees; and 1:1 replacement for non-native trees. The purpose of tree replacement is to restore wildlife habitat quickly and to account for mortality of replanted trees.
4.3 Local

4.3.1 The Significant Tree Ordinance of San Mateo County and the Resource Management District

The County of San Mateo Planning and Building Division oversees compliance with the Significant Tree Ordinance of San Mateo County (Part Three of Division VIII of the San Mateo County Ordinance Code). The County has identified that tress and tree communities in San Mateo county are a valuable and distinctive natural resource. A “significant tree” is any live woody plant rising above the ground with a single stem or trunk of a circumference of thirty-eight inches or more measured at four and one half feet vertically above the ground or immediately below the lowest branch, whichever is lower. This is equivalent to a tree of 12 inches diameter at breast height (DBH).

Tree cutting in the RM district is exempt from obtaining a permit except within 100 feet of any County or State scenic road or highway, as identified in the San Mateo County General Plan, provide that any tree cutting in the RM district meets the criteria of sections 6324 through 6326.4 of the San Mateo County Zoning Regulations. Any permit issued for projects in the RM district constitutes a Certificate of Compliance as required by Section 6461 of the San Mateo County Zoning Regulations.

The zoning ordinance (Section 6324.2) includes the following guidance relative to natural resources:

“(i) Wherever possible, vegetation removed during construction shall be replaced. Vegetation for the stabilization of graded areas or for replacement of existing vegetation shall be selected and located to be compatible with surrounding vegetation, and should recognize climatic, soil and ecological characteristics of the region.

(j) Removal of living trees with trunk circumference of more than 55 inches measured 4-1/2 feet above the average surface of the ground is prohibited, except as may be required for development permitted under this Ordinance, or permitted under the timber harvesting ordinance, or for reason of actual or potential danger to life and property.

(k) With the exception of trails and paths, and related appurtenances, no structural development shall be permitted where such development will adversely affect a perennial stream and associated riparian habitat.” (note: Cordilleras Creek is intermittent and not a perennial stream).

And the following from Section 6324.4:

“(f) Development, with the exception of agricultural uses and public works and public safety projects, which might cause significant adverse impacts upon the natural course or riparian habitat of any stream, shall not be permitted. All developments shall be required to perform all feasible measures to mitigate possible impacts upon such areas.”; and

“(h) Projects shall clearly demonstrate methods to be employed for management of vegetative cover, surface water runoff, groundwater recharge, and erosion and sedimentation processes to assure stability of downstream aquatic environments.”

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1 17 inches DBH
5.0 Constraints Analysis

5.1 Wetland and Jurisdictional Waters

Cordilleras Creek and its tributary have a distinct channel and banks that fall within the jurisdiction of the U.S. Army Corps of Engineers, the California Regional Water Quality Control Board, and the California Department of Fish and Wildlife. The riparian zone around Cordilleras Creek (Figure 3) is also within the jurisdiction of the California Department of Fish and Wildlife. No freshwater emergent wetlands were found on the project property. Any work associated with the culverts will require authorization from these agencies because the culverts are located within the historic creek banks. It should be assumed that the U.S. Army Corps of Engineers will request consultation with the U.S. Fish and Wildlife Service, and that a Biological Assessment will need to be prepared for that.

The Cordilleras Creek channel varies in width from 20 feet to 40 feet, measured from bank top to bank top. The low flow channel is shallow (6 inches) and narrow (2 feet), and the creek is intermittent. The low flow channel and top of bank is mapped on Figure 4; the approximate centerline is shown on Figure 5. The County planning division recommends a 30-foot setback from the creek centerline. The California Department of Fish and Wildlife may require a setback that is measured from the top of the creek bank in the Lake and Streambed Alteration Agreement (see Regulatory Requirements below).

The area where soil fill was historically placed on the property (upstream of the current development and to the south of the Cordilleras Creek channel), contains spots where water may pond as a result of the soil fill. Hydrophytic vegetation has not developed in these low areas, and they do not contain jurisdictional wetlands.

5.2 Wildlife Corridors

The existing development is fenced, but is surrounded by open space, and there are pathways open for wildlife movement around the development. Future fencing will need to take wildlife movement into consideration, however, because there is open space on all sides of the development it is expected that wildlife could continue to move through the area without being significantly impeded.

5.3 Special-status Species

The project footprint currently contains stick houses built by the San Francisco dusky-footed woodrat. Mitigation required for impacts to this species are listed below. The houses will need to be removed out of the project footprint prior to construction following a protocol agreed to with the California Department of Fish and Wildlife. This protocol is summarized in Section 6.1, below.

The project footprint has not been surveyed for Western leatherwood or San Francisco collinsia, which could occur in habitat present. A follow up survey is recommended. Removal of the plants should be avoided, and existing populations protected from human disturbance.

There is a very low likelihood of occurrence of California red-legged frog, San Francisco garter snake or Western pond turtle. Best management practices are recommended to be incorporated into project documents to avoid impacts to these species. If impacts occur and the project does not have a permit to take CRF or SFGS, the project would be in violation of the state federal endangered species acts. It should be assumed that the U.S. Army Corps of Engineers will
consult with the U.S. Fish and Wildlife Service regarding potential impacts to these federally listed species.

5.4 Trees

The project footprint contains a significant number of trees which need to be evaluated using the parameters listed below. It is recommended that trees 17 inches DBH or greater in diameter be retained in the project design to address concerns identified in the RM district zoning regulations. However, the California Department of Fish and Wildlife will require mitigation for any trees greater 4 inches DBH as part of the Lake and Streambed Alteration Agreement (S. DeLeon, pers. comm.), and the mitigation requirements are often site specific. An assessment of tree size and species will need to be prepared for the Lake and Streambed Alteration Agreement, along with a tree mitigation plan that includes replacement ratios, species, location, maintenance, monitoring, and reporting.

Trees that are removed will need to be replaced at higher ratios, as noted below, and these replacement trees will need to be shown in the landscape plan for the project. If there is not enough room onsite to plant replacement trees, a local site that is preferably within the watershed will need to be identified. There may be mitigation opportunities in the Pulgas Ridge Open Space Preserve adjacent to the project site (S. DeLeon, pers. comm.).

Tree replacement ratios for trees removed that are greater than 4 inches DBH could be:

- 6:1 for coast live oaks
- 3:1 for other native trees
- 1:1 for non-native trees (but replaced by native trees)

These ratios may change and site-specific ratios may be required by the resource agencies. Removal of trees less than 4 inches DBH may not require mitigation.

5.5 Regulatory Requirements

The project will require the following permits related to natural resources:

- A Lake and Streambed Alteration Agreement from the California Department of Fish and Wildlife for impacts to the riparian zone along Cordilleras Creek. It is recommended that the tributary to Cordilleras Creek be included in the application in the event changes to the culvert are required.
- A Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers (USACE) to replace existing culverts. This can likely be completed under the Nationwide Permit Program, however, the USACE may also need to consult with the U.S. Fish and Wildlife Service regarding the potential for impacts to federally listed species.
- A Clean Water Act Section 401 Water Quality Certification from the Regional Water Quality Control Board.

5.6 CEQA Checklist Questions

Would the project:

a. Have a substantial adverse effect, either directly or through habitat modifications, on
any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

The response to this question is expected to be “Less than Significant Impact with Mitigation”. The project footprint contains the stick houses of the San Francisco Dusky-footed woodrat and a CDFW-approved plan to trap the animals and move the woodrat houses out of the footprint will be required. The project may also impact San Francisco collinsia and western leatherwood. A site survey in the next bloom period for these species is recommended (Jan-May) to determine and map presence. A protection plan for the plants on the property should be incorporated into the project to minimize human impact.

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The response to this question is expected to be “Less than Significant Impact with Mitigation”. The project includes redevelopment of an existing disturbed site and will also affect adjacent riparian and oak bay woodland. Because of its setting, the project will need to be executed carefully and with consideration for the natural environment to be in keeping with local ordinances and California Department of Fish and Wildlife requirements regarding creek setback and tree replacement. The parcel is predominantly open space, and is adjacent to the Pulgas Ridge Open Space and near Edgewood Natural Preserve and the Crystal Springs watershed. It will affect two to three acres of undeveloped habitat and will not substantially reduce wildlife habitat in the vicinity. Mitigation measures that should be incorporated into the project design are provided in section 6.2, below.

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No. While the project site contains waters of the U.S. and state, it does not currently contain wetlands defined by the three parameters (hydric soil, hydrology, and hydric vegetation).

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No. It is unlikely that fish migrate through this area of Cordilleras Creek because of intermittent flows and barriers to fish movement between this site and San Francisco Bay. The existing development is fenced, but is surrounded by open space, and there are pathways open for wildlife movement around the development. Future fencing will need to take wildlife movement into consideration, however, because there is open space on all sides of the development it is expected that wildlife could continue to move through the area without being significantly impeded.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy?

It is anticipated that the project will incorporate requirements for creek setback and tree replacement and will not conflict with policies protecting biological resources.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural
Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No. The project is not within the study area of any approved or anticipated habitat conservation plans or natural community conservation plans.
6.0 Recommendations

6.1 Additional Surveys that are Necessary

Botanical survey(s) for western leatherwood and San Francisco collinsia should be conducted in suitable habitat within the proposed project footprint and adjacent areas during the blooming period (January to April for leatherwood, March-May for collinsia). If these plants are found to be present in the area of direct project impacts, the project plan may need to be modified to avoid the plants. It will be important to identify all locations of the plants on the property in order to put any unavoidable removal of plants in biological context.

Woodrat

A map of woodrat houses within the project footprint and within 200 feet of the project footprint will be necessary in order to prepare a woodrat removal plan for CDFW approval.

Bat

In order to avoid or minimize impacts to potential roosting bats, a pre-tree removal survey should be conducted no more than 30 days prior to tree removal. The survey should be conducted by a qualified bat biologist. If no active roost is present, then no further action is required. However, if a maternity roost of a special-status bat species is detected during the maternity season (approximately March 1 – August 30), then CDFW will need to be notified and tree removal cannot take place until after August 30. If non-breeding bats are found in a tree proposed for removal, bats should be passively excluded from the tree. This is generally accomplished by opening up the roost area to allow airflow through the cavity/crevice, or installing one-way doors. This would need to be done by a CDFW approved biologist.

Trees

The project should include an arborist report that identifies the location of all trees larger than 4 inches DBH, their species, and their condition.

Biological Assessment

The U.S. Army Corps of Engineers may require a Biological Assessment that addresses project impacts to federally listed species in the event it consults with the U.S. Fish and Wildlife Service. The Biological Assessment will include a habitat assessment for these species but does not require protocol surveys.

6.2 Avoidance and Minimization Measures

The following measures are likely to be required of the project as a result of the CEQA process and/or wildlife agency authorizations:

Creek Protection

Stormwater Best Management Practices (e.g., erosion control) will be required for the project to protect water quality in Cordilleras Creek and downstream.
A setback from the creek bank (not just the centerline) will be required to protect creek bank vegetation and integrity. Stormwater flows will need to be managed so there is no net increase in stormwater flow to the creek, per state guidelines.

Revegetation of soils temporarily disturbed for site grading will be required.

Replacement of trees removed per ratios mentioned above will replace wildlife habitat and restore portions of the riparian corridor that are affected. Native trees will be required.

San Francisco Dusky-footed Woodrat

Mitigation for SFDW requires preparation of a plan to move woodrat houses out of the project impact area that is approved by the California Department of Fish and Wildlife. Based on recent experience, this could potentially include the following steps:

- A site survey to map woodrat houses within the project footprint and a 200 foot perimeter of the project footprint;
- A written removal plan provided to CDFW for approval well in advance of actual removal;
- The availability of an adequate amount of adjacent habitat;
- Live trapping SFDW at stick houses that cannot be avoided, then holding them temporarily in trap in a shaded area.
- Dismantling of the stick house, and release of the SFDW the same morning in re-constructed stick house shelters in similar habitat within 200 feet of the removed house;
- Reconstructed stick houses will consist of woody debris salvaged from the stick house assembled around a 12-inch pine box, vented, with 2 interior chambers, one off-set entrance. The pine box will be stabilized with wooden stakes and screws and installed slightly below grade. Cached food from the affected house and/or seed used for live-trapping will be placed inside the box along with salvaged nest material. The SFDW will be released into the chamber and the entrance loosely plugged with soil and debris to incite the animal to remain during the day it is released.
- Monitoring of the results of woodrat activity at each shelter within 60 days and at one year, and providing a report to CDFW.
- Pre-project construction surveys for the SFDW within 48 hours before sites are disturbed to verify no new stick houses have been established. New houses will be protected and CDFW will be contacted for guidance.

California Red-legged Frog, San Francisco Garter Snake, Western Pond Turtle

Although impacts to these species are not likely, the project will need to include the following measures to avoid impacts.

Project construction shall be limited to the dry season (June 1- November 1) when these species are unlikely to be moving to and from aquatic sites.

An employee education program shall be conducted prior to the initiation of project activities. The program will consist of a brief presentation by persons knowledgeable in the biology of these species and legislative protection to explain concerns to contractors and their employees. The program shall include: a) a description of species identifying features and life history; b)
information on status of the species and protection under state and federal laws; and c) a list of measures required during the project to reduce impacts to the species and the habitat. Both construction and maintenance crews shall be instructed what to do if a frog is found, including notification requirements. The employee education program shall be repeated for new construction and maintenance personnel.

A qualified biologist shall conduct pre-construction surveys for these species immediately before initiation of any ground disturbing activities. These surveys will comprise thoroughly walking the area while conducting visual encounter surveys within areas that will be subject to development. In addition, daily monitoring of the site in the morning prior to the start of work may be conducted at the discretion of the qualified biologist or as required by permits. A qualified biologist shall be present during all new ground disturbing work.

To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled they must be thoroughly inspected by the biological monitor for trapped animals. Any pipes or similar structures stored in the project site overnight shall be inspected by the biological monitor before they are subsequently moved, capped and/or buried.

To prevent animals from becoming entangled, trapped or injured, erosion control materials that contain synthetic mono-filament netting shall not be used within the project area. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut (coir), twine or other similar fibers.

**Rare Plants**

If rare plants are identified within or near the project development area the locations should be flagged. Depending on the species, there may be an effort to salvage plants that cannot be avoided. Plants outside of the footprint should be protected with fencing to avoid impacts during construction, and their locations should be left alone post construction.

An employee education program regarding rare plants should be incorporated into the rare animal education program explained above.

### 6.3 Additional Recommendations

Rodent control measures at the facility should be reviewed in light of the presence of San Francisco dusky-footed woodrat and raptors. Rodenticides are not recommended.

It is recommended that all plantings be native species or compatible species. Use of invasive plant species should be avoided.

There are patches of highly invasive non-native plant species on the property, such as French and Spanish broom. These should be removed to prevent adverse impacts to adjacent natural habitats.
7.0 References

Biological Diversity.


APPENDIX A

FIGURES
TRA Environmental Sciences, Inc.
Figure 1 Regional Location
Figure 2 Site Vicinity Location

Cordilleras Mental Health Center
Figure 4
Site Topography and Vegetation
Cordilleras Mental Health Center

Top of Bank
Culvert
Low Flow Channel
Annual Grassland
Coastal Sage Scrub
Developed
Mixed Live Oak Woodland
Riparian
Figure 6 Photographs

Photo 1: Cordilleras Creek stormdrain inlet upstream of existing development.
Photo 2: Redwoods and oak woodland in area proposed for new buildings.

Photo 3: Oak woodland and grassland in area proposed for new hospital community center.
Photo 4: Structure in the creek bed.

Photo 5: Creek bank and bed near storm drain inlet.
Photo 6: Cordilleras Creek channel.

Photo 7: Cordilleras Creek channel and woodrat house.
CORDILLERAS MENTAL HEALTH CENTER
BIOLOGICAL CONSTRAINTS ANALYSIS

APPENDIX B

SPECIAL STATUS SPECIES TABLES
TRA Environmental Sciences, Inc.
<table>
<thead>
<tr>
<th>Common Name (Scientific Name)</th>
<th>Listing Status</th>
<th>Geographic Distribution in California</th>
<th>Habitat Requirements</th>
<th>Life Form, Blooming Period</th>
<th>Potential to be impacted by the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Mateo thorn-mint (Acanthomintha duttonii)</td>
<td>FE; SE; CRPR1B.1</td>
<td>Located in San Mateo County.</td>
<td>Chaparral, valley and foothill grassland, or coastal scrub. Locally occurs in serpentine bunchgrass grassland; 50-300 m.</td>
<td>Annual herb, April - June</td>
<td>None. Suitable habitat is not present.</td>
</tr>
<tr>
<td>Franciscan onion (Allium peninsulare var. franciscanum)</td>
<td>CRPR 1B.2</td>
<td>Coastal mid California, from Monterey to Mendocino Counties.</td>
<td>Cismontane woodland, valley and foothill grasslands. Often on dry hillsides and in serpentine bunchgrass grasslands; 52-300 m.</td>
<td>Perennial bulbiferous herb, May - June</td>
<td>None. Suitable habitat is not present.</td>
</tr>
<tr>
<td>bent-flowered fiddleneck (Amsinckia lunaris)</td>
<td>CRPR 1B.2</td>
<td>Mid California, including Monterey, Santa Cruz, San Mateo, Marin, Alameda, Contra Costa, Napa, Lake and Colusa counties.</td>
<td>Coastal bluff scrub, cismontane woodland or valley and foothill grassland; 3-500 m.</td>
<td>Annual herb, March - June</td>
<td>Moderate</td>
</tr>
<tr>
<td>Anderson’s manzanita (Arctostaphylos andersonii)</td>
<td>CRPR 1B.2</td>
<td>Mid California including Monterey, Santa Cruz, San Mateo, Santa Clara, and Alameda counties.</td>
<td>Broadleaved upland forest, mixed evergreen forest, North coast coniferous forest including open sites in redwood forest, chaparral; 60-760 m.</td>
<td>Perennial evergreen shrub, November - May</td>
<td>None. Manzanita species are not present in the project footprint.</td>
</tr>
<tr>
<td>Montara manzanita (Arctostaphylos montaraensis)</td>
<td>CRPR 1B.2</td>
<td>Endemic to San Mateo County.</td>
<td>Maritime chaparral or coastal; 150-500 m.</td>
<td>Perennial evergreen shrub, January - March</td>
<td>None. Habitat not present in the project footprint</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Statusa</td>
<td>Geographic Distribution in California</td>
<td>Habitat Requirements</td>
<td>Life Form, Blooming Period</td>
<td>Potential to be impacted by the Projectb</td>
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<tr>
<td>Kings Mountain manzanita (Arctostaphylos regismontana)</td>
<td>CRPR 1B.2</td>
<td>Mid California including Santa Cruz, San Mateo, and Santa Clara counties.</td>
<td>Granite or sandstone outcrops in chaparral, coniferous, broadleaved upland and evergreen forests; 305-730 m.</td>
<td>Perennial evergreen shrub, January – April</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Coastal marsh milk-vetch (Astragalus pynostachyus var. pynostachyus)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Humboldt, Marin and San Mateo Counties.</td>
<td>Coastal dunes (mesic), coastal scrub or marshes and swamps (coastal salt, streamside); 0-30 m.</td>
<td>Perennial herb, April-October</td>
<td>None. Coastal scrub or dune habitat not present.</td>
</tr>
<tr>
<td>round-leaved filaree (California macrophylla)</td>
<td>CRPR 1B.1</td>
<td>Scattered locations throughout California west of the Sierra Nevada and south of Red Bluff.</td>
<td>Cismontane woodland or valley and foothill grassland on clay soils; 15-1200 m.</td>
<td>Annual herb, March-May</td>
<td>Low. Suitable habitat present but this species is not known to occur within 5 miles of the project.</td>
</tr>
<tr>
<td>Congdon’s tarplant (Centromadia parryi ssp. congdonii)</td>
<td>CRPR 1B.2</td>
<td>Throughout western California from San Luis Obispo to Solano County.</td>
<td>Valley and foothill grasslands with alkaline or clay soils; 0-230 m.</td>
<td>Annual herb, May - November</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>Pappose tarplant (Centromadia parryi ssp. parryi)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Butte, Colusa, Glenn, Lake, Napa, San Luis Obispo, San Mateo, Solano and Sonoma Counties.</td>
<td>Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt) or valley and foothill grassland (vernally mesic); 2-420 m.</td>
<td>Annual herb, May - November</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>Point Reyes bird’s beak (Chloropyron maritimum ssp. palustre)</td>
<td>CRPR 1B.2</td>
<td>Extant occurrences in Humboldt, Marin, San Francisco and Sonoma Counties.</td>
<td>Marshes and swamps (coastal salt); 0-10 m.</td>
<td>Annual herb (hemiparasitic), June-October</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
</tbody>
</table>
## Table 1. Special-status Plants Potentially Occurring in the Project Area (9 quad search)

<table>
<thead>
<tr>
<th>Common Name (Scientific Name)</th>
<th>Listing Statusa</th>
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<th>Habitat Requirements</th>
<th>Life Form, Blooming Period</th>
<th>Potential to be impacted by the Projectb</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco Bay spineflower (Chorizanthe cuspidata var. cuspidata)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Marin, San Francisco, San Mateo and possibly Sonoma Counties.</td>
<td>Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub on sandy soils; 3-215 m.</td>
<td>Annual herb, April-August</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>robust spineflower (Chorizanthe robusta var. robusta)</td>
<td>FE, CRPR 1B.2</td>
<td>Endemic to the San Francisco Bay Area and Monterey Coast.</td>
<td>Chaparral (maritime), cismontane woodland (openings), coastal dunes and coastal scrub in sandy or gravelly soils; 3-300 m.</td>
<td>Annual herb, April-September</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>Franciscan thistle (Cirsium andrewsii)</td>
<td>CNPS 1B.2</td>
<td>Endemic to Contra Costa, Marin, San Francisco and San Mateo Counties.</td>
<td>Broadleaved upland forest, coastal bluff scrub, coastal prairie or coastal scrub on mesic, sometimes serpentine sites; 0-150 m.</td>
<td>Perennial herb, March - July</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>Crystal Springs fountain thistle (Cirsium fontinale var. fontinale)</td>
<td>FE; SE; CRPR 1B.2</td>
<td>Found exclusively in San Mateo county.</td>
<td>Valley and foothill grasslands and chaparral including serpentine seeps and grassland; 45-175 m.</td>
<td>Perennial herb, May - October</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>San Francisco collinsia (Collinsia multicolor)</td>
<td>CRPR 1B.2</td>
<td>Mid-coastal California from Monterey to Marin county including Santa Clara county.</td>
<td>Moist shady woodland, closed-cone coniferous forests and coastal scrub. Occasionally found in serpentine; 30-250 m.</td>
<td>Annual herb, March – May</td>
<td>High. Suitable habitat is present in the project footprint. Observed to occur in the Cordilleras Creek channel in June 2014.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Status</td>
<td>Geographic Distribution in California</td>
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<tr>
<td>western leatherwood (Dirca occidentalis)</td>
<td>CRPR 1B.2</td>
<td>San Francisco Bay area including Santa Clara to Marin county and east to Alameda county.</td>
<td>Cool, moist slopes in foothill woodland and riparian forests. Mesic environments in broadleaved upland forests, chaparral and coniferous woodlands and mixed evergreen and oak woodlands; 25-425 m.</td>
<td>Perennial deciduous shrub, January – April.</td>
<td>High. Suitable habitat present in the project footprint. Known to occur at Edgewood Natural Preserve.</td>
</tr>
<tr>
<td>Ben Lomond buckwheat (Eriogonum nudum var. decurrens)</td>
<td>CRPR 1B.1</td>
<td>Endemic to Alameda, Santa Clara and Santa Cruz Counties.</td>
<td>Chaparral, cismontane woodland, lower montane coniferous forest (maritime ponderosa pine sandhills); 50-800 m.</td>
<td>Perennial herb, June-October</td>
<td>Low. Marginally suitable habitat present. Not known to occur within 5 miles of the project site.</td>
</tr>
<tr>
<td>San Mateo woolly sunflower (Eriophyllum latilobum)</td>
<td>FE, SE, CNPS 1B.1</td>
<td>San Mateo and Napa counties.</td>
<td>Cismontane and oak woodland, often on roadcuts; found on and off of serpentine and on grassy hillside; 45-150m.</td>
<td>Perennial herb, April – June</td>
<td>Low. Marginally suitable habitat present. Not known to occur within 5 miles of the site.</td>
</tr>
<tr>
<td>Hoover’s button-celery (Eryngium aristulatum var. hooveri)</td>
<td>CRPR 1B.1</td>
<td>Endemic to Alameda, San Benito, Santa Clara, San Diego and San Luis Obispo Counties.</td>
<td>Vernal pools; 3-45 m.</td>
<td>Annual/perennial herb, July-August</td>
<td>None. Suitable habitat is not present in the project footprint.</td>
</tr>
<tr>
<td>Hillsborough chocolate lily (Fritillaria bifora var. ineziana)</td>
<td>CRPR 1B.1</td>
<td>Endemic to San Mateo County.</td>
<td>Cismontane woodland or valley and foothill grasslands on serpentine soils.</td>
<td>Perennial herb, March – April</td>
<td>None. Serpentine soils are not present in the project footprint.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
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<tr>
<td>fragrant fritillary (Fritillaria liliacea)</td>
<td>CRPR 1B.2</td>
<td>Found throughout northern and central California wherever there is suitable habitat.</td>
<td>Cismontane woodland and coastal scrub and prairie, in valley and foothill grasslands (often serpentine bunchgrass grassland); 3-410 m.</td>
<td>Perennial bulbiferous herb, February – April</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Short-leaved evax (Hesperevax sparsiflora var. brevifolia)</td>
<td>CRPR 1B.2</td>
<td>Occurs along the coast from the Oregon border to near Santa Cruz.</td>
<td>Coastal bluff scrub (sandy), coastal dunes or coastal prairie; 0-215 m.</td>
<td>Annual herb, March-June</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Marin western flax (Hesperolinon congestum)</td>
<td>FT; ST; CRPR 1B.1</td>
<td>Found only around the San Francisco peninsula in San Mateo and Marin Counties.</td>
<td>Chaparral, valley and foothill grassland, especially in serpentine bunchgrass grassland and serpentine barrens; 5-370 m.</td>
<td>Annual herb, April – July</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Kellog's horkelia (Horkelia cuneata var. sericea)</td>
<td>CRPR 1B.1</td>
<td>California endemic with extant occurrences in Monterey, Santa Barbara, Santa Cruz, San Luis Obispo and San Mateo Counties.</td>
<td>Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes or coastal scrub in sandy or gravelly openings; 10-200 m.</td>
<td>Perennial herb, May-October</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Point Reyes horkelia (Horkelia marinensis)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Mendocino, Marin, Santa Cruz, San Mateo and Sonoma Counties.</td>
<td>Coastal dunes, coastal prairie or coastal scrub on sandy soils; 5-350 m.</td>
<td>Perennial herb, May-September</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Statusa</td>
<td>Geographic Distribution in California</td>
<td>Habitat Requirements</td>
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</tr>
<tr>
<td>perennial goldfields (Lasthenia californica ssp. macrantha)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Mendocino, Marin, San Luis Obispo, San Mateo and Sonoma Counties.</td>
<td>Coastal bluff scrub, coastal dunes or coastal scrub; 5-520 m.</td>
<td>Perennial herb, January-November</td>
<td>None. Suitable habitat not present.</td>
</tr>
<tr>
<td>legenere (Legenere limosa)</td>
<td>CRPR 1B.1</td>
<td>Endemic to the Central Valley and Inner Coast Ranges from Redding to Salinas.</td>
<td>Vernal pools; 0-880 m.</td>
<td>Annual herb, April-June</td>
<td>None. Suitable habitat not present.</td>
</tr>
<tr>
<td>Coast yellow leptosiphon (Leptosiphon croceus)</td>
<td>CRPR 1B.1</td>
<td>California endemic; extant occurrences in Monterey and San Mateo Counties.</td>
<td>Coastal bluff scrub or coastal prairie; 10-150 m.</td>
<td>Annual herb, April-May</td>
<td>None. Suitable habitat not present.</td>
</tr>
<tr>
<td>rose leptosiphon (Leptosiphon rosaceus)</td>
<td>CRPR 1B.1</td>
<td>California endemic; extant occurrences in Marin and San Mateo Counties.</td>
<td>Coastal bluff scrub; 0-100 m.</td>
<td>Annual herb, April-July</td>
<td>None. Suitable habitat not present.</td>
</tr>
<tr>
<td>Crystal Springs lessingia (Lessingia arachnoidea)</td>
<td>CRPR 1B.2</td>
<td>Endemic to San Mateo county and Sonoma Counties.</td>
<td>Cismontane woodland, coastal scrub or valley and foothill grassland on serpentine soils, often on roadsides; 60 – 200m.</td>
<td>Annual herb ; July – October</td>
<td>Low. Suitable vegetative habitat present, but serpentine soil habitat not present. Occurs in the area around the project site.</td>
</tr>
<tr>
<td>Indian Valley bush mallow (Malacothamnus aboriginum)</td>
<td>CRPR 1B.2</td>
<td>Endemic to western California from San Mateo to Paso Robles.</td>
<td>Chaparral, cismontane woodland. Rocky, granitic soils, often in burned areas; 150-1700 m.</td>
<td>Perennial deciduous shrub, April-October</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
</tbody>
</table>
Table 1. Special-status Plants Potentially Occurring in the Project Area (9 quad search)

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</thead>
<tbody>
<tr>
<td>arcuate bush mallow (Malacothamnus arcuatus)</td>
<td>CRPR 1B.2</td>
<td>Found throughout the San Francisco peninsula and the south bay area throughout San Mateo and Santa Clara counties and Merced county.</td>
<td>Ultramafic chaparral, gravelly alluvium. Locally, in openings in mixed evergreen forests; 15-355 m.</td>
<td>Perennial evergreen shrub, April – September</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Davidson's bush mallow (Malacothamnus davidsonii)</td>
<td>CRPR 1B.2</td>
<td>Throughout California, found in San Mateo, Monterey, San Luis Obispo, and Los Angeles counties.</td>
<td>Sandy washes within coastal scrub, chaparral, and riparian woodland, at elevations 185 – 855m.</td>
<td>Perennial deciduous shrub, June – January</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Hall's bush mallow (Malacothamnus hallii)</td>
<td>CRPR 1B.2</td>
<td>Endemic to western California from Mendecino and Lake Counties to Stanilaus County.</td>
<td>Chaparral and coastal scrub; 10-760 m.</td>
<td>Perennial evergreen shrub, May-October</td>
<td>None. Suitable habitat not present in project footprint.</td>
</tr>
<tr>
<td>marsh microseris (Microseris paludosa)</td>
<td>CRPR 1B.2</td>
<td>California endemic; extant occurrences in Mendocino, Monterey, Marin, San Benito, Santa Cruz, San Luis Obispo and Sonoma Counties.</td>
<td>Closed-cone coniferous forest, cismontane woodland, coastal scrub or valley and foothill grassland; 5-300 m.</td>
<td>Perennial herb, April-June</td>
<td>Low. Suitably moist habitat not present in project footprint.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Status(^a)</td>
<td>Geographic Distribution in California</td>
<td>Habitat Requirements</td>
<td>Life Form, Blooming Period</td>
<td>Potential to be impacted by the Project(^b)</td>
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</tr>
<tr>
<td>woodland woolythreads (Monolopia gracilens)</td>
<td>CRPR 1B.2</td>
<td>Through central California from San Mateo and Contra Costa counties south to San Luis Obispo county.</td>
<td>Grass openings in chaparral, valley and foothill grasslands (serpentine), cismontane woodland, broadleafed upland forests, North coast coniferous forest. Sandy to rocky soils; 100-1200 m.</td>
<td>Annual herb, February – July</td>
<td>Moderate. Grassy openings and serpentine soils are not present in the project footprint. This species is known to occur near the project site.</td>
</tr>
<tr>
<td>Dudley’s lousewort (Pedicularis dudleyi)</td>
<td>SR; CRPR 1B.2</td>
<td>Throughout central coastal California from San Mateo county south to San Luis Obispo county.</td>
<td>Chaparral, valley and foothill grassland and North coast coniferous forest, particularly deep shady woods and steep cut banks in older coast redwood forests and maritime chaparral; 60-900 m.</td>
<td>Perennial herb, April – June</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>white-rayed pentachaeta (Pentachaeta bellidiflora)</td>
<td>FE; SE; CNPS 1B.2</td>
<td>California endemic; extant occurrences in San Mateo County.</td>
<td>Cismontane woodland or valley and foothills grassland (often serpentinite); 35-620 m.</td>
<td>Annual herb, March – May</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>white-flowered rein orchid Piperia candida</td>
<td>CRPR 1B.2</td>
<td>Through northern coastal California from Del Norte county south to Santa Cruz county.</td>
<td>Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest. Often on mossy banks and rock outcrops or in the forest duff; 30-1310 m.</td>
<td>Perennial herb, May - September</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Status</td>
<td>Geographic Distribution in California</td>
<td>Habitat Requirements</td>
<td>Life Form, Blooming Period</td>
<td>Potential to be impacted by the Project</td>
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</tr>
<tr>
<td>Choris’ popcornflower (Plagiobothrys chorisianus var. chorisianus)</td>
<td>CRPR 1B.2</td>
<td>Endemic to coastal central California including Santa Cruz, San Francisco and San Mateo Counties.</td>
<td>Chaparral, coastal Prairie or coastal scrub on mesic sites; 15-160 m.</td>
<td>Annual herb, March – June</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Oregnon polemonium (Polemonium carneum)</td>
<td>CRPR 2.2</td>
<td>Occurs in northern California and in the San Francisco Bay Area.</td>
<td>Coastal Prairie, coastal scrub or lower montane coniferous forest; 0-1830 m.</td>
<td>Perennial herb, April-September</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Hickman’s cinquefoil (Potentilla hickmanii)</td>
<td>FE, SE, CRPR 1B.1</td>
<td>Endemic to Sonoma, San Mateo and Monterey Counties.</td>
<td>Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic) or marshes and swamps (freshwater); 10-149 m.</td>
<td>Perennial herb, April-August</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>San Francisco campion (Silene verecunda ssp. verecunda)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Santa Cruz, San Francisco, San Mateo and Sutter Counties.</td>
<td>Coastal bluff scrub, chaparral, coastal Prairie, coastal scrub or valley and foothills grassland on sandy soils; 30-645 m.</td>
<td>Perennial herb, March – August</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>slender-leaved pondweed (Stuckenia filiformis)</td>
<td>CRPR 2.2</td>
<td>Occurs in Northern California in the Inner Coast Ranges and Sierra Nevadas from east of Redding to near San Jose.</td>
<td>Marshes and swamps (assorted shallow freshwater); 300-2150 m.</td>
<td>Perennial rhizomatous herb, May-July</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
</tbody>
</table>
## Table 1. Special-status Plants Potentially Occurring in the Project Area (9 quad search)

<table>
<thead>
<tr>
<th>Common Name (Scientific Name)</th>
<th>Listing Status</th>
<th>Geographic Distribution in California</th>
<th>Habitat Requirements</th>
<th>Life Form, Blooming Period</th>
<th>Potential to be impacted by the Project&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>showy rancheria clover (&lt;i&gt;Trifolium amoenum&lt;/i&gt;)</td>
<td>FE; CRPR 1B.1</td>
<td>Marin, Sonoma, Napa Solano, and San Mateo counties.</td>
<td>Coastal bluff scrub, valley and foothill grassland (sometimes serpentine), often open sunny sites; 5-415 m.</td>
<td>Annual herb, April – June</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>saline clover (&lt;i&gt;Trifolium hydrophilum&lt;/i&gt;)</td>
<td>CRPR 1B.2</td>
<td>Endemic to San Francisco Bay Area and surrounding counties.</td>
<td>Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools; 0-300 m.</td>
<td>Annual herb, April – June</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>San Francisco owl’s clover (&lt;i&gt;Triphysaria floribunda&lt;/i&gt;)</td>
<td>CRPR 1B.2</td>
<td>Endemic to Marin, San Francisco and San Mateo Counties.</td>
<td>Coastal prairie, coastal scrub or valley and foothill grassland, usually serpentinite; 10-160 m.</td>
<td>Annual herb, April-June</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Coastal triquetrella (&lt;i&gt;Triquetrella californica&lt;/i&gt;)</td>
<td>CRPR 1B.2</td>
<td>Found in scattered locations along the California coast.</td>
<td>Coastal bluff scrub or coastal scrub; 10-100 m.</td>
<td>Moss</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Status(^a)</td>
<td>Geographic Distribution in California</td>
<td>Habitat Requirements</td>
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</table>

\(^a\) Status explanations:

**Federal:**
- FE = Listed as endangered under the Federal Endangered Species Act.
- FT = Listed as threatened under the Federal Endangered Species Act.

**State:**
- SE = Listed as endangered under the California Endangered Species Act.
- ST = Listed as threatened under the California Endangered Species Act.

**California Rare Plant Rank:**
- 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere
- 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
- 0.1 - Seriously threatened in California
- 0.2 - Fairly threatened in California

\(^b\) Potential Occurrence explanations:

**Present:** Species was observed on the project site, or recent species records (within five years) from literature are known within the project area.

**High:** The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. High-quality suitable habitat is present within the project area.

**Moderate:** Species does not meet all terms of High or Low category. For example: CNDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

**Low:** The CNDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.

**None:** CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area; or site is outside of species’s range.
Table 2. Special-status Animals Potentially Occurring in the Project Area

<table>
<thead>
<tr>
<th>Common Name (Scientific Name)</th>
<th>Listing Status</th>
<th>Geographic Distribution in California</th>
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</thead>
<tbody>
<tr>
<td><strong>Invertebrates</strong></td>
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</tr>
<tr>
<td>San Bruno elfin butterfly (Callophrys mossii bayensis)</td>
<td>FE</td>
<td>Endemic to only three locations in San Mateo County: Milagra Ridge, San Bruno Mountain and Montara Mountain.</td>
<td>Coastal, mountainous areas with grassy ground cover. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is Sedum spathulifolium.</td>
<td>None. Suitable habitat is not present in the project footprint. Host plant is not present. Highly restricted.</td>
</tr>
<tr>
<td>Bay checkerspot butterfly (Euphydryas editha bayensis)</td>
<td>FT</td>
<td>Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.</td>
<td>Plantago erecta is the primary host plant, Castilleja densiflorus and C. purpurscens are secondary host plants.</td>
<td>None. Suitable habitat is not present in the project footprint. Host and nectar plants are not present.</td>
</tr>
<tr>
<td>Mission blue butterfly (Plebejus icarioides missionensis)</td>
<td>FE</td>
<td>Endemic to the grasslands of the San Francisco peninsula.</td>
<td>Three larval host plants: Lupinus albifrons, L. varicolor and L. formosus; L. albifrons is favored.</td>
<td>None. Suitable habitat not present in the project footprint. Host plants are not present.</td>
</tr>
<tr>
<td>Callipe silverspot (Speyeria callipe calipe)</td>
<td>FE</td>
<td>Restricted to the Northern coastal scrub of the San Francisco Peninsula.</td>
<td>Host plant is Viola pedunculata. Most adults are found on east-facing slopes; males congregate on hilltops in search of females.</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
<tr>
<td>Mrytle’s silverspot (Speyeria zerene myrtleae)</td>
<td>FE</td>
<td>Restricted to foggy coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County.</td>
<td>Larval foodplant thought to be Viola adunca.</td>
<td>None. Suitable habitat not present in the project footprint.</td>
</tr>
</tbody>
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Table 2. Special-status Animals Potentially Occurring in the Project Area

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<td><strong>Fish</strong></td>
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<tr>
<td>steelhead- Central California Coast DPS (Oncorhynchus mykiss irideus)</td>
<td>FT</td>
<td>This distinct population segment (DPS) includes all anadromous O. mykiss (steelhead) populations from the Russian River south to Soquel Creek and to, but not including, the Pajaro River. Populations in the San Francisco and San Pablo Basins are also included.</td>
<td>Adults migrate from a marine environment into the freshwater streams and rivers of their birth in order to mate (called anadromy). Unlike other Pacific salmonids, they can spawn more than one time (called iteroparity). Migrations can be hundreds of miles.</td>
<td>Low. Cordilleras Creek is not known to support steelhead. The project is adjacent to the uppermost reach of the creek, and a drop structure in the creek east of the property would be a barrier to steelhead migration, as well as the portion of the creek that is currently culverted around the existing building.</td>
</tr>
<tr>
<td>tidewater goby (Eucyclogobius newberryi)</td>
<td>FE CSSC</td>
<td>Occurs in brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River.</td>
<td>Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.</td>
<td>None. Suitable habitat is not present in the project area.</td>
</tr>
<tr>
<td><strong>Amphibians and Reptiles</strong></td>
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</tr>
<tr>
<td>California tiger salamander (Ambystoma californiense)</td>
<td>FT ST CSSC</td>
<td>Endemic to California, found in isolated populations the Central Valley and Central Coast ranges.</td>
<td>This species needs underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal wetlands for breeding.</td>
<td>None. California tiger salamander is not known to occur within five miles of the project. The project property does not contain suitable breeding habitat for this species.</td>
</tr>
<tr>
<td>foothill yellow-legged frog (Rana boylii)</td>
<td>CSSC</td>
<td>Occurs in the foothills of the western side of the Sierra Nevada mountains from the northern border of the state to the Tehachapi mountains. Recorded in Pescadero Creek in 1999.</td>
<td>Inhabits partly shaded, shallow streams and rifles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg laying, need at least 15 weeks for metamorphosis.</td>
<td>None. Not known to occur within 5 miles of the project, and suitable breeding habitat is not present on site.</td>
</tr>
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<tr>
<td>California red-legged frog <em>(Rana draytonii)</em></td>
<td>FT</td>
<td>Endemic to California and northern Baja California.</td>
<td>Inhabits lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.</td>
<td>Low. CRF is recorded to occur 1.6 miles from the project, however all recorded locations are on the west side of I-280, which poses a significant migratory barrier. The project site and adjacent open space do not contain suitable breeding habitat for CRF, and CRF has not been recorded in the CNDDDB to occur in Cordilleras Creek.</td>
</tr>
<tr>
<td>Western pond turtle <em>(Actinemys marmorata)</em></td>
<td>CSSC</td>
<td>Occurs from Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley and on western slope of Sierra Nevada.</td>
<td>Inhabits ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.</td>
<td>Low. WPT is known to occur within 2 miles of the project site, however all recorded locations are on the west side of I-280, which poses a significant migratory barrier. The project site and adjacent open space do not contain suitable breeding habitat for WPT, and WPT has not been recorded in the CNDDDB to occur in Cordilleras Creek.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
<td>Listing Status(^a)</td>
<td>Geographic Distribution in California</td>
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<tr>
<td>San Francisco garter snake (Thamnophis sirtalis tetrateaenia)</td>
<td>FE SE</td>
<td>Occurs in the vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County.</td>
<td>Prefers dense cover and water depths of at least one foot, upland areas near water are also very important.</td>
<td>Low. SFGS is known to occur within 2 miles of the project site, however all recorded locations are on the west side of I-280, which poses a significant migratory barrier. The project site and adjacent open space do not contain suitable breeding habitat for SFGS, which does, and SFGS has not been recorded in the CNDB to occur in Cordilleras Creek.</td>
</tr>
<tr>
<td>Birds</td>
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<tr>
<td>white-tailed kite (Elanus lecurus)</td>
<td>CFP</td>
<td>Year-round resident in lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills, to western San Diego County at Mexico border.</td>
<td>Inhabits low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands are used for foraging.</td>
<td>Moderate. This species could occur in the Pulgas Ridge Open Space Preserve and Edgewood Natural Preserve. Potential nesting habitat occurs onsite.</td>
</tr>
<tr>
<td>Northern harrier (Circus cyaneus)</td>
<td>CSSC</td>
<td>Occurs throughout lowland California; has been recorded in fall at high elevations.</td>
<td>Inhabits grasslands, meadows, marshes, and seasonal and agricultural wetlands.</td>
<td>None. Suitable habitat for this species is not present.</td>
</tr>
<tr>
<td>golden eagle (Aquila chrysaetos)</td>
<td>CFP</td>
<td>Inhabits foothills and mountains throughout California.</td>
<td>Nests on cliffs and escarpments or in tall trees overlooking open country; forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals.</td>
<td>Low. Forage habitat is present on site; nesting habitat is not.</td>
</tr>
<tr>
<td>Common Name (Scientific Name)</td>
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</tr>
<tr>
<td>American peregrine falcon <em>(Falco peregrine anatus)</em></td>
<td>CFP</td>
<td>Occurs throughout the Central Valley, coastal areas and northern mountains of California.</td>
<td>Riparian areas, wetlands, lakes and other aquatic features provide important breeding and foraging habitat for this species. Nests on cliffs or man-made structures such as buildings and bridges; feeds on birds.</td>
<td>Moderate. Peregrine could use the project site for forage, and potentially use the existing building for nesting.</td>
</tr>
<tr>
<td>California clapper rail <em>(Rallus longirostris obsoletus)</em></td>
<td>FE SE</td>
<td>This California endemic inhabits salt water and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay.</td>
<td>Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
<td>Western snowy plover <em>(Charadrius alexandrinus nivosus-Pacific population)</em></td>
<td>FT CSSC</td>
<td>The Pacific population of western snowy plover occurs along the entire coastline of California.</td>
<td>Occurs on sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
<td>California least tern <em>(Sternula antillarum)</em></td>
<td>FE SE</td>
<td>Nests along the coast from San Francisco Bay south to Northern Baja California.</td>
<td>Colonial breeder on bare or sparsely vegetated flat substrates, sandy beaches, alkali flats, landfills or paved areas.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
<td>burrowing owl <em>(Athene cunicularia)</em></td>
<td>CSSC</td>
<td>Year-round resident throughout much of the State, except the coastal counties north of Marin and mountainous areas.</td>
<td>Occurs in open, dry annual or perennial grasslands, deserts and scrublands characterized by low growing vegetation. Nests in small mammal burrows, particularly those of the California ground squirrel.</td>
<td>None. Suitable habitat does not occur within the project footprint.</td>
</tr>
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<tr>
<td>short-eared owl (Asio flammeus)</td>
<td>CSSC</td>
<td>Year-round resident in certain parts of California; breeds regularly in the Great Basin region and locally in the Sacramento-San Joaquin River Delta, breeds periodically in the Central Coast and San Joaquin Delta.</td>
<td>Found in swamp lands, both fresh and salt, lowland meadows and agricultural fields. Tule patches or tall grass are needed for nesting and day time seclusion; nests on dry ground in depression concealed in vegetation.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
<td>long-eared owl (Asio otus)</td>
<td>CSSC</td>
<td>Occurs throughout the state except in the Central Valley, in pockets along the coast and in the far central south.</td>
<td>Inhabits riparian bottomlands grown to tall willows and cottonwoods and belts of live oak parallel to stream courses. Require adjacent open land productive of mice and the presence of old nests of crows, hawks or magpies for breeding.</td>
<td>None. Suitable habitat is not present on the project site or near the project site. Not recorded in the CNDDB to occur within 5 miles of the project site.</td>
</tr>
<tr>
<td>bank swallow (Riparia riparia)</td>
<td>ST</td>
<td>Occurs primarily around the remaining natural river banks of the Sacramento and Feather Rivers in the Sacramento Valley.</td>
<td>Colonial nester, nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine textured/cliffs with fine textured/sandy soils near streams, rivers, lakes or ocean to dig nesting hole.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
<td>saltmarsh common yellow throat (Geothlypis trichas sinuosa)</td>
<td>CSSC</td>
<td>This supspecies of the common yellow throat (Geothlypis trichas) is endemic to the fresh and salt water marshes of the San Francisco Bay region.</td>
<td>Requires thick, continuous cover down to water surface for foraging; and tall grasses, tule patches and willows for nesting.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
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<tr>
<td>Alameda song sparrow (Melospiza melodia pusillula)</td>
<td>CSSC</td>
<td>This California endemic subspecies of song sparrow (Melospiza melodia) is a resident of salt marshes bordering south arm of San Francisco Bay.</td>
<td>Inhabits Salicornia marshes, nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
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<tr>
<td>pallid bat (Antrozous pallidus)</td>
<td>CSSC</td>
<td>Throughout California except high Sierra from Shasta to Kern Counties and northwest coast, primarily at lower and mid-elevations</td>
<td>Inhabits deserts, grasslands, shrublands, woodlands and forests; most common in open dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures, very sensitive to disturbance of roosting sites.</td>
<td>Low. The project site contains suitable roost and forage habitat; this species is not recorded as occurring within 5 miles of the project site in the CNDDB.</td>
</tr>
<tr>
<td>big free-tailed bat (Nyctinomops macrotis)</td>
<td>CSSC</td>
<td>Rare in California; found only in low lying arid areas of southern California and as a vagrant elsewhere.</td>
<td>Needs high cliffs or rocky outcrops for roosting, feeds principally on large moths.</td>
<td>Low. The project site does not include high cliffs or rocky outcrops.</td>
</tr>
<tr>
<td>Thompson’s big-eared bat</td>
<td>State candidate for listing</td>
<td>Found in a patchy distribution across many habitat types</td>
<td>Roosts in caves or cave-like structures; roost temperature may be critical. Forages along stream edges in wooded areas.</td>
<td>Low. Roost habitat may not occur in the area. The project contains suitable foraging habitat.</td>
</tr>
<tr>
<td>San Francisco dusky-footed woodrat (Neotoma fuscipes annectens)</td>
<td>CSSC</td>
<td>This California endemic is found throughout the San Francisco Bay area in grasslands, scrub and wooded areas.</td>
<td>Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded leaves, grass and other material. May be limited by availability of nest-building materials.</td>
<td>Present.</td>
</tr>
<tr>
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<td>Listing Statusa</td>
<td>Geographic Distribution in California</td>
<td>Habitat Requirements</td>
<td>Potential to be impacted by the projectb</td>
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</tr>
<tr>
<td>saltmarsh harvest mouse (Reithrodontomys raviventris)</td>
<td>FE SE</td>
<td>This California endemic occurs only in the saline emergent wetlands of the San Francisco Bay and its tributaries.</td>
<td>Pickleweed is the primary habitat of this non-burrowing mammal. It builds loosely organized nests and requires higher areas to escape flooding.</td>
<td>None. Suitable habitat is not present on the project site or near the project site.</td>
</tr>
</tbody>
</table>

a Status explanations:
**Federal:**
FE = Listed as endangered under the Federal Endangered Species Act.
FT = Listed as threatened under the Federal Endangered Species Act.

**State:**
SE= Listed as endangered under the California Endangered Species Act.
ST= Listed as threatened under the California Endangered Species Act.
CSSC = Species of Special Concern designated by California Department of Fish and Game
CFP = Fully Protected Species under California Fish and Game Code.

b Potential Occurrence explanations:
**Present:** Species was observed on the project site, or recent species records (within five years) from literature are known within the project area.

**High:** The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. High-quality suitable habitat is present within the project area.

**Moderate:** Species does not meet all terms of High or Low category. For example: CNDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

**Low:** The CNDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.

**None:** CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area.
APPENDIX C

TERMINOLOGY
TRA Environmental Sciences, Inc.
1.6.1 Special-Status Species

Special-status species are plants and animals that are legally protected under the Endangered Species Act (ESA), CESA, or other such regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. For the purposes of this report, special-status species comprise species in one or more of the categories listed below.

- Species listed or proposed for listing as threatened or endangered under the ESA (50 Code of Federal Regulations [CFR] 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the ESA (73 Federal Register [FR] 75176, November 9, 2009).
- Species listed or proposed for listing by the state of California as threatened or endangered under CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.).
- Plants considered by CNPS to be “rare, threatened, or endangered in California” (Lists 1B and 2).
- Animal species listed as of special concern by the California Department of Fish and Game.
- Animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [amphibians and reptiles]).

1.6.2 Habitat

Habitat is the natural environment of a plant or animal, and the place that is natural for the life and growth of a plant or animal.

1.6.3 Sensitive Natural Communities

Sensitive natural communities are communities that are especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies. Elimination or substantial degradation of these communities would constitute a significant impact under CEQA.

1.6.4 Waters of the United States

Waters of the United States are defined for regulatory purposes in the CFR as: (1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters...; (4) all impoundments of waters otherwise defined as waters of the United States under the definition; (5) tributaries of waters identified in paragraphs (a)(1)–(4) of this section; (6) the territorial seas; and (7) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)–(6) of this section” (33 CFR 328.3).

1.6.5 Wetlands

Wetlands are defined for regulatory purposes in the CFR as areas “inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3, 40 CFR 230.3). To be considered subject to federal jurisdiction, a wetland must normally exhibit positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology (Environmental Laboratory 1987 and U.S. Army Corps of Engineers 2006).
Appendix G

Cultural Resources Constraint Analysis
June 11, 2014

Mr. Rob Kalkbrenner  
Capital Projects Manager  
Facilities Planning, Design & Construction  
**County of San Mateo**  
555 County Center - Fifth Floor  
Redwood City, CA 94063

RE: Cultural Resources Review Services for Constraints Analysis  
Cordilleras Community Treatment Facility, Edmonds Road,  
Unincorporated Redwood City, San Mateo County

Dear Mr. Kalkbrenner,

Please let this letter stand as the *Cultural Resources Review* for the above project conducted as part of a "feasibility" or "constraints analysis." This letter report provides the results of a records search conducted by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC), Sonoma State University, Rohnert Park; a limited literature review; and, Native American consultation in order to determine if historic properties are located in or adjacent to the proposed project. Mr. Ward Hill, a consulting architectural historian meeting the Standards of the Secretary of the Interior, completed a preliminary built environment review of the facility. An archaeological field review was not conducted since the property is almost totally developed with either buildings and/or introduced landscaping.

**PROJECT LOCATION AND DESCRIPTION**

The Cordilleras Community Treatment Facility is located at 200 Edmonds Road near Edgewood Road and east of Canada Road in unincorporated Redwood City, San Mateo County (United States Geological Survey (hereafter USGS) Woodside, CA 1997, T 5 South R 4 West, unsectioned) [Figs. 1-3]. The proposed project plans to demolish the existing building.

**METHODOLOGY**

An initial 1998 review of records and literature on file at BASIN completed for an adjacent project was negative (CHRIS/NWIC File No. 98-629 dated November 30, 1998 by Compas). An updated prehistoric and historic site record and literature search was commissioned for this constraints analysis (CHRIS/NWIC File No. 13-1661 dated May 19, 2014 by Price). In addition reference material from the Bancroft Library, University of California, Berkeley and Basin Research Associates.
Research Associates, San Leandro was also consulted.

Several specialized listings and their updates on the *Historic Properties Directory for San Mateo County* (CAL/OHP 2012a) were also reviewed including updates of the National Register of Historic Places, California Landmarks, and Points of Interest; *California History Plan* (CAL/OHP 1973); *California Inventory of Historic Resources* (CAL/OHP 1976); *Five Views: An Ethnic Sites Survey for California, Historic Properties Directory* (CAL/OHP 1988); *Historic Civil Engineering Landmarks of San Francisco and Northern California* (American Society of Civil Engineers [ASCE/SF] 1977); list of *Historic Civil Engineering Landmarks* (ASCE 2014); *Archaeological Determinations of Eligibility* (CAL/OHP 2012b); and, other local inventories and lists. Archival research by Mr. Hill included reviewing original building plans and other documents on file with San Mateo County Public Works; consulting the online archives of the *San Francisco Chronicle* and *The San Mateo Times*; and, reviewing the *Pacific Coast Architecture Database* online for biographical background on architects Douglas Stone and Louis Mulloy.

The Native American Heritage Commission was contacted for a review of the Sacred Lands Files (Busby 2014). Results were negative (Pilas-Treadway 2014). No other agencies, departments or local historical societies were formally contacted regarding landmarks, potential historic sites or structures.

Mr. Hill conducted a field survey of the Cordilleras Mental Health Center on May 22, 2014. During the field survey he interviewed Mr. Don Deluca, Stationary Engineer II, San Mateo County Department of Public Works, and Mr. Rob Kalkbrenner, Capital Projects Manager, San Mateo County Facilities Planning, regarding the building's design, construction and history.

**FINDINGS**

The intent of this *Cultural Resources Review* is to provide an constraints analysis of archaeological and historic properties within the project area which may be listed, determined or potentially eligible for inclusion on the California Register of Historical Resources (CRHR) and that could be affected by the proposed project.

Lead agencies must evaluate any listed or potential cultural resources in accordance with the criteria of the CRHR. The CRHR (Public Resources Code Section 5024.1) is a listing of properties that are to be protected from substantial adverse change, and it includes properties that are listed, or have been formally determined to be eligible for listing in the NRHP, State Historical Landmarks, and eligible Points of Historical Interest. A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or cultural heritage of California or the United States;
2. It is associated with lives of persons important in our past;
3. It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values; or,
4. It has yielded or has the potential to yield information important in the prehistory.
A resource that is not listed in or determined to be eligible for listing in the CRHR, not included in local register or historic resources, or not deemed significant in a historical resource survey may nonetheless be historically significant. This provision is intended to give a Lead Agency discretion to determine that a resource of historic significance exists where none had been identified before and to apply the requirements of Public Resources Code Section 21084.1 to properties that have not previously been formally recognized as historic.

**CHRIS/NWIC Records Searches**

No prehistoric, Hispanic or American era historic archaeological sites have been recorded in, adjacent, within 0.25 miles of the project.

Two built-environment sites have been recorded within 0.25 miles of the project.

- P-41-000161 (CA-SMA-161H), the "Hassler Health Home" (Cartier 1978/form)
- P-41-001811, the Children's Building at 100 Edmonds Road (Miller 1997/form)

Two compliance reports on file at the CHRIS/NWIC include the project.

- *Archaeological Field Inspection of the Cordilleras Community Treatment Facility Project, Redwood City, San Mateo County, California* (Holman 1999/S-22168).

**Other Sources**

None of the known late 19th and/or early 20th century "Indian Mounds" have been reported or mapped in or adjacent to the project (Whitney 1873; Nelson 1909, ca. 1912).

No known ethnographic, traditional or contemporary Native American resources have been identified in or adjacent to the project (Kroeber 1925:465, Fig. 42; Brown 1973-1974; Levy 1978:485, Fig.1; Milliken 1983:139, Map 4).

No known expedition routes appear to have proceeded along Edgewood Road and/or the near vicinity of the proposed project (e.g., Richards 1973:frontspiece, 88; Milliken 1995:33, Map3; USNPS 1995).

No known historic era trails, roads, or dwellings or structures dating to the 19th or early 20th century were located in or adjacent the project. Note Whipple Road - present-day Edgewood Road - has been in existence since at least 1856 (Stevens 1856; Cloud 1877; Easton 1868; Neuman 1909).

No historic resources listed on the *Historic Properties Directory* or other lists/inventories of historic resources are located in or adjacent to the project or area adjacent (see References Cited and Consulted). The Children's Building, Hassler Health, 100 Edmonds Road, formally recorded as P-41-001811, is listed on the *Historic Properties Directory [HPD]* (CAL/OHP 2012a) as an "Individual property determined eligible for NR by a consensus through Section 106 process, Listed in the CR (code 2S2; CAL/OHP 2012a with 2003). This building is outside of the project.
Native American Consultation

The NAHC record search was negative for Native American resources in or adjacent to the project (Pilas-Treadway 2012).

Architectural Field Review, Observations and Evaluation (see Attachments, DPR 523 form)

The Cordilleras Community Treatment Facility previously known as the San Mateo County Tuberculosis Hospital is surrounded by steep tree-covered hills near Edgewood Drive in Redwood City. A 150,000 gallon water tank is located in the hills nearby providing water for the hospital. Various small trees and hedges are planted around the perimeter of the building and in the parking areas. Paved parking areas are north and south of the hospital.

The hospital is a three-story with basement reinforced concrete structure with a butterfly shaped plan. The building has side wings projecting north and south at obtuse angles from the main block. A tall stair tower projects up above the main roof at the point where the south wing intersects the main block. The side wings measure 121 by 46 feet. The main block is 106 by 70 feet. The unadorned exterior walls (no window moldings or roof cornices) are covered with plaster. The second and third floors have horizontal rows of metal frame casement windows. The windows on the south side of the main block have projecting concrete “brise soleil” shading the windows. The flat roof is covered with tar and gravel. The hospital entrance lobby (covered with red brick facing) projects from the intersection of the south wing with the main block. A wide overhanging shed roof projects above the main entrance. Large fixed pane windows flank the glazed entrance doors. A glazed auditorium was added to the west side of the central block in the 1970s.

Inside the hospital has about 77,000 square feet. The basement level includes utility rooms (electrical, heating), laundry room, storage, maintenance room and the original morgue/autopsy room. The central block and wings have center corridors providing access to the spaces on each side. In addition to the main lobby the first floor includes a dining room and kitchen, loading and storage areas (north and east) in the main block and offices, a library, class room, exam rooms, physical/occupational therapy rooms, and nurse’s rooms.

The north and south wings on the second floor have a central corridor with patient bedrooms on each side. The two wings meet at a “Day Room” and an elevator lobby in the middle. The second floor main block includes various medical rooms including storage, operating room, a waiting room, a dental room, and x-ray room. Two corridors provide access to the rooms.

The north and south wings on the third floor have a central corridor with patient bedrooms on each side. The two wings meet at a “Day Room” and an elevator lobby in the middle. The third floor main block also has patient bedrooms (four bed wards) and an outdoor roof deck for walking and lounging.

Historical Background

Construction of the hospital began in April, 1950 and the official dedication ceremony was
Sunday March 2, 1952. The original plans are dated November 1, 1949; the building took a year to build and cost $1,583,000 (the 77,544 square feet building cost $ 19.48 a square foot). The hospital’s contractor was Palo Alto builder, Howard J. White, and the architects were Douglas Dacre Stone and Louis B. Malloy. Charles E. Smith, Dean of the School of Public Health, University of California, was the principal speaker at the dedication (San Mateo County Times 2/27/1952). The building was open for public inspection after the ceremony. Six hundred people attended the ceremony. The hospital began admitting patients on March 4, 1952 (San Mateo County Times 3/3/1952). Harold Chope, San Mateo County Health Director, indicated at the opening that occupational therapy would play a large part in the treatment of patients. The private non-profit San Mateo County Tuberculosis and Health Association played an important role in encouraging the County to construct of the hospital.

San Mateo County had 282 tuberculosis cases during the years 1949-1951. Located on the site of the old Canyon Sanatorium, the new hospital had a capacity of 116 patients. The facility was designed to provide County tuberculosis patients with “complete medical care,” including X-ray and surgical facilities. All service facilities were located in the center section of the hospital. The two wings on the east and west were primarily patient rooms. Described as the most “. . . modern in the state” (San Mateo County Times 2/13/1952), Dr. James Greenwell, San Mateo County Health and Welfare Department, managed the operation of the hospital. The County Tuberculosis Hospital ran a deficit its first year because of the higher than expected number of tuberculosis patients (they expected an average of 90 rather than the 105 they received). The County had undertaken a more aggressive screening program with 30,000 residents x-rayed by mobile units (San Mateo County Times 12/17/1952).

The Tuberculosis Hospital transitioned to a Mental Health facility - the Cordilleras Mental Health Center - in 1974, as a result of the success of various vaccine and drug therapies to treat tuberculosis. The Mental Health Center provided short and long term treatment and accommodations for mental health patients. An auditorium was built in the 1970s on the north side of the hospital for the patients living here. In 2001 a fire station and the Canyon Oaks Youth Crisis Center were built near the west side of the Mental Health Facility.

Architects Douglas Dacre Stone & Louis Mulloy

Architect Douglas Dacre Stone was born in Yokohama, Japan in 1898 while architect Louis Mulloy was born in California in 1910. Both Stone and Mulloy studied architecture at the University of California at Berkeley. Stone began working as an architect with the firm Hyman & Appleton in 1924. Stone and Louis Mulloy became partners as the firm Stone & Mulloy in 1928. The firm Stone & Mulloy continued in business until 1951, when they became known as Stone, Mulloy and Marracini, then later as Stone, Marracini and Patterson. Louis Mulloy died in 1963 and Douglas Stone died in 1971. Their firm specialized in hospital and medical building designs. They also designed several residences and fire stations. Most of their buildings were constructed in the late 1940s and the early 1950s, particularly on the San Francisco Peninsula, during the post-World War II construction boom. The firm designed the Bakersfield Memorial Hospital, Bakersfield; Children’s Hospital of the East Bay; El Camino Hospital, Mountain View;
Pacific Presbyterian Medical Center, San Francisco; Peninsula Blood Bank, Burlingame; Peninsula Hospital, Burlingame; Peralta Hospital, Oakland; Walter Reed Medical Center, Washington, D.C.; Sequoia Hospital, Redwood City; Sequoias Elderly Housing, San Francisco; Sharp Memorial Community Hospital, San Diego; Sutter Community Hospital, Sacramento; Letterman Army Medical Center, San Francisco Presidio; U.S. Public Health Hospital, San Francisco; and, the Valley Medical Center, San Jose.

CONCLUSIONS

This review suggests a very low sensitivity for prehistoric and/or historic era archaeological resources within the project.

The former San Mateo County Tuberculosis Hospital retains historic integrity from its original construction in 1949. The only major alteration is the addition of a relatively small auditorium at the center of the rear façade. The exterior is otherwise unaltered. The interior floor plan is also intact. It is recommended that a historic context on hospital design during the 1940s and 1950s - which changed radically during the post World War II years for a variety of reasons – should be prepared in order to evaluate the potential significance of the former San Mateo County Tuberculosis Hospital. The architectural team of Stone and Mulloy designed many major hospitals in the Bay Area in the Post World War II years and were known for their hospital designs, a specialized area of architectural practices with many features unique to it as a building type. The historic context would provide the necessary background to evaluate the architectural team and building with respect to CRHR criteria 1, 2 and 3.²

RECOMMENDATIONS

It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried archaeological resources appears necessary. Archaeological monitoring is also not recommended for either buried prehistoric or historic cultural resources. However, if any significant prehistoric³ or historic⁴ cultural resources cultural materials are exposed or

2. National Register Bulletin 15 (http://www.nps.gov/nr/publications/bulletins/nrb15/) describes the methodology for using historic contexts in the evaluation of historic resources. According to Bulletin 15, the significance of a historic property can be judged and explained only when it is evaluated within its historic context. Historic contexts are those patterns or trends in history by which a specific occurrence, property, or site is understood and its meaning (and ultimately its significance) within history or prehistory is made clear. The core premise is that resources, properties, or happenings in history do not occur in a vacuum but rather are part of larger trends or patterns.

3. Significant prehistoric cultural resources may include:
   a. Human bone - either isolated or intact burials.
   b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
   c. Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
   d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction),
discovered during site preparation or subsurface construction activities, operations should stop within 50 feet of the find and a qualified professional archaeologist contacted for evaluation and further recommendations. Potential recommendations could include evaluation, collection, recordation, analysis, and reporting of any significant cultural materials as well as the initiation of an archaeological monitoring component during further excavation.

Treatment of any Native American burials exposed during construction should be in accordance with the State of California Public Resources Code in consultation with the Native American Heritage Commission.

An architectural historian should be retained to formally evaluate the building including the development of a suitable context. A revised and enhanced DPR 523 form should be completed.

CLOSED REMARKS

If I can provide any additional information or be of further service please don't hesitate to contact me.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA
Principal

CIB/dg
Enclosures

distinctive changes in soil stratigraphy indicative of prehistoric activities.
e. Isolated artifacts

4. Historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include.
   a. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
   b. Trash pits, privies, wells and associated artifacts.
   c. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
   d. Human remains.

In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or clusters of artifacts and samples include remains of structures, trash pits, and privies.
REFERENCES CITED AND CONSULTED

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Compas, Lynn (CHRIS/NWIC staff)

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1925 Kroeber, A.L.


1978 Levy, R.


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Neuman, J.V.

Pilas-Treadway, Debbie (Native American Heritage Commission) (NAHC)

Price, David (CHRIS/NWIC staff)

Richards, Gilbert

San Mateo County

Stevens, T.S.

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Whitney, A.D.

Abbreviations

n.d. no date
v.d. various dates
N.P. no publisher noted
n.p. no place of publisher noted

Note: The abbreviated phrase "CHRIS/NWIC, Sonoma State University, Rohnert Park" is used for material on file at the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park.
ATTACHMENTS

FIGURES
FIGURE 1 General Project Location
FIGURE 2 Project Area (USGS Woodside, CA 1993)
FIGURE 3 Aerial View of Project Area

CORRESPONDENCE
LETTER Request to Native American Heritage Commission
LETTER Native American Heritage Commission Response

FORM
FORM 1 San Mateo County Tuberculosis Hospital, DPR 523 Primary Form
Figure 1: General Project Location
Figure 2: Project Area (USGS Woodside, CA 1997)
Figure 3: Aerial View of Project Area
May 2, 2014

Ms. Cynthia Gomez
Executive Secretary
Native American Heritage Commission
1550 Harbor Boulevard
West Sacramento, CA 95691

RE: Request for Review of Sacred Lands Inventory –
Cordilleras Community Treatment Facility,
Edmonds Road, Unincorporated Redwood City, San Mateo County

Dear Ms. Gomez,

Please let this letter stand as our request for the Native American Heritage Commission (NAHC) to conduct a review of the NAHC Sacred Lands Inventory to determine if any listed properties are present within or adjacent to the above proposed project area (see enclosed USGS map).

The proposed project consists of a “feasibility” or “constraints” analysis of a building complex also known as the Cordilleras Center. This adult mental health facility is located at 200 Edmonds Road, just off of Edgewood Road.

Information from the NAHC Sacred Lands Inventory will be used to determine if significant archaeological resources under the California Environmental Quality Act (CEQA) may be affected by the proposed project.

If I can provide any further information, please don’t hesitate to contact me (510 430-8441 or BasinresI@gmail.com). Thank you for your timely review of our request.

Colin I. Busby, Ph.D., RPA
Principal

BASIN RESEARCH ASSOCIATES, INC.

CIB/dg

BASIN RESEARCH ASSOCIATES
Figure 1: Project Area T5S R4W (USGS Woodside, CA 1997)
May 6, 2014

Colin Busby  
Basin Research Associates  
1933 Davis Street, Suite 210  
San Leandro, CA  94577

VIA FAX:  510-530-8443  
Number of Pages:  2

Re:  Cordilleras Community Treatment Facility project, San Mateo County

Dear Mr. Busby:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3713.

Sincerely,

Debbie Pilas-Treadway  
Environmental Specialist III
Native American Contacts
San Mateo County
May 9, 2014

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(209) 892-1060

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Ann Marie Sayers, Chairperson
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ams@indiancanyon.org
831-637-4238

Muwekma Ohlone Indian Tribe of the SF Bay Area
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Ohlone/Costanoan

Ohlone/Costanoan

Ohlone/Costanoan

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This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5997.94 of the Public Resources Code Section 5997.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Cordilerras Community Treatment Facility project, San Mateo County.
P1. Other Identifier: Cordilleras Community Treatment Facility
P2. Location: ☑ Not for Publication ☑ Unrestricted
   a. County San Mateo
   b. USGS 7.5' Quad Woodside, CA Date 1997 T5S R4W; unsectioned; Mount Diablo B.M.
   c. Address 200 Edmonds Road City Redwood City Zip 94062
   d. UTM: Zone 10: __mE / __mN
   e. Other Locational Data: Northeast of the intersection of I-280 and Edgewood Road APN 050470050

P3a. Description
The San Mateo County Tuberculosis Hospital building is surrounded by steep tree-covered hills near Edgewood Drive in Redwood City. A 150,000 gallon water tank is located in the hills nearby providing water for the hospital. Various small trees and hedges are planted around the perimeter of the building and in the parking areas. Paved parking areas are north and south of the hospital.

The hospital is a three-story with basement reinforced concrete structure with a butterfly shaped plan. The building has side wings projecting north and south at obtuse angles from the main block. A tall stair tower projects up above the main roof at the point where the south wing intersects the main block. The side wings measure 121 by 46 feet. The main block is 106 by 70 feet. The unadorned exterior walls (no window moldings or roof cornices) are covered with plaster. The second and third floors have horizontal rows of metal frame casement windows. The windows on the south side of the main block have projecting concrete “brise soleil” shading the windows. The flat roof is covered with tar and gravel. The hospital entrance lobby (covered with red brick facing) projects from the intersection of the south wing with the main block. A wide overhanging shed roof projects above the main entrance. Large fixed pane windows flank the glazed entrance doors. A glazed auditorium was added to the west side of the central block in the 1970s. (see continuation sheet)

P3b. Resource Attributes: HP41 — Hospital
P4. Resources present: ☑ Building ☑ Structure ☑ Object ☑ Site ☑ District ☑ Element of District ☑ Other

P5b. Description of Photo:
Front façade from parking lot – view to the northwest

P6. Date Constructed/Age and Sources:
☑ Historic ☑ Prehistoric ☑ Both 1950-51

P7. Owner and Address
San Mateo County

P8. Recorded by:
Ward Hill, M.A.
Basin Research Associates, Inc.
1933 Davis Street, Suite 210
San Leandro, CA 94577

P9. Date Recorded May 2014

P10. Survey Type: Intensive

P11. Report Citation: Cultural Resources Review Services for Constraints Analysis – Cordilleras Community Treatment Facility, Edmonds Road, Unincorporated Redwood City, San Mateo County

Attachments: ☑ NONE ☑ Location Map ☑ Sketch Map ☑ Continuation Sheet ☑ Building, Structure and Object Record
☑ Archaeological Record ☑ District Record ☑ Linear Feature Record ☑ Milling Station Record ☑ Rock Art Record ☑ Artifact Record
☑ Photograph Record ☑ Other (List)
Inside the hospital has about 77,000 square feet. The basement level includes utility rooms (electrical, heating), laundry room, storage, maintenance room and the original morgue/autopsy room. The central block and wings have center corridors providing access to the spaces on each side. In addition to the main lobby the first floor includes a dining room and kitchen, loading and storage areas (north and east) in the main block and offices, a library, class room, exam rooms, physical/occupational therapy rooms, and nurse’s rooms.

The north and south wings on the second floor have a central corridor with patient bedrooms on each side. The two wings meet at a “Day Room” and an elevator lobby in the middle. The second floor main block includes various medical rooms including storage, operating room, a waiting room, a dental room, and x-ray room. Two corridors provide access to the rooms.

The north and south wings on the third floor have a central corridor with patient bedrooms on each side. The two wings meet at a “Day Room” and an elevator lobby in the middle. The third floor main block also has patient bedrooms (four bed wards) and an outdoor roof deck for walking and lounging.

**Historical background**

Construction on the San Mateo County Tuberculosis Hospital began in April, 1950 and the official dedication ceremony was Sunday March 2, 1952. The original plans are dated November 1, 1949; the building took a year to build and cost $1,583,000 (the 77,544 square feet building cost $ 19.48 a square foot). The hospital’s contractor was Palo Alto builder, Howard J. White, and the architects were Douglas Dacre Stone and Louis B. Malloy. Charles E. Smith, Dean of the School of Public Health, University of California, was the principal speaker at the dedication. The building was open for public inspection after the ceremony. 600 people attended the ceremony. The Hospital began admitting patients on March 4, 1952. Harold Chope, San Mateo County Health Director, indicated at the opening that occupational therapy would play a large part in the treatment of patients. The private non-profit San Mateo County Tuberculosis and Health Association played an important role in encouraging the County to construct of the hospital.

San Mateo County had had 282 tuberculosis cases during the years 1949-1951. Located on the site of the old Canyon Sanatorium, the new hospital had a capacity of 116 patients. The facility was designed to provide County tuberculosis patients with “complete medical care,” including X-ray and surgical facilities. All service facilities were located in the center section of the hospital. The two wings on the east and west were primarily patient rooms. Described as the most “modern in the state” Dr. James Greenwell, San Mateo County Health and Welfare Department, managed the operation of the hospital. The County Tuberculosis Hospital ran a deficit its first year because of the higher than expected number of tuberculosis patients (they expected an average of 90 rather than the 105 they received). The County had undertaken a more aggressive screening program with 30,000 residents x-rayed by mobile units.

The Tuberculosis Hospital transitioned to a Mental Health facility – the Cordilleras Mental Health Center – in 1974, as a result of the success of various vaccine and drug therapies to treat tuberculosis. The Mental Health Center provided short and long term treatment and accommodations for mental health patients. An auditorium was built in the 1970s on the north side of the hospital for the patients living here. In 2001 a fire station and the Canyon Oaks Youth Crisis Center were built near the west side of the Mental Health Facility.

**Architects Douglas Dacre Stone & Louis Mulloy**

Architect Douglas Dacre Stone was born in Yokohama, Japan in 1898. Architect Louis Mulloy was born in California in 1910. Both Stone and Mulloy studied architecture at the University of California, Berkeley. Stone began working as an architect with the firm Hyman & Appleton in 1924. Stone and Louis Mulloy became partners as the firm Stone & Mulloy in 1928. The firm Stone & Mulloy continued in business until 1951, when they became known as Stone, Mulloy and Marracini, then later as Stone, Marracini and Patterson. Louis Mulloy died in 1963 at the age of 56 and Douglas Stone died in 1971. Their firm specialized in hospital and medical building designs. They also designed several residences and fire stations. Most of their buildings were constructed in the late 1940s and the early 1950s, particularly on the San Francisco Peninsula, during the post-World War II construction boom. The firm designed the Bakersfield Memorial Hospital, Bakersfield; Children’s Hospital of the East Bay; El Camino Hospital, Mountain View; Pacific Presbyterian Medical Center, San Francisco; Peninsula Blood Bank, Burlingame; Peninsula Hospital, Burlingame; Peralta Hospital, Oakland; Walter Reed Medical Center, Washington, D.C.; Sequoia Hospital, Redwood City; Sequoias Elderly Housing, San Francisco; Sharp Memorial Community Hospital, San Diego; Sutter Community Hospital, Sacramento; Letterman Army Medical Center, San Francisco Presidio; U.S. Public Health Hospital, San Francisco; and the Valley Medical Center, San Jose.

1. “State Leader to Dedicate TB Hospital Here,” San Mateo Times, February 27, 1952, pg. 12.
5. The following biographical information on Stone and Mulloy is from the Pacific Coast Architecture Database at digital.lib.washington.edu/architect/architects/562/ and /563/.

DPR 523L (1/95)
Preliminary Evaluation

The former San Mateo County Tuberculosis Hospital retains historic integrity from its original construction in 1949. The only major alteration is the addition of a relatively small auditorium at the center of the rear façade. The exterior is otherwise unaltered. The interior floor plan is also intact. It is recommended that a historic context on hospital design during the 1940s and 1950s – which changed radically during the post World War II years for a variety of reasons – should be prepared in order to evaluate the potential significance of the former San Mateo County Tuberculosis Hospital. The architectural team of Stone and Mulloy designed many major hospitals in the Bay Area in the Post World War II years and were known for their hospital designs, a specialized area of architectural practices with many features unique to it as a building type. The historic context would provide the necessary background to evaluate the architectural team and building with respect to CRHR criteria 1, 2, and 3.

P5. Photos

Hospital entrance lobby – view to the northwest

6. National Register Bulletin 15 (http://www.nps.gov/nr/publications/bulletins/nrb15/) describes the methodology for using historic contexts in the evaluation of historic resources. According to Bulletin 15, the significance of a historic property can be judged and explained only when it is evaluated within its historic context. Historic contexts are those patterns or trends in history by which a specific occurrence, property, or site is understood and its meaning (and ultimately its significance) within history or prehistory is made clear. The core premise is that resources, properties, or happenings in history do not occur in a vacuum but rather are part of larger trends or patterns.
Resource Name or #: San Mateo County Tuberculosis Hospital

Date: June 2014

Main block, east façade – view to the west

Third floor roof deck – view to the northeast
Resource Name or #: San Mateo County Tuberculosis Hospital

Date: June 2014

Recorded by Ward Hill

P5. Photos

First floor entrance lobby

First floor dining room
P5. Photos

Second floor corridor lined with doors to patient rooms

Aerial view

San Mateo County Tuberculosis Hospital

San Mateo County Fire Department – Station 18
San Mateo County Tuberculosis Hospital
Appendix H

Building Systems Report
Conceptual Design
Narrative

Cordilleras Mental Health Rehabilitation Center
2014-0216
prepared for:
Capital Projects
Facilities Planning, Design and Construction
County of San Mateo

prepared by:
Joel D. Cruz - Principal
Roland Thomas - Project Manager/Senior Mechanical
Benson Balan, PE - Lead Electrical
Hasan Shah - Lead Plumbing

July 1, 2014

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EXECUTIVE SUMMARY

The project entails the construction of a new 90,000 square feet Mental Health Center for the County of San Mateo. The new center will include a 3-story 35,000 square feet Community Center/Support Building and Adult Residential Facility (ARF) and five single-story Mental Health Rehabilitation Center (MHRC) buildings, 10,500 square feet each, with a 16-bed household. The project will be LEED certified.

The Mechanical design concept includes HVAC systems and controls to serve all buildings including the single Community and five Adult Residential Buildings. The HVAC system will incorporate air-cooled variable refrigerant volume system (VRV/VRF) units which consist of air-cooled condensers and indoor fan coil units. Motorized louvers/windows and fan assist systems will provide natural ventilation as the primary cooling source for the common areas in the individual buildings. In addition, a secondary cooling and heating source will utilize above-ceiling fan coil units. Each residence room will incorporate a dedicated HVAC system. Control of space temperature in individual resident rooms will not be directly available to the resident; however central administration control of temperature in individual resident rooms will be provided. The building automation system will incorporate a BACNET over Ethernet, with web access and pager alarm.

The Plumbing design concept includes all domestic cold and recycled water, domestic hot water, storm, sanitary sewer, and vent systems. The scope of work also includes the testing of all plumbing equipment and systems associated with the new construction. The following systems will be provided: Sanitary sewer and vent system; storm drainage system; domestic cold and recycled water system; domestic hot water system; drain systems; and natural gas system for the kitchen only. Water conserving fixtures will be selected accordingly to meet LEED certification.

The Electrical design concept includes all power, lighting, lighting controls, fire alarm, telecommunications, and testing of all electrical equipment. One new main power utility service for the entire complex will be installed at the ARF building, the power distribution will feed both ARF building and each MHRC building. An emergency standby diesel engine generator unit will be installed near the ARF building to provide 12 hours back-up power for 80 percent electrical load of the entire facility. Light fixtures to be specified will utilize fluorescent, LED, and HID lamps. Lighting controls will be provided. Fire alarm will be designed with full coverage area detection. Telecommunication system will be provided to support new service, backbone and horizontal distribution throughout the facility.

Sustainable and Zero Net Energy design strategies are also being considered for this project. Design considerations for plumbing include rainwater treatment system, gray water system, and solar thermal domestic water heating system. Design considerations for electrical are photovoltaic system for the ARF & MHRC buildings and possibly fuel cell system for the main kitchen.
HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

PART 1 - Codes and Standards

1.01 Codes

A. Systems will be designed in accordance with the latest edition of the following codes:
   - Local Amendments to above Codes.

1.02 Standards

A. The following reference standards will be used for the design:
   - AMCA – Air Movement and Control Association International, Inc.
   - ANSI – American National Standards Institute.
   - ARI – Air Conditioning and Refrigeration Institute.
   - ASHRAE – American Society of Heating, Refrigeration, and Air Conditioning Engineers.
   - LEED-Leadership in Energy and Environmental Design for Healthcare Facilities
   - SMACNA – Fire and Smoke Damper Installation Guide.
   - SMACNA – Standards for Duct Construction.
   - EPA – Environmental Protection Agency
   - NEMA – National Electrical Manufacturer’s Association
   - UL – Underwriters’ Laboratories.
   - NFPA - National Fire Protection Association:
     - NFPA 90A – Air Conditioning and Ventilating Systems.

PART 2 - Scope of Work

2.01 Description of Work

A. The scope of work will incorporate all mechanical HVAC systems and controls serving the individual buildings as described in the executive summary of our Assessment Report. The system includes air-cooled variable refrigerant volume system (VRV/VRF) units including air-cooled condensers and indoor fan coil units. The condensers will be connected to fan coils via refrigerant line sets, distribution boxes and isolation ports. Isolation valves on each refrigeration connection to the distribution box will be provided. The distribution system will be a VRV fan coil system with overhead air distribution. Motorized louvers/windows and fan assist will provide natural ventilation to the common areas in the individual buildings. In addition fan coil systems will be provided.

B. Each residence room will be designed with dedicated HVAC system and control. Control of temperature in individual resident rooms will not be directly available to resident; however central administration control of temperature in individual resident rooms will be verified during design.
C. Selection of HVAC diffusers, access panel location and type and size of HVAC accessories will require special attention to preserve safety of residents.

D. Building automation system is BACNET over Ethernet, with web access and pager alarming. Fire alarm will be designed with full coverage area detection.

PART 3 - Design Criteria

3.01 Load Calculations – Outdoor Design Conditions

A. System load calculations will be based on the following outdoor design conditions:

1. Summer - 93 degrees F DB / 67 degrees F MCWB (0.1 percent - CEC Title-24) for airside system calculations.

2. Winter – 28 degrees F DB (Winter Median Extremes - CEC Title-24) for airside system calculations and heating system calculations.

3.02 Load Calculations – Indoor Design Conditions

A. System will be designed to maintain the following temperature and humidity conditions (numbers below are the set-point to which load calculations will be completed and to which the control system will be set):

<table>
<thead>
<tr>
<th>Space</th>
<th>Cooling (degrees F)</th>
<th>Heating (degrees F)</th>
<th>Relative Humidity (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence Areas</td>
<td>72+/-2</td>
<td>70+/-2</td>
<td>Max 60%</td>
</tr>
<tr>
<td>Staff/ Administrative space</td>
<td>72+/-2</td>
<td>70+/-2</td>
<td>Max 60%</td>
</tr>
<tr>
<td>Building Support</td>
<td>72+/-2</td>
<td>70+/-2</td>
<td>Max 60%</td>
</tr>
<tr>
<td>Restrooms</td>
<td>72+/-2</td>
<td>70+/-2</td>
<td>No Control</td>
</tr>
<tr>
<td>Corridors</td>
<td>72+/-2</td>
<td>70+/-2</td>
<td>Max 60%</td>
</tr>
<tr>
<td>Private Offices / Conference rooms</td>
<td>72+/-2</td>
<td>70+/-2</td>
<td>TBD</td>
</tr>
<tr>
<td>Telecom, Data Room</td>
<td>78+/-4</td>
<td>No control</td>
<td>TBD</td>
</tr>
<tr>
<td>Unoccupied Areas (Elec. Closets, Mechanical Rooms, etc.)</td>
<td>No control</td>
<td>No control</td>
<td>No Control</td>
</tr>
</tbody>
</table>

3.03 Load Calculations - Internal Air Conditioning Loads Assumptions

A. Lighting –1 Watts/S.F. for all spaces. Utilize actual lighting load upon completion of lighting design.

B. Miscellaneous Equipment – 1.5 Watts/S.F. all spaces. Utilize actual Misc. load upon completion of lighting design.
C. People

1. 245 BTUH Sensible/155 BTUH Latent for general people load. Utilize actual people load upon completion of design.

2. Number of people will be based on ASHRAE standard 62.1-2007.

D. Ventilation Rate – ASHRAE Std.- Ventilation of Healthcare Facilities 170-2008 / CMC Table 4-A / Owner preference

3.04 Load Calculations - Envelope Load Assumptions

A. Walls: Composite U-Value will be determined based on actual building design conditions. For the purposes of the calculations for the bid, utilize 6-inch wood frame walls, 16-inch on center framing, with R-19 insulation between framing members.

B. Glazing: Dual pane low-E glazing similar to PPG Solarban 70XL with NFRC U-Value of 0.42 (includes framing) and SHGC of 0.28. Overhangs, exterior shading devices, and building shading created by permanent building structures will be allowed for reduction of cooling loads.

C. Roof: Composite U-Value will be determined based on actual building design conditions. For the purposes of the calculations utilize R-30 insulation between framing members.

3.05 Load Calculation Methodology

A. All cooling loads will be completed using industry standard software such as Trace 700, Carrier HAP, etc. Load calculations will meet industry standards as outlined in the latest ASHRAE Fundamental Handbook.

3.06 Load Calculations – Systems Sizing

A. Block Loads: VRV/VRF condensers are to be sized based on block loads. Over-sizing by adding all peak loads is not allowed.

B. Airside System Sizing: Air handlers, associated coils, associated filters are to be sized for an extra 10 percent load capacity than required for calculated loads. This final load capacity is to be used in sizing systems based on velocities noted later in this Design Build Performance Criteria and Basis of Design. Provide an additional extra 4 percent leakage capacity in fan motor horsepower to account for duct leakage. This spare leakage capacity is not to be accounted for in calculating system velocity requirements. Indicate design capacity and total capacity on design drawings (total capacity is design capacity plus safety factor).

C. Cooling Plant Sizing: Provide a 10 percent safety factor in VRV/VRF plant sizing for morning cool down and to support higher tenant loads than anticipated. For purposes of bidding, do not assume any diversity factor for people or miscellaneous loads. Diversity may be accounted for where agreed upon by Owner in writing and justification has been provided. Indicate design capacity and total capacity on design drawings (total capacity is design capacity plus safety factor). Safety factor need not include airside system safety factor (i.e. do not add airside system safety factor to create base capacity plus add another 10 percent safety factor).
D. Heating Plant Sizing: Provide a 20 percent safety factor in VRV/VRF plant sizing for morning warm-up. Heat generated from lights, people, and computers is not allowed to offset system heating loads. Indicate design capacity and total capacity (total capacity is design capacity plus safety factor) on design drawings. Safety factor need not include airside system safety factor (i.e. do not add airside system safety factor to create base capacity plus add another 20 percent safety factor).

PART 4 - Heating, Ventilating, and Air Conditioning Systems

4.01 Proposed Systems

A. Variable Refrigerant Volume (VRV) / Variable Refrigerant Flow (VRF)

1. VRF System for All Cooling/Heating, Domestic Hot Water, & Hot Water for MUA Kitchen Units
   a. Use Variable Refrigerant Flow (VRF) System to serve both corridor common areas as well as the residence rooms. These will be provided by a VRF System with Heat Recovery for simultaneous heating and cooling in all zones. In addition to the Variable Refrigerant Flow system, a natural ventilation system will be used for the common areas as a method of providing non compressorized cooling. This will be the first stage of cooling with the VRF supplementing as needed.
   b. The Kitchen area in each building pod will be served by a 100% OSA (outside air) make up air unit with water coil. The water coil will be used for tempering the OSA during both winter and summer. The water coming to the make up air unit shall come from the VRF system via a hydronic heat exchanger. During heating months, the hydronic heat exchanger shall deliver 110 degree water and during cooling months, the hydronic heat exchanger shall deliver 50 degree chilled water.
   c. The domestic hot water needs shall be served by a hydronic heat exchanger with booster compressor. The hydronic heat exchanger shall be directly tied to the VRF system and provide 140 degree water for domestic hot water use.
   d. OSA ventilation for the residence rooms shall be delivered by an energy recovery unit (ERV) dedicated to OSA only and fed directly to all fan coil units serving residence rooms. One ERV will be used for each building.

4.02 Telecommunication Rooms

A. Provide cooling only split system units for telecommunication rooms. A high temperature activated exhaust fan will be installed in telecommunication rooms.

4.03 Electrical Rooms

A. Provide high temperature activated exhaust and outdoor air intake or air transfer to electrical closets. Provide cooling only split system for electrical rooms housing transformer. A high temperature activated exhaust fan will be installed in electrical rooms. Cook, Greenheck, Twin Cities are approved exhaust fan manufacturers. All exhaust fans will be seismically certified.

4.04 General Exhaust

A. Restrooms will be provided with general exhaust fans for 24/7 operation. Cook, Greenheck, Twin Cities are approved exhaust fan manufacturers. All exhaust fans will be seismically certified.
PART 5 - Equipment and Component Selection

5.01 Selection Criteria

A. Ductwork Mains: All main ductwork for supply or three or more registers for return or exhaust air will be sized with extra capacity equal to 10 percent. Supply air and return/exhaust air main and branch ductwork will be sized for a friction pressure drop of 0.06-inches H2O per hundred feet of ductwork. Variable volume system supply air main ductwork upstream of terminal units will be sized for a friction pressure drop of 0.06-inches H2O per hundred feet of ductwork. Main supply air ductwork will never exceed 750 FPM. Exact duct air velocities will be coordinated per room acceptable NC level coordinated with acoustical requirements. Transfer air will be sized at a velocity not to exceed 250 feet per minute. No internal lining is acceptable in ductwork. Packless sound attenuators will be used where is required.

B. Diffusers: Diffusers will be selected at airflows less than 300 CFM each. Where the load is more than 300 CFM in a room multiple diffusers will be provided. Diffusers will be selected at 5NC lower than Room Maximum NC values noted for the project. Titus air inlet/outlets are basis of design.

C. Return and Transfer Grilles: Return air grilles will not exceed more than 500 CFM per grille. Transfer grilles will not exceed 250 FPM in ductwork used for transfer or 250 FPM in face of grille. Titus air inlet/outlets are basis of design.

D. Dampers:
   1. Balancing Dampers: Adjustable balancing dampers in each branch take-off for proper control of balancing of the air distribution system will be provided. All operating levers will be readily accessible and be of extended type so as to not be in contact with insulation. Where dampers are inaccessible for adjustment, ceiling flush mounted concealed damper regulators with rod extension to damper, and die cast gears, as manufactured by Ventlock and Young Regulator, or equal will be provided. Dampers will be Ruskin, Johnson, or equal.
   2. Opposed blade dampers are not to be used within ten feet of registers.

E. Vibration Isolation: All motor operated equipment will be provided with vibration isolation mounting to prevent transmission of vibration or noise to the building.

F. Fire Smoke Dampers: Ruskin fire smoke dampers are basis of design. Fire smoke dampers will have end switches and communicate / reset between fire alarm and BAS.

G. Seismic Restraints: Piping, ductwork, and equipment will be provided with adequate restraints conforming to California Building Code.

H. Testing, Adjusting, and Balancing: An independent testing and balancing contractor will be required (as a sub-contractor to the general contractor), AABC certified to balance all air and water systems and heating and cooling equipment to the required quantities; and to verify the capacity and operating conditions of each piece of equipment.
PART 6 - Temperature Controls and Zoning

6.01 Temperature Controls Systems and Building Management

A. Temperature Control Systems: The temperature control system will control all primary equipment as well as all distribution equipment (exhaust fans, etc.) Room sensors to simply be temperature sensor reporting to the VRV/VRF controller network.

1. Individual temperature controls will be based on functions, exposure, and individual control per residence room.

PART 7 - Sustainable Design Considerations

7.01 The VRF system is an all-electric system that eliminates gas service to the building as well as allowing the use of PV or other means of onsite renewable energy to offset any and all electrical costs while eliminating any potential source energy transition costs associated with using gas. In addition, using a natural ventilation scheme will use less energy when outdoor air temperature permits. The VRF system will recover lost heat/cool energy and will recover the excess heat and produce hot water to temper the OSA as well as generate domestic hot water. The VRF system with heat recovery capabilities provides a more sustainable and energy efficient building.

END OF HEATING, VENTILATING AND AIR CONDITIONING SECTION
PLUMBING/FIRE PROTECTION SYSTEMS

PART 1 - Codes and Standards

1.01 Codes

A. Systems will be designed in accordance with the following codes:
   • 2013 California Building Code.
   • 2013 California Plumbing Code.
   • 2013 California Mechanical Code.
   • 2013 California Fire Code.
   • NFPA (adopted editions).

1.02 Standards

A. The following reference standards will be used for the design:
   • ANSI – American National Standards Institute.
   • ASCE 7 Minimum Design Loads for Buildings and Other Structures.
   • ASME – American Society of Mechanical Engineers.
   • ASTM – American Society for Testing and Materials.
   • AWS – American Welding Society.
   • AWWA – American Water Work Association.
   • FM – FM Global Approval Guide.
   • UL – Underwriters’ Laboratory.

PART 2 - Scope of Work

2.01 Description of Work

A. The scope of work involves all domestic cold and recycled water, domestic hot water, storm, sanitary sewer, and vent systems. The scope of work also includes the testing of all plumbing equipment and systems associated with the new construction of approximately 90,000 GSF buildings for the Cordilleras Mental Health Center.

PART 3 - Plumbing Systems

3.01 Sanitary Sewer and Vent System

A. Sanitary waste piping will be provided to all plumbing fixtures and will be sized per CPC Chapter 7, 8, and 9.

B. A gravity sanitary sewer and vent system will be provided for all new buildings. A sanitary sewer service will be shown up to 5 feet outside each building with a clean-out.

C. Any floor drains or floor sinks that will receive intermittent waste will be provided with automatic trap primers. Access panels will be provided for the trap primers. Access panels will be consistent with the architectural specifications.
D. Piping service below grade will be cast iron, service weight, 10-psi maximum service pressure, 140 degrees F maximum service temperature. It will be wrapped with 8 mil polyethylene plastic for corrosion protection. Under slab piping will be supported if settlement of soil below slab is established per soil or geo-tech report.

3.02 Storm Drainage System

A. The building will be provided with a storm drainage system at a minimum of 1.5 inches per hour of rainfall per CPC Appendix D and Chapter 11.

B. Storm drain piping will be drained by gravity through a storm drain main to terminate 5 feet from the building with a clean-out.

C. The secondary (overflow) drainage piping will also be drained by gravity and will be terminated from the building’s exterior with a downspout nozzle at 12-inches above grade.

3.03 Domestic Cold and Recycled Water System

A. Domestic water piping will be copper type K (for underground installations) and type L (for above ground installations) hard drawn copper, 125 psi maximum service pressure, 250 degrees F maximum service temperature.

B. A secondary zone backflow preventer will be provided for areas that can cause low or high hazard backflow at domestic water main.

3.04 Domestic Hot Water System

A. All buildings will have their own electric water heaters. Domestic hot water supply and return lines will be tied to the water heater.

B. The domestic hot water system will provide 120 degree F water to all lavatories, showers and kitchen sinks with scald protection.

C. The domestic hot water system will provide 140 degree F water to the dishwashers and the triple sinks.

D. A circulating pump will be provided to the hot water return line and will be connected to the electric water heater.

3.05 Drain Systems

A. The condensate drain system will drain all clean water drainage from any mechanical cooling equipment. All equipment requiring condensate removal will be equipped with a secondary drain pan and visible overflow piping. The primary condensate will be tied into the sanitary sewer system as an indirect waste with an air gap fitting. Condensate is required to be insulated as specified.

3.06 Natural Gas System

A. Gas service will enter the site with a main gas meter, a regulator, and an earthquake valve. Gas will be supplied only to the kitchen equipment.
3.07 Plumbing Fixtures and Equipment

A. Plumbing fixture selection will be based first and foremost for the safety and security of the occupants. Following are examples of plumbing fixtures to be considered.

1. In general, plumbing fixtures will be based on fixtures in clinics specific to psychiatric units.

2. Showers will be provided with single knob anti-ligature mixing valves. Thermostatic mixing valves with limited hot water temperature will be provided to prevent scalding. For accessible showers, shower valves with infrared control will be provided.

3. Lavatories will be provided with anti-ligature handles or infrared sensors. The supply and waste piping under the lavatory will be enclosed and not accessible.

4. It is recommended to use floor mounted, back outlet backwater supply fixtures. Wall mounted fixtures can be broken off its support. Toilets made of stainless steel rather than vitreous china are less susceptible to breaking. Powder coated stainless steel can be specified for better appearance. Manual flush valves would be recessed type with push plate or button control. Recessed sensor flush valves would also be used. Accessible and bariatric types can be provided.

5. Hose bibs will be lockable or with loose key.

B. Project will be LEED certified and water conserving fixtures will be selected with the following flow rates:

1. All lavatories in the project will be equipped with 0.5 gpm aerators or push-button type metering faucets at .25 gallons per use.

2. The water closets will be low-flow, 1.28 gal per flush valve type.

3. The urinals will be low flow 0.125 gal/flush type.

4. The sink valves will be low flow 1.5 gpm or less.

5. Electric water coolers will be provided and its location will be coordinated with the architect. Emergency eyewash will be provided at hazardous areas.

6. Hose bibs will be provided in the multiple fixture toilet rooms, exterior of building every 100 feet and where requested by the user. Hose bibs in weather exposed area will have freeze protection. Hose bibs will all be lockable.

3.08 Fuel Oil System

A. No fuel oil system is anticipated for this project.

PART 4 - Sustainable Design Considerations

4.01 Rainwater Treatment System

A. Rain water runoff will be collected from the roof of each building and then piped through a filter located on the ground floor of each building. Rain water from each building will be connected to the
external storm water main which will discharge rain water to the under-ground rain water collection tank with the option of by-passing to the city storm water main. The water is treated by a chlorine chemical injection system to ensure a minimum CT of 450 mg-min/L and filtered by a pressure filtration system at a rate that does not exceed 5 GPM/ft² to reduce turbidity to less than a daily average of 2 NTU. At the end of conveyance, storage, filtering, and treatment, the recycled water will be stored in the recycled water break tank and pumped to the 150,000 gallon existing steel tank located on the hill. The recycled water will be used for irrigation and flushing water closets and urinals. Recycled water may be used for the external fire hydrants and the fire protection system of the building subject to the Fire Marshal’s approval.

4.02 Gray water system

A. Gray water will be collected from the lavatories and showers of each building and connected to the external gray water system which will discharge gray water into an underground storage tank. A gray water treatment system shall be installed and will provide recycled water which will be pumped to the 150,000 gallon steel tank located on the hill.

4.03 Solar Thermal Domestic Water Heating System

A. A Solar Thermal Domestic Water Heating System will be installed for each building and will generate hot water for the building.

END OF PLUMBING/FIRE PROTECTION SECTION
ELECTRICAL/LIGHTING/FIRE ALARM SYSTEMS

PART 1 - Codes and Standards

1.02 Codes

A. Systems will be designed in accordance with the following codes:
   - NFPA-72, National Fire Alarm and Signaling Code - 2013
   - ANSI Electrical Systems
   - ANSI Handicapped Code - A117.1
   - State of California Code Regulations, Titles 8, 17, 19, and 22, Division 7, 24 - Part 3
   - California Occupational Safety and Health Act (CAL-OSHA)

1.03 Standards

A. The following reference standards will be used in design:
   - ADA- Americans with Disabilities Act
   - AEIC- Association of Edison Illuminating Companies
   - ANSI/TIA/EIA-569-B Commercial Building Standard for Telecommunications Pathways and Spaces
   - ANSI/TIA/EIA-606-A Administration Standard for commercial Telecommunications Infrastructure
   - ANSI/TIA/EIA-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
   - ASTM- American Society of Testing and Materials
   - Design Guide for the Built Environment of Behavioral Health Facilities
   - FGI – Facility Guidelines Institute for Design and Construction of Health Care Facilities
   - IEEE- Institute of Electrical and Electronic Engineers
   - IESNA – Illuminating Engineering Society of North America
   - ICEA- Insulated Cable Engineers Association
   - LEED-Leadership in Energy and Environmental Design
   - Mason Industries (conduit supports only)
   - NEMA- National Electrical Manufacturers Association
   - NFPA- National Fire Protection Association
   - UL- Underwriters Laboratories

PART 2 - Scope of Work

2.01 Description of Work

A. The scope of work involves all power, lighting, lighting controls, fire alarm, and testing of all electrical equipment for the construction of approximately 90,000 GSF building for San Mateo County Cordilleras Mental Health Center. One new main power utility service for the entire complex will be installed at the ARF building. Photovoltaic (PV) system will be installed at each
MHRC building. An emergency standby diesel engine generator unit will be installed near the ARF building to provide 12 hours back-up power for 80 percent electrical load of the entire facility, i.e. ARF and MHRC buildings.

PART 3 - Electrical Systems

3.01 Electrical Service and Distribution System

A. Normal Distribution:

1. The main electrical service for the entire facility will be fed via a new PG&E pad mounted transformer located at the site in the vicinity of the ARF building. One main PG&E kWh meter will be installed for the entire facility. The main switchboard shall be rated at 2500A, 277/480V, 3 phase, 4 wires. The main switchboard MSB will be installed at the ARF building main electrical room to serve the entire facility. The main switchboard will include the following circuit breakers: One 2500AT/3P main circuit breaker, one 400AT/3P circuit breaker to serve the ARF building distribution panel ARF-DP, five 125AT/3P circuit breakers to serve the five MHRC buildings distribution panels MHRC-DP, one 250AT/3P circuit breaker to serve life safety panel LS via transfer switch ATS-LS, and one 1200 AT/3P circuit breaker to serve equipment panel EQ via transfer switch ATS-EQ. Each of the 125A circuit breakers that serve the five MHRC buildings will have an in-house kWh meter. Two 125AT/3P spare breakers will also be installed at the main switchboard, as well as spaces for future breakers.

2. The ARF-DP distribution board will be installed in the ARF building main electrical room. It shall be rated 400A, 277/480V, 3 phase, 4 wires with main lugs and required quantities of branch circuit breakers. This will serve the ARF building and site electrical loads. Step-down transformers will be installed in the ARF building to provide 120/208V, 3 phase power for the branch circuit panelboards.

3. The five MHRC-DP distribution panels will be installed in the five MHRC buildings electrical room. Each shall be rated 125A, 277/480V, 3 phase, 4 wires with main circuit breaker and required quantities of branch circuit breakers. These MHRC distribution panels will serve the five MHRC building units. Each of these will be installed in the MHRC building electrical room. Step-down transformers will be installed in the MHRC buildings to provide 120/208V, 3 phase power for the branch circuit panelboards.

4. 277/480V panelboards will be used for HVAC equipment and lighting.

5. Where receptacles are provided within occupant rooms, they will be tamper-resistant, hospital-grade, and provided with GFCI protection. Coverplates will be made of polycarbonate materials and secured with tamper-resistant screws. A dedicated circuit will be required for each occupant room and bath to allow remote shut-off if necessary for occupant’s safety.
B. Emergency Distribution:

1. An emergency standby diesel-engine generator with sound attenuated weatherproof outdoor type enclosure will be installed outside the ARF building to provide back-up power for the entire facility. The generator capacity will support 80 percent electrical loads of both ARF building and the five MHRC buildings. The diesel fuel tank capacity will provide emergency back-up power for 12 hours at generator full load capacity. Emergency generator rating shall be 1000KW, 1250KVA, 1600A, 277/480V, 3 phase, 4 wires.

2. The main emergency distribution board EDB will be installed in the ARF building main electrical room. It shall be rated 1600A, 277/480V, 3 phase, 4 wires with main circuit breaker. EDB will include the following circuit breakers: One 1600AT/3P main circuit breaker, one 250AT/3P circuit breaker to serve the life safety panel LS via 250A/3P transfer switch ATS-LS, and one 1200AT/3P circuit breaker to serve the equipment panel EQ via 1200A/3P transfer switch ATS-EQ.

3. The life safety distribution panel LS will be installed in the ARF building electrical room. It shall be rated 250A, 277/480V, 3 phase, 4 wires with main circuit breaker LS and will include the following circuit breakers: One 250AT/3P main circuit breaker, one 125AT/3P circuit breaker to serve the life safety panel ARF-LS for ARF building, and five 60AT/3P circuit breakers to serve the five life safety panels MHRC-LS for the five MHRC buildings. Each of the 60A circuit breaker that serves the five MHRC-LS panels will have an in-house kWh meter.

4. The equipment distribution panel EQ will be installed in the ARF building electrical room. It shall be rated 1200A, 277/480V, 3 phase, 4 wires with main circuit breaker EQ and will include the following circuit breakers: One 1200AT/3P main circuit breaker, one 600AT/3P circuit breaker to serve the equipment panel ARF-EQ for ARF building, five 225AT/3P circuit breakers to serve the five equipment panels MHRC-EQ for the five MHRC buildings. Each of the 225A circuit breakers that serves the five MHRC-EQ panels will have an in-house kWh meter.

3.02 Conduit and Wire

A. All conduits will be concealed except in mechanical and electrical rooms. Galvanized rigid metal conduit will be used in concrete slabs and below grade. Minimum size conduit will be 3/4 inch trade size for power system and 3/4 inch trade size for telecommunication system; also, minimum 1 inch for power system will be used below slab or where concealed in concrete. EMT will be used in hung ceilings and non-masonry walls.

B. Grounding conductors will be installed in all feeder and branch circuits.

C. All conductors will be copper with THHN insulation for dry locations. Type XHHW will be used for sizes larger than #1/0. Conductor sizes will be No. 12 AWG minimum for power and No. 14 AWG for controls or signal.

D. RMC conduit with THHN/THWN will be used for branch circuits exposed outside of buildings but not underground.
E. Flexible steel conduit will be used to connect motors, lay-in luminaires, and transformers. Liquid-tight flexible steel conduit will be used in damp and wet locations.

3.03 Lighting Systems

A. System Description

1. A complete lighting system for all indoor, outdoor and building mounted illumination will be installed. The indoor lighting system will consist primarily of energy-efficient fluorescent and LED sources. Incandescent lighting will not be used.

2. The outdoor lighting system will consist of HID and LED sources. Luminaires will use optical systems and sources that are in compliance with local lighting ordinances. Light levels between 1.0 to 2.0 footcandles will be maintained throughout the site to provide for traffic and pedestrian safety. Full cut-off lamps and energy efficient lamps will be installed to exceed 20 percent of ASHRAE 90.1.

3. In general, indoor lighting controls will consist of a combination of low voltage relay based lighting control panels and local occupancy sensors. Outdoor lighting controls will consist of a low voltage relay based lighting control panel with astronomical time clock function.

4. Design Lighting Levels
   a. Average Maintained Footcandles

<table>
<thead>
<tr>
<th>Area</th>
<th>Recommended Lighting Level (Footcandles) at 30” A.F.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Area</td>
<td>30-50</td>
</tr>
<tr>
<td>Resident Support Core</td>
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<tr>
<td>Staff/ Administrative space</td>
<td>30</td>
</tr>
<tr>
<td>Building Support</td>
<td>20-30</td>
</tr>
<tr>
<td>Restrooms</td>
<td>10</td>
</tr>
<tr>
<td>Corridors</td>
<td>5-10</td>
</tr>
<tr>
<td>Private Offices / conference rooms</td>
<td>30-40</td>
</tr>
<tr>
<td>Telecom, Electrical Rooms</td>
<td>30</td>
</tr>
<tr>
<td>Exterior Lighting and Pedestrian Pathways</td>
<td>1-2</td>
</tr>
</tbody>
</table>

   b. No point of exit and egress path will be less than 1 footcandle at the floor.
B. Equipment and Materials

1. Lamps and Ballasts
   a. In general, fluorescent lamps will be high output (third generation) ‘Super T8’ lamps with energy efficient electronic ballast. All fluorescent lamps will have a color temperature of 3,100 degrees Kelvin and a color rendering index (CRI) of 82 or greater. LED & compact fluorescent lamps will also be utilized.
   b. LED and HID lamps for outside lighting will have a color temperature of 5,000 degrees Kelvin.

2. Lighting Control
   a. Lighting in public spaces will be controlled via low voltage, relay based lighting control panel time switch.
   b. Lighting controls in treatment areas, client bedrooms, and toilet rooms will be tamper resistant.
   c. Occupancy sensors will be utilized in all private offices, conference rooms, restrooms, and storage rooms. Occupancy sensors will be of the passive infrared or combination infrared/ultrasonic type. Manual override of occupancy sensors will be utilized in private offices, conference rooms, and storage rooms.
   d. Daylighting controls will be utilized in areas with skylights or exterior windows, where natural light is available. Continuous dimming will be utilized with the daylight controls for luminaires in these areas.

3. Occupant Room Lighting
   a. Luminaires located within the client areas will be tamper-resistant type or have minimum 1/4-inch thick polycarbonate prismatic lenses securely fixed in the frame and the covers firmly secured with tamper-resistant screws. Anti-ligature luminaires will be provided.
   b. Exit signs located within client areas in the corridors will be vandal-resistant and installed tight to the ceiling with full-length mounting bracket.
   c. Lighting control coverplates will be made of polycarbonate materials and secured with tamper-resistant screws

3.04 Fire Alarm System

A. An automatic, addressable, fire alarm system will be supplied to meet the requirements of the adopted editions of the California Building Code, California Fire Code, and NFPA 72.

B. The fire alarm system will require system alarm, supervisory and trouble signal monitoring, and alarm notification for the building. Any power supplies will have batteries to provide a secondary power source in case of primary power loss to the control panel or any remote power supply. The system will be manufactured by Simplex or Siemens and will be connected to the existing Simplex or Siemens campus network, via the local or wide area network infrastructure.

C. Activation of system smoke detectors or manual pull stations will initiate alarm signals on the fire alarm control panel (FACP) and fire alarm annunciator (FAA), and activate the audible and visual notification appliances throughout the building.
D. Manual pull stations will be supplied at building exits. Automatic smoke detection will be supplied throughout, in lieu of duct mounted smoke detectors at fire/smoke dampers and air handling units. Heat detectors will be supplied where the environment is not suitable for smoke detectors. Audible and/or visual alarm devices will be supplied throughout the building.

E. Control outputs will be supplied for fire safety functions, such as air handler shut down, elevator control, fire smoke damper closure, and fire door release.

3.05 Energy Management System

A. Raceway system of conduits, pull rope, and outlet boxes in compliance with the requirements and standards of the campus to be installed.

B. Minimum conduit size of 3/4-inch.

3.06 Mechanical Controls

A. The typical voltage source configuration to motor loads will be 480 volt, 3-phase, 3-wire. Motors with a nameplate 5 hp or greater will have VFD controllers or equivalent reduced voltage starting.

B. 120 volt receptacles will be required within 25 feet of mechanical equipment for maintenance use. Power to BMS control panels.

C. Power to new fire-smoke dampers will be required. Duct detector relay base will shut down related fan.

D. Local disconnect switches will be required at each motor where the control panel does not include an integral switch.

3.07 Telecommunication System

A. Telecommunication Rooms

1. Telecommunication rooms will be located on each level of the ARF. The Level 1 room will be the main point of entry (MPOE) for telephone and data services. Each MHRC will have a telecommunications room (TR) to provide a connection point to the facility backbone and support horizontal distribution in each building.

2. 3/4-inch fire-resistant plywood backboard and ground bus bar system will be installed in each telecommunications room. TRs will also consist of equipment racks with wire managers for backbone and horizontal cable installation.

3. Cable runway system will be provided in each telecommunications room to serve as backbone raceway infrastructure.

B. Telecommunication Pathways

1. The MPOE will be served via new 4-inch conduits to the property and will be coordinated with the client and service provider’s requirements.
2. Provide multiple 4-inch conduits from each MHRC building back to the ARF for connection to facility telecommunication services.

3. Provide 4-inch conduit risers in the ARF from the Level 1 MPOE to each TR.

4. Wire-basket cable tray system will be located in the main corridors to serve as the raceway infrastructure. J-hooks will be provided by the telecommunications contractor.

C. Backbone Distribution

1. A comprehensive backbone cabling system consisting of multi-strand fiber optic and multi-pair copper and coax cabling will be provided originating in the MPOE room to support each TR throughout the facility.

D. Horizontal Distribution

1. A 4-pair unshielded twisted pair (UTP) voice and data network cabling will be provided.

2. Wireless access point locations will be coordinated and designed per client requirements.

3. Conduit sizes, tele/data outlet junction box locations, and power requirements will be coordinated and designed per client and service provider’s requirements.

PART 4 - Sustainable Design Considerations

4.01 Photovoltaic System

A. A 496 kW photovoltaic (PV) system will be installed for the Project. This includes installation of PV systems on the roofs of the ARF and five MHRC buildings. The normal panelboard in the ARF and each MHRC building will include a circuit breaker for PV system connection, and the bus rating of the normal panelboard will be in accordance with the electrical code requirement for PV systems. The site will need to be evacuated during design for adequate solar exposure to validate PV system strategy.

B. The PV system will consist of standard efficiency modules (approximately 16-17% efficiency) mounted to the roof using a permanently attached racking system. The PV arrays will be located to avoid shade from roof mounted equipment, trees, etc. The PV modules will be equipped with optimizers to limit the effects of shade, and compatible utility grid-interactive inverters will be located in an easily accessible but secure location. Additional interconnection equipment will be provided as required by PG&E as a condition of interconnection. The PV system will be interconnected via PG&E’s Net Energy Metering program.
The PV system size was estimated by calculating the annual energy usage by assigning an energy use intensity (EUI) to each building occupancy type. These EUIs are based on previous project experience and industry standards for sustainable, high efficiency design. The EUI for the five MHRCs is estimated to be 25 kBTU/sf-yr, and the community center/ARF is 30 kBTU/sf-yr. The MHRCs were treated as multifamily residential housing, and not as an institutional occupancy. The following panel specifications and PV design standards were used for system sizing:

| Panel Size | 345 W |
| Panel Area | 17.6 ft² |
| PV Production | 1450 kWh/kW |
| Usable Roof Area | 10 W/sf |
| Panel Cost | $3.5/W |
| Energy Cost | $0.15/kWh |

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<tr>
<th>MHRC (x5)</th>
<th>Community Center/ARF</th>
<th>Total</th>
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<tbody>
<tr>
<td>Area/Floor (sf/flr)</td>
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<tr>
<td>Total Area (sf)</td>
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<td>EUI (kBTU/sf-yr)</td>
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<tr>
<td>kWh/yr</td>
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<td>Est. Annual Energy Cost ($/yr)</td>
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<td>No. Panels</td>
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<td>Est. Roof Area (sf)</td>
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<td>PV System Cost ($)</td>
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<td>Escalated Energy Cost ($) - 30 yrs</td>
<td>146,718</td>
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The estimated simple payback period is 30 years, and the PV system cost is $3.2 million. Accounting for fuel escalation of 3.0%, this number reduces to approximately 21 years.

A web-enabled monitoring system will graphically display the energy output of the PV system for educational purposes.

4.02 Fuel Cell System

A 20 kW fuel cell may be needed for the main kitchen in addition to the photovoltaic system to achieve Zero Net Energy (ZNE) Basis of Design due to the presence of high energy use intensity.
cooking and process loads as allowed by the NREL definition of ZNE. The area of the kitchen has been interpolated based on the anticipated EUI and kWh/yr of energy usage.

B. The estimated simple payback period is 10 years, and the fuel cell system cost is $250,000. Accounting for fuel escalation of 3.0%, this number reduces to approximately 8 years.

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<tr>
<td>Total Area (sf)</td>
<td>6,293</td>
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<tr>
<td>EUI (kBtu/sf-yr)</td>
<td>95</td>
<td>95</td>
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<tr>
<td>kWh/yr</td>
<td>175,200</td>
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<td>Est. Annual Energy Cost ($/yr)</td>
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<td>Fuel Cell Size (kW)</td>
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<td>Fuel Cell System Cost ($)</td>
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<tr>
<td>Simple Payback (yrs)</td>
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<tr>
<td>Escalated Energy Cost ($) - 5 yrs</td>
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<tr>
<td>Escalated Energy Cost ($) - 10 yrs</td>
<td>35,318</td>
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</table>

END OF ELECTRICAL/LIGHTING/FIRE ALARM SECTION
Cordilleras Mental Health Rehabilitation Center
Mechanical, Electrical, Plumbing, and Fire-Life Safety Systems Assessment Report

Interface Project No. 2014-0216

prepared for:
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Roland Thomas - Project Manager, Lead Mechanical
Benson Balan, PE - Lead Electrical
Hasan Shah - Lead Plumbing

May 14, 2014

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Executive Summary

Interface Engineering performed an assessment and examination of the existing mechanical, electrical, plumbing, and fire/life safety systems (MEP/FLS) serving the Cordilleras Mental Health Rehabilitation Center at 200 Edmonds Road, Redwood City, California. The assessment and examination was performed on April 17, 2014 with the intent of determining the existing MEP/FLS systems’ conditions, operations, reliability and capacity.

The Center is a three-story building with a basement level built in 1949 as a hospital for tuberculosis patients. The hospital was converted to a 68-bed locked psychiatric facility and a 49-bed adult residential rehab facility serving seriously mentally ill residents and others on the path of recovery and a return to their communities. The center operates under the management of the county’s Division of Behavioral Health and Recovery Services. As part of this report, recommendations will be provided for the necessary upgrade of MEP/FLS systems if the County decided to keep the building and change the occupancy to a full-time adult residential care facility.

Investigation for this report includes a site visit conducted by the representatives from Interface Engineering and an examination of existing as-built drawings of the facility. The report below is a description of the existing conditions for the MEP/FLS systems observed during the walk-through. The observations were compared with available as-built drawings in order to confirm the accuracy of the as-built documentation for the facility. This report provides a description of the existing MEP/FLS conditions and observations.
Observation

Mechanical Systems

Heating Plant System
The heating plant consists of two Bryan AB 250-S natural gas-fired steam generating boilers located in the basement level of this main building. The natural gas input for each of these boilers is 2,500 MBH input with an output capacity of 2,000 MBH. (See Photo M-1.)

The boiler flue appeared to be in good condition with no evidence of corrosion. The flue extended through the exterior wall and connected to a stucco enclosed stack on the east side of the building. Some cracking of the plaster was noted in the exterior finish. (See Photo M-2.)

Each boiler has the capacity to maintain the heating requirements for the entire building during peak heating demand. The secondary boiler is activated to ensure the primary boiler is not operating at full capacity for any great length of time.

The boiler nameplate data indicates the boilers were manufactured in 2003. Although the boilers appear to be in good working condition with routine maintenance, they do not meet the current regional air quality requirements.

On the day of the site visit, it was mentioned the boilers would be de-rated to meet the air quality requirements, however this adjustment would impact the overall efficiency and performance of the boilers.

The boiler service life is approximately 25 years with another 15 years of operation available. This type of system requires a greater amount of maintenance and can encounter premature equipment failures and poor steam system efficiency.

The vacuum pumps, and feed water pumps serving this system were in operation at the time of the visit and have been replaced in the last 5 to 10 years. (See Photo M-3.)

The piping, blow-off and flash tanks, including some of the valves in the Mechanical Room are original to the 1949 construction. The estimated piping service life is approximately 30 years from the time of installation, so these components have served more than double their expected life. (See Photo M-4.)

Combustion air intake louvers located on the east side of the Mechanical Room appeared adequate in size and were unobstructed.

The steam and condensate return piping system is original to the 1949 building construction and has exceeded its useful service life.

According to the facilities staff, except for the piping, the individual patient room radiators, associated steam traps and room controls have been replaced within the last 5 years.
Fans and Supply/Exhaust Air Distribution Systems

The Basement Level Mechanical Room contains the building’s 100% outside air and supply fan system. The four individual supply air fans and duct distribution serving the First, Second, Third Floors and Kitchen areas are original to the 1949 construction. The fan motors and belts have been refurbished. The supply fans and associated casework have exceeded their life expectancy. (See Photo M-5.)

The supply air distribution system serves the individual floor corridors with no air discharged directly into the patient rooms. Outside ventilation air to the individual patient rooms was intended to be through the operable windows, however due to safety reasons, a number of these window have been secured. The rooms are not ventilated and do not meet code compliance. (See Photo M-6.)

The heating air handling system consists of a 100% outside air arrangement with a single outside air louver connected to a plenum. The record drawings do not indicate that an outside or individual fan damper has been installed. Plenum access was not obtained at the time of the site visit and it is assumed that no damper system exists. This is a code violation that should be remedied.

The air is relieved through a number of exhaust fans located on the roof in a Mechanical Room. The fans are original to the 1949 building construction; however the motors and belts have been replaced. The fans and associated casework and duct system has exceeded their life expectancy. (See Photo M-7.)

The air distribution for both supply and exhaust systems located throughout the building is original and has passed its life expectancy. The insulation duct wrap was observed to be damaged in several locations. (See Photo M-8.)

The kitchen exhaust fan and duct system serving the Type 1 hood does not meet current code requirements and should be replaced.

The Lobby and Third Floor Pharmacy areas have dedicated roof mounted packaged heat pump units with duct distribution system routed on the roof level. These units have been installed within the last 5 to 10 years and have a life expectancy of 15 years. The Pharmacy unit appeared to have insufficient supply airflow capacity and an inline booster fan was incorporated into the system to compensate for airflow required in this area. (See Photos M-9 and M-10.)

Plumbing Systems

Sanitary Waste and Vent System

The majority of the sanitary waste is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what is visible on the Ground Floor and Boiler Room. The sanitary waste lines for the building appear worn-out and outdated; the pipes and fittings are hub spigot type with lead joints.

The existing sump pump in the Boiler Room appears to be worn-out and outdated. It has a broken cover and its associated piping needs to be replaced.
Domestic Cold Water System
6” City incoming water main splits into two 2-1/2” domestic water lines at the Pump House. The two 2-1/2” domestic water lines are connected to two water transfer pumps and are pumped to a single 4” common header in order to supply water to the existing steel tank (approximately 150,000 gallons capacity) installed in 2001 and located on nearby hill.

The domestic cold water supply to the building is fed by gravity from the existing steel tank. The piping from the tank to the building is underground and therefore its condition could not be determined. It is assumed the piping has reached its useful service life and should be replaced. The distribution piping system in the building is above the ceiling or concealed and was not visible for the site observation.

Reduced pressure backflow preventer and water meters for City incoming water are located at the entrance gate.

Domestic Water Heating System
The majority of the domestic hot water distribution system is in the ceiling or concealed and was not visible for the site observation.

The hot water 120 degree F is supplied by the existing PVI Lownox Turbopower gas Water heater capacity 400 gallons, 800,000 BTUH. Water heater appears to be in good condition.

Hot water 140 degree F to the kitchen dishwasher is also supplied by the existing gas water heater capacity 40 gallons, 40,000 BTUH manufactured by State Industries Inc. The water heater appears to be in fair condition.

Storm and Overflow Drainage System
The majority of the storm water piping is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what was visible in the Ground Floor and the Boiler Room. Rainwater lines for the building appear to be original with a hub spigot type fitting with lead joints.

When it rains, underground water rises up and enters into the trenches of the Boiler Room. Building maintenance staff places a single sump pump to lift and discharge the water to the main sewer. Sometimes single pump is not able to accommodate all of the water, and so they place a second pump to get rid of all underground water. The sump pump discharge piping in the trench is rusty and needs to be replaced.

The roof drains located on the roof appear to be undersized. There is a scupper system in place to accommodate overflow.

Plumbing Fixtures
Most of the plumbing fixtures in the building have exceeded their service life and do not meet current low flow standards and ADA requirements.

The Janitor sinks located in a few places look in fair condition.
Kitchen
Most of the kitchen equipment is in good condition. Grease interceptor located in the Boiler Room appears to be worn-out and outdated. The equipment has probably reached the end of its effectiveness and needs to be replaced.

Natural Gas
The majority of the natural gas piping is above the ceiling or concealed and not visible for the site observation. The only piping visible was limited to what was visible in the existing Boiler Room at ground floor.

There are two gas meters and regulators for the building. One gas regulator/meter is for the kitchen and supplies gas to the kitchen at 7” W.C. The second regulator/meter is for the mechanical equipment and supplying gas at 1psi.

Fuel Oil System
Main fuel oil storage tank installed in 1988 with a capacity of 2000 gallons located outside underground. Oil pumped from main tank to the day tank installed at the ceiling of the Boiler Room which directly supplies oil to the generator.

Fire Protection System
The building is partially sprinklered with only the Basement Level currently sprinklered at this time. The current code requires this type of building occupancy to be fully sprinklered.

Electrical Distribution Systems
Normal Distribution System
Utility power for the building is derived from a PG&E pad-mount transformer located in an indoor dry vault in the basement level.

The building is served by Main Switchboard rated at 800A, 208/120V, 3-phase, 4-wire with an 800A/3P main breaker and a single utility meter. The Main Switchboard is located in the Main Electrical room adjacent to the PG&E’s indoor dry vault in the basement. The Main Switchboard supplies various distribution and branch-circuit panelboards located strategically in various electrical rooms in the building.

Majority of the electrical equipment, including the Main Switchboard, are original equipment installed in 1949. The equipment is outdated and past the manufacturer’s 25 year recommended life span. The manufacturer is no longer in business and parts are obsolete and will be difficult to obtain. Existing antiquated equipment is difficult and costly to maintain, replacement parts and service may not be readily available.

Furthermore, the installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and is no longer compliant with the Utility Company standards and regulations.
Emergency Distribution System
There is an existing 60kW/75KVA, 208/120V, 3 phase, 4-wire diesel driven indoor generator with a 60 gallon sub-base fuel tank serving the building. It has a 225A supply to an emergency panelboard via an automatic transfer switch. The emergency panelboard is rated at 225A, 208/120V, 3 phase, 4-wire.

The system currently serves life safety and other various loads but is not designed to support the entire electrical loads for the Center. The emergency system distribution equipment is within the manufacturer’s recommended lifespan. The installed location of the equipment is not in compliance with the current code requirements for essential/emergency systems. Based on surface investigation, the following are loads connected to the emergency generator:

1. Egress lights
2. Elevators
3. Fire alarm system
4. Telephone system
5. Boilers and associated controls
6. Maintenance Shop miscellaneous loads
7. Kitchen area miscellaneous loads
8. Sump pumps
9. Miscellaneous pumps and alarms in the Boiler Room

Also, the generator is located in the basement level that is at risk for flooding during a heavy rainfall. Critical equipment like a generator should not be located in area that may cause it to fail during an emergency situation.

Lighting System
Lighting luminaires being utilized in the center uses a mixture of both fluorescent and incandescent lamps. Majority of the luminaires are outdated and not energy efficient. Both lighting and associated controls are outdated and no longer comply with the latest requirements of Title 24.

Fire Alarm System
The existing fire alarm system is by Siemens. The main fire alarm control panel is located in the Second Floor and is fairly new, approximately 5 years old. The existing fire alarm system currently provides smoke detection and audio/visual coverage.
Recommendation

**Mechanical Systems**

**Heating Plant System**
The existing hydronic steam and condensate return piping, and associated appurtenances within the Boiler Room are original and should be replaced with new piping, insulation and piping supports, valves and tanks.

The Boiler Plant is in good working condition but does not meet current air quality requirements. Although it’s grandfathered in, any renovation or expansion that will result in alteration to the Boiler Plant will require upgrades that meet current codes. This includes adding code-mandated outdoor ventilation.

The existing hydronic steam piping and condensate return piping routed within the building and connecting to the individual room heating coils is original and should be replaced. The coils, steam traps and controls have been recently replaced and shall remain.

The vacuum and feed-water pumps, valves, controls and all associated shall be replaced.

**Fans and Supply/Exhaust Air Distribution Systems**
The supply and exhaust fans and casework are original and should be replaced with new units of equal performance capacity. These components have exceeded their service life. All associated control components should be replaced with new.

The existing resident rooms do not have the necessary ventilation required per code. The operating windows were the source of outside air; however, due to security requirements, these windows have been secured. A method of providing the code-required outside air must be provided. HVAC options to consider would include either a dedicated outside air fan with a distribution system and heating coil, or exterior/interior wall louvers at each resident room.

The entire air distribution system including supply and exhaust ductwork and associated appurtenances have exceeded their useful service life and should be replaced with new. This includes all new duct insulation and support systems to meet current code requirements.

**Plumbing Systems**

**Sanitary Waste and Vent System**
All corroded piping should be replaced with new piping.

All hub spigot-type pipes should be replaced with hub-less piping joined together with couplings.

Existing sump-pump in the Boiler Room should be cleaned. Replace the sump-pump discharge pipes and fittings with new piping and fittings. Also replace the sump-pit cover.
Domestic Cold Water System
The existing water transfer pumps located in the pump house need to be fixed along with their bases. Flexible connections should be installed in the suction and the discharge of the pumps.

All corroded cold water supply piping should be replaced with new piping.

Domestic Water Heating System
All corroded hot water supply piping should be replaced with new piping.

All ripped/damaged insulation needs to be replaced.

Storm and Overflow Drainage System
All corroded piping should be replaced with new piping.

All hub spigot-type pipes should be replaced with hub-less piping joined together with couplings.

A new sump-pit with duplex pumps should be installed for underground water, discharging to the storm-water system.

Roof drains needs to be installed as per the square footage requirements of the CPC for 2-inch rainfall.

Overflow drains should be installed for the roof.

Plumbing Fixtures
Plumbing fixtures need to be replaced to meet the current low-flow standards and meet ADA requirements.

Kitchen
The existing grease interceptor located in the Boiler Room needs to be replaced with a new grease interceptor.

Natural Gas
All corroded piping should be replaced with new piping.

Fire Protection System
The building is currently sprinklered only in the Basement Level. Although the installed fire sprinkler system is grandfathered in, a renovation or change of occupancy will trigger a complete building Fire Sprinkler System upgrade in compliance with the latest codes.

Electrical Distribution Systems

Normal Distribution System
Due to the age of the existing distribution equipment, the majority of the original distribution equipment will require replacement as part of the conversion. Replacement of the distribution equipment will provide long term benefits, such as equipment reliability, and cost savings from repairs, maintenance, and utilizing outdated components.
The majority of feeders and branch-circuit feeders (conduit and wires) are also assumed to be an original installation. Replacement of these feeders and branch-circuit feeders (conduit and wires) will provide long term reliability.

The grounding system should be tested to confirm integrity and ensure reliability. The grounded resistance should be tested to ensure compliance with the requirements of the California Electrical Code.

The replacement of the Main Switchboard will require coordination with the Utility Company having jurisdiction. The installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and no longer compliant with the Utility Company standards and regulations. A new exterior pad-mounted utility transformer might be required. Allowance should be provided for the replacement of the existing utility transformer including new primary and secondary feeders.

The integrity of all wiring devices need to be tested. Wiring devices that has reached the end of useful life due to age and deterioration needs replacement. Due to age and use, receptacle outlet contact loses tension to securely hold inserted plugs and wiring termination loosen.

Majority of wiring devices are mounted 12 inches above finished floor which is no longer compliant with ADA. These devices should be replaced and mounted 15 inches above finished floor per ADA requirements. This holds true for any light switches mounted at 52 inches above finished floor. These switches should be replaced or relocated to 48 inches above finished floor.

If architectural remodeling of the interior is necessary to accommodate the new architectural layout, new wiring devices should be provided as required suit the new architectural layout.

**Emergency Distribution System**

Due to the age of the existing emergency panelboard and automatic transfer switch, the emergency distribution equipment will require replacement as part of the conversion. Replacement of the emergency equipment will provide long term benefits, such as equipment reliability, and cost savings from repairs, maintenance, and utilizing outdated components.

The majority of feeders and branch-circuit feeders (conduit and wires) are also assumed to be an original installation. Replacement of these feeders and branch-circuit feeders (conduit and wires) will provide long term reliability.

Critical equipment like a generator should not be located in area that is prone to flooding and may cause it to fail during an emergency situation. The generator should be relocated to a new location at the ground level. It is recommended that a separate electrical room dedicated for essential/emergency system be provided.

**Lighting System**

Lighting luminaires being utilized are a mixture of both fluorescent and incandescent lamps. Majority of the luminaires are old and not energy efficient, especially luminaires with incandescent lamps. There are some luminaires that are already utilizing T-8 lamps and can be reused in order to minimize cost. Luminaires that are not energy efficient should be replaced with luminaires with more energy
efficient lamp and ballast; or with LED luminaires. Discolored lenses for luminaires to remain should be replaced.

Majority of the lighting controls are outdated and no longer complies with the latest requirements of California Title 24. Replace lighting controls with newer technology that will meet the requirements of California Energy Efficiency Standards.

If architectural remodeling of the interior is necessary to accommodate the new architectural layout, new luminaires and controls should be provided as required suit the new architectural layout.

**Fire Alarm System**

Fire alarm system for a residential care facility is less restrictive than for a psychiatric care facility. The conversion will require a change from a private-mode notification to a public-mode notification. No other changes for fire alarm detection and controls are expected.
Photos

Mechanical Systems

Photo M-1 - Boiler
Photo M-2 – Boiler Flue

Photo M-3 - Pumps
Photo M-4 – Flash Tanks

Photo M-5 – Supply Fans
Photo M-6 – Operable Windows have been screened off due to security reasons.

Photo M-7 – Exhaust Fan
Photo M-8 – Duct Insulation

Photo M-9 – Roof Packaged Heat Pumps
Photo M-10 – Roof Packaged Heat Pumps
Plumbing Systems

Photo P-1 - Grease Interceptor

Photo P-2 - Hub & Spigot Cast Iron Piping
Photo P-3 - Outdated Type of Janitor Sink

Photo P-4 - Sump Pit in Boiler Room
Photo P-5 - Sump Pumps in Trench
Electrical Systems

Photo E-1 - Genset

Photo E-2 - Panel
Photo E-5 - Main Switchboard

Photo E-6 - Switchboard
Photo E-7 - Electrical Panel
2. Above ceiling fan coil unit with ducted air distribution system.
3. Above ceiling fan coil unit with ducted air distribution system to provide minimum ventilation.
4. Roof mounted kitchen 100% outside air heat pump unit and exhaust hood fans.
5. Fan assisted natural ventilation system w/motorized dampers / louvers or windows.
1. Condensing units with energy recovery located on roof. Estimate 75 tons.
2. Above ceiling fan coil unit with ducted air distribution system.
3. Roof mounted kitchen 100% outside air heat pump unit and exhaust hood fans.
Appendix I

Hazardous Materials Investigation
June 2, 2014

Mr. Rob Kalkbrenner
Capital Projects Manager
Facilities Planning, Design & Construction
County of San Mateo
555 County Center - Fifth Floor
Redwood City, CA 94063

Cordilleras Facility, 200 Edmonds, Redwood City, CA
SCA Project No.: F11312.02

Dear Mr. Kalkbrenner:

This letter summarizes the results of a hazardous materials investigation at the Cordilleras Facility located at 200 Edmonds, Redwood City. Sampling was conducted by SCA Environmental, Inc. (SCA) on May 1-6, 2014 by Daniel Leung, CSP, CAC (#07-4175), CDPh. The investigation included the following:

- An inspection and survey of all areas of the Cordilleras Facility, including the nearby Pump House and Water Tower.
- Sampling and non-destructive testing for lead-containing coatings, polychlorinated biphenyls, and asbestos-containing materials (ACM).
- Assessment to quantify possible polychlorinated biphenyl (PCB) lighting ballasts and mercury-containing fluorescent lighting fixtures.
- Visual identification of possible PCB-containing transformers.

The survey was limited to the interior and exterior areas of the Cordilleras Mental Health Facility (e.g., interior rooms/areas of Basement-3rd floors, roof, volleyball court, parking area, etc.), the Pump House, and the Water Tank. The newly constructed Fire Station and Youth Center were not included in this survey.

The following summarizes our findings.

**Asbestos Hazards**

**Summary of Standards**

Certain existing building components or materials, which may be impacted by the planned demolition or extensive renovation of the Cordilleras facility, are known or presumed to contain asbestos.

Asbestos-containing material (ACM) is defined by EPA regulations as those substances containing greater than 1% asbestos. The Bay Area Air Quality Management District (BAAQMD) and the Cal/EPA provide local enforcement of these regulations. Friable ACM with greater than 1% asbestos must be abated prior to demolition or renovation, and is required to be disposed of as asbestos waste. Prior to renovation or demolition, the BAAQMD requires abatement of friable ACM, as well as non-friable ACM that may become friable during renovation (practically, this means all non-friable ACM).
Federal Occupational Safety and Health Administrations (OSHA) regulations, locally enforced by CAL/OSHA, define ACM as substances that contain greater than 1% asbestos. Cal/OSHA also mandates special training, medical exams, personal protective equipment and record keeping for employees working with asbestos-containing construction materials (ACCM), or materials that contain <0.1% asbestos. If a material contains less than 1% asbestos but more than 0.1% asbestos, the material may be disposed of as non-ACM, but the Cal/OSHA requirements would still have to be followed regarding workers' protection and Contractor licensing.

"Trace" materials (i.e., materials <1% asbestos) are currently regulated in California and require the following:

- Removal using wet methods;
- Prohibition of removal using abrasive saws or methods which would aerosolize the material;
- Prompt clean-up of the impacted zone, using HEPA-filtered vacuums, as applicable;
- Employer registration by Cal/OSHA for removal quantities exceeding 100 sq. ft. per year; and
- Cal/OSHA Carcinogen Registration by the Demolition or Abatement Contractor impacting such materials.

**Methodology**

Sampling activities were conducted per industry standards and the Federal AHERA regulations (40 CFR Part 763), and sample locations were documented on field diagrams (Attachment B). Under these procedures, the first sample is analyzed. If it tests positive for asbestos (>1%), the analysis is suspended for further samples of that material. If the first sample tests only trace positive (between 0.1 to 1%), or negative, however, the second and third samples are analyzed sequentially, in order to determine the possible presence of asbestos. If all three samples test negative, the material is considered as non-asbestos. Certain materials, such as plasters and gypsum board systems, are frequently non-homogeneous in content. For such materials, multiple samples were gathered at various points in the Buildings, with all samples analyzed to determine the possible presence of asbestos.

All building material samples collected were submitted to Asbestos TEM Laboratory in Berkeley, California for analysis by polarized light microscopy with dispersion staining (DS/PLM).

**Results**

SCA has entered the sampling data from the above-referenced structure into Table 1: Material Matrix Report (MMR). A printout which shows detailed sample results, locations, and quantity estimates is included in Attachment A of this report. Materials designated as AAA are assumed to contain asbestos, and materials designated as NNN are considered non-suspect materials. Sample locations are included on the sample location diagrams in Attachment B.

1. The MMR (Attachment A) lists positive and negative materials, the locations where each material is present, and the quantity estimates in each location.

2. SCA completed an inspection and survey of all areas at the facility including the water tank and pump house. All suspect materials identified were sampled or listed as assumed asbestos-containing, as destructive sampling was not included in the scope of services.

3. Note that as the survey was non-destructive, various materials were assumed asbestos containing and not sampled. Furthermore, as the building is still in use, SCA did not perform destructive sampling to inspect wall cavities, above ceilings, etc. Quantities
listed in the matrices are for visible quantities and estimates identified from review of as-built drawings supplied by the County of San Mateo. SCA makes no warranties or representations regarding materials or quantities that may be present behind wall cavities, above ceilings, etc.

4. As destructive testing was excluded from the scope of work, the following items were to be assumed asbestos-containing during the survey: vapor barriers under concrete slab/restrooms, fire doors, ceramic tiles, etc. SCA has listed these materials as assumed asbestos-containing items in the attached MMR and Abatement Cost Estimate. The County of San Mateo should be aware that these materials are required to be tested prior to renovation or demolition of the buildings. SCA recommends that the destructive testing and testing of inaccessible/assumed materials be performed prior to preparation of abatement specifications, if possible, or that the specifications be prepared with line items for all inclusive unit costs for abatement in the event the materials are found to contain asbestos.

Please note the following with respect to the assumed materials:

- Based on review of the as-built drawings, lightweight concrete is present on the roof of the building. SCA collected samples of the surface of the lightweight concrete where accessible. Although sample results were reported as negative for asbestos, additional core sampling would be required to determine asbestos content for all layers of concrete and on all roof decks where lightweight concrete is present. If found to be asbestos-containing, abatement of the lightweight concrete will increase abatement costs significantly. SCA has provided an estimated cost for abatement in the event that asbestos-containing lightweight concrete is found during destructive testing prior to demolition or renovation of the structure.

- It is not uncommon for the aggregate and sand components of concrete to contain asbestos. Concrete is considered a manufactured material and is subject to CalOSHA and NESHAPS regulations governing worker protection, abatement and disposal. SCA collected samples of the surface of various concretes at the facility. Although initial surface sample results were reported as negative for asbestos, additional core sampling and analysis of all layers would be required to determine asbestos content for all layers of concrete for the various building systems.

It is not uncommon for structures to have a vapor barrier assembly under restrooms and under the concrete foundation slab, as well as the subgrade walls. Given the construction date of the building, this vapor barrier system, if present, could consist of a tar-like substance with waterproofing membrane that often contains asbestos. As destructive testing was excluded from the scope of work, SCA has assumed that a vapor barrier system may be present under the building concrete slab, on the basement (subgrade) perimeter sidewalls, and under areas with drains within the facilities (e.g., restrooms, kitchens, etc.). A coring contractor should be retained prior to demolition of the structures to obtain a continuous core through these areas to verify the presence of a vapor barrier system. If present, the material should be tested to verify asbestos content. If the material is found to contain asbestos, the demolition contractor should possess asbestos-registration and proper training, and such concrete should not be recycled.

If found to be asbestos-containing, abatement of these materials will increase abatement costs significantly. SCA has provided an estimated cost for abatement of
these items in the event that asbestos-containing concrete, vapor barriers, or aggregates are found during destructive testing prior to demolition or renovation of the structure.

5. SCA assumes that in the future, this survey report may be referenced by Abatement Contractors providing bids for abatement of materials at the surveyed site. SCA requests that this text portion of the report be provided to bidding contractors for review. Bidding Contractors are hereby notified that the quantities included herein are estimates only, and all quantities should be field verified by the Contractor for any budgeting, planning or bidding decisions.

Naturally-Occurring Asbestos in Soil

Sampling to verify the presence of naturally-occurring asbestos in Serpentine soil was not included in this scope of work. The County of San Mateo should be aware that naturally-occurring asbestos may be present at the site and should be addressed during the geotechnical study or prior to commencement of renovation activities. If present, the requirements issued by the California Air Resources Board (CARB) and BAAQMD should be implemented.

Lead Hazards

Summary of Standards

Certain existing painted or coated surfaces to be impacted by the proposed renovation or demolition of the facility are known or suspected to contain lead.

Since elemental lead is a suspect carcinogen and known teratogen and neurotoxic in high doses, lead-containing materials need to be identified prior to the onset of demolition activities. Using combinations of engineering controls and personal protective equipment, lead-containing materials can be removed safely. Several sources of applicable standards are listed as follows:

1. Lead exposures in the workplace are regulated by Cal/OSHA, which has certain regulatory requirements for identifying and controlling potential lead exposures. Currently applicable regulations for the construction industry have been adopted by Cal/OSHA (8 CCR 1532.1) from the Federal OSHA regulations. The current OSHA 8-hour Permissible Exposure Level (PEL) for lead is 50 µg/m³.

2. Current EPA and Cal/EPA regulations do not require LBP to be removed prior to demolition, unless loose and peeling. Provided that the paints are securely adhered to the substrates (i.e., non-flaking or non-peeling), disposal of intact demolition debris can generally be handled in California as non-hazardous and non-RCRA waste. Disposal requirements are as follows:
Classification and Disposal of Inorganic Lead Wastes in California

<table>
<thead>
<tr>
<th>Standards</th>
<th>TTLC</th>
<th>Leachable Lead</th>
<th>Test Methods &amp; Results</th>
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</thead>
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<tr>
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<td>Total Pb (mg/kg)</td>
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<td>TCLP Pb (mg/L)</td>
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<tr>
<td>b5</td>
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</tr>
</tbody>
</table>

(a1) 50 = 10 x 5 (STLC for Pb). Per WET method, impossible to exceed STLC even if 100% soluble.
(a2) 100 = 20 x 5 (TCLP for Pb). Per TCLP method, impossible to exceed STLC even if 100% soluble.
(b) Physically impossible due to the stronger acid used in WET than TCLP.
(c) Landfills will likely require documentation that TCLP is <5, even though TCLP is almost always less than WET.
(d) Landfill dependent, function of permit, landfill liner, or landfill policy.

In California, loose and peeling LBP or other wastes require characterization and testing for leachability to determine if the materials would be classified as a RCRA or California hazardous waste.

3. The major definitions of LBP or lead-coated surfaces are listed as follows:
   - HUD defines LBP as paint that contains either \( \geq 0.5\% \) by weight of lead, or \( \geq 1\) mg/cm\(^2\).
   - Consumer Product Safety Commission (CPSC) prohibits the manufacturing of paint that contains more than 90 ppm of lead.

4. Lead is on the "Proposition 65" list, based on its potential to cause reproductive harm.

5. The California Department of Public Health (CDPH) requires the use of Certified Lead Workers and Supervisors for lead abatement projects at public buildings with a greater than 20 years expected life or whenever work is completed specifically to abate Lead-Based paints as defined by HUD. The CDPH certification requirements do not apply to industrial sites; however, dust controls and personnel protection are still required under 17 CCR Section 35001 through 36100.

Methodology
SCA collected a number of bulk samples for analysis to determine the lead content of these materials. Materials included lead paints and coatings and 9"x9" vinyl floor tiles.

Lead samples collected were submitted to McCampbell Analytical, Inc. in Pittsburg, California for analysis for total lead content by Flame Atomic Absorption (Flame AA).

Results
SCA has entered the lead sampling data into Table 1: Material Matrix Report included in Attachment A. The MMR shows detailed sample results and locations of the sampled materials. Sample locations are included on the sample location diagrams in Attachment B.
1. Lead concentrations for most paints ranged from 5.6 milligrams per kilogram (mg/kg) to 350,000 mg/kg, with most paints having lead content above the laboratory detection limits.

2. Lead was also identified in 9"x9" asbestos-containing vinyl floor tiles present throughout the building (97 mg/kg). As the result exceeded 10-times the soluble threshold limit concentration (STLC) of 5 mg/L, Waste Extraction Test (WET) and Toxicity characteristic leaching procedure (TCLP) were performed. Results were found to be 0.56 mg/L and <0.2 mg/L, respectively, indicating that the tiles would not be considered a RCRA waste. Note that as these tiles contain >1% asbestos, the tiles are required to be abated prior to renovation or demolition of the structure.

3. Lead sheeting is known to be present in the E. Offices Area on the 2nd Floor of the building. This area was formerly used as X-ray clinics and dental areas, and visual evidence of lining within the walls and doors was noted during the inspection. As the survey was non destructive in nature, removal of wall sections to access the sheeting was not performed. SCA recommends that destructive sampling be performed prior to renovation or demolition of the building to determine the presence and lead content of this material. SCA has provided an estimated cost for abatement in the event that the material is found to contain lead during destructive testing prior to demolition or renovation of the structure.

As lead was identified in some paints and a detailed inventory of paints was not performed for the project, for the purpose of complying with the Cal/OSHA lead in construction regulation (8 CCR 1532.1), all coated surfaces shall be considered to contain some lead and require demolition dust control procedures for compliance with Cal/OSHA's Construction Lead Standard under 8 CCR 1532.1. The aforementioned regulation contains requirements for lead air monitoring, work practices, respiratory protection, etc., that are triggered by the presence of even very low levels of lead.

In addition, based on the California Total Threshold Level Concentration (TTLC) hazardous waste standard, the paints may be classified as hazardous wastes. Additional sampling and analysis for leachable lead content by the Contractor or Consultant during demolition will be required for waste characterization.

**Polychlorinated Biphenyls (PCBs) & Mercury-Containing Items**

*Methodology*
SCA collected representative samples of caulks and putties to determine PCB content. These samples were analyzed by EPA Method 8082 at McCampbell Analytical, Inc. in Pittsburg, CA and reported in milligrams per kilogram (mg/kg).

SCA also quantified lighting ballasts that were observed in conjunction with mercury-containing, fluorescent lighting fixtures in various locations.

*Results*
Quantities of both PCB ballasts and fluorescent tubes in various locations are included in Table 1: Material Matrix Report included in Attachment A.

1. No PCBs were identified in any caulks or putties sampled by SCA.
2. Various lighting ballasts were identified throughout the building. Cal/OSHA regulates disposal of both PCBs and mercury-containing materials. To reduce liability concerns, many building owners opt to have PCB ballasts incinerated, with a record of destruction.
generated. A slightly less expensive approach involves recycling of the components (and incineration of the small amount of PCBs separately). However, this method may pose liability concerns for building owners.

3. Various mercury-containing fluorescent tubes were identified throughout the building. Recycling vendors for reclaiming the mercury vapor are commonly available for services at approximately $0.15 per lineal foot. Note that costs for fluorescent tube disposal do not tend to be significant compared to overall abatement costs.

4. SCA also noted three (3) transformers at the property. These transformers are owned by PG&E. As the units were functioning at the time of the investigation, sampling of transformer fluids to determine PCB content was not performed. No visual evidence of staining was noted during the investigation. As the units are owned by PG&E, disposal of the PCB-containing fluids, if present, would be the responsibility of PG&E.

If you have any questions, please contact us.

Sincerely,

SCA ENVIRONMENTAL, INC.

Christina Codemo, CHMM, REPA, CAC  Chuck Siu, CIH, PE, CSP, CAC, CDPH  
Sr. Consultant  President

Appendices:

Appendix A:  Materials Matrix Report
Appendix B:  Sample Location Drawings
Appendix C:  Asbestos Laboratory Results
Appendix D:  PCB & Lead Laboratory Results
Appendix E:  Abatement Cost Estimates
Appendix A

Materials Matrix Report
**TABLE 1: MATERIAL MATRIX REPORT: 200 Edmonds Road, Redwood City, CA**

### MATERIAL MATRIX REPORT

**Asbestos:** Positive, Negative, Trace, Assumed

<table>
<thead>
<tr>
<th>Room ID</th>
<th>Components</th>
<th>Materials</th>
<th>Location</th>
<th>Description</th>
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**Notes:**
- ND=not detected
- NA=not analyzed
- CH=chrysotile-PNQ=present, but not quantified

June 2014

**SCA Project No.: F11312.02**
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### Material Matrix Report

#### TABLE 1: MATERIAL MATRIX REPORT: 200 Edmonds Road, Redwood City, CA

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<th>Material ID</th>
<th>Components</th>
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<td>Sample 2</td>
<td>FLVCT-31 12&quot;x12&quot; blue with white streaks vinyl floor tile (-) with yellow glue (-) ND SF 330 750</td>
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<td>Sample 3</td>
<td>CLSP-32 12&quot;x12&quot; off-white splined ceiling tiles with fissures ND ND SF 1050</td>
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<td>Sample 4</td>
<td>FLVCT-33 12&quot;x12&quot; beige with brown and tan streaks vinyl floor tile (-) with yellow glue (-) ND ND SF 375 275</td>
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<td>Sample 5</td>
<td>BBMAS-35 4&quot; brown vinyl baseboard with brown mastic ND LF 50</td>
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<td>Sample 6</td>
<td>FLCTG-36 red/green textured floor coating on roof deck ND ND SF</td>
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<td>Sample 7</td>
<td>PUTTY-39 grey exterior window putty ND ND ND LF</td>
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<td>Sample 8</td>
<td>RFAG-40 tar and gravel roofing ND ND ND SF</td>
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<td>Sample 9</td>
<td>RFMAS-41 black roofing mastic along edge of roof and main field ND ND ND SF</td>
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<td>Sample 10</td>
<td>FRCTG-42 off-white coating on overhang ND ND ND SF</td>
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<td>Sample 11</td>
<td>CONC-44 grey concrete on volleyball court and exterior walkways ND ND ND SF</td>
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<td>Sample 12</td>
<td>PAINT-46 beige exterior paint on building and stack ND ND ND ND SF</td>
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<td>Sample 13</td>
<td>PAINT-47 green exterior textured paint on landings ND ND SF</td>
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<td>Sample 14</td>
<td>PAINT-48 grey exterior textured paint on steps ND SF</td>
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<td>Sample 15</td>
<td>PAINT-49 red paint on concrete floors ND ND SF</td>
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<td>HCAULK-50 light grey caulk around HVAC ducts ND LF</td>
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<td>GASKET-52 lack foam gasket along bottom of tan k</td>
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<td>Sample 18</td>
<td>PAINT-54 beige exterior paint on CMU walls ND ND SF</td>
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<td>TANK-NNN2 fiberglass insulation with paper jacket on condensate tank SF 100</td>
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<td>CLTL-NNN4 24&quot;x24&quot; beige/white screwed on compressed board ceiling tile with pinholes SF 1950 500 300 150 150</td>
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<td>Sample 25</td>
<td>ROOF-NNN5 grey rolled roofing with tars and mastics (replace approx. 5 years ago [est. 2009] per Don Deluca) SF</td>
</tr>
</tbody>
</table>

### Lead Containing Materials

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 26</td>
<td>LEAD LINING-AA</td>
</tr>
<tr>
<td>Sample 27</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
<tr>
<td>Sample 28</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
<tr>
<td>Sample 29</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
<tr>
<td>Sample 30</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
<tr>
<td>Sample 31</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
<tr>
<td>Sample 32</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
<tr>
<td>Sample 33</td>
<td>LEAD PAINTS lead-containing paints</td>
</tr>
</tbody>
</table>

### PCBs

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 34</td>
<td>CAULK-26 grey caulk between brick wall and window frame &lt;10 LF 100</td>
</tr>
<tr>
<td>Sample 35</td>
<td>PUTTY-30 off-white interior window putty &lt;0.69 LF 90 60 20 85 70 80 40 160 100 90 90 90</td>
</tr>
<tr>
<td>Sample 36</td>
<td>PUTTY-39 grey exterior window putty &lt;0.05 LF</td>
</tr>
<tr>
<td>Sample 37</td>
<td>CAULK-53 beige exterior caulk between brick wall and window frame &lt;0.05 LF 100</td>
</tr>
<tr>
<td>Sample 38</td>
<td>TRANSFORMER-AAA15 PCB-containing oils (owned by PG&amp;E) Assumed EA 3</td>
</tr>
</tbody>
</table>

### Other Hazards

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 39</td>
<td>BALLASTS Possible PCB-containing lighting ballasts</td>
</tr>
<tr>
<td>Sample 40</td>
<td>TRANSFORMER-AAA15 PCB-containing oils (owned by PG&amp;E) Assumed EA 3</td>
</tr>
</tbody>
</table>

### Notes:
- ND=none detected
- NA=not analyzed
- CH=chrysotile
- PNQ=present, but not quantified
- June 2014
<table>
<thead>
<tr>
<th>Area</th>
<th>Roof &amp; Exterior</th>
<th>Interior</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditorium Roof</td>
<td>1F Roof</td>
<td>1F Roof</td>
<td>Negative</td>
</tr>
<tr>
<td>Overhang/1F Roof</td>
<td>Elev Water tank</td>
<td>Elev Main Roof</td>
<td>Negative</td>
</tr>
<tr>
<td>2F Roof</td>
<td>Stairs 3 &amp; 4</td>
<td>3F Roof Deck</td>
<td>Negative</td>
</tr>
<tr>
<td>Pump House</td>
<td>Stair 2</td>
<td>Stair 1</td>
<td>Negative</td>
</tr>
<tr>
<td>Elev Lobby</td>
<td>S Hall</td>
<td>NE Rms</td>
<td>Negative</td>
</tr>
<tr>
<td>S Hall</td>
<td>NE Rms</td>
<td>SW Rms</td>
<td>Negative</td>
</tr>
<tr>
<td>N Hall</td>
<td>NW Rms</td>
<td>Assumed</td>
<td>Negative</td>
</tr>
<tr>
<td>Auditorium Roof</td>
<td>Auditorium Roof</td>
<td>Auditorium Roof</td>
<td>Negative</td>
</tr>
<tr>
<td>Overhang/1F Roof</td>
<td>Elev Water tank</td>
<td>Elev Main Roof</td>
<td>Negative</td>
</tr>
<tr>
<td>2F Roof</td>
<td>Stairs 3 &amp; 4</td>
<td>3F Roof Deck</td>
<td>Negative</td>
</tr>
<tr>
<td>Pump House</td>
<td>Stair 2</td>
<td>Stair 1</td>
<td>Negative</td>
</tr>
<tr>
<td>Elev Lobby</td>
<td>S Hall</td>
<td>NE Rms</td>
<td>Negative</td>
</tr>
<tr>
<td>S Hall</td>
<td>NE Rms</td>
<td>SW Rms</td>
<td>Negative</td>
</tr>
<tr>
<td>N Hall</td>
<td>NW Rms</td>
<td>Assumed</td>
<td>Negative</td>
</tr>
<tr>
<td>Auditorium Roof</td>
<td>Auditorium Roof</td>
<td>Auditorium Roof</td>
<td>Negative</td>
</tr>
<tr>
<td>Overhang/1F Roof</td>
<td>Elev Water tank</td>
<td>Elev Main Roof</td>
<td>Negative</td>
</tr>
<tr>
<td>2F Roof</td>
<td>Stairs 3 &amp; 4</td>
<td>3F Roof Deck</td>
<td>Negative</td>
</tr>
<tr>
<td>Pump House</td>
<td>Stair 2</td>
<td>Stair 1</td>
<td>Negative</td>
</tr>
<tr>
<td>Elev Lobby</td>
<td>S Hall</td>
<td>NE Rms</td>
<td>Negative</td>
</tr>
<tr>
<td>S Hall</td>
<td>NE Rms</td>
<td>SW Rms</td>
<td>Negative</td>
</tr>
<tr>
<td>N Hall</td>
<td>NW Rms</td>
<td>Assumed</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**Notes:**
- ND = none detected
- NA = not analyzed
- CH = chrysotile
- PNQ = present, but not quantified

**June 2014**

### TABLE 1: MATERIAL MATRIX REPORT: 200 Edmonds Road, Redwood City, CA

#### Materials

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditorium Roof</td>
<td>Auditorium Roof</td>
</tr>
<tr>
<td>Overhang/1F Roof</td>
<td>Elev Water tank</td>
</tr>
<tr>
<td>2F Roof</td>
<td>Stairs 3 &amp; 4</td>
</tr>
<tr>
<td>Pump House</td>
<td>Stair 2</td>
</tr>
<tr>
<td>Elev Lobby</td>
<td>S Hall</td>
</tr>
<tr>
<td>S Hall</td>
<td>NE Rms</td>
</tr>
<tr>
<td>N Hall</td>
<td>NW Rms</td>
</tr>
<tr>
<td>Auditorium Roof</td>
<td>Auditorium Roof</td>
</tr>
<tr>
<td>Overhang/1F Roof</td>
<td>Elev Water tank</td>
</tr>
<tr>
<td>2F Roof</td>
<td>Stairs 3 &amp; 4</td>
</tr>
<tr>
<td>Pump House</td>
<td>Stair 2</td>
</tr>
<tr>
<td>Elev Lobby</td>
<td>S Hall</td>
</tr>
<tr>
<td>S Hall</td>
<td>NE Rms</td>
</tr>
<tr>
<td>N Hall</td>
<td>NW Rms</td>
</tr>
</tbody>
</table>

#### Asbestos

- Off-white insulation with yellow/green-painted canvas jacket on steam pipes and fittings (some of which are concealed within walls or above ceilings)
- Black exterior asphalt (+) and assumed aggregate base (AAA) (destructive coring required to confirm presence of aggregate and asbestos content)
- Transite abandoned grey transite pipes (along the southwest ext side on the first floor level)
- Beige/black terrazzo flooring
- Black flex duct connectors
- Red brick wall with associated mortar
- Formica yellow/wood-look Formica counter top with associated glue
- Concrete layers and aggregate baserock under surface concrete comprising building slab
- Vapor barrier under slab
- Vapor barriers under restrooms, laundry, former operating rooms, etc.
- Insulation and/or mastics associated with walk-in freezers
- Insulation and/or mastics associated with Bryan Gas Boilers (2x): Models AB 250-5-150/54-FDG)
- Light grey high density foam (Note: Surface only sampled. Cores required for analysis of all concrete layers, including probable presence of another vaporbarrier at its bottom.)
- Grey caulking between brick wall and window frame
- Beige exterior caulk between brick wall and window frame
- Beige/black exterior caulk between brick wall and window frame
<table>
<thead>
<tr>
<th>Room ID</th>
<th>Components</th>
<th>Notes</th>
<th>Lead Paints</th>
<th>PCBs</th>
<th>Other Hazmats</th>
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<td>Lead-Containing</td>
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</tr>
<tr>
<td>NW Rms</td>
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<td>PNQ</td>
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<tr>
<td>NE Rms</td>
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<td>PNQ</td>
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<td></td>
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<tr>
<td>N Hall</td>
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<td></td>
<td>PNQ</td>
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<tr>
<td>SW Rms</td>
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<tr>
<td>SE Rms</td>
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<td></td>
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<tr>
<td>S Hall</td>
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<td></td>
<td>PNQ</td>
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<tr>
<td>E Rms</td>
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<td>PNQ</td>
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<tr>
<td>Elev Lobby</td>
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<td>Stair 2</td>
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<td></td>
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<tr>
<td>Stairs 3 &amp; 4</td>
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<td>PNQ</td>
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<td></td>
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<tr>
<td>Elev Rm</td>
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<td>PNQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH Fan Room</td>
<td></td>
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<td>PNQ</td>
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<tr>
<td>PH Roof</td>
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<td></td>
<td>PNQ</td>
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<tr>
<td>Elev Rm Roof</td>
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<td></td>
<td>PNQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Roof</td>
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<td>PNQ</td>
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<td></td>
</tr>
<tr>
<td>3F Roof Deck</td>
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<td></td>
<td>PNQ</td>
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<tr>
<td>2F Roof</td>
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<td></td>
<td>PNQ</td>
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<td></td>
</tr>
<tr>
<td>1F Roof</td>
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<td>PNQ</td>
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</tr>
<tr>
<td>Auditorium Roof</td>
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<td>PNQ</td>
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<tr>
<td>Overhang/Canopy</td>
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<td>Water Tank</td>
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<td>Pump House</td>
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<tr>
<td>TOTAL+/- 15%</td>
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<td>PNQ</td>
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</tbody>
</table>

**Notes:**
- ND = none detected
- NA = not analyzed
- CH = chrysotile
- PNQ = present, but not quantified

**Materials:**
- SCA Project No.: F11312.02
- June 2014

**TABLE 1: MATERIAL MATRIX REPORT: 200 Edmonds Road, Redwood City, CA**
Appendix B

Sample Location Drawings
Figure 2: Asbestos and Lead Sample Locations
Cordilleras Facility, 1st Floor
200 Edmonds Street
Redwood City, CA
SCA Project # F11312
June 2014
Figure 3: Asbestos and Lead Sampling Locations
Cordilleras Facility, 2nd Floor
203 Edmonds Street Redwood City, CA
SCA Project #: F11312
June 2014
Figure 4: Asbestos and Lead Sampling Locations
Cordilleras Facility, 3rd Floor
203 Edmonds Street Redwood City, CA
SCA Project #: F11312
June 2014
Figure 5: Asbestos and Lead Sampling Locations
Cordilleras Facility, Roof & Exterior
203 Edmonds Street Redwood City, CA
SCA Project #: F11312
June 2014
Figure 6: Asbestos & Lead Sample Locations
Cordilleras Facility Pump House
200 Edwards Street Redwood City, CA
SCA Project #: F11312
June 2014
Figure 7: Asbestos and Lead Sample Locations
Cordilleras Facility Water Tank
200 Edmonds Street Redwood City, CA
SCA Project #: F11312
June 2014
Appendix C

Asbestos Laboratory Results
### POLARIZED LIGHT MICROSCOPY
#### ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>% ASBESTOS TYPE</th>
<th>OTHER DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1) Non-Asbestos Fibers</td>
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<tr>
<td></td>
<td></td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3)</td>
</tr>
<tr>
<td>200-PAINT-1-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-001</td>
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</tr>
<tr>
<td>200-PAINT-2-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-002</td>
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</tr>
<tr>
<td>200-PISTM-3-1</td>
<td>60-70% Amosite</td>
<td>1) None Detected</td>
</tr>
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<td>Lab ID # 532-02326-003</td>
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<tr>
<td>200-PISTM-3-2</td>
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<td>1)</td>
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<td>Lab ID # 532-02326-004</td>
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<tr>
<td>200-CONC-4-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-005</td>
<td></td>
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</tr>
<tr>
<td>200-BRICK-5-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-006A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-BRICK-5-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-006B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-BRICK-5-2</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-007A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-BRICK-5-2</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-007B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-BRICK-6-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
</tr>
<tr>
<td>Lab ID # 532-02326-008</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DESCRIPTION**

**FIELD**

**LAB**

## Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

---

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  
Job Site / No. Cordilleras Mental Health Center, RWC  
F11312 - CC

---

**Analyst**

ASBESTOS TEM LABORATORIES, INC.  
630 Bancroft Way, Berkeley CA 94710  
(510) 704-8930  
With Offices in Reno, NV (775) 359-3377

www.asbestostemlabs.com
**ANALYTICAL REPORT**

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  

**Job Site / No.** Cordilleras Mental Health Center, RWC  
F11312 - CC

---

### POLARIZED LIGHT MICROSCOPY

**Samples Indicated:** 65  
**Reg. Samples Analyzed:** 63  
**Split Layers Analyzed:** 51

**Date Submitted:** May-05-14  
**Date Reported:** May-14-14

---

#### OTHER DATA

<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>ASBESTOS TYPE</th>
<th>%</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-PAINT-7-1</td>
<td>None Detected</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>
Lab ID # 532-02326-009A |
| 200-PAINT-7-1 | None Detected | 1.0 | Paint-Off-White  
Lab ID # 532-02326-009B |
| 200-PAINT-7-2 | None Detected | 1.0 | Texture-Yellow  
Lab ID # 532-02326-010A |
| 200-PAINT-7-2 | None Detected | 1.0 | Texture-Yellow  
Lab ID # 532-02326-010B |
| 200-CONC-8-1 | None Detected | 1.0 | Concrete-Grey  
Lab ID # 532-02326-011A |
| 200-CONC-8-1 | None Detected | 1.0 | Concrete-Grey  
Lab ID # 532-02326-011B |
| 200-CONC-8-2 | None Detected | 1.0 | Floor Tile-Green  
Lab ID # 532-02326-012A |
| 200-CONC-8-2 | None Detected | 1.0 | Floor Tile-Green  
Lab ID # 532-02326-012B |
| 200-PAINT-9-1 | None Detected | 1.0 | Paint-Silver/Beige  
Lab ID # 532-02326-013 |
| 200-PIRFG-10-1 | None Detected | 1.0 | PIRFG-Brown/Black  
Lab ID # 532-02326-014 |

---

**Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique**

---

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(510) 704-8930  
With Offices in Reno, NV (775) 359-3377

---

**www.asbestostemlabs.com**
### POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>% ASBESTOS</th>
<th>TYPE</th>
<th>DESCRIPTION FIELD</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-PIRFG-10-2</td>
<td>None Detected</td>
<td>1) 5-10% Cellulose</td>
<td>3) May-13-14</td>
<td>PIRFG-Brown/Black</td>
</tr>
<tr>
<td>Lab ID # 532-02326-015</td>
<td></td>
<td>2) 90-95% Other m.p., Tar</td>
<td>4)</td>
<td></td>
</tr>
<tr>
<td>200-WLSH-11-1</td>
<td>None Detected</td>
<td>1) 1-5% Fiberglass</td>
<td>3) May-13-14</td>
<td>Drywall-Off-White</td>
</tr>
<tr>
<td>Lab ID # 532-02326-016A</td>
<td></td>
<td>2) 95-99% Gyp, Other m.p.</td>
<td>4)</td>
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</tr>
<tr>
<td>200-WLSH-11-1</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
<td>3) May-13-14</td>
<td>JointCom/Text-Off-White</td>
</tr>
<tr>
<td>Lab ID # 532-02326-016B</td>
<td></td>
<td>2) 95-99% Calc, Bndr, Mica, Other m.p.</td>
<td>4)</td>
<td></td>
</tr>
<tr>
<td>200-WLSH-11-2</td>
<td>None Detected</td>
<td>1) 1-5% Fiberglass</td>
<td>3) May-13-14</td>
<td>Drywall-Off-White</td>
</tr>
<tr>
<td>Lab ID # 532-02326-017A</td>
<td></td>
<td>2) 95-99% Gyp, Other m.p.</td>
<td>4)</td>
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</tr>
<tr>
<td>200-WLSH-11-2</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose</td>
<td>3) May-13-14</td>
<td>JointCom/Text-Off-White</td>
</tr>
<tr>
<td>Lab ID # 532-02326-017B</td>
<td></td>
<td>2) 95-99% Calc, Bndr, Mica, Other m.p.</td>
<td>4)</td>
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</tr>
<tr>
<td>200-BBMAS-12-1</td>
<td>None Detected</td>
<td>1) None Detected</td>
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<td>Mastic-Off-White</td>
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<tr>
<td>Lab ID # 532-02326-018A</td>
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<td>2) 99-100% Glue</td>
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<tr>
<td>Lab ID # 532-02326-018B</td>
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<tr>
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<tr>
<td>200-HIWS-13-1</td>
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<td>1) 90-95% Fiberglass</td>
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<tr>
<td>Lab ID # 532-02326-020</td>
<td></td>
<td>2) 5-10% GlassFfrags, Opq</td>
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</table>

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

---

Contact: Christina Codemo
Address: SCA Environmental
650 Delancey Street, #222
San Francisco, CA 94107

Samples Indicated: 65
Reg. Samples Analyzed: 63
Split Layers Analyzed: 51
Report No.: 325726
Date Submitted: May-05-14
Date Reported: May-14-14

Job Site / No.: Cordilleras Mental Health Center, RWC
F11312 - CC

ASBESTOS TEM LABORATORIES, INC.
630 Bancroft Way, Berkeley CA 94710 (510) 704-8930
With Offices in Reno, NV (775) 359-3377

www.asbestostemlabs.com
### POLARIZED LIGHT MICROSCOPY
#### ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

<table>
<thead>
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<td>200-FLVCT-16-1</td>
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<td>Lab ID # 532-02326-025A</td>
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<td>Lab ID # 532-02326-025B</td>
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<td>Lab ID # 532-02326-026A</td>
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Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

---

**ASBESTOS TEM LABORATORIES, INC.**
630 Bancroft Way, Berkeley CA 94710 (510) 704-8930
With Offices in Reno, NV (775) 359-3377

Contact: Christina Codemo
Address: SCA Environmental
650 Delancey Street, #222
San Francisco, CA 94107
Job Site / No. Cordilleras Mental Health Center, RWC
F11312 - CC

Report No. 325726
Date Submitted: May-05-14
Date Reported: May-14-14

Samples Indicated: 65
Reg. Samples Analyzed: 63
Split Layers Analyzed: 51

Analyst: [Signature]

## POLARIZED LIGHT MICROSCOPY
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EPA Method 600/R-93/116 or 600/M4-82-020

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<td>4) Date Analyzed</td>
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- **200-FLVCT-16-2**
  - Lab ID #: 532-02326-026B
  - Not Analyzed
  - None Detected
  - 1) Non Detected
  - 2) 99-100% Tar, Opq, Qtz, Other m.p.
  - 3) May-14-14
  - 4) May-14-14
  - Mastic-Black

- **200-FLVCT-16-3**
  - Lab ID #: 532-02326-027A
  - Not Analyzed
  - None Detected
  - 1) Non Detected
  - 2) 3%
  - 3) 4) May-14-14

- **200-FLVCT-16-3**
  - Lab ID #: 532-02326-027B
  - Not Analyzed
  - None Detected
  - 1) Non Detected
  - 2) 3%
  - 3) 4) May-14-14

- **200-WLPL-17-1**
  - Lab ID #: 532-02326-028A
  - None Detected
  - 1) 6-15% Fiberglass, Cellulose
  - 2) 85-94% Calc, Gyp, Other m.p.
  - 3) 4) May-13-14
  - Plaster-Off-White

- **200-WLPL-17-1**
  - Lab ID #: 532-02326-028B
  - None Detected
  - 1) 6-15% Cellulose
  - 2) 95-99% Glue, Opq, Calc, Other m.p.
  - 3) 4) May-13-14
  - Paint-Off-White

- **200-WLPL-17-2**
  - Lab ID #: 532-02326-029A
  - None Detected
  - 1) 6-15% Fiberglass, Cellulose
  - 2) 85-94% Calc, Gyp, Other m.p.
  - 3) 4) May-13-14
  - Plaster-Off-White

- **200-WLPL-17-2**
  - Lab ID #: 532-02326-029B
  - None Detected
  - 1) 6-15% Cellulose
  - 2) 95-99% Glue, Opq, Calc, Other m.p.
  - 3) 4) May-13-14
  - Paint-Off-White

- **200-WLPL-17-3**
  - Lab ID #: 532-02326-030A
  - None Detected
  - 1) 6-15% Fiberglass, Cellulose
  - 2) 85-94% Calc, Gyp, Other m.p.
  - 3) 4) May-13-14
  - Plaster-Off-White

- **200-WLPL-17-3**
  - Lab ID #: 532-02326-030B
  - None Detected
  - 1) 6-15% Cellulose
  - 2) 95-99% Glue, Opq, Calc, Other m.p.
  - 3) 4) May-13-14
  - Paint-Off-White

- **200-WLPL-17-4**
  - Lab ID #: 532-02326-031A
  - None Detected
  - 1) 6-15% Fiberglass, Cellulose
  - 2) 85-94% Calc, Gyp, Other m.p.
  - 3) 4) May-13-14
  - Plaster-Off-White

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

ASBESTOS TEM LABORATORIES, INC.
www.asbestostemlabs.com

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With Offices in Reno, NV (775) 359-3377
## POLARIZED LIGHT MICROSCOPY
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<td>None Detected</td>
<td>1) 1-5% Cellulose 2) 95-99% Glae, Opq, Calc, Other m.p.</td>
<td>Paint-Off-White</td>
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<td>1) 6-15% Fiberglass, Cellulose 2) 85-94% Calc, Gyp, Other m.p.</td>
<td>Paint-Off-White</td>
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<td>200-WLPL-17-6</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose 2) 95-99% Glae, Opq, Calc, Other m.p.</td>
<td>Plaster-Off-White</td>
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<td>200-WLPL-17-7</td>
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<td>1) 6-15% Fiberglass, Cellulose 2) 85-94% Calc, Gyp, Other m.p.</td>
<td>Plaster-Off-White</td>
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<tr>
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<td>1) 1-5% Cellulose 2) 95-99% Glae, Opq, Calc, Other m.p.</td>
<td>Paint-Off-White</td>
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<tr>
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<td>None Detected</td>
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<td>Plaster-Off-White</td>
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<td>None Detected</td>
<td>1) None Detected 2) 99-100% Qtz, Opq, Other m.p.</td>
<td>Paint-Off-White</td>
<td></td>
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</tbody>
</table>

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Contact: Christina Codemo
Address: SCA Environmental
650 Delancey Street, #222
San Francisco, CA 94107

Job Site / No. Cordilleras Mental Health Center, RWC
F11312 - CC

Report No. 325726
Report Date Submitted: May-05-14
Report Date Reported: May-14-14

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<td>200-WLPL-17-4</td>
<td>None Detected</td>
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</tbody>
</table>

Analyst signature

ASBESTOS TEM LABORATORIES, INC.
630 Bancroft Way, Berkeley CA 94710 (510) 704-8930
With Offices in Reno, NV (775) 359-3377

www.asbestostemlabs.com
## POLARIZED LIGHT MICROSCOPY
### ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

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<th>DESCRIPTION</th>
<th>FIELD</th>
<th>LAB</th>
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</table>
| 200-CLPL-18-2 | None Detected          | 1) 6-15% Fiberglass, Cellulose  
2) 85-94% Calc, Gyp, Other m.p. | Plaster-Off-White | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Qtz, Opq, Other m.p. | PlastCoarse-Off-White | 3) 4)    | 1)-May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Off-White   | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Qtz, Opq, Other m.p. | PlastCoarse-Off-White | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Off-White   | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Qtz, Opq, Other m.p. | PlastCoarse-Off-White | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Off-White   | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Qtz, Opq, Other m.p. | PlastCoarse-Off-White | 3) 4)    | 1) May-13-14 |
|               |                        |                                                                             |                  |         |            |
|               |                        | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Off-White   | 3) 4)    | 1) May-13-14 |

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

**ANALYST**

ASBESTOS TEM LABORATORIES, INC. 630 Bancroft Way, Berkeley CA 94710 (510) 704-8930

**With Offices in Reno, NV (775) 359-3377**

www.asbestostemlabs.com
### SAMPLE ID | % ASBESTOS | TYPE | OTHER DATA | DESCRIPTION FIELD | LAB
--- | --- | --- | --- | --- | ---
200-CLPL-18-5 | None Detected | | 1) None Detected 2) 99-100% Qtz, Opq, Other m.p. | PlastCoarse-Off-White | Lab ID # 532-02326-039B
200-CLPL-18-5 | None Detected | | 1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Off-White | Lab ID # 532-02326-039C
200-CLGL-19-1 | None Detected | | 1) 40-60% FiberGlass, Cellulose 2) 40-60% GlassFrags, GlassFoam, Bndr | Ceiling Tile-Grey | Lab ID # 532-02326-040A
200-CLGL-19-1 | None Detected | | 1) None Detected 2) 99-100% Glue | Mastic-Brown | Lab ID # 532-02326-040B
200-PIDHW-20-1 | 1-5% | Chrysotile | 1) None Detected 2) 75-89% Calc, Other m.p. | Insulation-White | Lab ID # 532-02326-041
200-HIWS-21-1 | 1-5% | Chrysotile | 1) None Detected 2) 75-89% Calc, Other m.p. | Insulation-White | Lab ID # 532-02326-042
200-HIWS-21-2 | Not Analyzed | | 1) 2) | | Lab ID # 532-02326-043
200-FLVCT-22-1 | None Detected | | 1) 1-5% Cellulose 2) 95-99% Calc, Bndr, Other m.p. | Floor Tile-Black | Lab ID # 532-02326-044A
200-FLVCT-22-1 | None Detected | | 1) None Detected 2) 99-100% Glue | Mastic-Yellow | Lab ID # 532-02326-044B
200-FLVCT-22-1 | None Detected | | 1) None Detected 2) 99-100% Calc, Bndr | Floor Tile-Off-White | Lab ID # 532-02326-044C

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique
### POLARIZED LIGHT MICROSCOPY

**ANALYTICAL REPORT**

EPA Method 600/R-93/116 or 600/M4-82-020

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**Contact:** Christina Codemo

**Address:** SCA Environmental
650 Delancey Street, #222
San Francisco, CA 94107

---

**Samples Indicated:** 65

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**Job Site / No.** Cordilleras Mental Health Center, RWC F11312 - CC

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**Report No.** 325726

**Date Submitted:** May-05-14

**Date Reported:** May-14-14

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<tr>
<td></td>
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<tr>
<td>Lab ID # 532-02326-044D</td>
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| 200-FLVCT-22-1 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Calc, Mica, Other m.p. |
|               |               | 3) May-13-14 |
|               |               | 4) LevelCmpd-Grey |
| Lab ID # 532-02326-044E | | |

| 200-FLVCT-22-2 | None Detected | 1) 1-5% Cellulose |
|               |               | 2) 95-99% Calc, Bndr, Other m.p. |
|               |               | 3) May-13-14 |
|               |               | 4) Floor Tile-Black |
| Lab ID # 532-02326-045A | | |

| 200-FLVCT-22-2 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Glue |
|               |               | 3) May-13-14 |
|               |               | 4) Mastic-Yellow |
| Lab ID # 532-02326-045B | | |

| 200-FLVCT-22-2 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Calc, Bndr |
|               |               | 3) May-13-14 |
|               |               | 4) Floor Tile-Off-White |
| Lab ID # 532-02326-045C | | |

| 200-FLVCT-22-2 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Glue |
|               |               | 3) May-13-14 |
|               |               | 4) Mastic-Off-White |
| Lab ID # 532-02326-045D | | |

| 200-FLVCT-22-2 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Calc, Mica, Other m.p. |
|               |               | 3) May-13-14 |
|               |               | 4) LevelCmpd-Grey |
| Lab ID # 532-02326-045E | | |

| 200-CARMAS-24-1 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Glue |
|               |               | 3) May-13-14 |
|               |               | 4) Mastic-Yellow |
| Lab ID # 532-02326-046 | | |

| 200-CARMAS-24-2 | None Detected | 1) None Detected |
|               |               | 2) 99-100% Glue |
|               |               | 3) May-13-14 |
|               |               | 4) Mastic-Yellow |
| Lab ID # 532-02326-047 | | |

| 200-CLGL-25-1 | None Detected | 1) 70-80% Cellulose |
|               |               | 2) 20-30% GlassFoam, Other m.p. |
|               |               | 3) May-13-14 |
|               |               | 4) Ceiling Tile-Grey |
| Lab ID # 532-02326-048 | | |

---

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

---

**Analyst**

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With Offices in Reno, NV (775) 359-3377

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### POLARIZED LIGHT MICROSCOPY
### ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

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**Contact:** Christina Codemo
**Address:** SCA Environmental
650 Delancey Street, #222
San Francisco, CA 94107

**Job Site / No.:** Cordilleras Mental Health Center, RWC
F11312 - CC

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**Samples Indicated:** 65  
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Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

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**ASBESTOS TEM LABORATORIES, INC.**  
630 Bancroft Way, Berkeley CA 94710 (510) 704-8930  
*With Offices in Reno, NV (775) 359-3377*

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**Analyst:** 

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**www.asbestostemlabs.com**
## POLARIZED LIGHT MICROSCOPY
### ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

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Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

**ASBESTOS TEM LABORATORIES, INC.**
630 Bancroft Way, Berkeley CA 94710 (510) 704-8930

*With Offices in Reno, NV (775) 359-3377*

**www.asbestostemlabs.com**

**Contact:** Christina Codemo
**Address:** SCA Environmental
650 Delancey Street, #222
San Francisco, CA 94107

**Job Site / No.:** Cordilleras Mental Health Center, RWC
F11312 - CC

**Samples Indicated:** 65
**Reg. Samples Analyzed:** 63
**Split Layers Analyzed:** 51

**Report No.:** 325726
**Date Submitted:** May-05-14
**Date Reported:** May-14-14
### POLARIZED LIGHT MICROSCOPY

#### ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

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<td>3) 4) May-13-14 Texture-Off-White</td>
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Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

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ASBESTOS TEM LABORATORIES, INC.  
630 Bancroft Way, Berkeley CA 94710  
(510) 704-8930  
With Offices in Reno, NV (775) 359-3377

www.asbestostemlabs.com
# SCA Environmental Inc.

**CHAIN OF CUSTODY FORM**

**Corylles Environmental, Inc.**

**LAB:** MEM LABS

**RESULTS DUE:** 6 DAYS

**COURIER:**
- **LAB REP NOTIFIED:**
- **AIRBILL/FIGHT NO.:**
- **EST. ARRIVAL DATE:**

**METHOD REFERENCE:**
- **7400 PCM**
- **AHERA TEM**
- **CARB-AHERA TEM 0.001 u/c Detection Limit**
- **Sample Media:** 0.45 & 0.8 micron MCEF Bulk Water Wipe

**SAMPLE ID**

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**INSTRUCTIONS TO LAB (DELETE ITEMS NOT APPLICABLE AND CIRCLE ITEMS APPLICABLE):**

1. **Pickup requested:**
2. **Time of call:**
3. **Call SCA's contact to acknowledge receipt of samples.**
4. **Analyze samples by PCM only.**
5. **Sample inside samples by PCM first; if any sample > 0.01 pg, contact SCA.**
6. **If any samples are > 0.01 pg, proceed with items 4, 7 and 8, as needed.**
7. **Analyze outside samples only; stop if any > 0.01 pg, contact SCA before analyzing outside or blanks.**
8. **Analyze all samples, including outside samples and blanks.**
9. **In the first analysis in a series of blanks, use the highest PCM result.**
10. **If serial analysis, step at first positive (+1); last time (< 0.01 pg), except sheetrock and plaster samples.**

**SUPPLIES/EQUIPMENT:**
- Hi-Vol (3940)
- Lo-Vol (3020)
- TEM / Pb cassettes (3520)
- PCM cassettes (3500)
- Bulk sampling supply (3710)

**NUMBERS:**
- **Report Number:** 325726
- **Invoice Number:** 325726
### POLARIZED LIGHT MICROSCOPY
#### ANALYTICAL REPORT

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  
Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC  
F11312 - CC

**Samples Indicated:** 52  
**Reg. Samples Analyzed:** 50  
**Split Layers Analyzed:** 12  
**Date Submitted:** May-07-14  
**Date Reported:** May-16-14

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| 200-BRICK-6-2 |   | None Detected | 1) 1-5% Cellulose  
2) 95-99% Calc, Bndr, Mica, Other m.p. | Brick-Beige |
| Lab ID # 532-02327-001 | | | 3) 4) May-15-14 | |
| 200-PAINT-7-3 |   | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-White |
| Lab ID # 532-02327-002 | | | 3) 4) May-15-14 | |
| 200-WLPL-17-8 |   | None Detected | 1) 6-15% Fiberglass, Cellulose  
2) 85-94% Calc, Gyp, Other m.p. | Plaster-White |
| Lab ID # 532-02327-003A | | | 3) 4) May-15-14 | |
| 200-WLPL-17-8 |   | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-White |
| Lab ID # 532-02327-003B | | | 3) 4) May-15-14 | |
| 200-WLPL-17-9 |   | None Detected | 1) 6-15% Fiberglass, Cellulose  
2) 85-94% Calc, Gyp, Other m.p. | Plaster-White |
| Lab ID # 532-02327-004A | | | 3) 4) May-15-14 | |
| 200-WLPL-17-9 |   | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-White |
| Lab ID # 532-02327-004B | | | 3) 4) May-15-14 | |
| 200-CLPL-18-6 |   | None Detected | 1) 6-15% Fiberglass, Cellulose  
2) 85-94% Calc, Gyp, Other m.p. | Plaster-White |
| Lab ID # 532-02327-005A | | | 3) 4) May-15-14 | |
| 200-CLPL-18-6 |   | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Beige |
| Lab ID # 532-02327-005B | | | 3) 4) May-15-14 | |
| 200-CLPL-18-7 |   | None Detected | 1) 6-15% Fiberglass, Cellulose  
2) 85-94% Calc, Gyp, Other m.p. | Plaster-White |
| Lab ID # 532-02327-006A | | | 3) 4) May-15-14 | |
| 200-CLPL-18-7 |   | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p. | Paint-Beige |
| Lab ID # 532-02327-006B | | | 3) 4) May-15-14 | |

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

**Analysis:**

ASBESTOS TEM LABORATORIES, INC.  
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With Offices in Reno, NV (775) 359-3377

www.asbestostemlabs.com
**Polarized Light Microscopy Analytical Report**

**EPA Method 600/R-93/116 or 600/M4-82-020**

<table>
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<td>1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-15-14 Concrete-Grey</td>
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<td>Lab ID # 532-02327-010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-LTWTCONC-37-2</td>
<td>None Detected</td>
<td>1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-15-14 Concrete-Grey</td>
</tr>
<tr>
<td>Lab ID # 532-02327-011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-PENMAS-38-1</td>
<td>1-5% Chrysotile</td>
<td>1) None Detected 2) 95-99% Tar, Bndr, Calc, Other m.p. 3) 4) May-15-14 Mastic-Black</td>
</tr>
<tr>
<td>Lab ID # 532-02327-012A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-PENMAS-38-1</td>
<td>None Detected</td>
<td>1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-15-14 Paint-Silver</td>
</tr>
<tr>
<td>Lab ID # 532-02327-012B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-PENMAS-38-2</td>
<td>None Detected</td>
<td>1) 1-5% Cellulose 2) 95-99% Glue, Opq, Calc, Other m.p. 3) 4) May-16-14 Paint-Silver</td>
</tr>
<tr>
<td>Lab ID # 532-02327-013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique*

---

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  

**Job Site / No.** Cordilleras Mental Health Center, 200 Edmonds Rd RWC  
F11312 - CC  

**Samples Indicated:** 52  
**Reg. Samples Analyzed:** 50  
**Split Layers Analyzed:** 12  
**Report No.:** 325758  
**Date Submitted:** May-07-14  
**Date Reported:** May-16-14  

---

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---

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## POLARIZED LIGHT MICROSCOPY
### ANALYTICAL REPORT

**EPA Method 600/R-93/116 or 600/M4-82-020**

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  
Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC  
F11312 - CC

<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>% ASBESTOS</th>
<th>TYPE</th>
<th>OTHER DATA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| 200-PENMAS-38-3 | None Detected | 1)1-5% Cellulose  
2)95-99% Glue, Opq, Calc, Other m.p. | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Paint-Silver |
| Lab ID # 532-02327-014 | | | | |
| 200-PUTTY-39-1 | None Detected | 1)None Detected  
2)99-100% Calc, Bndr | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Putty-Off-White |
| Lab ID # 532-02327-015 | | | | |
| 200-PUTTY-39-2 | None Detected | 1)None Detected  
2)99-100% Calc, Bndr | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Putty-Off-White |
| Lab ID # 532-02327-016 | | | | |
| 200-PUTTY-39-3 | None Detected | 1)None Detected  
2)99-100% Calc, Bndr | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Putty-Off-White |
| Lab ID # 532-02327-017A | | | | |
| 200-PUTTY-39-3 | None Detected | 1)None Detected  
2)99-100% Calc, Bndr | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Putty-Off-White |
| Lab ID # 532-02327-017B | | | | |
| 200-RFAG-40-1 | None Detected | 1)10-20% Cellulose,Fiberglass  
2)80-90% Calc, Tar, Qtz, Opq | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Roofing Felt/Tar-Black |
| Lab ID # 532-02327-018 | | | | |
| 200-RFAG-40-2 | None Detected | 1)10-20% Cellulose,Fiberglass  
2)80-90% Calc, Tar, Qtz, Opq | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Roofing Felt/Tar-Black |
| Lab ID # 532-02327-019 | | | | |
| 200-RFAG-40-3 | None Detected | 1)10-20% Cellulose,Fiberglass  
2)80-90% Calc, Tar, Qtz, Opq | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Roofing Felt/Tar-Black |
| Lab ID # 532-02327-020 | | | | |
| 200-RFMAS-41-1 | None Detected | 1)None Detected  
2)99-100% Tar, Opq, Qtz, Other m.p. | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Roof Mastic-Black |
| Lab ID # 532-02327-021 | | | | |
| 200-RFMAS-41-2 | None Detected | 1)None Detected  
2)99-100% Tar, Opq, Qtz, Other m.p. | 1)Non-Asbestos Fibers  
2)Matrix Materials  
3)Date/Time Collected  
4)Date Analyzed | Roof Mastic-Black |
| Lab ID # 532-02327-022 | | | | |

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

**ASBESTOS TEM LABORATORIES, INC.**  
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(510) 704-8930  
www.asbestostemlabs.com

**Analyst**
# POLARIZED LIGHT MICROSCOPY
## ANALYTICAL REPORT

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  
Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC  
F11312 - CC

### SAMPLE ID | % ASBESTOS TYPE | OTHER DATA | DESCRIPTION
| --- | --- | --- | ---
| 200-RFMAS-41-3 | None Detected | 1) None Detected  
2) 99-100% Tar, Opq, Qtz, Other m.p.  
3) 4) May-15-14 | Roof Mastic-Black |
| Lab ID # 532-02327-023 | | | |
| 200-RFCTG-42-1 | None Detected | 1) None Detected  
2) 99-100% Calc, Bd | Caulk-Tan |
| Lab ID # 532-02327-024A | | 3) 4) May-15-14 | |
| 200-RFCTG-42-1 | None Detected | 1) None Detected  
2) 99-100% Calc, Bd | Caulk-Off-White |
| Lab ID # 532-02327-024B | | 3) 4) May-15-14 | |
| 200-RFCTG-42-2 | None Detected | 1) None Detected  
2) 99-100% Calc, Bd | Caulk-Tan |
| Lab ID # 532-02327-025A | | 3) 4) May-15-14 | |
| 200-RFCTG-42-2 | None Detected | 1) None Detected  
2) 99-100% Calc, Bd | Caulk-Off-White |
| Lab ID # 532-02327-025B | | 3) 4) May-15-14 | |
| 200-RFCTG-42-3 | None Detected | 1) None Detected  
2) 99-100% Calc, Bd | Caulk-Tan |
| Lab ID # 532-02327-026A | | 3) 4) May-15-14 | |
| 200-RFCTG-42-3 | None Detected | 1) None Detected  
2) 99-100% Calc, Bd | Caulk-Off-White |
| Lab ID # 532-02327-026B | | 3) 4) May-15-14 | |
| 200-ASPHALT-43-1 | 1-5% Chrysotile | 1) None Detected  
2) 95-99% Tar, Other m.p.  
3) 4) May-15-14 | Asphalt-Black |
| Lab ID # 532-02327-028 | | | |
| 200-ASPHALT-43-2 | Not Analyzed | 1) 2) | |
| Lab ID # 532-02327-029 | | 3) 4) May-15-14 | |
| 200-ASPHALT-43-3 | Not Analyzed | 1) 2) | |
| Lab ID # 532-02327-030 | | 3) 4) May-15-14 | |

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

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(510) 704-8930  
With Offices in Reno, NV (775) 359-3377  
www.asbestostemlabs.com
# POLARIZED LIGHT MICROSCOPY
## ANALYTICAL REPORT

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA  94107  
Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC  
F11312 - CC

### OTHER DATA

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<tr>
<th>样品ID</th>
<th>%</th>
<th>石棉类型</th>
<th>描述</th>
<th>日期/时间采集</th>
<th>日期分析</th>
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<tr>
<td>200-CONC-44-1</td>
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<td>200-CONC-44-2</td>
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<td>200-CONC-44-3</td>
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<td>None Detected</td>
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<tr>
<td>200-TRANSITE-45-1</td>
<td>30-40%</td>
<td>Chrysotile</td>
<td></td>
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<td></td>
<td>1-5%</td>
<td>Crocidolite</td>
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<tr>
<td>200-PAINT-46-1</td>
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<td>None Detected</td>
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<tr>
<td>200-PAINT-46-2</td>
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<td>None Detected</td>
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<tr>
<td>200-PAINT-46-2</td>
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<td>None Detected</td>
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<tr>
<td>200-PAINT-46-3</td>
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<td>None Detected</td>
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<tr>
<td>200-PAINT-46-4</td>
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<td>None Detected</td>
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<td></td>
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<tr>
<td>200-PAINT-47-1</td>
<td></td>
<td>None Detected</td>
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</tbody>
</table>

**Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique**

**Report No.: 325758**  
**Date Submitted: May-07-14**  
**Date Reported: May-16-14**

---

**ASBESTOS TEM LABORATORIES, INC.**  
630 Bancroft Way, Berkeley CA 94710  
(510) 704-8930  
**With Offices in Reno, NV (775) 359-3377**

**www.asbestostemlabs.com**
### POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

- **EPA Method 600/R-93/116 or 600/M4-82-020**

**Contact:** Christina Codemo  
**Address:** SCA Environmental  
650 Delancey Street, #222  
San Francisco, CA 94107  
Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC  
F11312 - CC

### OTHER DATA

1. **Non-Asbestos Fibers**  
2. **Matrix Materials**  
3. **Date/Time Collected**  
4. **Date Analyzed**

### SAMPLE ID | ASBESTOS TYPE | DESCRIPTION |
--- | --- | --- |
200-PAINT-47-2 | None Detected | Paint-Green |
Lab ID # 532-02327-040 | | 3) 4) May-15-14 |
200-PAINT-48-1 | None Detected | Paint-Red/Grey |
Lab ID # 532-02327-041 | | 3) 4) May-15-14 |
200-PAINT-48-2 | None Detected | Paint-Red/Grey |
Lab ID # 532-02327-042 | | 3) 4) May-15-14 |
200-PAINT-49-1 | None Detected | Paint-Red |
Lab ID # 532-02327-043 | | 3) 4) May-15-14 |
200-PAINT-49-2 | None Detected | Paint-Red |
Lab ID # 532-02327-044 | | 3) 4) May-15-14 |
200-HCAULK-50-1 | None Detected | Caulk-Grey |
Lab ID # 532-02327-045 | | 3) 4) May-15-14 |
200-GASKET-51-1 | None Detected | Gasket-White |
Lab ID # 532-02327-046 | | 3) 4) May-15-14 |
200-GASKET-51-2 | None Detected | Gasket-White |
Lab ID # 532-02327-047 | | 3) 4) May-15-14 |
200-GASKET-52-1 | None Detected | Gasket-Brown/Black |
Lab ID # 532-02327-048 | | 3) 4) May-15-14 |
200-GASKET-52-2 | None Detected | Gasket-Brown/Black |
Lab ID # 532-02327-049 | | 3) 4) May-15-14 |

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

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With Offices in Reno, NV (775) 359-3377
<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>%</th>
<th>ASBESTOS TYPE</th>
<th>OTHER DATA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| 200-CAULK-53-1 | 1-5% | Chrysotile     | 1) None Detected  
2) 95-99% Calc, Tar, Qtz, Bndr  
3)  
4) May-15-14 | Caulk-Off-White |
| 200-PAINT-54-1 | None Detected | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p.  
3)  
4) May-15-14 | Paint-Beige |
| 200-PAINT-54-2 | None Detected | None Detected | 1) None Detected  
2) 99-100% Glue, Qtz, Opq, Other m.p.  
3)  
4) May-15-14 | Paint-Beige |
| 200-PUTTY-30-3 | None Detected | None Detected | 1) None Detected  
2) 99-100% Calc, Bndr  
3)  
4) May-15-14 | Putty-Beige |

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

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630 Bancroft Way, Berkeley CA 94710  
(510) 704-8930  
With Offices in Reno, NV (775) 359-3377  
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### Chain of Custody Form

**Caller**
- **Name:** [Redacted]
- **Contact:** [Redacted]

**Site:** [Redacted]

**Sampling Date:** [Redacted]

**Sample Media:**
- **Sample ID:** 200-BPICK-6-2
  - **Liters:** 471.2
  - **Sampling Date:** 5/6/05

**Sample Details:**
- **Sample ID:** 200-PAIN-1-2
  - **Liters:** 471.2
  - **Sampling Date:** 5/6/05

**Sample Details:**
- **Sample ID:** 200-PAIN-1-2
  - **Liters:** 471.2
  - **Sampling Date:** 5/6/05

---

### Instructions to Lab
1. **Package requested:**
   - **Contact:** [Redacted]
2. **Call SCA contact to acknowledge receipt of samples.
3. Analyze samples by TEM only.
4. Analyze inside samples by TEM first. If any sample >0.01 I/6c, contact SCA.
5. If sample >0.01, proceed with TEM Analysis.
6. If sample >0.01, contact SCA before analyzing outside or blanks.
7. Analyze all samples, including outside samples and blanks.
8. Do NOT analyze inside or blank samples.
9. Always analyze TEM only. The inside air sample with the highest TEM result.
10. Serial analysis, stop at first positive (>15%), first trace (<0.1%), except sheetrock and plaster samples.

---

### Supplies / Equipment
- **Hi-Vol:** 325.758
- **Lo-Vol:** 325.758
- **TEM / Pb Cassettes:** 325.758
- **PCM Cassettes:** 325.758
- **Bulk Sampling Supply:** 52
Appendix D

PCB & Lead Laboratory Results
Analytical Report

WorkOrder: 1405113

Report Created for: SCA Environmental, Inc.
334 19th Street
Oakland, CA 94612

Project Contact: Christina Codemo
Project P.O.: #F-11312; City of SM Cordilleras Svy
Project Received: 05/05/2014

Analytical Report reviewed & approved for release on 05/08/2014 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.
Glossary of Terms & Qualifier Definitions

Client: SCA Environmental, Inc.
Project: #F-11312; City of SM Cordilleras Svy
WorkOrder: 1405113

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Glossary</th>
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<tbody>
<tr>
<td>95% Interval</td>
<td>95% Confident Interval</td>
</tr>
<tr>
<td>DF</td>
<td>Dilution Factor</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate</td>
</tr>
<tr>
<td>EDL</td>
<td>Estimated Detection Limit</td>
</tr>
<tr>
<td>ITEF</td>
<td>International Toxicity Equivalence Factor</td>
</tr>
<tr>
<td>LCS</td>
<td>Laboratory Control Sample</td>
</tr>
<tr>
<td>MB</td>
<td>Method Blank</td>
</tr>
<tr>
<td>MB % Rec</td>
<td>% Recovery of Surrogate in Method Blank, if applicable</td>
</tr>
<tr>
<td>MDL</td>
<td>Method Detection Limit</td>
</tr>
<tr>
<td>ML</td>
<td>Minimum Level of Quantitation</td>
</tr>
<tr>
<td>MS</td>
<td>Matrix Spike</td>
</tr>
<tr>
<td>MSD</td>
<td>Matrix Spike Duplicate</td>
</tr>
<tr>
<td>ND</td>
<td>Not detected at or above the indicated MDL or RL</td>
</tr>
<tr>
<td>NR</td>
<td>Matrix interferences, or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix; or sample diluted due to high matrix or analyte content.</td>
</tr>
<tr>
<td>RD</td>
<td>Relative Difference</td>
</tr>
<tr>
<td>RL</td>
<td>Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Deviation</td>
</tr>
<tr>
<td>RRT</td>
<td>Relative Retention Time</td>
</tr>
<tr>
<td>SPK Val</td>
<td>Spike Value</td>
</tr>
<tr>
<td>SPKRef Val</td>
<td>Spike Reference Value</td>
</tr>
<tr>
<td>TEQ</td>
<td>Toxicity Equivalence</td>
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**Analytical Qualifier**

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Glossary</th>
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<tbody>
<tr>
<td>S</td>
<td>spike recovery outside accepted recovery limits</td>
</tr>
<tr>
<td>a3</td>
<td>sample diluted due to high organic content.</td>
</tr>
<tr>
<td>a4</td>
<td>the reporting limits were raised due to the sample's matrix prohibiting a full volume extraction.</td>
</tr>
<tr>
<td>a7</td>
<td>reporting limit raised due to limited sample amount</td>
</tr>
<tr>
<td>c1</td>
<td>surrogate recovery outside of the control limits due to the dilution of the sample.</td>
</tr>
<tr>
<td>h4</td>
<td>sulfuric acid permanganate (EPA 3665) cleanup</td>
</tr>
</tbody>
</table>

**Quality Control Qualifiers**

<table>
<thead>
<tr>
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<th>Glossary</th>
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<tbody>
<tr>
<td>F1</td>
<td>MS/MSD recovery and/or RPD was out of acceptance criteria; LCS validated the prep batch.</td>
</tr>
</tbody>
</table>
### Polychlorinated Biphenyls (PCBs) Aroclors

<table>
<thead>
<tr>
<th>Client ID</th>
<th>Lab ID</th>
<th>Matrix/ExtType</th>
<th>Date Collected</th>
<th>Instrument</th>
<th>Batch ID</th>
</tr>
</thead>
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<tr>
<td>200-CAULK-26</td>
<td>1405113-008A</td>
<td>Solid</td>
<td>05/02/2014</td>
<td>GC5A</td>
<td>90034</td>
</tr>
</tbody>
</table>

**Analytes**

- **Aroclor1016**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **Aroclor1221**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **Aroclor1232**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **Aroclor1242**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **Aroclor1248**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **Aroclor1254**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **Aroclor1260**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11
- **PCBs, total**: ND, RL 10, DF 20, Date Analyzed: 05/06/2014 17:11

**Surrogates**

- **Decachlorobiphenyl**: REC 171, Qualifiers S, Limits 70-130, Date Analyzed: 05/06/2014 17:11

**Analytical Comments**: a3,a4,c1,h4

<table>
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<th>Client ID</th>
<th>Lab ID</th>
<th>Matrix/ExtType</th>
<th>Date Collected</th>
<th>Instrument</th>
<th>Batch ID</th>
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<tbody>
<tr>
<td>200-PUTTY-30</td>
<td>1405113-009A</td>
<td>Solid</td>
<td>05/02/2014</td>
<td>GC5A</td>
<td>90034</td>
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</table>

**Analytes**

- **Aroclor1016**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **Aroclor1221**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **Aroclor1232**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **Aroclor1242**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **Aroclor1248**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **Aroclor1254**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **Aroclor1260**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49
- **PCBs, total**: ND, RL 0.69, DF 1, Date Analyzed: 05/06/2014 17:49

**Surrogates**

- **Decachlorobiphenyl**: REC 128, Qualifiers S, Limits 70-130, Date Analyzed: 05/06/2014 17:49

**Analytical Comments**: a7,h4
## Analytical Report

**Client:** SCA Enviromental, Inc.

**Project:** #F-11312; City of SM Cordilleras Svy

**Date Received:** 5/5/14 9:53

**Date Prepared:** 5/5/14

**WorkOrder:** 1405113

**Extraction Method:** SW3050B

**Analytical Method:** SW6010B

**Unit:** mg/Kg

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(Ccont.)
## Analytical Report

**Client:** SCA Environmental, Inc.

**Project:** #F-11312; City of SM Cordilleras Svy

**Date Received:** 5/5/14 9:53

**Date Prepared:** 5/5/14

**WorkOrder:** 1405113

**Extraction Method:** SW3050B

**Analytical Method:** SW6010B

**Unit:** mg/Kg

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| 200-GY-6-1  | 1405113-007A      | Solid/TOTAL    | 05/02/2014     | ICP-JY     | 90033    |
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|             | 350,000           | 230            | 10             | 05/07/2014 12:12 |
| Surrogates  | REC (%)           | Limits         |                |            |          |
| Tb 350.917  | 107               | 70-130         |                | 05/07/2014 12:12 |
Quality Control Report

Client: SCA Environmental, Inc.
Date Prepared: 5/5/14
Date Analyzed: 5/6/14
Instrument: GC5A
Matrix: Soil
Project: #F-11312; City of SM Cordilleras Svy

QC Summary Report for SW8082

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Surrogate Recovery

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CDPH ELAP 1644 ♦ NELAP 4033ORELAP

QA/QC Officer

Page 6 of 11
### QC Summary Report for SW6010B

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# Chain-of-Custody Record

**WorkOrder:** 1405113  
**ClientCode:** SCAO

**Report to:**  
Christina Codemo  
SCA Environmental, Inc.  
334 19th Street  
Oakland, CA 94612  
(510) 645-6200  
FAX: (510) 839-6200

**Bill to:**  
Accounts Payable  
SCA Environmental, Inc.  
334 19th Street  
Oakland, CA 94612  
emuise@sca-ic.com

**Requested TAT:** 5 days

**Date Received:** 05/05/2014  
**Date Printed:** 05/05/2014

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**Test Legend:**

1  8082A_PCB_Solid  
6  PB_S  
11

**Prepared by:** Maria Venegas

---

**Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.
**WORK ORDER SUMMARY**

**Client Name:** SCA ENVIRONMENTAL, INC.  
**Project:** #F-11312; City of SM Cordilleras Svy  
**Comments:**  
**Client Contact:** Christina Codemo  
**Contact's Email:** ccodemo@sca-enviro.com  
**Work Order:** 1405113  
**Date Received:** 5/5/2014

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<td>5/2/2014</td>
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<tr>
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<td>SW6010B (Lead)</td>
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* NOTE: STLC and TCLP extractions require 48 hrs to complete; therefore, all TATs begin after the extraction is completed (i.e., 24hr TAT yields results in 72 hrs from sample submission).  

**Bottle Legend:**  
Small Yellow Plastic =  

---

Page 9 of 11
<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>Location/Field Point Name</th>
<th>SAMPLING</th>
<th>MATRIX</th>
<th>METHOD PRESERVED</th>
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<tr>
<td>-PUFFY-2B</td>
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**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open area, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.**

Refounded By: [Signature]
Date: 5/2
Time: 4:00 P

Refounded By: [Signature]
Date: 5/14
Time: 9:30 A

Refounded By: [Signature]
Date: 5/14
Time: 9:30 A

COMMENTS:
- **GOOD CONDITION**
- **HEAD SPACE ABSENT**
- **DECHLORINATED IN LAB**
- **APPROPRIATE CONTAINERS**
- **RESERVED IN LAB**
- **VOAS O&G METALS OTHER**
- **HAZARDOUS**

pH=2
## Sample Receipt Checklist

**Client Name:**  
**Project Name:**  
**WorkOrder N°:**  
**Matrix:**  
**Carrier:**  

### Chain of Custody (COC) Information

- Chain of custody present?  
  - Yes [✓]  
  - No [ ]  
- Chain of custody signed when relinquished and received?  
  - Yes [✓]  
  - No [ ]  
- Chain of custody agrees with sample labels?  
  - Yes [✓]  
  - No [ ]  
- Sample IDs noted by Client on COC?  
  - Yes [✓]  
  - No [ ]  
- Date and Time of collection noted by Client on COC?  
  - Yes [✓]  
  - No [ ]  
- Sampler's name noted on COC?  
  - Yes [✓]  
  - No [ ]

### Sample Receipt Information

- Custody seals intact on shipping container/cooler?  
  - Yes [ ]  
  - No [✓]  
  - NA [ ]  
- Shipping container/cooler in good condition?  
  - Yes [✓]  
  - No [ ]  
- Samples in proper containers/bottles?  
  - Yes [✓]  
  - No [ ]  
- Sample containers intact?  
  - Yes [✓]  
  - No [ ]  
- Sufficient sample volume for indicated test?  
  - Yes [✓]  
  - No [ ]

### Sample Preservation and Hold Time (HT) Information

- All samples received within holding time?  
  - Yes [✓]  
  - No [ ]  
- Container/Temp Blank temperature  
  - Cooler Temp: [ ]  
  - NA [✓]  
- Water - VOA vials have zero headspace / no bubbles?  
  - Yes [ ]  
  - No [✓]  
  - NA [✓]  
- Sample labels checked for correct preservation?  
  - Yes [✓]  
  - No [ ]  
- pH acceptable upon receipt (Metal: pH<2; 522: pH<4)?  
  - Yes [ ]  
  - No [✓]  
  - NA [✓]  
- Samples Received on Ice?  
  - Yes [ ]  
  - No [✓]

*NOTE: If the "No" box is checked, see comments below.*

**Project Name:**  
**Date and Time Received:** 5/5/2014 9:53:46 AM  
**LogIn Reviewed by:** Maria Venegas  

---

**Comments:**
Analytical Report

WorkOrder: 1405194

Report Created for: SCA Environmental, Inc.
334 19th Street
Oakland, CA 94612

Project Contact: Christina Codemo
Project P.O.: #F-11312; CT of SM Cordilleras SVY
Project Received: 05/06/2014

Analytical Report reviewed & approved for release on 05/08/2014 by: Angela Rydelius, Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.
# Glossary of Terms & Qualifier Definitions

**Client:** SCA Environmental, Inc.

**Project:** #F-11312; CT of SM Cordilleras SVY

**WorkOrder:** 1405194

## Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tr>
<td>95% Interval</td>
<td>95% Confident Interval</td>
</tr>
<tr>
<td>DF</td>
<td>Dilution Factor</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate</td>
</tr>
<tr>
<td>EDL</td>
<td>Estimated Detection Limit</td>
</tr>
<tr>
<td>ITEF</td>
<td>International Toxicity Equivalence Factor</td>
</tr>
<tr>
<td>LCS</td>
<td>Laboratory Control Sample</td>
</tr>
<tr>
<td>MB</td>
<td>Method Blank</td>
</tr>
<tr>
<td>MB % Rec</td>
<td>% Recovery of Surrogate in Method Blank, if applicable</td>
</tr>
<tr>
<td>MDL</td>
<td>Method Detection Limit</td>
</tr>
<tr>
<td>ML</td>
<td>Minimum Level of Quantitation</td>
</tr>
<tr>
<td>MS</td>
<td>Matrix Spike</td>
</tr>
<tr>
<td>MSD</td>
<td>Matrix Spike Duplicate</td>
</tr>
<tr>
<td>ND</td>
<td>Not detected at or above the indicated MDL or RL</td>
</tr>
<tr>
<td>NR</td>
<td>Matrix interferences, or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix; or sample diluted due to high matrix or analyte content.</td>
</tr>
<tr>
<td>RD</td>
<td>Relative Difference</td>
</tr>
<tr>
<td>RL</td>
<td>Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Deviation</td>
</tr>
<tr>
<td>RRT</td>
<td>Relative Retention Time</td>
</tr>
<tr>
<td>SPK Val</td>
<td>Spike Value</td>
</tr>
<tr>
<td>SPKRef Val</td>
<td>Spike Reference Value</td>
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<td>TEQ</td>
<td>Toxicity Equivalence</td>
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## Analytical Qualifier

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<th>Description</th>
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<tr>
<td>S</td>
<td>spike recovery outside accepted recovery limits</td>
</tr>
<tr>
<td>a7</td>
<td>reporting limit raised due to limited sample amount</td>
</tr>
<tr>
<td>h4</td>
<td>sulfuric acid permanganate (EPA 3665) cleanup</td>
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## Quality Control Qualifiers

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<tr>
<td>F1</td>
<td>MS/MSD recovery and/or RPD was out of acceptance criteria; LCS validated the prep batch.</td>
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### Polychlorinated Biphenyls (PCBs) Aroclors

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<th>Lab ID</th>
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<th>Instrument</th>
<th>Batch ID</th>
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#### Analytes

<table>
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<th>Result</th>
<th>RL</th>
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<tbody>
<tr>
<td>Aroclor1016</td>
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<td>1</td>
<td>05/06/2014 22:48</td>
</tr>
<tr>
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<tr>
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<td>1</td>
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#### Surrogates

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#### Analytes

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#### Surrogates

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## Analytical Report

**Client:** SCA Enviromental, Inc.  
**WorkOrder:** 1405194  
**Project:** #F-11312; CT of SM Cordilleras SVY  
**Date Received:** 5/6/14 17:35  
**Date Prepared:** 5/6/14  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6010B  
**Unit:** mg/Kg

### Lead

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<th>Batch ID</th>
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(Cont.)

CDPH ELAP 1644 ♦ NELAP 4033ORELAP  
DB Analyst's Initial  
Angela Rydelius, Lab Manager
## Analytical Report

**Client:** SCA Environmental, Inc.  
**Project:** #F-11312; CT of SM Cordillera SVY  
**Date Received:** 5/6/14 17:35  
**Date Prepared:** 5/6/14

**WorkOrder:** 1405194  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6010B  
**Unit:** mg/Kg

### Lead

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<tr>
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<td>Tb 350.917</td>
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| 200-GR-9-1  | 1405194-007A    | Solid/TOTAL    | 05/05/2014     | ICP-JY     | 90113    |
| Analytes    | Result          | RL             | 25             | Date Analyzed |
| Lead        | 7.7             | 1.0            | 05/07/2014 12:05 |
| Surrogates  | REC (%)         | Limits         | 108            | 05/07/2014 12:05 |
| Tb 350.917  | 70-130          |                |                | 05/07/2014 12:05 |

| 200-BR-10-1 | 1405194-008A    | Solid/TOTAL    | 05/05/2014     | ICP-JY     | 90113    |
| Analytes    | Result          | RL             | 220            | Date Analyzed |
| Lead        | 100             | 1.0            | 05/07/2014 12:07 |
| Surrogates  | REC (%)         | Limits         | 107            | 05/07/2014 12:07 |
| Tb 350.917  | 70-130          |                |                | 05/07/2014 12:07 |

| 200-RD-11-1 | 1405194-009A    | Solid/TOTAL    | 05/05/2014     | ICP-JY     | 90113    |
| Analytes    | Result          | RL             | 26             | Date Analyzed |
| Lead        | 23              | 1.0            | 05/07/2014 12:09 |
| Surrogates  | REC (%)         | Limits         | 104            | 05/07/2014 12:09 |
| Tb 350.917  | 70-130          |                |                | 05/07/2014 12:09 |
## QC Summary Report for SW6010B

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### Surrogate Recovery

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**WorkOrder:** 1405194  
**Client Code:** SCAO

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**Request Legend:**

- 1: 8082A_PCB_S
- 2: PB_S
- 3:  
- 4:  
- 5:  
- 6:  
- 7:  
- 8:  
- 9:  
- 10:  
- 11:  
- 12:  

**Test Legend:**

- 1: 8082A_PCB_S
- 2: PB_S
- 3:  
- 4:  
- 5:  
- 6:  
- 7:  
- 8:  
- 9:  
- 10:  
- 11:  
- 12:  

**Prepared by:** Jena Alfaro

**Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.
**WORK ORDER SUMMARY**

**Client Name:**  SCA ENVIROMENTAL, INC.  
**Project:**  #F-11312; CT of SM Cordilleras SVY  
**QC Level:**  LEVEL 2  
**Comments:**  
**Client Contact:**  Christina Codemo  
**Contact's Email:**  ccodemo@sca-enviro.com  
**Work Order:**  1405194  
**Date Received:**  5/6/2014

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<th>Client ID</th>
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*NOTE: STLC and TCLP extractions require 48 hrs to complete; therefore, all TATs begin after the extraction is completed (i.e., 24hr TAT yields results in 72 hrs from sample submission).*

**Bottle Legend:**
Small Yellow Plastic Container =
**CHAIN OF CUSTODY RECORD**

**TURN AROUND TIME:** RUSH □ 1 DAY □ 2 DAY □ 3 DAY □ 5 DAY □
GeoTracker EDF □ PDF □ EDD □ Write On (DW) □ Edits □ 10 DAY □

Effluent Sample Requiring “J” flag □ UST Clean Up Fund Project □; Claim #: 

**Analysis Request**

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**SAMPLE ID**

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**Report To:** CHRISTINA CODEMO  
**Company:** SCA ENVIRONMENTAL INC.

**Telephone:** (415) 867-9540  
**E-Mail:** CCODEMO@SCA-ENVIRONMENTAL.COM

**Fax:** (415) 962-2736

**Project #:** F-113812  
**Project Name:** CORDILLERAS MELIN HIRE

**Sampler Signature:** DALL LEUNG

---

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.**

**Relinquished By:** DALL LEUNG

**Date:** 5/6  
**Time:** 11:00 AM

**Relinquished By:**

**Date:**  
**Time:**  
**Received By:**

**ICEA**

**GOOD CONDITION**

**HEAD SPACE ABSENT**

**DECHLORINATED IN LAB**

**APPROPRIATE CONTAINERS**

**PRESERVED IN LAB**

**pH=2**

**COMMENTS:**

**VOAs O&G METALS OTHER HAZARDOUS:**
Sample Receipt Checklist

Client Name: SCA Enviromental, Inc.  Date and Time Received: 5/6/2014 5:35:45 PM
Project Name: #F-11312; CT of SM Cordilleras SVY  Login Reviewed by: Jena Alfaro
WorkOrder N°: 1405194  Matrix: Solid  Carrier: Rob Pringle (MAI Courier)

### Chain of Custody (COC) Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain of custody present?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chain of custody signed when relinquished and received?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chain of custody agrees with sample labels?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sample IDs noted by Client on COC?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Date and Time of collection noted by Client on COC?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sampler's name noted on COC?</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

### Sample Receipt Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custody seals intact on shipping container/cooler?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shipping container/cooler in good condition?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Samples in proper containers/bottles?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sample containers intact?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sufficient sample volume for indicated test?</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

### Sample Preservation and Hold Time (HT) Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>All samples received within holding time?</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
| Container/Temp Blank temperature  
  Cooler Temp:                   |     |    |
| Water - VOA vials have zero headspace / no bubbles?                      |     |    |
| Sample labels checked for correct preservation?                          | ✓   |    |
| pH acceptable upon receipt (Metal: pH<2; 522: pH<4)?                      |     |    |
| Samples Received on Ice?                                                 |     | ✓  |

* NOTE: If the "No" box is checked, see comments below.

---

Comments:
Analytical Report

WorkOrder: 1405A20

Report Created for: SCA Environmental, Inc.
650 Delancey Street, #222
San Francisco, CA 94107

Project Contact: Christina Codemo
Project Name: #F11312.02; Cordilleras Survey

Project Received: 05/28/2014

Analytical Report reviewed & approved for release on 05/29/2014 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.
# Glossary of Terms & Qualifier Definitions

**Client:** SCA Environmental, Inc.

**Project:** #F11312.02; Cordilleras Survey

**WorkOrder:** 1405A20

## Glossary Abbreviation

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>95% Interval</td>
<td>95% Confident Interval</td>
</tr>
<tr>
<td>DF</td>
<td>Dilution Factor</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate</td>
</tr>
<tr>
<td>EDL</td>
<td>Estimated Detection Limit</td>
</tr>
<tr>
<td>ITEF</td>
<td>International Toxicity Equivalence Factor</td>
</tr>
<tr>
<td>LCS</td>
<td>Laboratory Control Sample</td>
</tr>
<tr>
<td>MB</td>
<td>Method Blank</td>
</tr>
<tr>
<td>MB % Rec</td>
<td>% Recovery of Surrogate in Method Blank, if applicable</td>
</tr>
<tr>
<td>MDL</td>
<td>Method Detection Limit</td>
</tr>
<tr>
<td>ML</td>
<td>Minimum Level of Quantitation</td>
</tr>
<tr>
<td>MS</td>
<td>Matrix Spike</td>
</tr>
<tr>
<td>MSD</td>
<td>Matrix Spike Duplicate</td>
</tr>
<tr>
<td>ND</td>
<td>Not detected at or above the indicated MDL or RL</td>
</tr>
<tr>
<td>NR</td>
<td>Matrix interferences, or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix; or sample diluted due to high matrix or analyte content.</td>
</tr>
<tr>
<td>RD</td>
<td>Relative Difference</td>
</tr>
<tr>
<td>RL</td>
<td>Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Deviation</td>
</tr>
<tr>
<td>RRT</td>
<td>Relative Retention Time</td>
</tr>
<tr>
<td>SPK Val</td>
<td>Spike Value</td>
</tr>
<tr>
<td>SPKRef Val</td>
<td>Spike Reference Value</td>
</tr>
<tr>
<td>TEQ</td>
<td>Toxicity Equivalence</td>
</tr>
</tbody>
</table>
# Analytical Report

**Client:** SCA Environmental, Inc.  
**Project:** #F11312.02; Cordilleras Survey  
**Date Received:** 5/28/14 11:43  
**Date Prepared:** 5/28/14  
**WorkOrder:** 1405A20  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6010B  
**Unit:** mg/Kg

## Lead

<table>
<thead>
<tr>
<th>Client ID</th>
<th>Lab ID</th>
<th>Matrix/ExtType</th>
<th>Date Collected</th>
<th>Instrument</th>
<th>Batch ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLVCT-16</td>
<td>1405A20-001A</td>
<td>Solid/TOTAL</td>
<td>05/28/2014</td>
<td>ICP-JY</td>
<td>90870</td>
</tr>
</tbody>
</table>

### Analytes
- **Lead**  
  - **Result:** 97  
  - **RL:** 12  
  - **DF:** 1  
  - **Date Analyzed:** 05/29/2014 10:41

### Surrogates
- **Tb 350.917**  
  - **REC (%):** 91  
  - **Limits:** 70-130  
  - **Date:** 05/29/2014 10:41
Quality Control Report

Client: SCA Environmental, Inc.

WorkOrder: 1405A20

Date Prepared: 5/28/14

BatchID: 90870

Date Analyzed: 5/29/14

Extraction Method: SW3050B

Instrument: ICP-JY

Analytical Method: SW6010B

Matrix: Soil

Unit: mg/Kg

Sample ID: MB/LCS-90870

Project: #F11312.02; Cordilleras Survey

<table>
<thead>
<tr>
<th>Analyte</th>
<th>MB Result</th>
<th>LCS Result</th>
<th>RL</th>
<th>SPK Val</th>
<th>MB SS %REC</th>
<th>LCS %REC</th>
<th>LCS Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>ND</td>
<td>48.2</td>
<td>5.0</td>
<td>50</td>
<td>-</td>
<td>96.3</td>
<td>75-125</td>
</tr>
<tr>
<td>Surrogate Recovery</td>
<td>492</td>
<td>474</td>
<td>500</td>
<td>98</td>
<td>95</td>
<td>70-130</td>
<td></td>
</tr>
</tbody>
</table>

QC Summary Report for SW6010B

CDPH ELAP 1644 • NELAP 4033ORELAP

QA/QC Officer

Page 4 of 8
### Chain of Custody Record

**WorkOrder:** 1405A20  **ClientCode:** SCAF

<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Client ID</th>
<th>Matrix</th>
<th>Collection Date</th>
<th>Hold</th>
<th>Requested Tests (See legend below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1405A20-001</td>
<td></td>
<td>Solid</td>
<td>5/28/2014</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

**Test Legend:**

1. PB_S
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

**Comments:** 1 Day ASAP Rush

---

**NOTE:** Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.

---

**Prepared by:** Maria Venegas
## WORK ORDER SUMMARY

**Client Name:** SCA ENVIRONMENTAL, INC.  
**Project:** #F11312.02; Cordilleras Survey  
**Comments:** 1 Day ASAP Rush  
**Client Contact:** Christina Codemo  
**Contact's Email:** ccodemo@sca-enviro.com  
**QC Level:** LEVEL 2  
**Work Order:** 1405A20  
**Date Received:** 5/28/2014

<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Client ID</th>
<th>Matrix</th>
<th>Test Name</th>
<th>Number of Containers</th>
<th>Bottle &amp; Preservative Dechlorinated</th>
<th>Collection Date &amp; Time</th>
<th>TAT</th>
<th>Sediment Content</th>
<th>Hold</th>
<th>SubOut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1405A20-001A</td>
<td>FLVCT-16</td>
<td>Solid</td>
<td>TCLP Extraction</td>
<td>3</td>
<td>Yellow Plastic</td>
<td>5/28/2014</td>
<td>1 day*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STLC Extraction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SW6010B (Lead)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: STLC and TCLP extractions require 48 hrs to complete; therefore, all TATs begin after the extraction is completed (i.e., 24hr TAT yields results in 72 hrs from sample submission).*

---

**Bottle Legend:**  
Yellow Plastic =
<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>SAMPLING</th>
<th>MATRIX</th>
<th>LAB ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLVCT-16</td>
<td>05/28/14</td>
<td>3</td>
<td>B</td>
</tr>
</tbody>
</table>

**Relinquished By:**
- CC via Golden Bullet Courier from ATEM
- Date: 5/28/14
- Time: 10:04 am
- Received By:

**Relinquished By:**
- Date:
- Time:
- Received By:

**Relinquished By:**
- Date:
- Time:
- Received By:

**Turnaround Requested:**
- Standard (5-7 days)
- 48 Hour
- 24 hour
- Other: ASAP

**Sample Disposal:**
- Return to Client
- Disposal by Lab

**Instructions/Remarks:**
- START EXTRACTIONS FOR STLC/TCLP. SCA WILL CONTACT MCCAMPBELL TO IDENTIFY METALS TO RUN ONCE INITIAL LAB RESULTS ARE RECEIVED.

**Report to:**
- Christina Codemo, ccodemo@sca-enviro.com

**SCA ENVIRONMENTAL, INC.**
- 650 Delancey St. #222
- San Francisco, CA 94107
- Tel: 415/867-9540
- efax: 415/962-0736

- 334 19th Street
- Oakland, CA 94612
- tel: 510-645-6200
- efax: 415-962-0736
## Sample Receipt Checklist

**Client Name:** SCA Environmental, Inc.  
**Project Name:** #F11312.02; Cordilleras Survey  
**WorkOrder #:** 1405A20  
**Date and Time Received:** 5/28/2014 11:43:13 AM  
**LogIn Reviewed by:** Maria Venegas

### Chain of Custody (COC) Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain of custody present?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chain of custody signed when relinquished and received?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chain of custody agrees with sample labels?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sample IDs noted by Client on COC?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date and Time of collection noted by Client on COC?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampler's name noted on COC?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sample Receipt Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custody seals intact on shipping container/cooler?</td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td>Shipping container/cooler in good condition?</td>
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<td></td>
<td></td>
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<tr>
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<td>✓</td>
<td></td>
<td></td>
</tr>
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<td>Sample containers intact?</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Sufficient sample volume for indicated test?</td>
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<td></td>
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</table>

### Sample Preservation and Hold Time (HT) Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>All samples received within holding time?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Container/Temp Blank temperature</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Water - VOA vials have zero headspace / no bubbles?</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Sample labels checked for correct preservation?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH acceptable upon receipt (Metal: pH&lt;2; 522: pH&lt;4)?</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

* NOTE: If the "No" box is checked, see comments below.

### Comments:

---

Comments:
Analytical Report

WorkOrder: 1405A20 A

Report Created for: SCA Environmental, Inc.
650 Delancey Street, #222
San Francisco, CA 94107

Project Contact: Christina Codemo

Project P.O.: #F11312.02; Cordilleras Survey

Project Received: 05/28/2014

Analytical Report reviewed & approved for release on 06/02/2014 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: SCA Environmental, Inc.
Project: #F11312.02; Cordilleras Survey
WorkOrder: 1405A20

### Glossary Abbreviation

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<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
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<td>95% Confident Interval</td>
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<tr>
<td>DF</td>
<td>Dilution Factor</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate</td>
</tr>
<tr>
<td>EDL</td>
<td>Estimated Detection Limit</td>
</tr>
<tr>
<td>ITEF</td>
<td>International Toxicity Equivalence Factor</td>
</tr>
<tr>
<td>LCS</td>
<td>Laboratory Control Sample</td>
</tr>
<tr>
<td>MB</td>
<td>Method Blank</td>
</tr>
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<td>% Recovery of Surrogate in Method Blank, if applicable</td>
</tr>
<tr>
<td>MDL</td>
<td>Method Detection Limit</td>
</tr>
<tr>
<td>ML</td>
<td>Minimum Level of Quantitation</td>
</tr>
<tr>
<td>MS</td>
<td>Matrix Spike</td>
</tr>
<tr>
<td>MSD</td>
<td>Matrix Spike Duplicate</td>
</tr>
<tr>
<td>ND</td>
<td>Not detected at or above the indicated MDL or RL</td>
</tr>
<tr>
<td>NR</td>
<td>Matrix interferences, or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix; or sample diluted due to high matrix or analyte content.</td>
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<tr>
<td>RD</td>
<td>Relative Difference</td>
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<td>RL</td>
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<tr>
<td>RPD</td>
<td>Relative Percent Deviation</td>
</tr>
<tr>
<td>RRT</td>
<td>Relative Retention Time</td>
</tr>
<tr>
<td>SPK Val</td>
<td>Spike Value</td>
</tr>
<tr>
<td>SPKRef Val</td>
<td>Spike Reference Value</td>
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<tr>
<td>TEQ</td>
<td>Toxicity Equivalence</td>
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</table>
## Lead

<table>
<thead>
<tr>
<th>Client ID</th>
<th>Lab ID</th>
<th>Matrix/ExtType</th>
<th>Date Collected</th>
<th>Instrument</th>
<th>Batch ID</th>
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</thead>
<tbody>
<tr>
<td>FLVCT-16</td>
<td>1405A20-001A</td>
<td>Solid/WET</td>
<td>05/28/2014</td>
<td>ICP-JY</td>
<td>90848</td>
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</table>

<table>
<thead>
<tr>
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<th>Result</th>
<th>RL</th>
<th>DF</th>
<th>Date Analyzed</th>
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<tbody>
<tr>
<td>Lead</td>
<td>0.56</td>
<td>0.20</td>
<td>1</td>
<td>06/02/2014 11:03</td>
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</table>

---

Angela Rydelius, Lab Manager
Analytical Report

Client: SCA Environmental, Inc.
Project: #F11312.02; Cordilleras Survey
Date Received: 5/28/14 11:43
Date Prepared: 5/28/14

WorkOrder: 1405A20
Extraction Method: SW1311/SW3050B
Analytical Method: SW6010B
Unit: mg/L

<table>
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<tr>
<th>Client ID</th>
<th>Lab ID</th>
<th>Matrix/ExtType</th>
<th>Date Collected</th>
<th>Instrument</th>
<th>Batch ID</th>
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<tbody>
<tr>
<td>FLVCT-16</td>
<td>1405A20-001A</td>
<td>Solid/TCLP</td>
<td>05/28/2014</td>
<td>ICP-JY</td>
<td>90849</td>
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<th>RL</th>
<th>DF</th>
<th>Date Analyzed</th>
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<td>ND</td>
<td>0.20</td>
<td>1</td>
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</table>

Angela Rydelius, Lab Manager

CDPH ELAP 1644 ♦ NELAP 4033ORELAP

DB Analyst's Initial

Page 4 of 9
Quality Control Report

Client: SCA Environmental, Inc.
Date Prepared: 5/27/14
Date Analyzed: 5/31/14
Instrument: ICP-JY
Matrix: Soil
Project: #F11312.02; Cordilleras Survey

WorkOrder: 1405A20
BatchID: 90848
Extraction Method: CA Title 22
Analytical Method: SW6010B
Unit: mg/L
Sample ID: MB/LCS-90848

1405517-002AMS/MSD

Instrument: ICP-JY
Matrix: Soil
Extraction Method: CA Title 22
Analytical Method: SW6010B
Unit: mg/L
Sample ID: MB/LCS-90848

1405517-002AMS/MSD

QC Summary Report for SW6010B

<table>
<thead>
<tr>
<th>Analyte</th>
<th>MB Result</th>
<th>LCS Result</th>
<th>RL</th>
<th>SPK Val</th>
<th>MB SS %REC</th>
<th>LCS %REC</th>
<th>LCS Limits</th>
</tr>
</thead>
<tbody>
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<td>Lead</td>
<td>ND</td>
<td>1.10</td>
<td>0.20</td>
<td>1</td>
<td>-</td>
<td>110</td>
<td>75-125</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Analyte</th>
<th>MS Result</th>
<th>MSD Result</th>
<th>SPK Val</th>
<th>SPKRef Val</th>
<th>MS %REC</th>
<th>MSD %REC</th>
<th>MS/MSD Limits</th>
<th>RPD</th>
<th>RPD Limit</th>
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</thead>
<tbody>
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<td>Lead</td>
<td>1.27</td>
<td>1.19</td>
<td>1</td>
<td>0.32</td>
<td>95.4</td>
<td>87</td>
<td>70-130</td>
<td>6.83</td>
<td>30</td>
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</tbody>
</table>
### QC Summary Report for SW6010B

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<thead>
<tr>
<th>Analyte</th>
<th>MB Result</th>
<th>LCS Result</th>
<th>RL</th>
<th>SPK Val</th>
<th>MB SS %REC</th>
<th>LCS %REC</th>
<th>LCS Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>ND</td>
<td>1.09</td>
<td>0.20</td>
<td>1</td>
<td>-</td>
<td>109</td>
<td>75-125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analyte</th>
<th>MS Result</th>
<th>MSD Result</th>
<th>SPK Val</th>
<th>SPKRef Val</th>
<th>MS %REC</th>
<th>MSD %REC</th>
<th>MS/MSD Limits</th>
<th>RPD</th>
<th>RPD Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>1.12</td>
<td>0.996</td>
<td>1</td>
<td>ND</td>
<td>112</td>
<td>99.6</td>
<td>70-130</td>
<td>11.7</td>
<td>30</td>
</tr>
<tr>
<td>Lab ID</td>
<td>Client ID</td>
<td>Matrix</td>
<td>Collection Date</td>
<td>Hold</td>
<td>Requested Tests (See legend below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>--------</td>
<td>-----------------</td>
<td>------</td>
<td>-------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1405A20-001</td>
<td>FLVCT-16</td>
<td>Solid</td>
<td>5/28/2014</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Test Legend:**

| 1  | STLC_PB_S |
| 2  | TCLP_PB_S |
| 3  |           |
| 4  |           |
| 5  |           |
| 6  |           |
| 7  |           |
| 8  |           |
| 9  |           |
| 10 |           |
| 11 |           |
| 12 |           |

**Comments:** 1 Day ASAP Rush STLC and TCLP added 5/29/14 RTAT

**NOTE:** Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.
**WORK ORDER SUMMARY**

<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Client ID</th>
<th>Matrix</th>
<th>Test Name</th>
<th>Number of Containers</th>
<th>Bottle &amp; Preservative</th>
<th>Collection Date &amp; Time</th>
<th>TAT</th>
<th>Sediment Content</th>
<th>Hold</th>
<th>SubOut</th>
</tr>
</thead>
<tbody>
<tr>
<td>1405A20-001A</td>
<td>FLVCT-16</td>
<td>Solid</td>
<td>SW6010B (Lead) (TCLP)</td>
<td>3</td>
<td>Yellow Plastic</td>
<td>5/28/2014</td>
<td>1 day*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SW6010B (Lead) (STLC)</td>
<td></td>
<td></td>
<td></td>
<td>1 day*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: STLC and TCLP extractions require 48 hrs to complete; therefore, all TATs begin after the extraction is completed (i.e., 24hr TAT yields results in 72 hrs from sample submission).*
<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>SAMPLING</th>
<th>MATRIX</th>
<th>LAB ID</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLVCT-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Relinquished By: | Date: 5/28/14 | Time: 10:04 am | Received By: |

| Relinquished By: | Date: | Time: | Received By: |
| Relinquished By: | Date: | Time: | Received By: |

**Turnaround Requested:**
- [ ] Standard (5-7 days)
- [ ] 48 Hour
- [ ] 24 hour
- [ ] Other: ASAP

**Sample Disposal:**
- [ ] Return to Client
- [ ] Disposal by Lab

**Instructions/Remarks:**
START EXTRACTIONS FOR STLC/TCLP. SCA WILL CONTACT MCCAMPBELL TO IDENTIFY METALS TO RUN ONCE INITIAL LAB RESULTS ARE RECEIVED.

- [ ] PROVIDE EDD FORMAT

**Report to:** Christina Codemo, ecodemo@sca-enviro.com
- 650 Delancey St. #222, San Francisco, CA 94107, Tel: 415/867-9540, efax: 415/962-0736
- 334 19th Street, Oakland, CA 94612, tel: 510-645-6200, efax: 415-962-0736
Appendix E

Abatement Cost Estimates
<table>
<thead>
<tr>
<th>Building</th>
<th>Total Abatement Cost Estimate</th>
<th>Positive Asbestos</th>
<th>Assumed Asbestos</th>
<th>Other Hazmats</th>
<th>Consultant Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cordilleras Facility</td>
<td>$1,935,094</td>
<td>$439,074</td>
<td>$1,143,816</td>
<td>$29,689</td>
<td>$322,516</td>
</tr>
<tr>
<td>Water Tower</td>
<td>$10,800</td>
<td>$0</td>
<td>$0</td>
<td>$9,000</td>
<td>$1,800</td>
</tr>
<tr>
<td>Pump House</td>
<td>$11,088</td>
<td>$0</td>
<td>$8,040</td>
<td>$1,800</td>
<td>$1,848</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,956,982</strong></td>
<td><strong>$439,074</strong></td>
<td><strong>$1,151,856</strong></td>
<td><strong>$40,489</strong></td>
<td><strong>$326,164</strong></td>
</tr>
</tbody>
</table>

| % of total    | 100% | 22% | 59% | 2% | 17% |

*Note: The cost estimates refer to asbestos, lead-coatings, PCB ballasts, mercury-containing tubes, and lead sheeting only. The estimates provided herein do not include costs for removal of other hazardous materials that may be present at the site. Costs listed above include abatement and consultant oversight. For a detailed breakdown, refer to the attached sheets. Unit prices provided on attached sheets assume State Prevailing Wages will be required. Note that costs can fluctuate +/- 20-25% based on seasonal fluctuations, temperature, etc.
## ABATEMENT COST ESTIMATE: CORDILLERAS FACILITY, REDWOOD CITY, CA

**Cordilleras Facility, 200 Edmonds**

### Room ID---------
**Material ID**
**Components**

### ASBESTOS

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>PISTM-3</td>
<td>off-white insulation with yellow-painted canvas jacket on steam pipes</td>
</tr>
<tr>
<td>FLVCT-16</td>
<td>8&quot;Ø tan with brown and white streaks vinyl floor tile (+) with black mastic (-)</td>
</tr>
<tr>
<td>PIMW-20</td>
<td>off-white insulation with canvas jacket on pipes</td>
</tr>
<tr>
<td>HINS-21</td>
<td>off-white insulation with canvas jacket on HVAC ducts</td>
</tr>
<tr>
<td>CAULK-26</td>
<td>grey caulk between brick wall and window frame</td>
</tr>
<tr>
<td>FLVCT-27</td>
<td>grey speckled vinyl floor sheeting (+) w/ yellow glue (-) over FLVCT-16 (+) &amp; mastic (-)</td>
</tr>
<tr>
<td>SINK-34</td>
<td>black stainless steel sink undercoating</td>
</tr>
</tbody>
</table>

### OTHER HAZMATS

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD Lining-AAA</td>
<td>c-ray and dark rooms with lead lining in walls and doors assumed present</td>
</tr>
<tr>
<td>LEAD PAINTS</td>
<td>Stabilization of Lead coatings</td>
</tr>
<tr>
<td>TRANSFORMER-AAA15</td>
<td>PCB-containing oils (owned by PG&amp;E)*</td>
</tr>
<tr>
<td>BALLASTS</td>
<td>Possible PCB-containing lighting ballasts</td>
</tr>
</tbody>
</table>

### CONTRACTOR TOTAL
$1,612,578.60

### CONSULTANT MONITORING
$322,515.72

### ABATEMENT TOTAL
$1,935,094.32
<table>
<thead>
<tr>
<th>Room ID</th>
<th>Material ID</th>
<th>Components</th>
<th>Present / not present</th>
<th>Units</th>
<th>TOTAL +/- 15%</th>
<th>Estimated Abatement Cost per unit</th>
<th>Total Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTHER HAZMATS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAD PAINTS</td>
<td></td>
<td>Stabilization of Lead coatings</td>
<td>Present</td>
<td>SF</td>
<td>750</td>
<td>$12.00</td>
<td>$9,000.00</td>
</tr>
</tbody>
</table>

Contractor Total $9,000.00  
Consultant Monitoring $1,800.00  
Abatement Total $10,800.00  

SCA Project No.: F11312.02  
June 2014
<table>
<thead>
<tr>
<th>Room ID-------</th>
<th>Material ID</th>
<th>Components</th>
<th>Asbestos:</th>
<th>Estimated Abatement Cost per unit</th>
<th>Total Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Positive, Negative, Trace, Assumed</td>
<td>$9,240.00</td>
<td>$11,088.00</td>
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<td></td>
<td>$380</td>
<td>$18.00</td>
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<td></td>
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<td>$200</td>
<td>$6.00</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>$125</td>
<td>$2.40</td>
<td>$1,200.00</td>
</tr>
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</table>

- Contractor Total: $9,240.00
- Consultant Monitoring: $1,848.00
- Abatement Total: $11,088.00

SCA Project No.: F11312.02
June 2014
Appendix J

Site Analysis and Site Survey
Appendix K

Site Utilities Diagram
Appendix L

Financial Analysis Reports
Cordilleras Mental Health Center
Replacement Annual Operating Costs
Financial Analysis

Prepared for the San Mateo County Public Works Department and the San Mateo County Health System, Behavioral Health and Recovery Services (BHRS) July 2014

By Dale Jarvis, CPA
Dale Jarvis and Associates, LLC
Dale Jarvis and Associates (DJA) is a consulting firm in Seattle, Washington specializing in development and implementation of health and human services payment models and service delivery designs to support the American healthcare system’s transition from a model that pays for volume to one that pays for value.

Dale Jarvis, the firm’s founder, has over twenty years’ experience helping health plans, health and human services providers, and state and local governments redesign their systems and organizations to achieve better health for the populations they serve, with better care for individuals, and overall reduced costs. He has contributed articles to several publications and is a co-author of two books on healthcare system redesign. Mr. Jarvis has been a certified public accountant in the State of Washington and a member of the American Institute of Certified Public Accountants since 1982.

Dale Jarvis and Associates’ current focus is on helping ensure that the needs of at-risk and vulnerable Americans are addressed as the health and human services systems are transformed, with a particular emphasis on persons with mental health and substance use disorders. This includes working with states, health plans, regional authorities, and at a national level to develop strategies that align safety net systems with general healthcare system transformation and reform efforts.

206.613.3339 | www.djconsult.net | dale@djconsult.net
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Project Approach ........................................................................................................................... 4
Financial Analysis Summary ........................................................................................................ 5
Analysis Findings .......................................................................................................................... 6
Conclusion ...................................................................................................................................... 6
Financial Analysis Detail .............................................................................................................. 7
Overview

In March 2014, the San Mateo Behavioral Health and Recovery Services (BHRS) engaged Dale Jarvis & Associates to complete a Cordilleras Mental Health Center Replacement Annual Operating Costs Financial Analysis.

This analysis is part of a larger feasibility study to replace a large building built in the 1950s with a set of smaller facilities that will support a new approach to recovery-oriented mental health treatment for adults with serious mental illnesses.

The purpose of the analysis was fourfold:

- **Current Operating Costs**: Compile current total annual operating costs and revenues of the Cordilleras Mental Health Center (Cordilleras) to determine baseline net operating costs for the 68 bed Mental Health Rehabilitation Center (MHRC) and the 49 bed Adult Residential Facility (ARF).

- **Projected Operating Costs**: Project total annual operating costs of six smaller replacement facilities comprised of five 16-bed MHRCs and one 37 or 56 bed ARF.

- **Medi-Cal Revenue Analysis**: Evaluate the Medi-Cal revenue impact of moving from a large facility where, due to existing federal law, none of the services are Medicaid reimbursable, to a smaller facility model where services may be Medicaid reimbursable.

- **Financial Feasibility Assessment**: Assess the financial feasibility of replacing the current facility with the new facilities using an annual net operating cost analysis.

In order to accurately compare baseline net operating costs of the current facility with projected net operating costs of the new facilities, we have calculated all revenues and expenses in 2014 dollars. Because of higher facility maintenance costs for the aging current facility, we consider this approach more conservative than other approaches we could have taken. We anticipate that BHRS will update this analysis if the project moves forward and additional facility and program design elements are determined.

Project Approach

Between March and June 2014, Dale Jarvis & Associates completed the following tasks in support of the Cordilleras Mental Health Center Replacement Annual Operating Costs Financial Analysis.

- **Financial Analysis Preparation**: Prepared a project workplan, timeline and data requests.

- **Data Collection**: Collected detailed staffing and cost data – current and projected – from Telecare, the current operator of Cordilleras. Collected staffing and cost data from comparative programs in California and Washington State.

- **Financial Modeling**: Developed financial analysis models for the following nine project components:
  - Current Telecare MHRC
Current Telecare ARF (The Suites)
Projected 16-bed High Intensity MHRC Program
Projected 16-bed Moderate Intensity MHRC Program
Projected 37-bed ARF
Projected 18-bed add-on to the 37-bed ARF
Dietary and Food Cost analysis – current and projected
Federal Medicaid MHRC and ARF revenue analysis
Federal Medicaid revenue analysis for off-campus services

Data Analysis: Synthesized the nine project data components into a Cordilleras Replacement Modeling Dashboard to support the development of multiple comparison scenarios and identified the best-fit scenario for the analysis.

Financial Analysis Summary

The following table summarizes the results of project. The final section of the Project Summary describes three findings drawn from the financial analysis.

<table>
<thead>
<tr>
<th></th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Facilities</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Beds per Facility</td>
<td>16</td>
<td>16</td>
<td>37</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Beds</td>
<td>64</td>
<td>16</td>
<td>37</td>
<td>117</td>
<td>135</td>
</tr>
<tr>
<td>Total Days</td>
<td>23,360</td>
<td>5,840</td>
<td>13,505</td>
<td>42,705</td>
<td>49,275</td>
</tr>
<tr>
<td>Occupancy Rate</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>Occupied Days</td>
<td>22,192</td>
<td>5,548</td>
<td>12,830</td>
<td>40,570</td>
<td>46,811</td>
</tr>
<tr>
<td>Total Staffing FTEs</td>
<td>105.20</td>
<td>18.95</td>
<td>21.00</td>
<td>145.15</td>
<td>155.37</td>
</tr>
<tr>
<td>Staff FTE per Bed</td>
<td>1.64</td>
<td>1.18</td>
<td>0.57</td>
<td>1.24</td>
<td>1.15</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>$11,671,094</td>
<td>$2,355,531</td>
<td>$2,168,670</td>
<td>$16,195,295</td>
<td>$17,250,324</td>
</tr>
<tr>
<td>Less On-Campus Revenue</td>
<td>-$5,200,837</td>
<td>$1,062,072</td>
<td>-$477,219</td>
<td>-$6,740,128</td>
<td>-$6,972,288</td>
</tr>
<tr>
<td>Less Off-Campus Revenue</td>
<td>-$1,300,271</td>
<td>-$262,428</td>
<td>-$44,245</td>
<td>-$1,606,944</td>
<td>-$1,606,944</td>
</tr>
<tr>
<td>Savings from Avoiding Purchase of Other Beds</td>
<td>-$601,265</td>
<td>-$1,147,396</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>New Project Net BHRS Costs</td>
<td>$7,246,959</td>
<td>$7,523,696</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Net BHRS Costs</td>
<td>$7,505,208</td>
<td>$8,051,339</td>
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<td></td>
</tr>
<tr>
<td>Decrease in Costs</td>
<td>-$258,249</td>
<td>-$527,643</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Project Net BHRS Cost per Day</td>
<td>$178.63</td>
<td>$160.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Net Cost per Day</td>
<td>$185.00</td>
<td>$198.46</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Decrease in Cost per Day</td>
<td>-$6.37</td>
<td>-$37.73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional information can be found in the Financial Analysis Detail section below.
Analysis Findings

We have three findings from our financial analysis.

Finding 1: Projected Staffing Levels are Higher than Current Staffing Levels

The new facilities are projected to be staffed at an average of 1.15 full time equivalent staff members (FTEs) per bed compared with 0.74 FTEs per bed in the existing facility. This increased staffing level is consistent with a more recovery-oriented treatment approach provided in small homelike settings for adults with serious mental illnesses. Current staffing for the 117 bed facility is 86.10 FTEs, which is anticipated to grow to 145.15 FTEs in the new configuration of 117 beds, and 155.37 FTEs if the project adds an additional 18 beds and expands to a total of 135 beds.

Finding 2: BHRS Could Receive $6.5 Million per Year of New Federal Medicaid Dollars

By moving to smaller facilities that are less than 17 beds and meeting other federal guidelines, the Cordilleras clients would no longer be subject to the federal prohibition on receiving federal Medicaid dollars (known as the IMD Exclusion) and BHRS could begin drawing down this funding. We project annual Federal Medicaid revenue of $4.9 million for services provided on the Cordilleras campus and $1.6 million for services provided to Cordilleras clients provided off-campus, computed in 2014 dollars.

Finding 3: Projected Net Operating Costs are Lower than Current Net Operating Costs

Net operating costs are defined as total operating expenses minus revenues from payors other than the Health Plan of San Mateo and BHRS. Currently, the net operating costs average $198.46 per day for the 135 beds in this analysis. We project future net operating costs, computed in 2014 dollars, at $178.63 per day for a 117 bed project and $160.72 per day if 18 additional ARF beds are added to create a 135 bed project. Because the ARF has lower staffing levels and lower costs, the addition of those beds reduces the average cost per day in the 135 bed project. The projected decrease of $6.37 per day for the 117 bed project and $37.73 for the 135 bed project is due to the significant amount of new federal Medicaid funding that offsets the costs related to higher staffing levels and savings from avoiding the purchase of beds from other facilities.

Conclusion

Viewed through the lens of Annual Net Operating Costs, this financial analysis demonstrates a business case for proceeding with the project. As noted in the Overview, this analysis is part of a larger feasibility study to replace the Cordilleras facility and decision-makers should evaluate the feasibility study in its entirety before proceeding with a decision to pursue the project.
## Financial Analysis Detail

This section contains ten tables that add additional detail to the Financial Analysis Summary.

### Section 1. New BHRS Campus

<table>
<thead>
<tr>
<th></th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Facilities and Bed Days</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Facilities (1)</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Beds per Facility</td>
<td>16</td>
<td>16</td>
<td>37</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Beds</td>
<td>64</td>
<td>16</td>
<td>37</td>
<td>117</td>
<td>18</td>
<td>135</td>
</tr>
<tr>
<td>Total Days</td>
<td>23,360</td>
<td>5,840</td>
<td>13,505</td>
<td>42,705</td>
<td>6,570</td>
<td>49,275</td>
</tr>
<tr>
<td>Occupancy Rate</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupied Days</td>
<td>22,192</td>
<td>5,548</td>
<td>12,830</td>
<td>40,570</td>
<td>6,242</td>
<td>46,811</td>
</tr>
</tbody>
</table>

|                     |                |                    |                   |               |                 |                     |
| **B. Staffing FTEs per Facility** |                |                    |                   |               |                 |                     |
| Direct Service       | 22.20          | 15.60              | 16.60             | 54.40         | 8.08            | 62.48               |
| Total FTEs           | 26.30          | 18.95              | 21.00             | 66.25         | 10.22           | 76.47               |

|                     |                |                    |                   |               |                 |                     |
| **C. Total Staffing FTEs** |                |                    |                   |               |                 |                     |
| Direct Service       | 88.80          | 15.60              | 16.60             | 121.00        | 8.08            | 129.08              |
| Environ Services & Administration | 16.40         | 3.35               | 4.40              | 24.15         | 2.14            | 26.29               |
| Total FTEs           | 105.20         | 18.95              | 21.00             | 145.15        | 10.22           | 155.37              |
| Staff FTE per Bed    | 1.64           | 1.18               | 0.57              | 1.24          | 0.57            | 1.15                |

|                     |                |                    |                   |               |                 |                     |
| **D. Expenses per Facility** |                |                    |                   |               |                 |                     |
| Salaries            | $1,261,000     | $919,000            | $993,400          | $3,173,400    | $483,276        | $3,656,676          |
| Benefits            | $463,730       | $337,960            | $365,321          | $1,167,011    | $177,724        | $1,344,734          |
| Services & Supplies | $702,773       | $702,773            | $445,550          | $1,851,096    | $216,754        | $2,067,850          |
| Corp Alloc and Operating Income (2) | $327,713 | $264,564             | $243,577          | $835,853      | $118,497        | $954,350            |
| Subtotal            | $2,755,216     | $2,224,297          | $2,047,847        | $7,027,360    | $996,250        | $8,023,610          |
| Facility Operating Costs (3) | $162,558 | $131,234             | $120,823          | $414,614      | $58,779         | $473,393            |
| Total               | $2,917,774     | $2,355,531          | $2,168,670        | $7,441,974    | $1,055,029      | $8,497,003          |

Note (1): Added Adult Residential Facility (ARF) Capacity would be expansion of the 37 unit.
Note (2): Based on current costs.
Note (3): Estimate of Maintenance and Furniture, Fixtures & Equipment (FF&E) replacement paid directly by BHRS.
### Section 1. New BHRS Campus (cont’d)

#### E. Total Campus Expenses

<table>
<thead>
<tr>
<th></th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$5,044,000</td>
<td>$919,000</td>
<td>$993,400</td>
<td>$6,956,400</td>
<td>$483,276</td>
<td>$7,439,676</td>
</tr>
<tr>
<td>Benefits</td>
<td>$1,854,920</td>
<td>$337,960</td>
<td>$365,321</td>
<td>$2,558,200</td>
<td>$177,724</td>
<td>$2,735,924</td>
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<tr>
<td>Services &amp; Supplies</td>
<td>$2,811,092</td>
<td>$702,773</td>
<td>$445,550</td>
<td>$3,959,415</td>
<td>$216,754</td>
<td>$4,176,169</td>
</tr>
<tr>
<td>Corp Alloc and OP Income</td>
<td>$1,310,852</td>
<td>$264,564</td>
<td>$243,577</td>
<td>$1,818,992</td>
<td>$118,497</td>
<td>$1,937,489</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$11,020,863</td>
<td>$2,224,297</td>
<td>$2,047,847</td>
<td>$15,293,007</td>
<td>$996,250</td>
<td>$16,289,257</td>
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<tr>
<td>Facility Operating Costs</td>
<td>$650,231</td>
<td>$131,234</td>
<td>$120,823</td>
<td>$902,287</td>
<td>$58,779</td>
<td>$961,066</td>
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<tr>
<td><strong>Total</strong></td>
<td>$11,671,094</td>
<td>$2,355,531</td>
<td>$2,168,670</td>
<td>$16,195,295</td>
<td>$1,055,029</td>
<td>$17,250,324</td>
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<tr>
<td>Expenses per Day</td>
<td>$525.91</td>
<td>$424.57</td>
<td>$169.03</td>
<td>$399.20</td>
<td>$169.03</td>
<td>$368.51</td>
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</table>

#### F. Campus Revenues, Non-County

<table>
<thead>
<tr>
<th>Revenues</th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSI Room &amp; Board Revenue</td>
<td>$656,640</td>
<td>$164,160</td>
<td>$410,400</td>
<td>$1,231,200</td>
<td>$199,654</td>
<td>$1,430,854</td>
</tr>
<tr>
<td>State TB Revenue</td>
<td>$96,720</td>
<td></td>
<td>$96,720</td>
<td></td>
<td></td>
<td>$96,720</td>
</tr>
<tr>
<td>VA Revenue</td>
<td>$496,836</td>
<td></td>
<td>$496,836</td>
<td></td>
<td></td>
<td>$496,836</td>
</tr>
<tr>
<td>Medi-Cal FMAP</td>
<td>$3,950,642</td>
<td>$897,912</td>
<td>$66,819</td>
<td>$4,915,372</td>
<td>$32,506</td>
<td>$4,947,878</td>
</tr>
<tr>
<td><strong>Non-County Revenue</strong></td>
<td>$5,200,837</td>
<td>$1,062,072</td>
<td>$477,219</td>
<td>$6,740,128</td>
<td>$232,160</td>
<td>$6,972,288</td>
</tr>
</tbody>
</table>

#### G. Net Campus Costs (4)

<table>
<thead>
<tr>
<th>Costs</th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-County Revenue</td>
<td>$5,200,837</td>
<td>$1,062,072</td>
<td>$477,219</td>
<td>$6,740,128</td>
<td>$232,160</td>
<td>$6,972,288</td>
</tr>
<tr>
<td>Campus Expenses</td>
<td>$11,671,094</td>
<td>$2,355,531</td>
<td>$2,168,670</td>
<td>$16,195,295</td>
<td>$1,055,029</td>
<td>$17,250,324</td>
</tr>
<tr>
<td><strong>Net Campus Costs</strong></td>
<td><strong>$6,470,257</strong></td>
<td><strong>$1,293,459</strong></td>
<td><strong>$1,691,451</strong></td>
<td><strong>$9,455,167</strong></td>
<td><strong>$822,868</strong></td>
<td><strong>$10,278,036</strong></td>
</tr>
</tbody>
</table>

Note (4) Although it will be a number of years before the Cordilleras Replacement comes online, we have calculated all revenues and costs in 2014 dollars so that we can accurately compare scenarios.

#### H. Modeling Assumptions

Yellow shaded cells are input cells; cells with white backgrounds are formulas.

- San Mateo County will replace the current 117 bed facility with a set of new 117 bed facilities or increase capacity to 135 beds.
- Staffing levels will increase to align with smaller homelike facilities and more recovery oriented programming.
- BHRS will be able to draw down Federal Medicaid dollars for services due to configuring the campus so that it is no longer an IMD.
- Federal Medicaid dollars for services are based on the projected Cordilleras services costs and current service costs of Cordilleras residents served in other programs.
- SSI revenue per client per day, VA revenue per year, and TB revenue per year will remain the same on the new campus.
## Section 2. Off-Campus Expenses Related to Replacement Project

<table>
<thead>
<tr>
<th></th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Current Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently Purchased Beds</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Occupancy Rate</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed Days</td>
<td>4,161</td>
<td>0</td>
<td>0</td>
<td>4,161</td>
<td>2,081</td>
<td>6,242</td>
</tr>
<tr>
<td>Average Cost per Day</td>
<td>$232.00</td>
<td>$232.00</td>
<td>$87.50</td>
<td>$87.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cost (5)(6)</td>
<td>$965,352</td>
<td>$0</td>
<td>$0</td>
<td>$965,352</td>
<td>$182,044</td>
<td>$1,147,396</td>
</tr>
</tbody>
</table>

| **B. Off Campus Expenses without Additional ARF Capacity** |                |                    |                   |               |                 |                     |
| Newly Purchased Beds  | 0              | 0                  | 12                | 12            | 6               | 18                  |
| Occupancy Rate        | 95%            | 95%                | 95%               | 95%           |                 |                     |
| Bed Days              | 0              | 0                  | 4,161             | 4,161         | 2,081           | 6,242               |
| Average Cost per Day  | $232.00        | $232.00            | $87.50            | $87.50        |                 |                     |
| Total Cost (7)        | $0             | $0                 | $364,088          | $364,088      | $182,044        | $546,131            |

| **C. Off Campus Expenses WITH Additional ARF Capacity** |                |                    |                   |               |                 |                     |
| Newly Purchased Beds  | 0              | 0                  | 0                 | 0             | 0               | 0                   |
| Occupancy Rate        | 95%            | 95%                | 95%               | 95%           |                 |                     |
| Bed Days              | 0              | 0                  | 0                 | 0             | 0               | 0                   |
| Average Cost per Day  | $232.00        | $232.00            | $87.50            | $87.50        |                 |                     |
| Total Cost            | $0             | $0                 | $0                | $0            | $0              | $0                  |

| **D. Off Campus Bed Savings without Additional ARF Capacity** |                |                    |                   |               |                 |                     |
| MHRC Off Campus Savings | $965,352      |                    |                   |               |                 |                     |
| ARF Off Campus Payments | -$364,088     |                    |                   |               |                 |                     |
| **Net Savings for 117 Bed Campus** |                |                    |                   |               |                 | $601,265            |

| **E. Off Campus Bed Savings WITH Additional ARF Capacity** |                |                    |                   |               |                 |                     |
| MHRC Off Campus Savings | $965,352      |                    |                   |               |                 |                     |
| ARF Off Campus Savings | $182,044      |                    |                   |               |                 | $1,147,396          |
| **Net Savings for 135 Bed Campus** |                |                    |                   |               |                 | $1,147,396          |

Note (5): Off Campus MHRC Beds that could be brought On Campus if beds increase from 68 to 80.

Note (6): Off Campus ARF Beds that could be brought On Campus if Additional ARF Capacity added (49 to 55).

Note (7): On Campus ARF Beds that would be lost if Additional ARF NOT added and beds drop from 49 to 37.
## Section 3. Medi-Cal Revenue Impact of the IMD Rule (8)

<table>
<thead>
<tr>
<th>Service Type</th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHRS Community-Based (including the Suites)</td>
<td>$1,275,016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$1,275,016</td>
</tr>
<tr>
<td>BHRS Crisis Residential</td>
<td>$160,778</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$160,778</td>
</tr>
<tr>
<td>BHRS Psychiatric Inpatient</td>
<td>$4,203,211</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$4,203,211</td>
</tr>
<tr>
<td>BHRS Residential</td>
<td>$324,156</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$324,156</td>
</tr>
<tr>
<td>BHRS Shelter-Based Outpatient</td>
<td>$674</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$674</td>
</tr>
<tr>
<td>BHRS Skilled Nursing Facility</td>
<td>$27,027</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$27,027</td>
</tr>
<tr>
<td>SMMC Psychiatric Emergency Services</td>
<td>$436,914</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$436,914</td>
</tr>
<tr>
<td>BHRS 2 Year Medi-Cal Unbillable Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$6,427,776</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$6,427,776</td>
</tr>
<tr>
<td>Federal Medical Assistance Percentage (FMAP %)</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td><strong>Annual Medi-Cal Revenue Offset if Facilities Less than 17 Beds</strong></td>
<td><strong>$1,606,944</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$1,606,944</strong></td>
</tr>
</tbody>
</table>

Note (8): Services to Medi-Cal enrollees age 18-64 living in 17+ bed facilities cannot be billed under the IMD Rule.

## Section 4. BHRS Current Costs

### Table 4.1: BHRS Current Costs

<table>
<thead>
<tr>
<th></th>
<th>High Intensity</th>
<th>Moderate Intensity</th>
<th>Adult Residential</th>
<th>117 Bed Total</th>
<th>Added ARF Floor</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Beds</td>
<td>68</td>
<td>0</td>
<td>49</td>
<td>117</td>
<td>0</td>
<td>117</td>
</tr>
<tr>
<td>Current Occupied Bed Days</td>
<td>23,579</td>
<td>0</td>
<td>16,991</td>
<td>40,570</td>
<td>0</td>
<td>40,570</td>
</tr>
<tr>
<td>Projected Bed Days</td>
<td>22,192</td>
<td>5,548</td>
<td>12,830</td>
<td>40,570</td>
<td>6,242</td>
<td>46,811</td>
</tr>
<tr>
<td>Change in Bed Days</td>
<td>-1,387</td>
<td>5,548</td>
<td>-4,161</td>
<td>0</td>
<td>6,242</td>
<td>6,242</td>
</tr>
<tr>
<td>Current Staffing FTEs</td>
<td>60.94</td>
<td>0.00</td>
<td>25.16</td>
<td>86.10</td>
<td>0.00</td>
<td>86.10</td>
</tr>
<tr>
<td>Staff FTE per Bed</td>
<td>0.90</td>
<td>0.00</td>
<td>0.51</td>
<td>0.74</td>
<td>0.00</td>
<td>0.74</td>
</tr>
<tr>
<td>Current Telecare Costs</td>
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<td>$2,320,002</td>
<td>$8,212,710</td>
<td>$8,212,710</td>
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<td></td>
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<tr>
<td>Current County Operating Costs</td>
<td>$485,209</td>
<td></td>
<td>$485,209</td>
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<td></td>
<td></td>
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<tr>
<td>Current Off-Campus Bed Costs related to Replacement Project</td>
<td>$601,265</td>
<td></td>
<td>$1,147,396</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Current Costs</td>
<td>$9,299,184</td>
<td>$4,845,315</td>
<td>$14,144,499</td>
<td>$14,144,499</td>
<td>$5,000,000</td>
<td></td>
</tr>
<tr>
<td><strong>Current Revenue Offsets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSI Room &amp; Board Revenue</td>
<td>$1,200,420</td>
<td>$1,200,420</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State TB</td>
<td>$96,720</td>
<td>$96,720</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA Revenue</td>
<td>$496,836</td>
<td>$496,836</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Revenue Offsets</td>
<td>$1,793,976</td>
<td>$1,793,976</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current Net BHRS Costs</strong></td>
<td>$7,505,208</td>
<td>$8,051,339</td>
<td></td>
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<td></td>
</tr>
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</table>
### Section 5. Cost Analysis

#### A. New Project Summary

<table>
<thead>
<tr>
<th></th>
<th>117 Bed</th>
<th>Total with Added ARF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medi-Cal Federal Financial Participation for Campus Services</td>
<td>$4,915,372</td>
<td>$4,947,878</td>
</tr>
<tr>
<td>Medi-Cal Federal Financial Participation for Off-Campus Services</td>
<td>$1,606,944</td>
<td>$1,606,944</td>
</tr>
<tr>
<td>SSI Room &amp; Board Revenue</td>
<td>$1,231,200</td>
<td>$1,430,854</td>
</tr>
<tr>
<td>State TB Revenue</td>
<td>$96,720</td>
<td>$96,720</td>
</tr>
<tr>
<td>VA Revenue</td>
<td>$496,836</td>
<td>$496,836</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td><strong>$8,347,071</strong></td>
<td><strong>$8,579,232</strong></td>
</tr>
<tr>
<td>BHRS Campus Costs</td>
<td>$16,195,295</td>
<td>$17,250,324</td>
</tr>
<tr>
<td>BHRS Off-Campus Savings related to Replacement Project</td>
<td>-$601,265</td>
<td>-$1,147,396</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td><strong>$15,594,030</strong></td>
<td><strong>$16,102,928</strong></td>
</tr>
<tr>
<td><strong>Net BHRS Costs</strong></td>
<td><strong>$7,246,959</strong></td>
<td><strong>$7,523,696</strong></td>
</tr>
</tbody>
</table>

#### B. BHRS Current and Projected Net Operating Cost Comparison (9)

<table>
<thead>
<tr>
<th></th>
<th>New Project Net BHRS Costs</th>
<th>Current Net BHRS Costs</th>
<th>Decrease in Net BHRS Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$7,246,959</td>
<td>$7,523,696</td>
<td>-$258,249</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Current Net BHRS Costs per Day</th>
<th>Decrease in Net BHRS Costs per Day</th>
<th>Decrease in Net BHRS Costs per Day (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$178.63</td>
<td>-$6.37</td>
<td>-3%</td>
</tr>
<tr>
<td></td>
<td>$185.00</td>
<td>$37.73</td>
<td>-19%</td>
</tr>
</tbody>
</table>

### Notes:

- **Note (9):** Although it will be a number of years before the Cordilleras Replacement comes online, we have calculated all revenues and costs in 2014 dollars so that we can accurately compare scenarios.

- **Note (10):** Increasing beds from 117 to 135 significantly reduces the purchase of off-campus beds and generates additional Medi-Cal federal revenue for the services provided to the residents of the 18 additional beds, which results in a $500,000+ difference between the two options.