

Feasibility Study to Replace Cordilleras Mental Health Center

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

HGA Architects and Engineers



Feasibility Study to Replace Cordilleras Mental Health Center – San Mateo County

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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. Consumers 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. For purposes of comparison, the Study also evaluated the existing building and the feasibility and estimated costs of renovating it to meet current standards (\$55,568,861).

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.

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.

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 in to 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. There will be several storm water treatment areas located throughout the site at low points, and other natural areas to collect runoff.

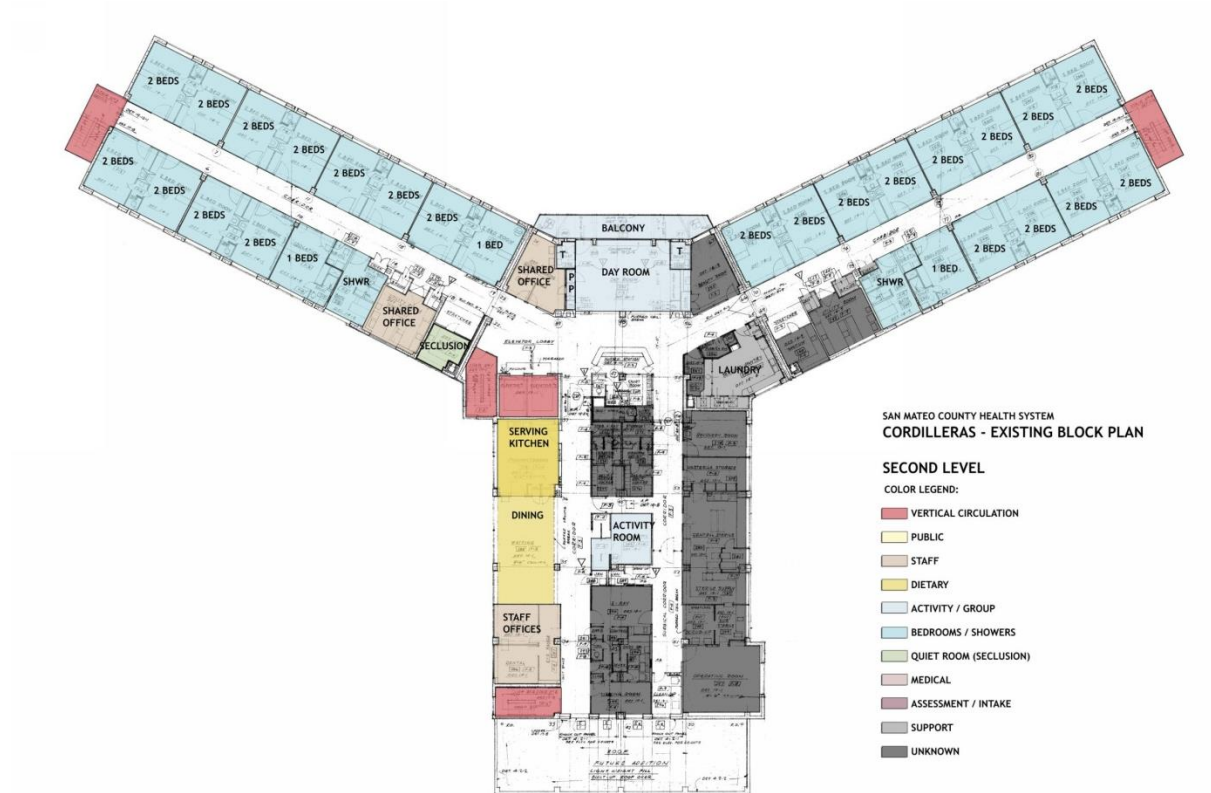
Summary of Part 4 – Existing Building Assessment and Recommendations

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 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

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.

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:

	Occupancy	Construction Type
Mental Health Rehabilitation Center (MHRC)	I-3, Condition 2 (Institutional)	Type V-A (wood frame)
Adult Residential Facility (ARF)	R-2.1 (Residential)	Type V-A (wood frame)
Campus Center	B (Business)	Type V-A (wood frame)

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:

Licensed Bed Capacity	Existing	Proposed
MHRC	68	80
ARF	49	37
Supplemental ARF	0	18
Total	117	135

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
 - MHRC: 75% private bedrooms and 25% semi-private bedrooms
 - 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.

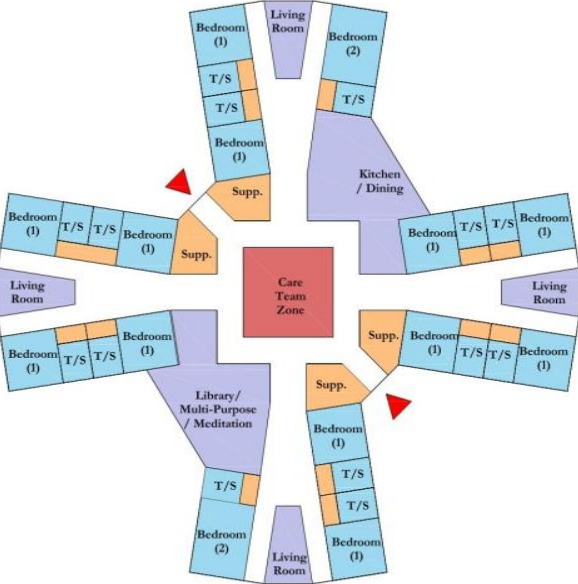
At the northern side of the site, another access road follows the slope of the site upwards and terminates in another turn-around for use by fire trucks. This turn-around creates an opportunity for a separate identity and front door entry for the ARF building on the second floor. The main front door 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

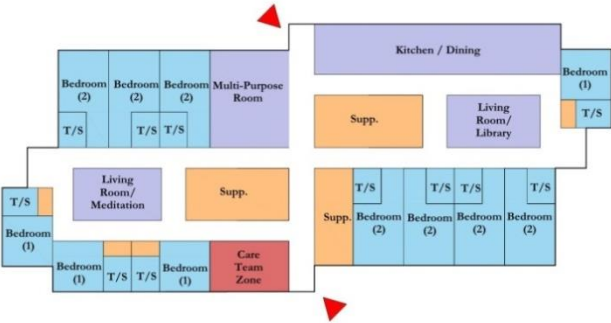
ARF/Campus Center Building, and is proposed to serve as an accessible nature area for the staff, residents, and their families.

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 louvers/windows and 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 Cordilleras' 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.

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 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 (eg, 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 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

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.

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 under-designed. 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.

- Basement Walls:
 - It appears that the Equivalent Lateral Pressure used for the design of the basement wall out-of-plane design is roughly 35 pcf. 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 geotechnical 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-foot 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 window 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.

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, 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. 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.

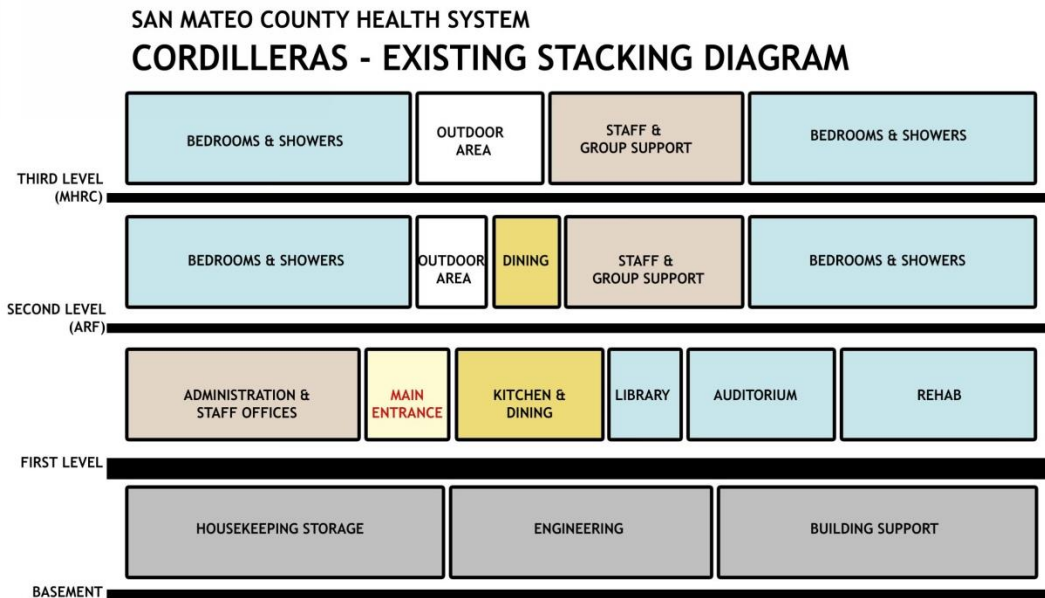
See Appendix I: Hazardous Materials Investigation for the full report

4.4 Function

Existing Building Functionality

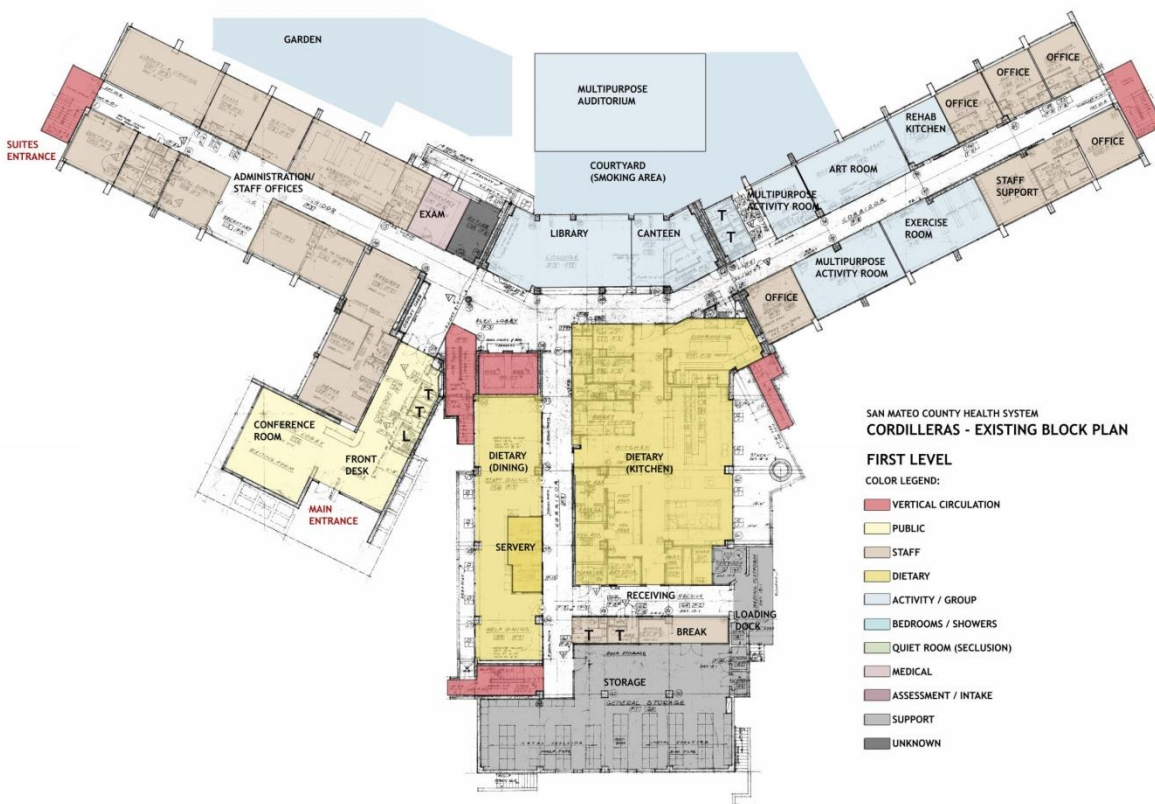
Building Stacking

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.

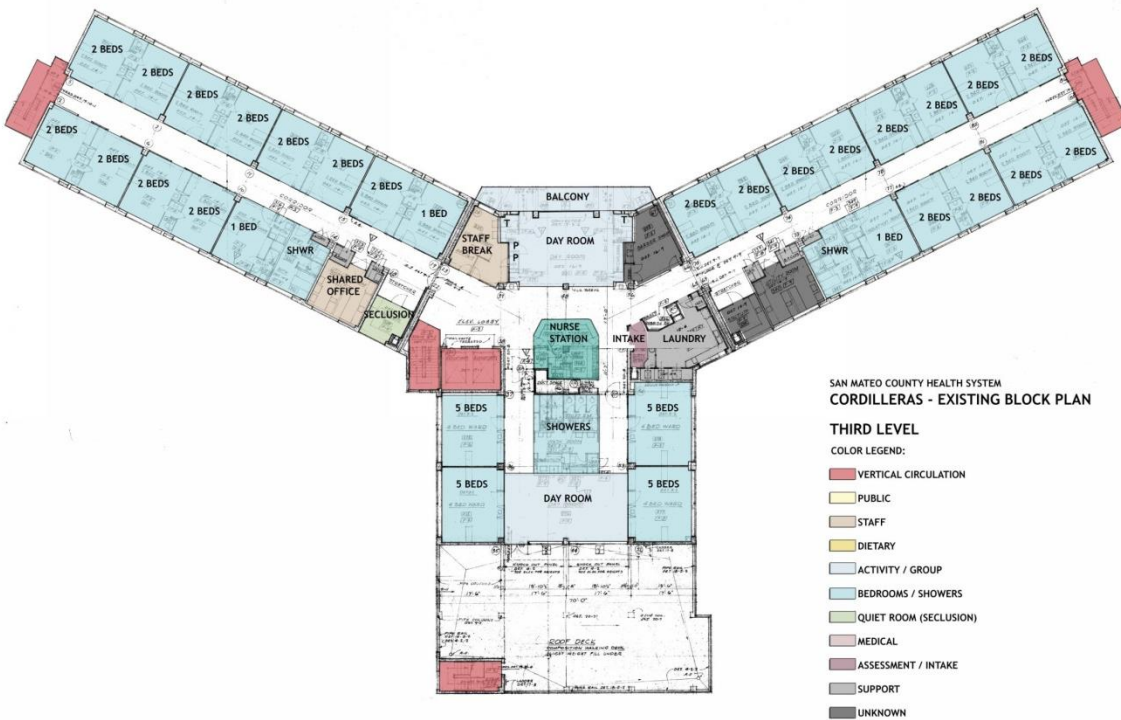
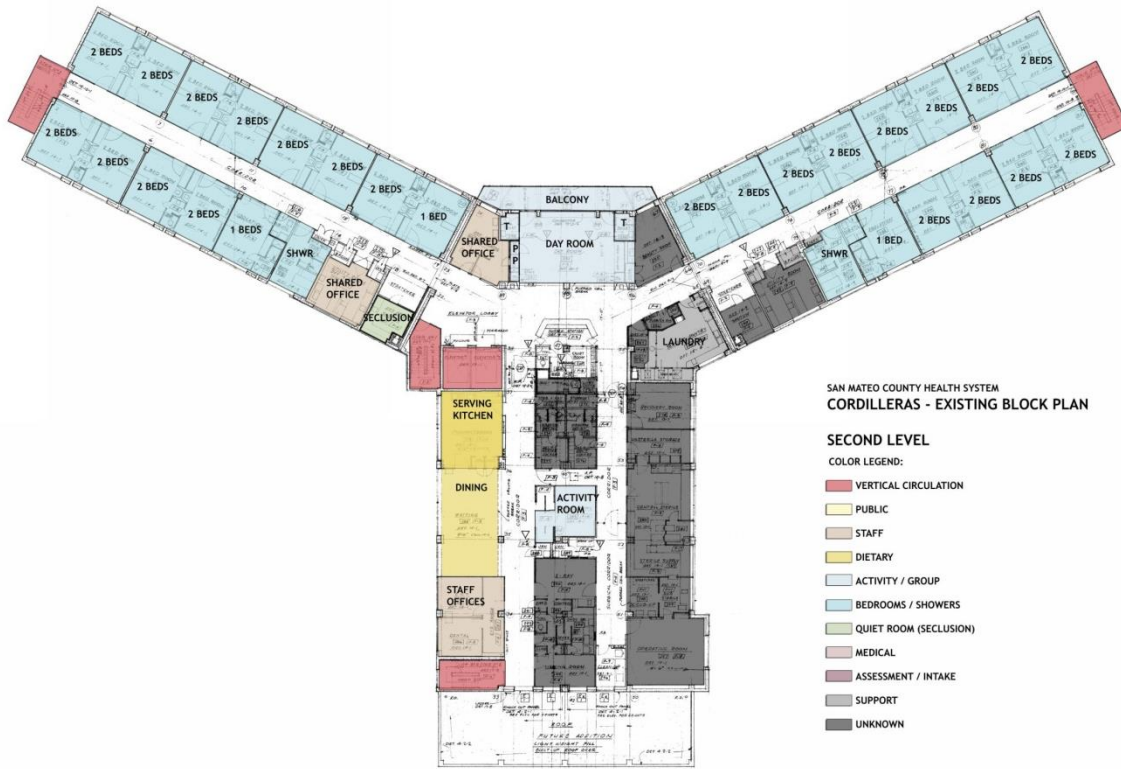


Building Block plans

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



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 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 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:

<p style="text-align: center;">Dietary</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Eliminate lines / waiting @ meal time • Community scale decentralized dining • Explore models of serving restaurant style versus Cafeteria (or family style) • Views to nature • Daylight • Serving clients in homelike atmosphere • Set menu and balanced meals • Increase food from garden • Client engagement • Relaxing Music <p>Constraints</p> <ul style="list-style-type: none"> • Dining / Kitchen / store room connectivity • Need large assembly room for big events • Equipment storage space and walk-in refrigerator + freezer space • Overloaded sewer flow • 3rd floor residents come down to suites - staff bring food up to servery • More opportunity for clients to help clean up etc. @ suites 	<p style="text-align: center;">Housekeeping</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Consider assistance program • Future proximity cards / hotel keying for security <p>Constraints</p> <ul style="list-style-type: none"> • Bigger Closets , space to have local inventory for daily access • Floor sinks in housekeeping closets • Centralized locked closets • Capacity issue @ laundry rooms • Keeping client property secure (laundry room and rooms) • Maintenance of locks (breaks easily) • Larger room for storage 	<p style="text-align: center;">Nursing</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Wireless for clients • Multiple Med Rooms (PODS) • Toilet/shower for each room • Single Rooms = better bed placement • Few sized for doubles as flexibility; some patients prefer roommates • Water control from Nurse station for specific client population • Self Care / ADL / "Spa" Rooms <p>Constraints</p> <ul style="list-style-type: none"> • Lines for medications • Only one med room for 65 clients • No automated med dispenser • Larger exam/treatment rooms • Wireless access 	<p style="text-align: center;">Rehab (MHRC)</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Closer proximity (visual) to Rehab & group areas • POD Organization • Smaller activities @ each POD • Bigger central group rooms • Add occupational therapies • Add spiritual programs/ Chapel/ Meditation • Team sport facilities outside • Trails without intermittent gates • More structured + free time outside • Gymnasium • Canteen/ Retail function/ Gift Shop/ Salon • Music Rooms (piano lessons) • Library/ Computer room • Unsupervised outdoor recreation • Money Management / Access to ATM <p>Constraints</p> <ul style="list-style-type: none"> • Currently Rehab is disconnected from bedrooms, dayroom, and clients • No place for indoor team sports • Nature walks now require supervision • Commingle license issues between MHR &
<p style="text-align: center;">Training</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Large Training Room (70) • Flexible set up • Multi Purpose • AV Technology • Assistant Staff • Small conference room on floor • E-learning for standard training 'reliant learning' • Education kiosks with space for discussions • Room flexibility (Moveable walls) • Natural Light <p>Constraints</p> <ul style="list-style-type: none"> • Δ 24/7 Staff (3 shifts), difficult to schedule • Not enough storage space • Lack of Wi-Fi and technology • Non-dedicated space • Inadequate lighting and sound 	<p style="text-align: center;">Social Work</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Electronic Charting • Private offices for meeting clients - safety concern. Dual egress • Family meeting space • Sallyport at entry vestibule • Pods or grouping of bedrooms that can acknowledge and celebrate progress • Goal is to get to discharge • Delayed egress option • Step down pods for discharge readiness <p>Constraints</p> <ul style="list-style-type: none"> • Connection to outside world and personal connections <ul style="list-style-type: none"> Δ Wireless and internet Δ Access to client phones • Coordinate discharge, currently shared office <ul style="list-style-type: none"> Δ Shared office (3) • Client conversation noise <ul style="list-style-type: none"> Δ Availability of conference room space • Proximity to patients, access to staff (reduce anxiety) • More staff amenities, Kitchen, Break Toilets/shower 	<p style="text-align: center;">The Suites</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Proper front door • Private showers • Variety of group rooms • Meditation room • Have a separately licensed Mental Health treatment option program that can also be home to a clubhouse model <p>Constraints</p> <ul style="list-style-type: none"> • Cable and Internet access • Transportation to community • Easy access to outdoors 	<p style="text-align: center;">Medical</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Daylight to exam rooms • More private bedrooms for better infection control • Telemedicine capabilities • PHF between inpatient and acute and MHRC • Help with placements • Enhanced residency program • Security <p>Constraints</p> <ul style="list-style-type: none"> • Exam room too small • Consider dual access exam/treatment • Computer access • Wireless access • Software system integration (County & Health System) • Primary care integration with "The Suites" (ARF)

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.dss.cahwnet.gov/ord/entres/getinfo/pdf/srfman.PDF>, <http://www.dss.cahwnet.gov/ord/entres/getinfo/pdf/arfman.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

	Occupancy	Construction Type
Mental Health Rehabilitation Center (MHRC)	I-3, Condition 2	Type V-A
Adult Residential Facility (ARF)	R-2.1	Type V-A
Campus Center	B	Type V-A

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:

Licensed Bed Capacity	Existing	Proposed
MHRC	68	80
ARF	49	37
Supplemental ARF	0	18
Total	117	135

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 MHRC's. 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 centralized 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.

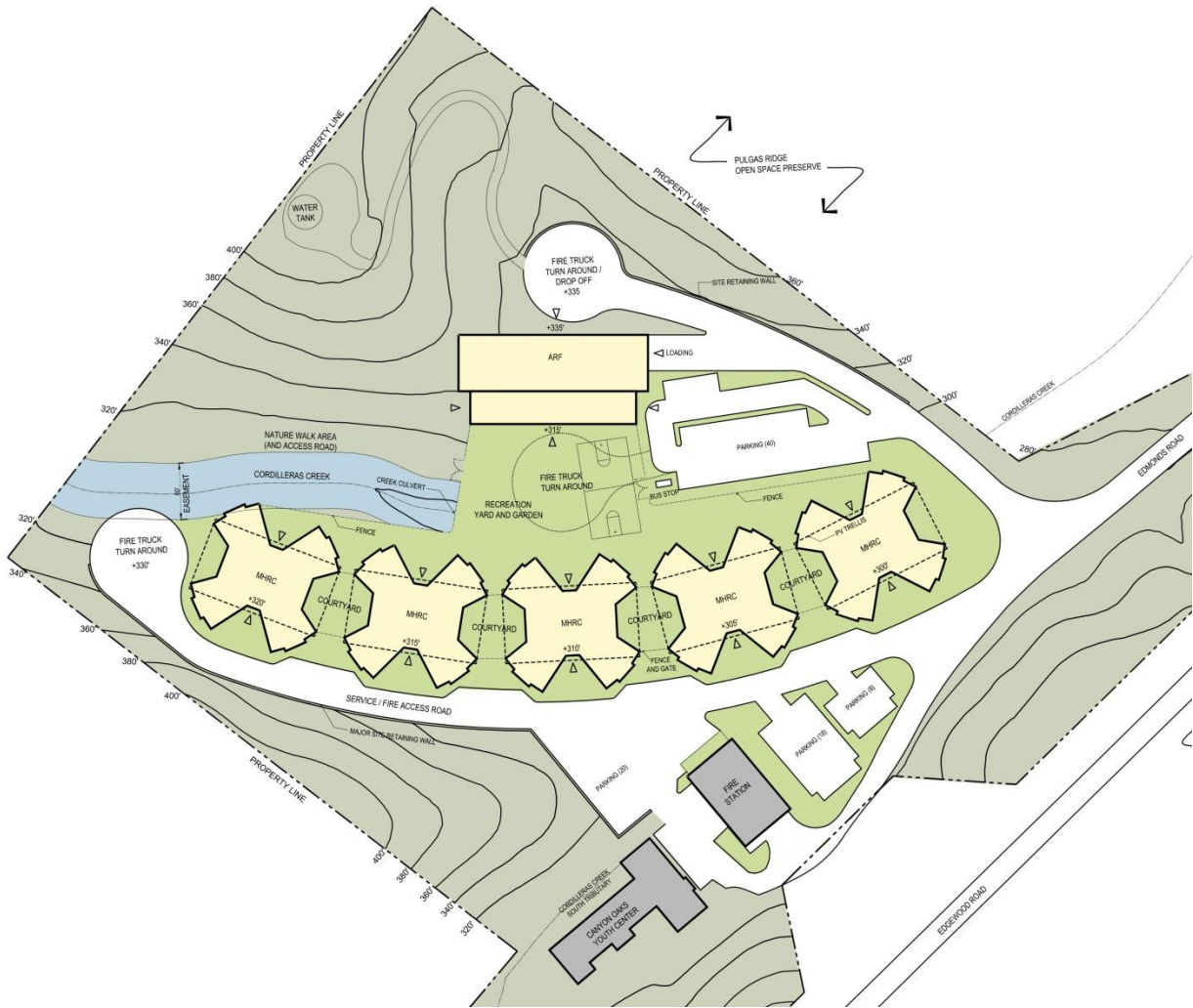
The new campus should also be designed to welcome visitors and incorporate space for the many different interactions that occur between visitors and residents. Visitors may include family and friends, providers and staff from other programs who may be involved in treatment, discharge planning, recreation,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

- 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.

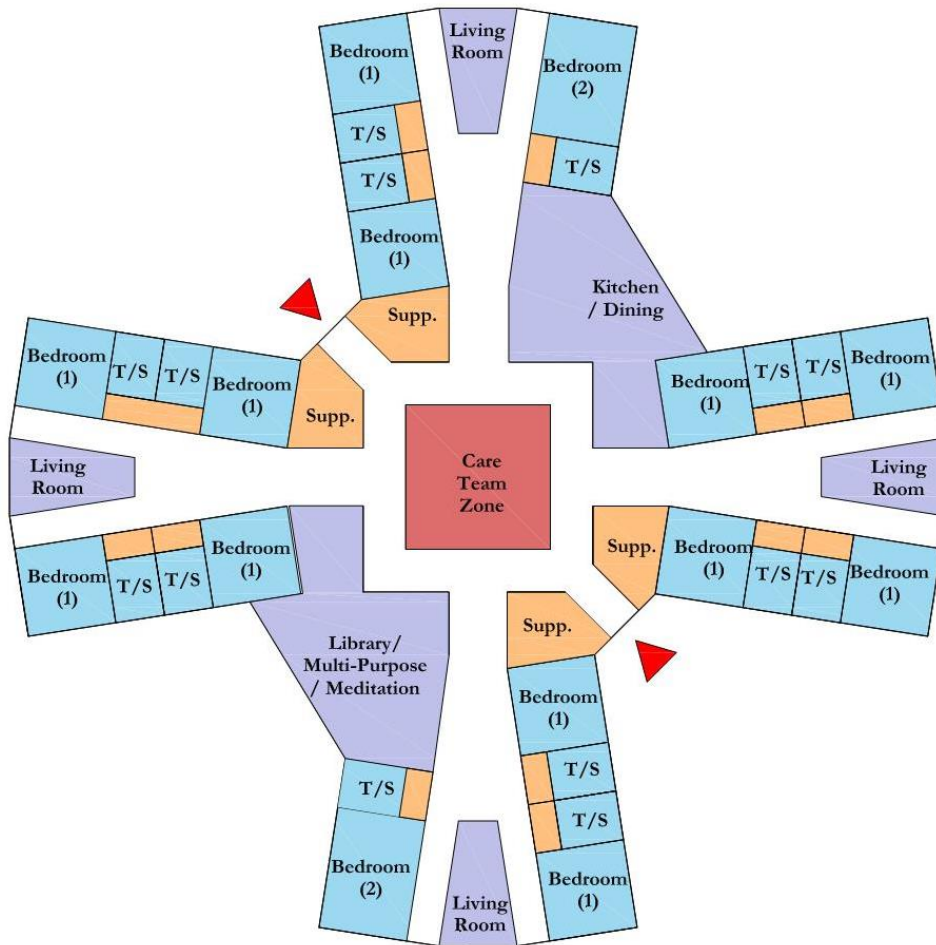
For the MHRC, the consensus of the group proposes a four-wing plan connect on one end to a centralized staff and support core. Each wing holds four consumers; two wings have all privates and the other two wings have a mix of semi-private and privates. The four-wing “cross” responds to the programmatic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



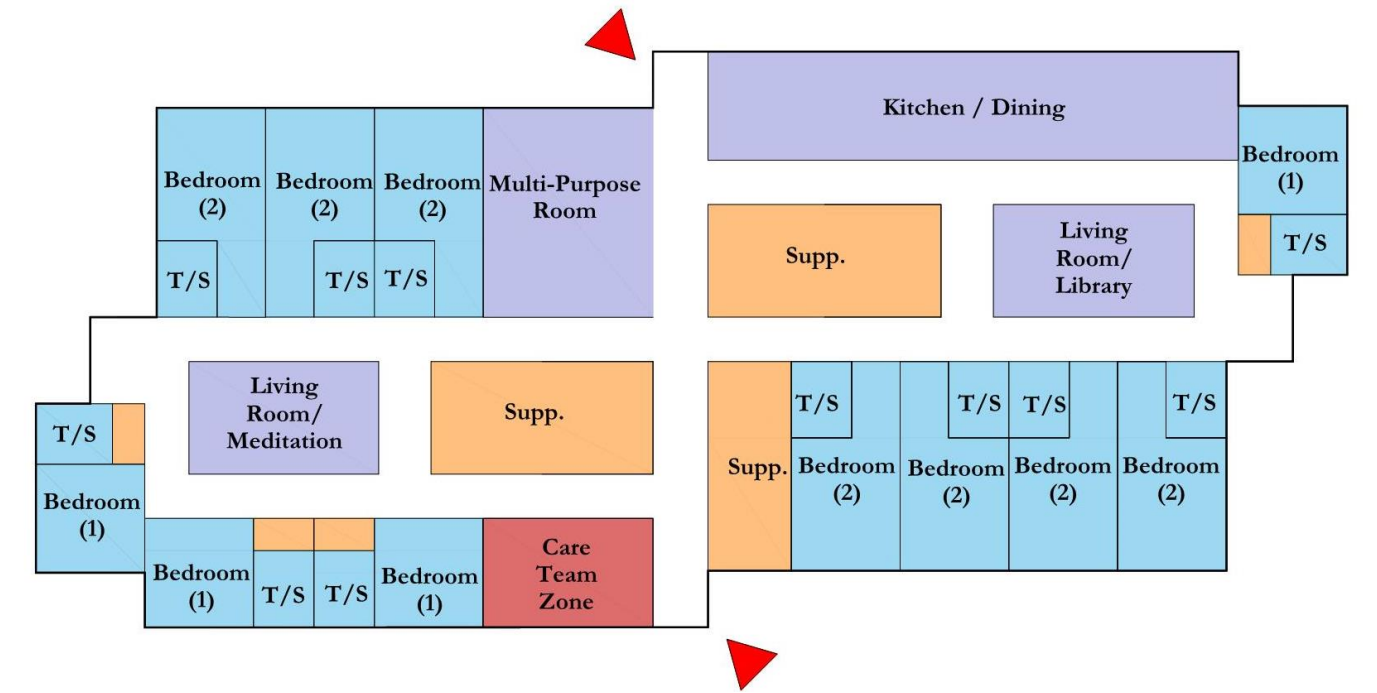
The Adult Residential Facility (ARF)/ The Suites has a reduced level of care need. It is the place consumers can “graduate” to after receiving treatment in the MHRC. For some, it may be considered a place to work towards in one’s treatment process. Consumers are able to come and go as they choose and 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



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 buildings 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 1/2" 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.

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

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 day-lighting 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

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

(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.

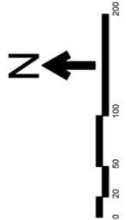
Site Safety

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.

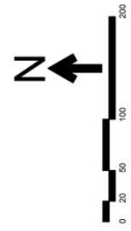




 San Mateo County Behavioral Health Services
 HGA Architects and Engineers

Feasibility Study to Replace
Cordilleras Mental Health Center

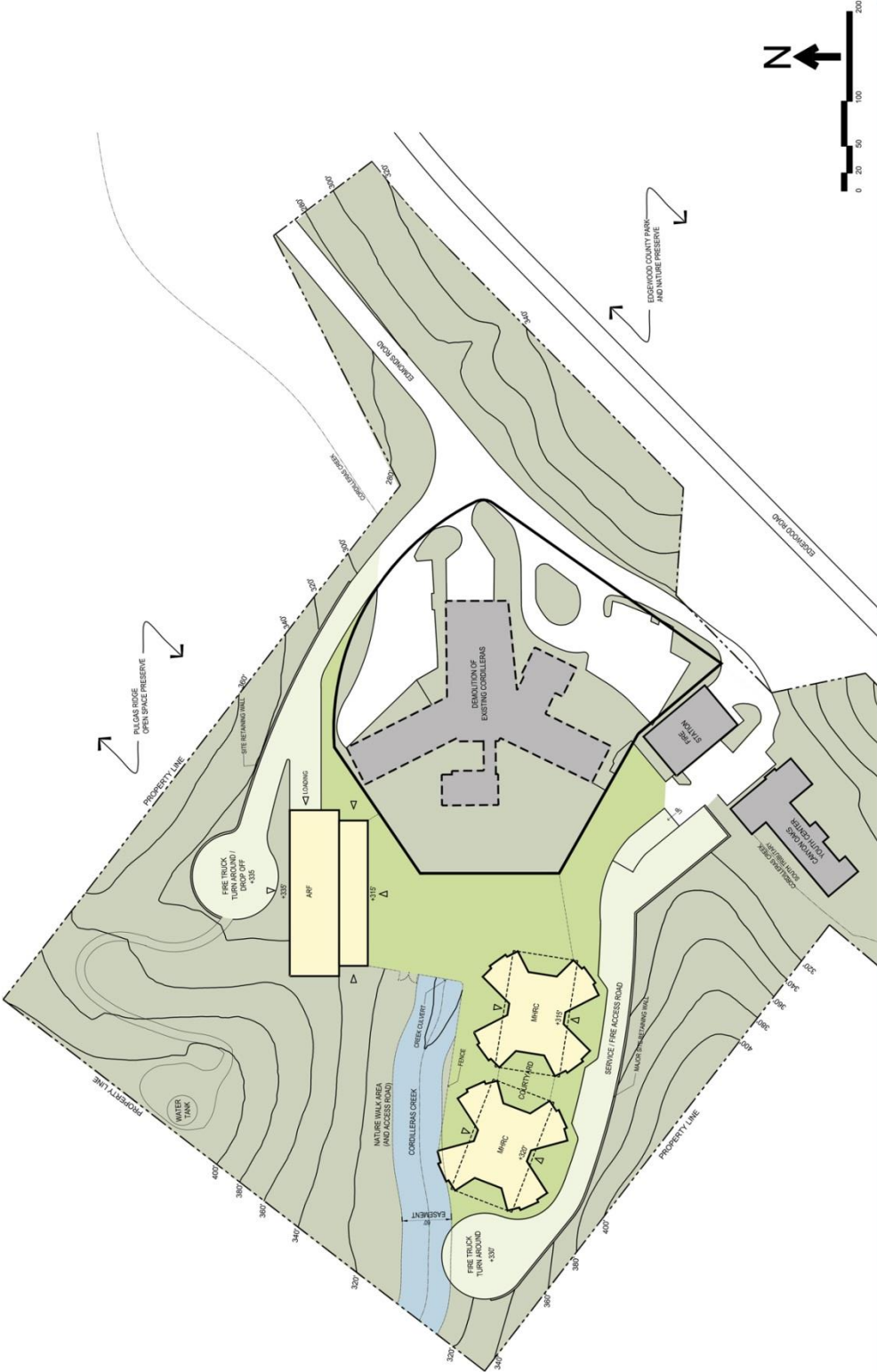
SITE PLAN Phase 1A April 2017 - September 2017




 San Mateo County Behavioral Health Services
 HGA Architects and Engineers

Feasibility Study to Replace
SITE PLAN Phase 1B
 Cordilleras Mental Health Center

October 2017 - August 2018



San Mateo County Behavioral Health Services HGA Architects and Engineers
Feasibility Study to Replace
SITE PLAN Demolition September 2018 - December 2018
Cordilleras Mental Health Center

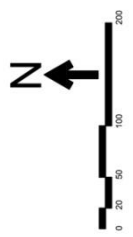


San Mateo County Behavioral Health Services
 HGA Architects and Engineers

Feasibility Study to Replace Cordilleras Mental Health Center

SITE PLAN Phase 2A January 2019 - April 2019




 San Mateo County
 Behavioral Health Services
 HGA Architects and Engineers
**Feasibility Study to Replace
 Cordilleras Mental Health Center**
SITE PLAN Phase 2B
 May 2019 - December 2019

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

Pre-design Construction Cost Model - NEW BUILDINGS (Design-Build Delivery)

Design-Build Delivery



COST MODELING SUMMARY	MHRC		ARF and Support Bldg		Site Development	
	10,452 GSF	\$/sf	35,114 GSF	\$/sf	6.13 acres	\$/acre
Building Core & Shell	\$1,125,963	\$108	\$4,311,497	\$123	\$0	
Interior Architectural Fit-out	\$656,704	\$63	\$2,179,229	\$62	\$0	
Furnishings/Equipment & Special Constructions	\$200,000	\$19	\$627,500	\$18	\$0	
Mechanical	\$571,828	\$55	\$1,967,894	\$56	\$0	
Electrical ^d	\$694,052	\$66	\$1,490,087	\$42	\$0	
Site Development Costs	\$0	\$0	\$0	\$0	\$8,873,817	
Temporary Site Controls, Grading & Utilities for Phased Construction	\$0	\$0	\$0	\$0	\$500,000	
DB Team General Requirements	\$422,311	\$40	\$1,374,907	\$39	\$1,218,596	
DB Team Construction Fee/Bond/Insurances	\$21,156	\$20	\$687,453	\$20	\$609,298	
DB Team Design Fee	\$162,427	\$16	\$528,810	\$15	\$468,691	
Phasing Premium for Occupied Site ^a	\$64,971	\$6	\$211,524	\$6	\$187,476	
Design Contingency	\$410,941	\$39	\$1,337,890	\$38	\$1,185,788	
Construction Contingency	\$205,471	\$20	\$668,945	\$19	\$592,894	
MHRC Building SubTotal (1 Bldg) ^b	\$4,725,824					
Building & Site Construction Cost	\$23,629,119	\$452	\$15,385,737	\$438	\$13,636,560	\$2,223,643
Feasibility Study			\$300,000			
AE & Consultant Bridging Document Development Fees		3.50%	\$1,752,207			
Owner's Design Representative		1.00%	\$500,631			
Environmental Consultant		0.35%	\$175,221			
HazMat Administration/Plan/Monitoring			\$234,035			
Geotech & Special Testing/Inspections/Monitoring			\$147,017			
Site Surveying / AEs Map			\$468,069			
Building Permits & Review Fees			\$536,138			
Owner's Builders Risk Insurance			\$300,631			
DPW Project Management			\$536,138			
DPW Construction Management (Reduced from D-B-B Delivery)		1.00%	\$351,052			
Health Services Project Staff			\$4,680,692			
LEED Administration & Fees			\$1,639,242			
Furniture, Fixtures, and Equipment			\$1,639,242			
(incl. procurement & installation costs)			\$468,069			
Technology/AV Equipment			\$536,138			
(incl. procurement & installation costs)			\$300,631			
Moving & Storage			\$536,138			
(Owner retained furniture to off site storage during constr. Move in to new facility)			\$351,052			
Printing & Advertising/Reimbursables			\$4,680,692			
Legal Costs			\$1,639,242			
Project Soft Costs (costs per original project budget, not incl. Phasing)	25%		\$13,409,194			
Over-all Project Contingency	10.00%		\$6,806,061			
Escalation to Contr. Mid-point (Q2 2018) ^c	13.77%		\$9,096,296			
Potential Additional Scope Items (not included above)						
1. Add 4th Floor to ARF (Core/Shell & Fit-out)					\$274,500	
2. Terraced ARF Floors Building Messing					\$486,270	
			9576 sqft			
			2 floors			
TOTAL PROJECT COSTS						\$85,364,021

NOTES:
^a Per preliminary phasing plan diagrams.
^b The total cost for construction of one single MHRC building would incrementally increase as the number of MHRC buildings included in the project scope decreases.
^c Annualized escalation rate of 3.50%.
^d Substantial rebates & incentives would likely be available for PV and Fuel Cell installations, but are not included in this pricing assessment.

San Mateo County Cordilleras - MHRC

Pre-design Construction Cost Model



Total Building GSF		10,452 sqft	1-Story on Grade (5 bldgs)	UNIT \$	TOTAL COST
Item Description	Comments & Clarifications	QUANTITY			
BUILDING CORE & SHELL					
BUILDING PAD PREP & FTG EXCAVATION	Typical, soils correction included w/ sitework	10,452 sqft	\$26,130		\$26,130
GRADE BEAM FOOTING FOUNDATIONS	On imported fill, included w/ sitework	1,400 lnft	\$85,000		\$119,000
SLAB ON GRADE	Typical, 5" w/ reinf. sand, VB	10,452 sqft	\$7,500		\$78,390
CONCRETE CURBS @ EXTERIOR WALL	Typical	620 lnft	\$25,000		\$15,500
EXTERIOR WOOD STUD BEARING WALLS	2x6 w/ bracing, high parapet/screen wall, 15 ht	9,300 sqft	\$6,000		\$55,800
INTERIOR WOOD STUD BEARING WALLS	2x6 w/ bracing, 9' ht	7,020 sqft	\$5,500		\$38,610
MISC. SHEAR WALL SHEETING, STRAPPING, BRACING	Allowance	1 lsum	\$15,000.00		\$15,000
TJI JOIST ROOF FRAMING	Roof framing, incl. plywood deck	10,452 sqft	\$6,500		\$67,938
GYP CEILING SHEETING ON TJ'S	2 layers for fire rating	10,452 sqft	\$3,250		\$33,969
LAM WOOD BEAMS	Special framing locations	864 lnft	\$15,000		\$12,960
WOOD PLATFORM FOR MECH UNITS	Structured over roof	600 sqft	\$15,000		\$9,000
STEEL SUPPORT CANOPY FOR PV	Independent footings, steel structure over roof	1 lsum	\$150,000.00		\$150,000
EXTERIOR ENCLOSURE - CARPENTRY/METALS/SEALANTS/ETC.	Allowance	9,300 sqft	\$2,500		\$23,250
ENCLOSURE WALL CONSTRUCTION	Ext gyp sheathing/plywood, air barrier, insulation	7,690 sqft	\$5,000		\$38,450
IPE WOOD SIDING	Incl. finish	7,690 sqft	\$18,000		\$138,420
STUCCO FINISH ON BACK OF PARAPET	Typical	2,480 sqft	\$10,000		\$24,800
ALUMINUM STOREFRONT	Typical, 9' ht	900 sqft	\$75,000		\$67,500
PUNCHED OPENING WINDOWS, 5'x5'	Alum clad, operable w/ security	20 each	\$2,200.00		\$44,000
ALUMINUM & GLASS ENTRY DOORS	3x7, typical w/ security	10 each	\$2,750.00		\$27,500
EXTERIOR MATERIAL ACCENTS/TRIM	Allowance	1 lsum	\$15,000.00		\$15,000
MISC. EXTERIOR ELEMENTS	Building lighting, skylights, signage, etc.	1 lsum	\$15,000.00		\$15,000
MEMBRANE/BUILT-UP ROOFING SYSTEM COMPLETE	Typical application	10,452 sqft	\$10,500		\$109,746
					\$0
					\$1,125,963
					\$107.73 /sf total
INTERIOR ARCHITECTURAL FIT-OUT					
INTERIOR METAL STUD PARTITION WALLS	2 side, 1 layer gyp, acoustical insulation, 9' ht	8,100 sqft	\$8,500		\$68,850
GYP SHEETING ON WOOD STUD WALLS	Taped & sanded	19,620 sqft	\$2,500		\$49,050
METAL STUD DROP SOFFITS	Accommodation for MEP	2,000 sqft	\$15,000		\$30,000
INTERIOR DOORS	HM frame, wood door, security hardware	42 each	\$1,500.00		\$63,000
INTERIOR GLAZING	Borrowed lite frame & glass	864 sqft	\$45,000		\$38,880
CUSTOM CASEWORK	Reception desk, armoire	72 lnft	\$350.00		\$25,200
TYPICAL STORAGE CASEWORK	Base, upper, shelving, c-top	176 lnft	\$165.00		\$29,040
FINISHES :					
RECEPTION/WAITING	Upgraded finishes - cpt, vwc, accents	563 sqft	\$40.00		\$22,512
PUBLIC RESTROOM	Upgraded finishes - full ht tile, specialties	168 sqft	\$70.00		\$11,760
BEDROOM - PRIVATE	Durable finishes, security fixturing	2,352 sqft	\$30.00		\$70,560
BEDROOM - SEMI-PRIVATE	Durable finishes, security fixturing	616 sqft	\$30.00		\$18,480
PRIVATE BATHROOM	Durable finishes, security fixturing	1,372 sqft	\$50.00		\$68,600
MEDITATION / LIBRARY	Upgraded finishes - cpt, vwc, accents	574 sqft	\$40.00		\$22,960
CARE TEAM STATION / WORKROOM / MEDS	Durable finishes	644 sqft	\$25.00		\$16,100
ACTIVITY / DINING	Durable finishes	1,400 sqft	\$25.00		\$35,000
LIVING ROOM	Upgraded finishes - cpt, vwc, accents	672 sqft	\$40.00		\$26,880

San Mateo County Cordilleras - MHRC

Pre-design Construction Cost Model



Total Building GSF		QUANTITY	1-Story on Grade (5 bldgs)	UNIT \$	TOTAL COST
		10,452 sqft			
KITCHEN / FOOD PREP / SERVERY	Food safe finishes, not incl. equipment	588 sqft		\$50.00	\$29,400
OFFICE / CONFERENCE	Typical finishes	504 sqft		\$20.00	\$10,080
STAFF LOCKER ROOM / BREAK	Typical finishes	364 sqft		\$20.00	\$7,280
STAFF RESTROOM	Typical finishes	168 sqft		\$50.00	\$8,400
STORAGE/WORK/MEP ROOMS	Basic finishes, durable	467 sqft		\$10.00	\$4,672
		10,452			\$656,704
					\$62.83 /sf total
FURNISHINGS/EQUIPMENT & SPECIAL CONSTRUCTIONS					
FIRE DOOR & FIRE RATED PARTITION CONSTRUCTION	Fire separations within building	200 Inft		\$250.00	\$50,000
SECURITY EQUIPMENT UPGRADES	Allowance	12 room		\$7,500.00	\$90,000
KITCHEN EQUIPMENT	Small commercial	1 Isum		\$60,000.00	\$60,000
					\$200,000
					\$19.14 /sf total
MECHANICAL					
FIRE PROTECTION SYSTEM	Typical, concealed heads	10,452 sqft		\$4.00	\$41,808
DOM/FIRE WATER EQUIPMENT	Pumps, meters, HW heater, etc.	1 Isum		\$20,000.00	\$20,000
PLUMBING SYSTEMS - TYPICAL	Typical, per fixture	14 loc		\$3,000.00	\$42,000
PLUMBING SYSTEMS - SECURITY	Security, per fixture	36 loc		\$4,000.00	\$144,000
ROOF DRAINAGE SYSTEM	Internally piped drainage, tied to storm system	1 Isum		\$7,500.00	\$7,500
VARIABLE REFRIGERANT SYSTEM	Condensers (+/-5) and fan units (+/-20)	30 tons		\$2,200.00	\$66,000
HVAC PIPING DISTRIBUTION & CONNECTIONS	VRF connections	10,452 sqft		\$3.50	\$36,582
DUCT DISTRIBUTION & TERMINALS	From fan coil units	10,452 sqft		\$6.50	\$67,938
HEAT PUMPS	100% OA, roof mounted, minimal ducting	5 each		\$6,500.00	\$32,500
EXHAUST FANS	Kitchen and general exhaust, minimal ducting	7,500 cfm		\$3.50	\$26,250
NATURAL VENTILATION FANS	At operable windows	8 each		\$1,500.00	\$12,000
HVAC CONTROLS	BAS to central location	65 pnts		\$850.00	\$55,250
SPECIAL MECHANICAL EQUIP & SYSTEMS	Allowance	1 Isum		\$20,000.00	\$20,000
					\$571,828
					\$54.71 /sf of bldg
ELECTRICAL					
ELECTRICAL SERVICE CONNECTION	Feeder & transformer, 300A	1 Isum		\$15,000.00	\$15,000
ELECTRICAL SERVICE EQUIPMENT	Distribution and sub-panels, incl. 480v for mech equip	1 Isum		\$15,000.00	\$15,000
PV POWER PRODUCTION EQUIPMENT	Panels, inverter, etc.	82,250 watts		\$4.50	\$370,125
FUEL CELL POWER PRODUCTION EQUIPMENT	Allocated cost allowance	3.33 kw		\$8,500.00	\$28,305
POWER DISTRIBUTION & DEVICES - TYPICAL	Typical application, security	10,452 sqft		\$5.00	\$52,260
MECHANICAL & EQUIPMENT CONNECTIONS	Incl. kitchen, some 480v	40 loc		\$500.00	\$20,000
LIGHTING SYSTEMS	High level lighting, LED, controls, security	10,452 sqft		\$8.50	\$88,842
FIRE ALARM SYSTEM	Typical application	10,452 sqft		\$3.00	\$31,356
TELECOM SYSTEMS	Pathways, cabling, devices, equipment, wireless system	10,452 sqft		\$3.00	\$31,356
SECURITY SYSTEMS	Pathways, cabling, devices, equipment	10,452 sqft		\$4.00	\$41,808
					\$0
					\$694,052
					\$66.40 /sf of bldg

San Mateo County Cordilleras - ARF & Support

Pre-design Construction Cost Model



Item Description	Community / Support ARF		UNIT \$	TOTAL COST
	1st flr	2nd & 3rd flr		
BUILDING CORE & SHELL	15,963 sqft	19,151 sqft		
BUILDING PAD PREP & FTG EXCAVATION			\$2.50	\$87,785
SPREAD FOOTING FOUNDATIONS	35,114 sqft		\$15.00	\$526,710
DEEP/ROCK FOOTINGS	1	1	\$75,000.00	\$75,000
SLAB ON GRADE	15,963 sqft		\$10.00	\$159,630
CONCRETE RETAINING WALLS @ LOWER LEVEL	4,800 sqft		\$50.00	\$240,000
CONCRETE SHEAR WALLS @ LOWER LEVEL	2,320 sqft		\$42.00	\$97,440
CONCRETE COLUMNS @ LOWER LEVEL	380		\$200.00	\$76,000
CONCRETE POST-TENSIONED FLOOR SLAB @ LOWER LEVEL	15,963 sqft		\$28.00	\$446,964
MISC. STRUCTURAL OPENINGS	1		\$35,000.00	\$35,000
CONCRETE CURBS @ EXTERIOR WALL	680		\$25.00	\$17,000
EXTERIOR WOOD STUD BEARING WALLS	20,600 sqft		\$6.00	\$123,600
INTERIOR WOOD STUD BEARING WALLS	18,500 sqft		\$5.50	\$101,750
MISC. SHEAR WALL SHEETING, STRAPPING, BRACING	1		\$50,000.00	\$50,000
TJI JOIST FRAMING	19,151 sqft		\$7.50	\$143,633
GYP CEILING SHEETING ON TJI'S	19,151 sqft		\$3.25	\$62,241
LAM WOOD BEAMS	2,400		\$15.00	\$36,000
WOOD PLATFORM FOR MECH UNITS	1,500 sqft		\$15.00	\$22,500
STEEL SUPPORT CANOPY FOR PV	1		\$150,000.00	\$150,000
EXTERIOR ENCLOSURE - CARPENTRY/METALS/SEALANTS/ETC.	30,100 sqft		\$2.50	\$75,250
ENCLOSURE WALL CONSTRUCTION - PODIUM	9,500 sqft		\$2.50	\$23,750
ENCLOSURE WALL CONSTRUCTION - ARF	15,400 sqft		\$5.00	\$77,000
IPE WOOD SIDING	22,900 sqft		\$18.00	\$412,200
STUCCO FINISH ON BACK OF PARAPET	2,200 sqft		\$10.00	\$22,000
ALUMINUM STOREFRONT	4,000 sqft		\$75.00	\$300,000
PUNCHED OPENING WINDOWS, 5'x5'	48		\$2,200.00	\$105,600
MISC. EXTERIOR ELEMENTS	1		\$50,000.00	\$50,000
ENTRY LOCATIONS	1		\$50,000.00	\$50,000
VERTICAL CIRCULATION	4		\$35,000.00	\$140,000
MEMBRANE/BUILT-UP ROOFING SYSTEM COMPLETE	9		\$35,000.00	\$315,000
CANOPY/SOFFIT CONSTRUCTION	15,963 sqft		\$15.00	\$239,445
	1		\$50,000.00	\$50,000
				\$0
				\$4,311,497
				\$122.79 /sf total
INTERIOR ARCHITECTURAL FIT-OUT				
INTERIOR SPACE FIT-OUT				
RECEPTION/WAITING	552 sqft		\$80.00	\$44,128
STAFF/PUBLIC RESTROOM	672 sqft		\$120.00	\$80,640
SPA/TUB ROOM	168 sqft		\$150.00	\$25,200
BEDROOM - PRIVATE	1,764 sqft		\$60.00	\$105,840

Comments & Clarifications

Typical, soils correction included w/ sitework
 On imported fill, included w/ sitework
 Allowance for special conditions
 Typical, 7" w/ reinf. sand, VB
 Hill side on first floor, WP and drainage
 Allowance
 Typical
 11" thickness
 Shafts & penetrations, etc.
 AFR floors
 2x6 w/ bracing, high parapet/screen wall, 15' ht
 2x6 w/ bracing, 9' ht
 Allowance
 Floor & roof framing, incl. plywood deck
 2 layers for fire rating
 Special framing locations
 Structured over roof
 Independent footings, steel structure over roof
 Allowance
 Met stud backup, gyp, MB, insul
 Ext gyp sheathing/plywood, air barrier, insulation
 Incl. finish
 Typical
 Typical, 9' ht
 Alum clad, operable w/ security
 Allowance
 Building lighting, skylights, signage, etc.
 Alum entry systems w/ security
 1 elevator, 2 stairs
 Typical application
 Allowance - metal panel or plaster

Partitions, doors, finishes, casework, specialties, etc.
 Upgraded finishes, custom casework
 Upgraded finishes
 Durable finishes, specialties
 Built-in furnishings, durable finishes, security

San Mateo County Cordilleras - ARF & Support

Pre-design Construction Cost Model



Item Description	Comments & Clarifications	Community / Support ARF		TOTAL COST
		15,963 sqft	1st flr	
		49,151 sqft	2nd & 3rd flr	
		35,114 sqft		
Total Building GSF				
Item Description	Comments & Clarifications	QUANTITY	UNIT \$	TOTAL COST
BEDROOM - SEMI-PRIVATE	Built-in furnishings, durable finishes, security	4,312 sqft	\$60.00	\$258,720
PRIVATE BATHROOM	Built-in furnishings, durable finishes, security	2,254 sqft	\$110.00	\$247,940
MEDITATION / LIBRARY	Interior glazing, upgraded finishes, casework	448 sqft	\$80.00	\$35,840
CARE / EXAM / THERAPY / MEDS	Upgraded finishes, casework	1,036 sqft	\$75.00	\$77,700
SHARED ACTIVITY	Durable finishes	5,187 sqft	\$55.00	\$285,285
LIVING ROOM	Upgraded finishes, furnishings	672 sqft	\$80.00	\$53,760
KITCHEN / FOOD PREP / SERVERY	Food safe finishes, not incl. equipment	3,178 sqft	\$100.00	\$317,800
OFFICE / CONFERENCE	Typical finishes	4,172 sqft	\$50.00	\$208,600
STAFF LOCKER ROOM / BREAK	Typical finishes	392 sqft	\$65.00	\$25,480
STORAGE/WORK/MEP ROOMS	Basic finishes, durable	10,307 sqft	\$40.00	\$412,296
		35,114		\$2,179,229
				\$62.06 /sf total
FURNISHINGS/EQUIPMENT & SPECIAL CONSTRUCTIONS				
FIRE DOOR & FIRE RATED PARTITION CONSTRUCTION	Fire separations within building	1	Isum	\$100,000.00
SECURITY / DOOR HARDWARE EQUIPMENT	Allowance	37	room	\$7,500.00
KITCHEN EQUIPMENT	Small commercial	1	Isum	\$250,000.00
				\$627,500
				\$17.87 /sf total
MECHANICAL				
FIRE PROTECTION SYSTEM	Typical, concealed heads	35,114	sqft	\$140,456
DOM/FIRE WATER EQUIPMENT	Pumps, meters, HW heater, etc.	1	Isum	\$65,000.00
PLUMBING SYSTEMS - TYPICAL	Typical, per fixture	26	loc	\$78,000
PLUMBING SYSTEMS - SECURITY	Security, per fixture	84	loc	\$336,000
ROOF DRAINAGE SYSTEM	Internally piped drainage, tied to storm system	1	Isum	\$35,000.00
VARIABLE REFRIGERANT SYSTEM	Condensers and fan units	90	tons	\$2,200.00
HVAC PIPING DISTRIBUTION & CONNECTIONS	VFR connections	35,114	sqft	\$175,570
DUCT DISTRIBUTION & TERMINALS	From fan coil units	35,114	sqft	\$421,368
HEAT PUMPS	100% OA, roof mounted, minimal ducting	10	each	\$10,000.00
EXHAUST FANS	Kitchen and general exhaust, minimal ducting	20,000	cfm	\$70,000
NATURAL VENTILATION FANS	At operable windows	24	each	\$36,000
HVAC CONTROLS	BAS to central location	250	pnts	\$212,500
SPECIAL MECHANICAL EQUIP & SYSTEMS	Allowance	1	Isum	\$100,000.00
				\$0
				\$1,967,894
				\$56.04 /sf of bldg

San Mateo County Cordilleras - ARF & Support

Predesign Construction Cost Model



Item Description	Community / Support ARF		QUANTITY	UNIT \$	TOTAL COST
	1st flr	2nd & 3rd flr			
	15,963 sqft	19,151 sqft			
Total Building GSF	35,114 sqft				
Comments & Clarifications					
ELECTRICAL					
ELECTRICAL SERVICE CONNECTION			1 Isum	\$50,000.00	\$50,000
ELECTRICAL SERVICE EQUIPMENT			1 Isum	\$85,000.00	\$85,000
PV POWER PRODUCTION EQUIPMENT			84,750 watts	\$4.50	\$381,375
FUEL CELL POWER PRODUCTION EQUIPMENT			3.33 kw	\$8,500.00	\$28,305
POWER DISTRIBUTION & DEVICES - TYPICAL			35,114 sqft	\$6.00	\$210,684
MECHANICAL & EQUIPMENT CONNECTIONS			100 loc	\$500.00	\$50,000
LIGHTING SYSTEMS			35,114 sqft	\$9.50	\$333,583
FIRE ALARM SYSTEM			35,114 sqft	\$3.00	\$105,342
TELECOM SYSTEMS			35,114 sqft	\$3.00	\$105,342
SECURITY SYSTEMS			35,114 sqft	\$4.00	\$140,456
				\$0	
				\$1,490,087	
					\$42.44 /sf of bldg

San Mateo County Cordilleras - Sitework

Pre-design Construction Cost Model



Item Description		Total Site Area		Comments & Clarifications		267,133	sqft (+/-6 acres)	UNIT \$	TOTAL COST
SITWORK						QUANTITY			
HAZARDOUS MATERIALS ABATEMENT	Existing Cordilleras building					90,000	sqft	\$21.67	\$1,950,000
BUILDING DEMOLITION	Existing Cordilleras building					90,000	sqft	\$10.00	\$900,000
EXCAVATION & FILL @ DEMO	Removal of basement & fill					15,000	cuyd	\$12.00	\$180,000
MISC DEMOLITION/REMOVALS	Fence, lighting, furnishings, signage, etc.					1	Isum	\$50,000.00	\$50,000
HABITAT RESTORATION	Allowance					1	Isum	\$100,000.00	\$100,000
TREE PRESERVATION	Allowance					1	Isum	\$100,000.00	\$100,000
SITE CLEARING/DEMO/GRUB	Demo paving, clear site					6.13	acres	\$3,500.00	\$21,464
SITE CONTROLS	Temp fence, E&S, temp drainage, etc.					6.13	acres	\$6,500.00	\$39,861
MAJOR SITE RETENTION WALL	Soil nail, incl. excavation, multiple lifts					20,000	sqft	\$40.00	\$800,000
MINOR SITE RETENTION WALL	Soil nail, incl. excavation, single lift					8,000	sqft	\$35.00	\$280,000
RETAINING WALL FINISH	Assumes finish applied to soil nail					28,000	sqft	\$15.00	\$420,000
MASS EXCAVATION	Cut and redistribute on site					60,000	cuyd	\$6.50	\$390,000
R&F SITE GRADING	Allowance					6.13	acres	\$7,500.00	\$45,994
IMPORTED FILL @ BUILDING FOUNDATIONS	Assumes 5' of fill					12,000	cuyd	\$20.00	\$240,000
EXISTING UTILITY REMOVAL	Allowance					1	Isum	\$50,000.00	\$50,000
DOMESTIC WATER PIPING	Distribution from existing water tower and mains					1,000	lft	\$85.00	\$85,000
FIRE WATER PIPING	Distribution from existing water tower and mains					1,000	lft	\$85.00	\$85,000
FIRE HYDRANTS	New/relocated					6	each	\$5,000.00	\$30,000
FIRE & DOMESTIC WATER BOOSTER PUMPS	New pumps at existing pump station					2	each	\$35,000.00	\$70,000
SANITARY SEWER PIPING & MANHOLES	6", 4", Connect to existing main					1,400	lft	\$85.00	\$119,000
EXISTING STORM PIPE RELOCATION	30" & 42" creek diversion pipes, reloc to avoid bldgs					600	lft	\$150.00	\$90,000
STORM SEWER PIPING & STRUCTURES	8"-18" piping and structures					2,000	lft	\$85.00	\$170,000
STORM WATER INFILTRATION AREAS	Special fill areas for treatment, 4% of impervious					6,416	sqft	\$12.00	\$76,997
STORMWATER HARVESTING & REUSE SYSTEM	FP, Irrigation & Sewage Conveyance uses					1	Isum	\$300,000.00	\$300,000
MAIN ELECTRICAL SERVICE & GEAR	2500A MSB in ARF bldg					1	Isum	\$100,000.00	\$100,000
EMERGENCY GENERATOR	Generator and associated equipment, fuel tank					1,200	kw	\$450.00	\$540,000
ELECTRICAL SITE DISTRIBUTION	MHRC building and site					850	lft	\$150.00	\$127,500
TELECOM SITE DISTRIBUTION	Service connections, MRHC/ARF building connections					850	lft	\$100.00	\$85,000
ROAD CONSTRUCTION	Paving & base, curbs, drainage, etc.					65,000	sqft	\$5.00	\$325,000
PARKING AREA CONSTRUCTION	Paving & base, curbs, drainage, etc.					15,000	sqft	\$4.00	\$60,000
PEDESTRIAN SURFACING	Sidewalks, patios, etc.					9,000	sqft	\$10.00	\$90,000
SITE SECURITY FENCING	Picket style, 6'-8" ht					1,000	lft	\$85.00	\$85,000
SITE LIGHTING	Allowance, vehicular and pedestrian					1	Isum	\$80,000.00	\$80,000
MHRC COURTYARDS	Surfacing, landscaping, furnishings					12,800	sqft	\$10.00	\$128,000
LANDSCAPE RETAINING WALLS	Minor retaining, keystone block					350	lft	\$150.00	\$52,500
RECREATIONAL AREAS	Allowance, sport court, garden, shelters					1	Isum	\$100,000.00	\$100,000
WALKING PATH AREAS	Path, gazebos, etc.					1	Isum	\$100,000.00	\$100,000
LANDSCAPED AREAS	Green space, sod, planting					85,000	sqft	\$3.50	\$297,500
RESTORATION AREAS	Landscape repair, seeding					45,000	sqft	\$0.50	\$22,500
IRRIGATION SYSTEM	All landscaped areas					85,000	sqft	\$1.50	\$127,500
									\$8,873,817



San Mateo County - Cordilleras Center
Pre-design Construction Cost Model - EXISTING BUILDING REUSE

	quantity	unit \$	Reuse of Existing Cordilleras Center
			90,000 GSF
Hazardous Materials Abatement	90,000 sqft	\$21.67	\$1,950,000
Interior & Exterior Selective Building Demolition	90,000 sqft	\$8.00	\$720,000
Structural Upgrades and Modifications	90,000 sqft	\$25.00	\$2,250,000
Exterior Enclosure Improvements	56,000 sqft	\$50.00	\$2,800,000
Re-Roofing	30,000 sqft	\$20.00	\$600,000
Interior Architectural Fitout	90,000 sqft	\$65.00	\$5,850,000
Furnishings/Equipment & Special Constructions	90,000 sqft	\$20.00	\$1,800,000
Mechanical System Replacement	90,000 sqft	\$50.00	\$4,500,000
Electrical System Replacement	90,000 sqft	\$25.00	\$2,250,000
Site Re-Development Costs	allowance		\$2,000,000
Contractors General Conditions/OH&P	15.00%		\$3,708,000
Design Contingency	10.00%		\$2,842,800
Construction Contingency	5.00%		\$1,421,400
Building & Site Construction Cost			\$32,692,200
Pre-Construction/Development Costs	2.00%		\$653,844
Permits, Inspections, Testing, Hazmat Admin	2.50%		\$817,305
Professional Service Fees	8.00%		\$2,615,376
IT Technology Equipment	3.00%		\$980,766
Furniture, Fixtures, and Equipment	10.00%		\$3,269,220
LEED / Commissioning	2.50%		\$817,305
Owner Management Costs, Moving, Storage	4.00%		\$1,307,688
Project Soft Costs	32%		\$10,461,504
Over-all Project Contingency (Renovation)	15.00%		\$6,473,056
Escalation to Contr. Mid-point (Q1 2018) ***	13.77%		\$5,942,102
TOTAL PROJECT COSTS			\$55,568,861

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.

	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Total with Added ARF
Number of Facilities	4	1	1	6	6
Beds per Facility	16	16	37	N/A	N/A
Total Beds	64	16	37	117	135
Total Days	23,360	5,840	13,505	42,705	49,275
Occupancy Rate	95%	95%	95%	95%	95%
Occupied Days	22,192	5,548	12,830	40,570	46,811
Total Staffing FTEs	105.20	18.95	21.00	145.15	155.37
Staff FTE per Bed	1.64	1.18	0.57	1.24	1.15
Total Expenses	\$11,671,094	\$2,355,531	\$2,168,670	\$16,195,295	\$17,250,324
Less On-Campus Revenue	-\$5,200,837	-\$1,062,072	-\$477,219	-\$6,740,128	-\$6,972,288
Less Off-Campus Revenue	-\$1,300,271	-\$262,428	-\$44,245	-\$1,606,944	-\$1,606,944
Savings from Avoiding Purchase of Other Beds				-\$601,265	-\$1,147,396
New Project Net BHRS Costs				\$7,246,959	\$7,523,696
Current Net BHRS Costs				\$7,505,208	\$8,051,339
Decrease in Costs				-\$258,249	-\$527,643
New Project Net BHRS Cost per Day				\$178.63	\$160.72
Current Net Cost per Day				\$185.00	\$198.46
Decrease in Cost per Day				-\$6.37	-\$37.73

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.

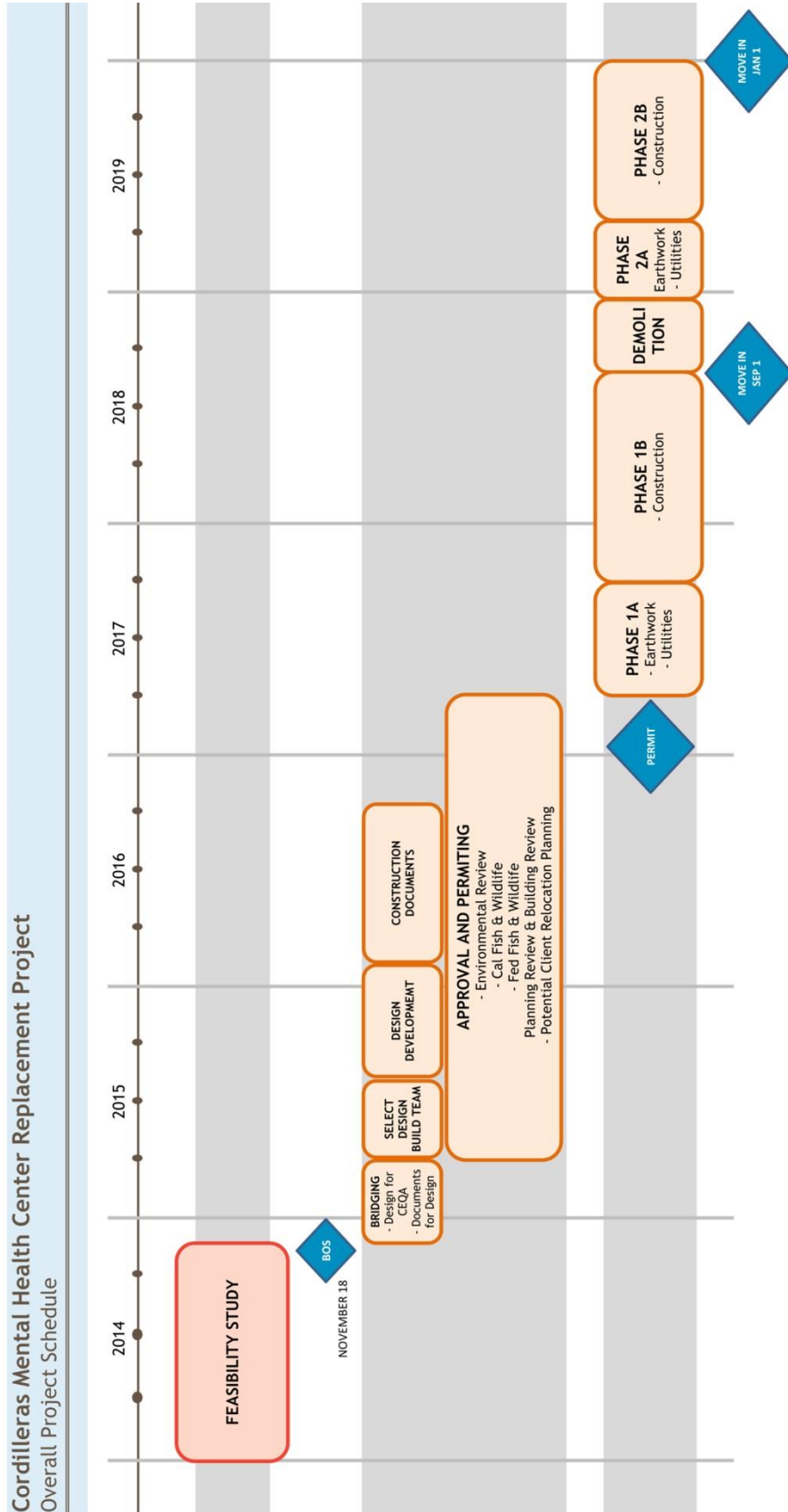
- Phase 1A – April to October 2017
 - Earthwork and Site Utilities for the western portion of the site
- Phase 1B – October 2017 to September 2018
 - Construction of two MHRC buildings and the ARF/Campus Center
- Demolition – September 2018 to December 2018
 - Demolish the Existing Building and Site
- 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.



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





Architecture | Engineering | Planning

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

Page 2

identify any important missing themes.

- 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.)

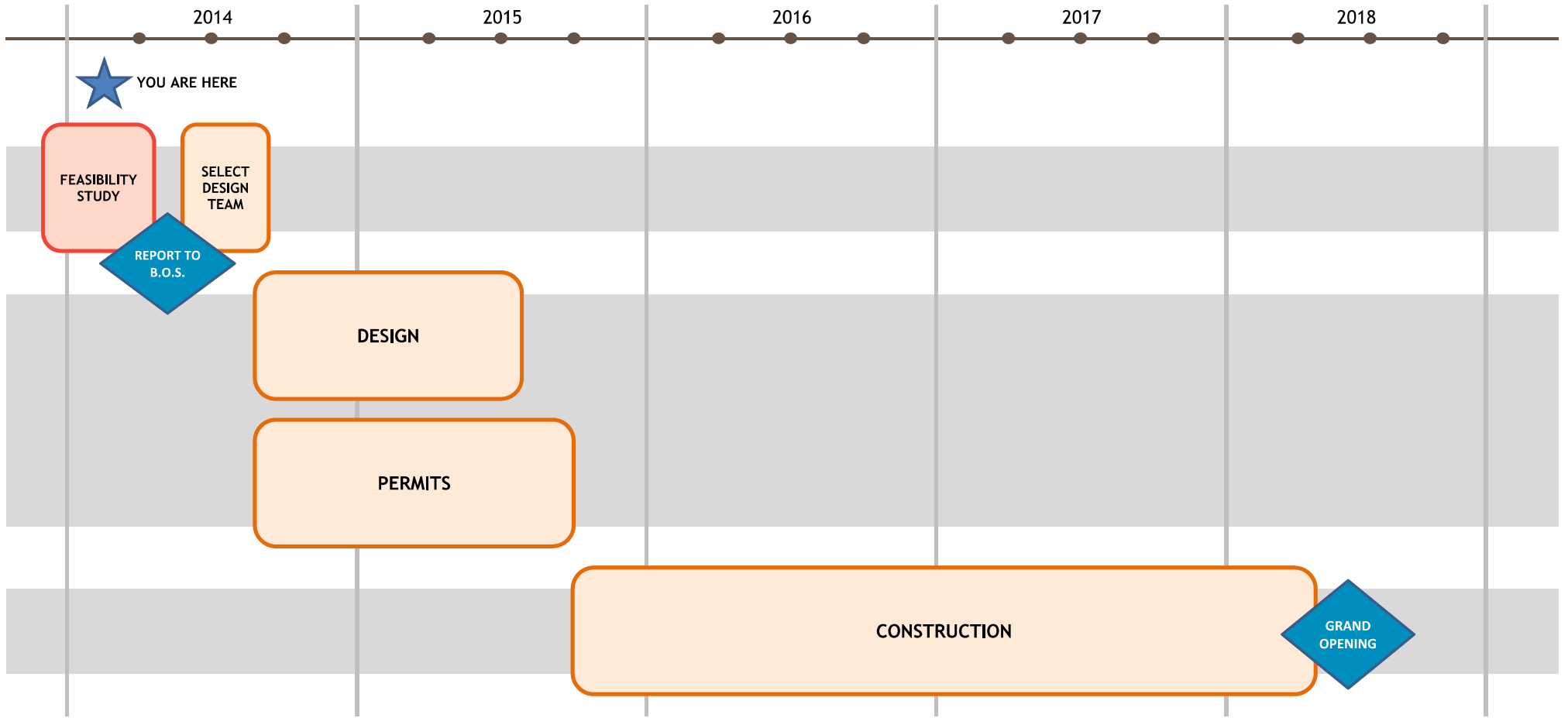
- 8) **Vision Statement (30 min.) – Kevin and Vince & (SMHS)**

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)**

Cordilleras Mental Health Rehabilitation Center

Overall Project Schedule

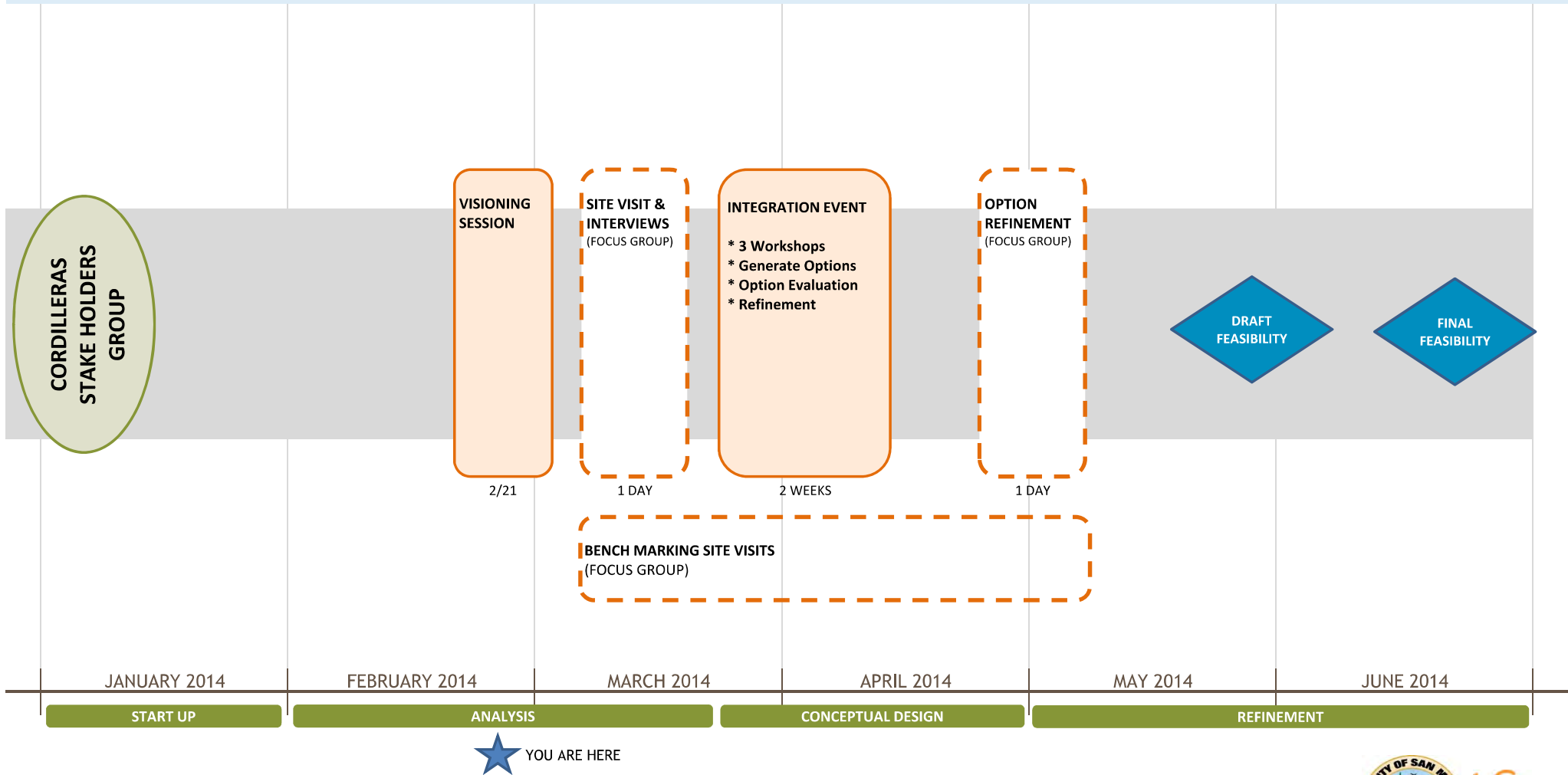
San Mateo County Health System
Behavioral Health and Recovery Services



Cordilleras Mental Health Rehabilitation Center

Feasibility Study Process Diagram - Stakeholders Group

San Mateo County Health System
Behavioral Health and Recovery Services



Cordilleras Mental Health Rehabilitation Center

San Mateo County Health System
Behavioral Health and Recovery Services
February 21, 2014

Historic Timeline

1950s 1960s 1970s 1980s 1990s 2000s 2010s Future

Cordilleras Context	<p>Thorazine hits the US market</p> <p>1952 - The first anti-psychotic drug is discovered. Many mentally ill patients who once required institutional care may now be able to function outside with the use of Thorazine. Development of other drugs quickly followed.</p>	<p>1970s - Clozapine medication first introduced dramatically improving psychotic symptom management.</p>	<p>1974 - PAS purchases the Mateo Lodge, a home in a residential neighborhood for six mentally ill adults. They are allowed to stay as long as they'd like. The Mateo Lodge serves as a case study for PAS. They purchase several more homes in the Bay Area for use as group homes for mentally ill adults.</p>	<p>1976 - PAS purchases the Mateo Lodge, a home in a residential neighborhood for six mentally ill adults. They are allowed to stay as long as they'd like. The Mateo Lodge serves as a case study for PAS. They purchase several more homes in the Bay Area for use as group homes for mentally ill adults.</p>	<p>1978 - Research group National Institute of Mental Health (NIMH) Community Support Program begins as a pilot program to improve the lives of deinstitutionalized patients by attacking the myth that hospital care is "bad" and community care is "good" or vice versa. Instead they focus on improving both as they are appropriate to different patients' needs.</p>	<p>1981 - Cordilleras is surveyed by the State Department of Mental Health and is found to have numerous problems. Attempts are made to improve security and safety.</p>	<p>1982 - Telecare Corporation is chosen by a committee which includes PAS members. They operate programs in Oregon, Washington, Nebraska, New Mexico, North Carolina, Texas, and California.</p>	<p>1983 - Dr. Haylett, Clinical Director of the Mental Health Division, reports that San Mateo County does not have a long-term, low-expectation program so patients are sent out of county. AMI asks that the vacant space at Cordilleras be made into such a facility for 20 patients. San Mateo County develops diversion plan to keep mentally ill out of jail.</p>	<p>1990s - More atypical antipsychotic medications introduced with reduced side effect profiles.</p>	<p>2000s - Heart and Soul is established as a 501(c)(3) in San Mateo County. Heart and Soul is contracted by San Mateo County to provide self-help services.</p>	<p>2011 - Cordilleras receives service awards from both NAMI and from the San Mateo County Behavioral Health and Recovery Services for their Horticulture Therapy program known as the Cordilleras Garden.</p>	<p>2014 - Cordilleras looks to the future by exploring options to replace and modernize the facility to support the latest advancements in care.</p>	
	<p>Parents of Adult Schizophrenics (PAS) is formed</p> <p>1974 - Parent Eve Oliphant places an ad in a Bay Area newspaper inviting other parents to join her in a support group for parents. Ten parents attend the first meeting. There are 115 members by the end of the year. The group decides to become politically active since most decisions for funding, treatment, and programs are political decisions. They "come out of the closet" and openly represent the needs of the mentally ill and their families and work to teach mental health professionals that families are not the cause of mental illness.</p>	<p>PAS sees the need for better care for the severely mentally ill</p> <p>1976 - After starting several board and care homes in the bay area, PAS sees the need for a place to house mentally ill adults who cannot function in a neighborhood setting They begin looking for options.</p>	<p>PAS helps Canyon Hospital</p> <p>1977 - With the help of PAS, plans are approved to remodel Canyon Hospital, a former tuberculosis hospital built in the 1950s, for a Skilled Nursing Facility for mental health treatment in San Mateo County.</p>	<p>Vocational Rehab Program saved</p> <p>1976 - Dr. Richard Lamb steps in to help PAS save the Vocational Rehab Program, which was slated to be eliminated. Dr. Lamb becomes a staunch supporter of family support groups, and speaks on their behalf in both political and mental health professional settings.</p>	<p>PAS expands</p> <p>1976 - By October, family groups had formed in Santa Clara, San Mateo, Marin, Alameda, Contra Costa, Yolo, Napa, San Francisco, Placer, and Sacramento counties.</p>	<p>Improvements made at Cordilleras</p> <p>1981 - Cordilleras is surveyed by the State Department of Mental Health and is found to have numerous problems. Attempts are made to improve security and safety.</p>	<p>New management is selected for Cordilleras Center</p> <p>1982 - Telecare Corporation is chosen by a committee which includes PAS members. They operate programs in Oregon, Washington, Nebraska, New Mexico, North Carolina, Texas, and California.</p>	<p>Cordilleras expands care</p> <p>1983 - Dr. Haylett, Clinical Director of the Mental Health Division, reports that San Mateo County does not have a long-term, low-expectation program so patients are sent out of county. AMI asks that the vacant space at Cordilleras be made into such a facility for 20 patients. San Mateo County develops diversion plan to keep mentally ill out of jail.</p>	<p>Drug Advancements</p> <p>1990s - More atypical antipsychotic medications introduced with reduced side effect profiles.</p>	<p>Stamp Out Stigma</p> <p>1990 - Carmen Lee and other mental health consumers establish Stamp Out Stigma in San Mateo County to broadcast the voices and lived experience of consumers.</p>	<p>Heart and Soul</p> <p>2000s - Heart and Soul is established as a 501(c)(3) in San Mateo County. Heart and Soul is contracted by San Mateo County to provide self-help services.</p>	<p>Program at Cordilleras earns awards</p> <p>2011 - Cordilleras receives service awards from both NAMI and from the San Mateo County Behavioral Health and Recovery Services for their Horticulture Therapy program known as the Cordilleras Garden.</p>	<p>Cordilleras' future and feasibility</p> <p>2014 - Cordilleras looks to the future by exploring options to replace and modernize the facility to support the latest advancements in care.</p>
Regulatory Context	<p>First edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-I) is published</p> <p>1952 - It is the first official manual of mental disorders for clinicians. It was published that toxic parents were the cause of mental illness citing over-protective mothers, disinterested fathers, schizophrenic mothers, marital dysfunction, and many other examples of parental blame.</p>	<p>Peak number of patients in institutional care, concept scrutinized</p> <p>Mid 1950s - The number of hospitalized mentally ill people in the United States peaks at 560,000 in 1955. Care for the mentally ill at this time was provided in an institutional setting, predominately run by the states, but several cases of neglect and inhumane living conditions are reported, and the push for deinstitutionalization begins. In addition, patients have limited rights. They can be committed for life to a state hospital based upon a brief doctor evaluation and court hearing. Patients have little recourse.</p>	<p>US Congress passes the Community Mental Health Act of 1963</p> <p>1963 - The result is the closure of state psychiatric hospitals and implementation of strict standards so that only individuals "who posed an imminent danger to themselves or someone else" could be committed to state psychiatric hospitals. Congress promises grant money to build community mental health facilities, but the money fails to materialize and many patients fail to get the services they need.</p>	<p>California passes Lanterman-Petris-Short Act (LPS) under Gov. Ronald Reagan</p> <p>1967 - It virtually abolishes involuntary hospitalization except in extreme cases. As a result, by the mid-1970s, many patients are on the street or incarcerated. The lack of mental health institutions to care for the mentally ill start to burden police and the judicial system.</p>	<p>Increase in homelessness and incarceration associated with deinstitutionalization of the mentally ill</p> <p>Early 1970s - California has moved most mentally ill patients out of its state hospitals. But the passing LPS Act of 1967 has made it very difficult to get a person back into a hospital if they relapse and need additional care. California becomes the first state to see an increase in homelessness and incarceration associated with deinstitutionalization of the mentally ill.</p>	<p>Sounder v. Brennan</p> <p>1972 - A federal court rules that patients in mental health facilities can no longer work at these institutions without pay. The cost of housing patients increases dramatically as a result. Institutions lack the money to pay the patients for their contributions and don't have adequate money or staffing to occupy patients with abundant much free time. Deinstitutionalization continues as a result.</p>	<p>Failures of deinstitutionalization starting to immerge</p> <p>1976 - Dr. Richard Lamb, a young psychiatrist working for San Mateo County, publishes a study of board-and-care homes in California stating "These facilities are in most respects like small long-term state hospital wards isolated from the community. One is overcome by the depressing atmosphere. . . . They maximize the state-hospital-like atmosphere. . . . The operator is being paid by the head, rather than being rewarded for rehabilitation efforts for her "guests." Dr. Lamb continues to be the leading American psychiatrist pointing out the failures of deinstitutionalization at this time.</p>	<p>Congress passes the Mental Health Systems Act</p> <p>1980 - Authorizes \$796 million for mental health services in the last month of the Carter Administration. It is rescinded by the Reagan Administration two months later before any of the money is distributed. The number of institutionalized-Americans is 130,000, down from the 560,000 peak in the 1950s.</p>	<p>The problems of deinstitutionalization becomes a national concern</p> <p>1980s - Despite the concern, another 40,000 beds in state mental hospitals were shut down. Around this time, stories of patient abuse in board-and-care homes start to surface as do studies indicating that a high percentage of the homeless population suffer from mental illness.</p>	<p>Congress passes the Mental Health Planning Act of 1986</p> <p>1986 - This federal law requires that at the state government level, all states must have plans for establishing case management under Medicaid, improving mental health coverage of community mental health services, adding rehabilitative services, and expanding clinical services to the homeless population. More specifically, community mental health providers could now receive reimbursement for services from Medicare and Medicaid, which allowed for many of the centers to expand their range of treatment options and services.</p>	<p>Mentally ill end up incarcerated</p> <p>1992 - A survey of American jails reports that 7.2 percent of inmates are overtly and seriously mentally ill, meaning that 100,000 seriously mentally ill people have been incarcerated. Over a quarter of them are held without charges, often awaiting a bed in a psychiatric hospital.</p>	<p>California passes Proposition 63 (Mental Health Service Tax)</p> <p>2004 - A tax of the state's wealthiest 0.1 percent of residents with funds going towards mental health services in California.</p>	<p>Congress passes Mental Health Parity Act</p> <p>2010 - Requires group health plans and insurers to ensure limitations applicable to mental health and substance use disorder benefits are no more restrictive than the limitations on medical/surgical benefits.</p>
	<p>Deinstitutionalization in California begins</p> <p>Late 1950s - California becomes the national leader in aggressively moving patients from state hospitals to community-based nursing and board and care homes as institutions become a less favorable form of care. It becomes increasingly clear that there are many patients in asylums and custodial care who were able to function in society with adequate out-patient care.</p>	<p>Medicaid and Medicare are created</p> <p>1965 - As a result, the federal government increases its role in financing community-based mental health and substance abuse services, but, inpatient care for adults in state mental hospitals is excluded from coverage.</p>	<p>Medicaid and Medicare are created</p> <p>1965 - As a result, the federal government increases its role in financing community-based mental health and substance abuse services, but, inpatient care for adults in state mental hospitals is excluded from coverage.</p>	<p>Medicaid and Medicare are created</p> <p>1965 - As a result, the federal government increases its role in financing community-based mental health and substance abuse services, but, inpatient care for adults in state mental hospitals is excluded from coverage.</p>	<p>Medicaid and Medicare are created</p> <p>1965 - As a result, the federal government increases its role in financing community-based mental health and substance abuse services, but, inpatient care for adults in state mental hospitals is excluded from coverage.</p>	<p>Improvements made at Cordilleras</p> <p>1981 - Cordilleras is surveyed by the State Department of Mental Health and is found to have numerous problems. Attempts are made to improve security and safety.</p>	<p>New management is selected for Cordilleras Center</p> <p>1982 - Telecare Corporation is chosen by a committee which includes PAS members. They operate programs in Oregon, Washington, Nebraska, New Mexico, North Carolina, Texas, and California.</p>	<p>Cordilleras expands care</p> <p>1983 - Dr. Haylett, Clinical Director of the Mental Health Division, reports that San Mateo County does not have a long-term, low-expectation program so patients are sent out of county. AMI asks that the vacant space at Cordilleras be made into such a facility for 20 patients. San Mateo County develops diversion plan to keep mentally ill out of jail.</p>	<p>Drug Advancements</p> <p>1990s - More atypical antipsychotic medications introduced with reduced side effect profiles.</p>	<p>Stamp Out Stigma</p> <p>1990 - Carmen Lee and other mental health consumers establish Stamp Out Stigma in San Mateo County to broadcast the voices and lived experience of consumers.</p>	<p>Heart and Soul</p> <p>2000s - Heart and Soul is established as a 501(c)(3) in San Mateo County. Heart and Soul is contracted by San Mateo County to provide self-help services.</p>	<p>Program at Cordilleras earns awards</p> <p>2011 - Cordilleras receives service awards from both NAMI and from the San Mateo County Behavioral Health and Recovery Services for their Horticulture Therapy program known as the Cordilleras Garden.</p>	<p>Cordilleras' future and feasibility</p> <p>2014 - Cordilleras looks to the future by exploring options to replace and modernize the facility to support the latest advancements in care.</p>

Cordilleras Mental Health Rehabilitation Center

Proposed Planning Organization



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



SAN MATEO COUNTY
HEALTH SYSTEM

“Best” Practices

1. Change Drivers
2. Built Environment Response
3. Best Practice methods

San Mateo County Behavioral Health
and Recovery Services, Cordilleras

February 21, 2014



Changes brought about by . . .

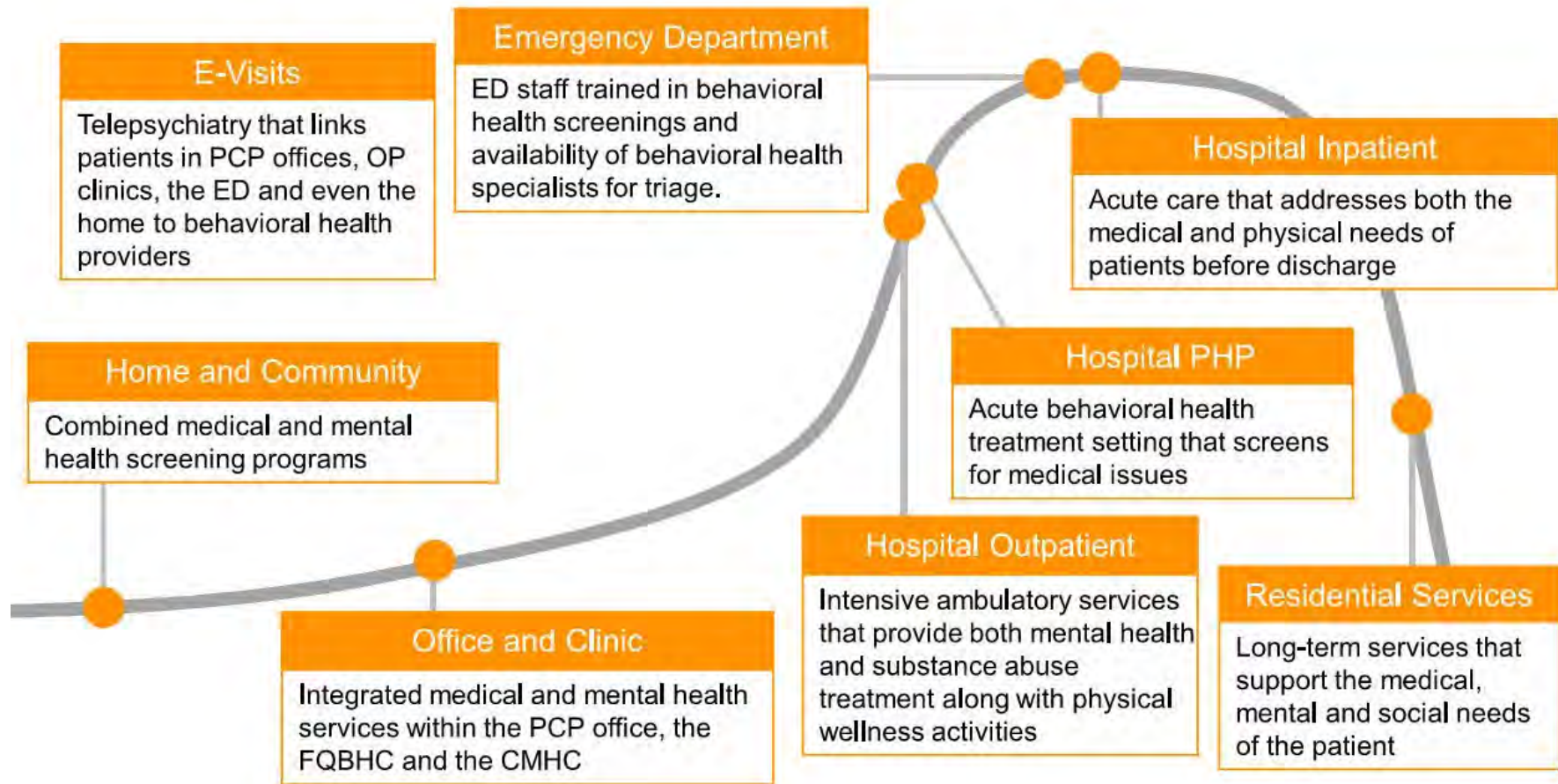
- Culture changes in behavioral health
- Advanced Treatments
- Smarter safety measures and technology
- Design oriented healing environments
- Reducing barriers (Financial, Facility and Societal)
- Education to better understand behavioral health
- Community support
- Engagement in recovery

**. . . Growth in Mental Health Services driven by
A Community in Need**



Cordilleras Visioning

Continuum of Care







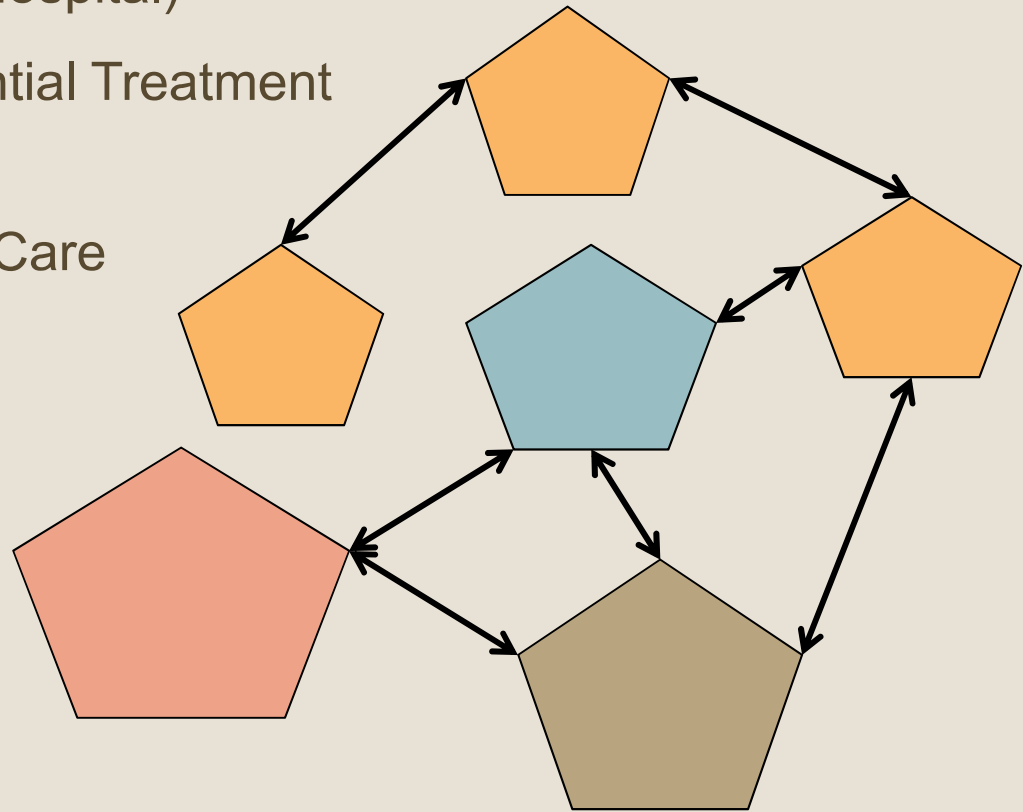
Source: Sg2 2013 Behavioral Health:
Creating an Integrated System of Care

Cordilleras Visioning

System Thinking

Levels of Care

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



Cordilleras Visioning

Quality Healthcare Defined *(Institute of Medicine, 2001)*

Safe

avoiding injuries to patients

Effective

Providing services based on scientific knowledge to all who could benefit

Patient Centered

Providing care that is respectful of and responsive to individual patient preferences, needs and values and ensuring that patient values guide all clinical decisions

Timely

Reducing waits and sometime harmful delays for both those who receive and those who give care

Efficient

Avoiding waste, in particular waste of equipment, supplies, ideas and energy

Equitable

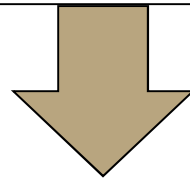
Providing care that does not vary in quality



Cordilleras Visioning

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

Built Environment Response Strategies

Aesthetic Expression

Scale

Flexibility

Visibility & Control

Privacy/ Social Balance

Security and Safety

Zoning

Circulation

Natural Daylight

Outdoor Spaces



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

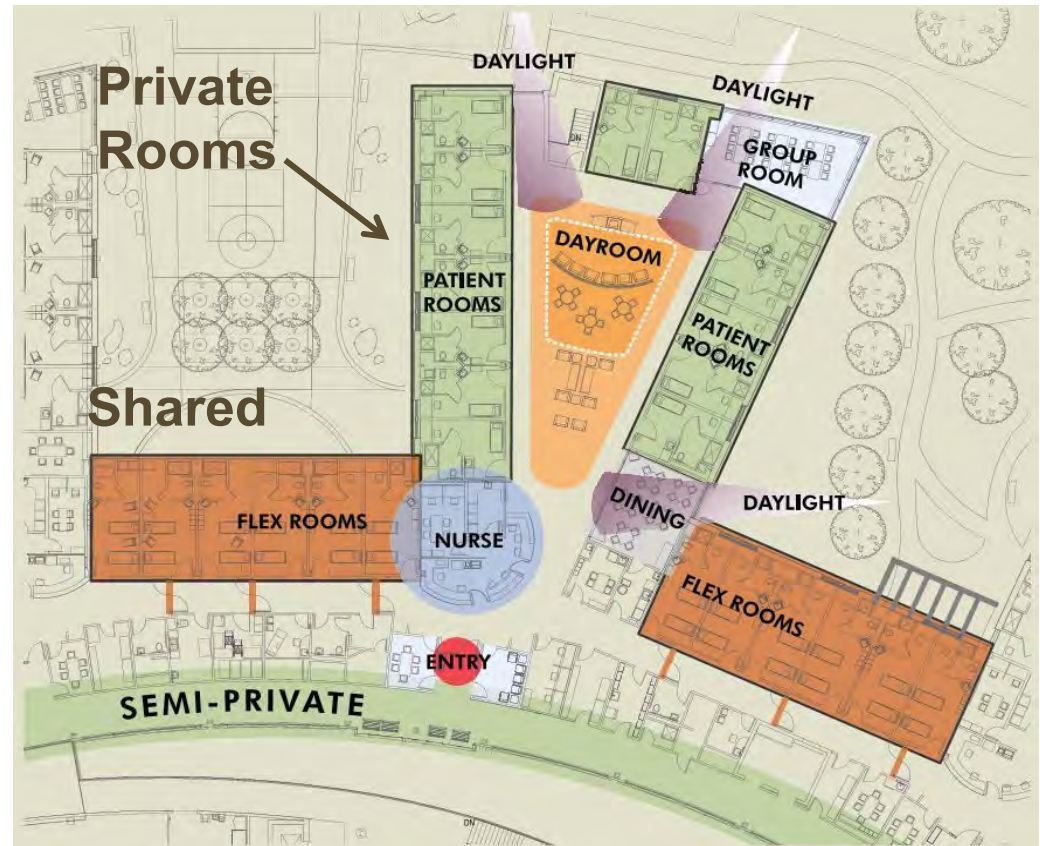
Worcester Recovery Center
Worcester, MA



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



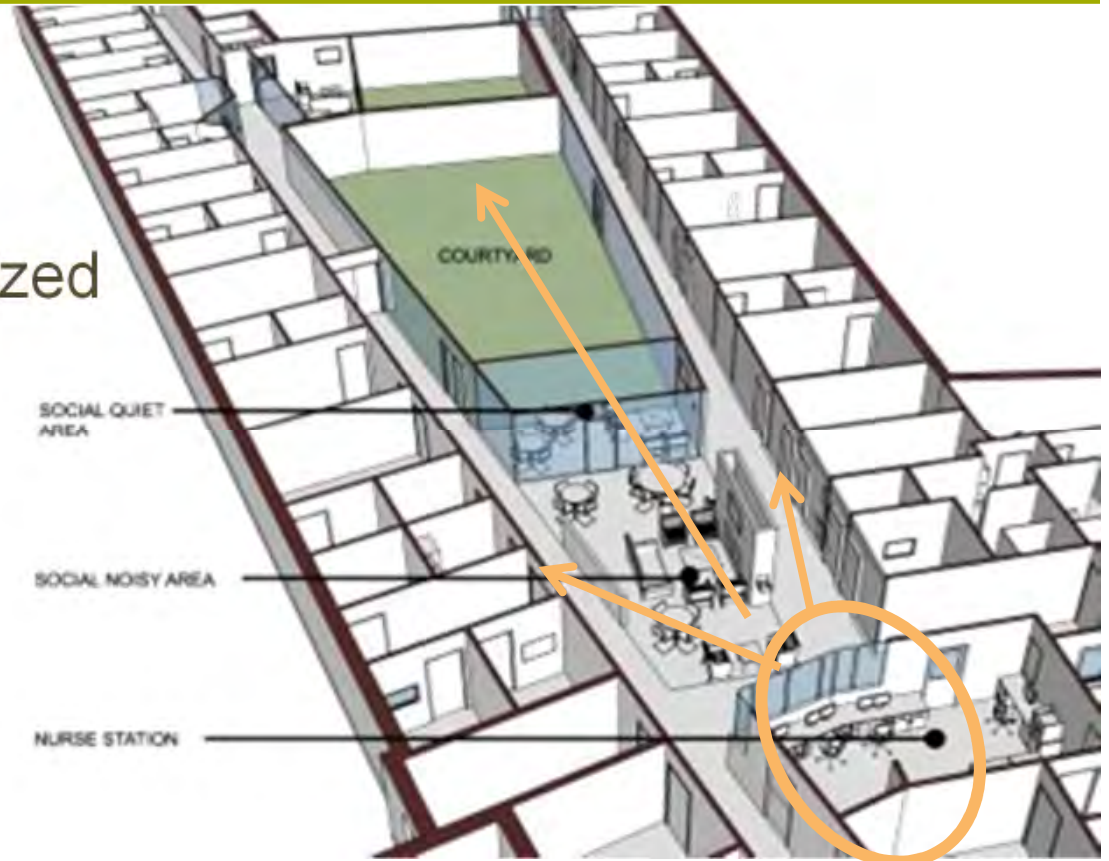
Cordilleras Visioning

Visibility and Control

- Focal points
- Open corridors
- Centralized vs Decentralized



Avera Behavioral Health Center
Sioux Falls, SD



William Sharpe Jr. Hospital
Weston, WV



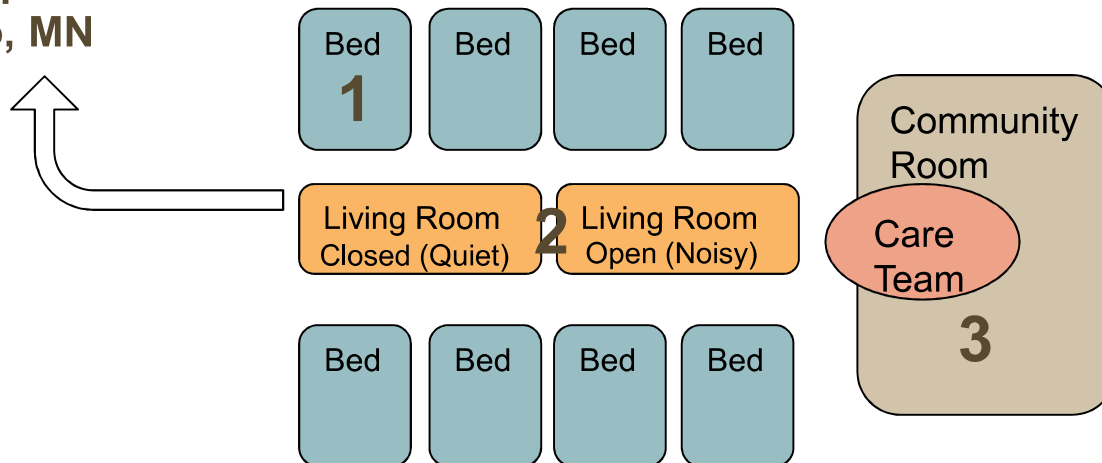
Cordilleras Visioning

Balance of Privacy and Social Interaction



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

United Hospital District Adolescent Treatment Center
Winnebago, MN



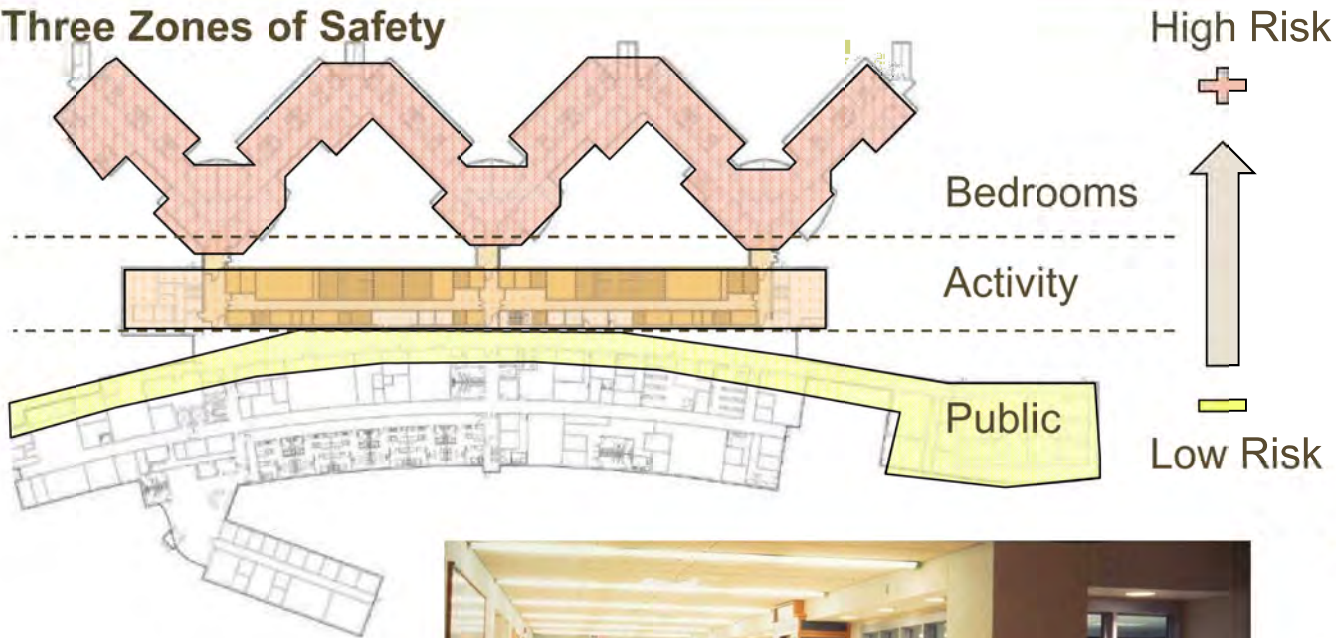
- 1 Private
- 2 Intermediate
- 3 Group



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



Image: AIA AAH Mental Health 101 , architecture +



Cordilleras Visioning

Circulation

On-Stage vs. Off-Stage



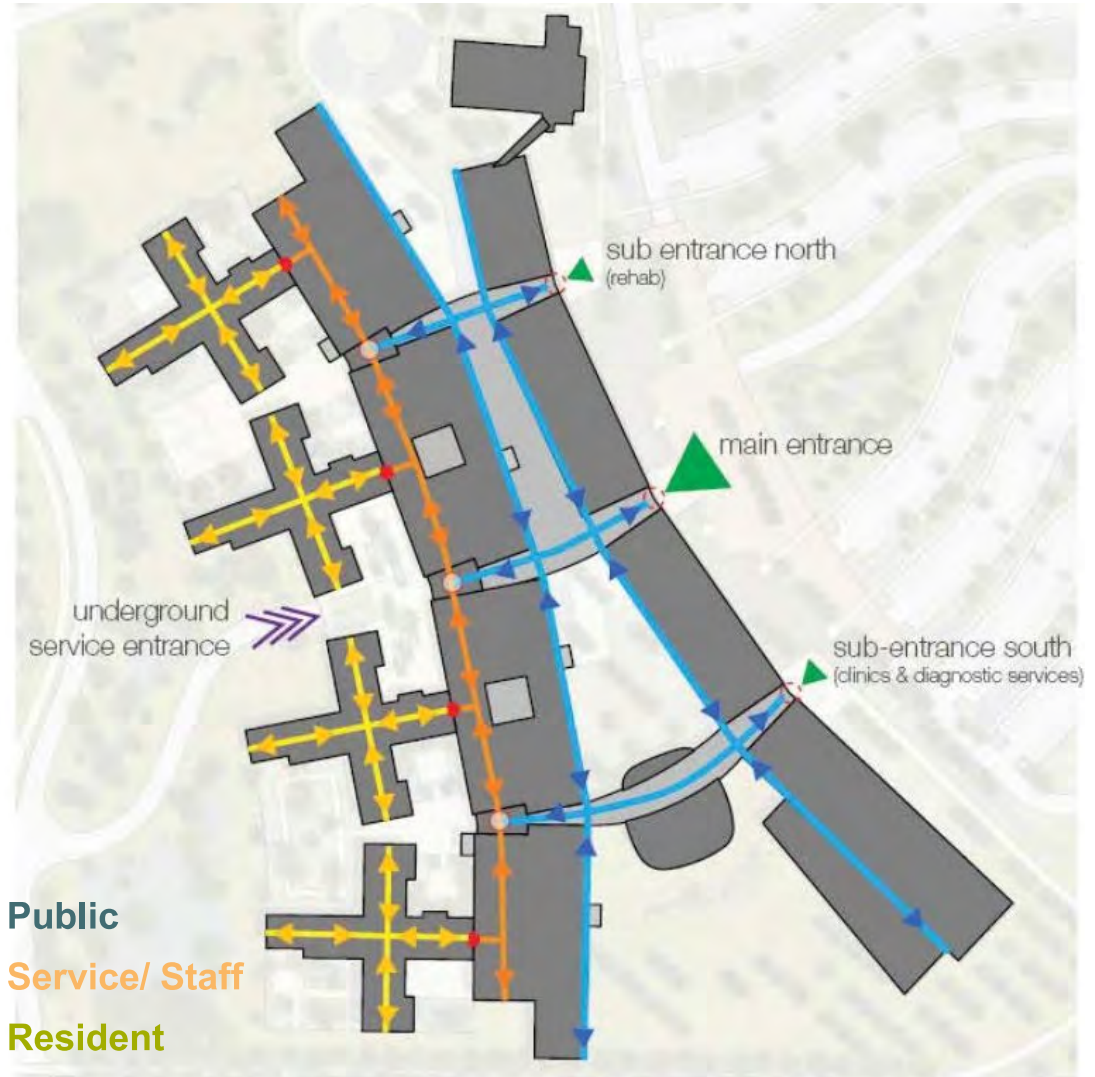
Building as a Village:

Boulevards

Streets

Squares

“Main Street”



Images: AIA AAH Mental Health 101 , architecture +



Cordilleras Visioning

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

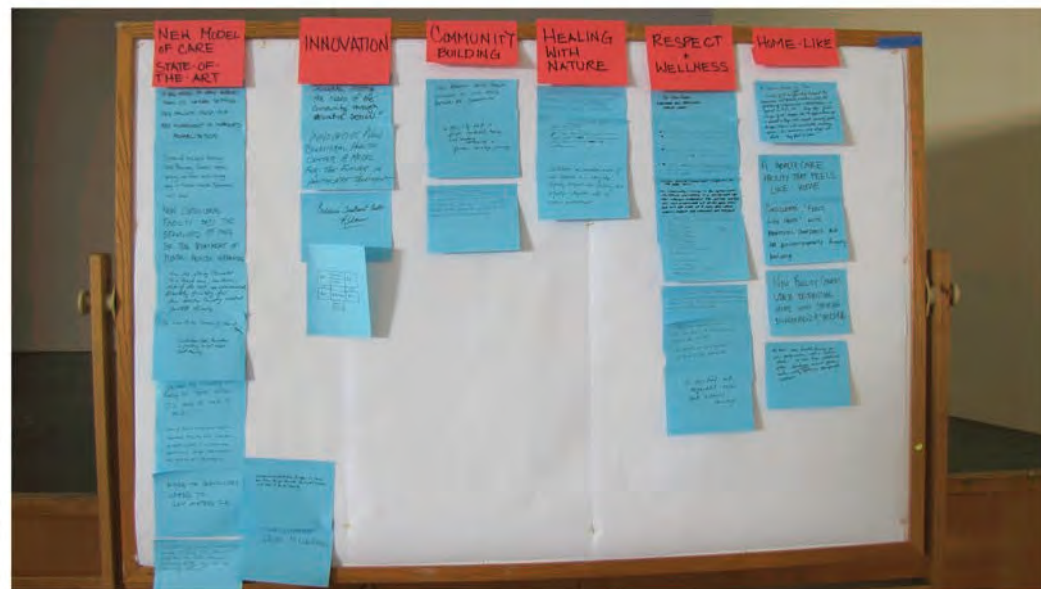


Cordilleras Visioning

Headline Exercise

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 (Gemba)
- 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 diagraming - *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*



SAN MATEO COUNTY
HEALTH SYSTEM

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

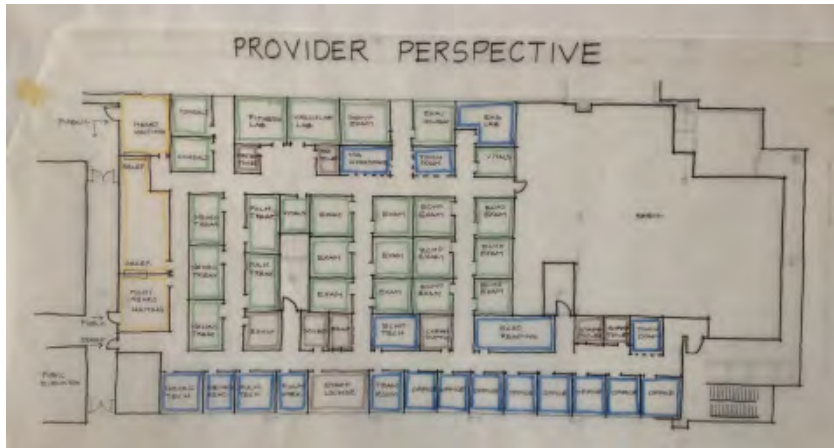


Set a foundation for future work



Cordilleras “3P”

Generate Extreme Schemes



Cordilleras "3P"

Day 2: Extreme Scheme Perspectives

- Present Extreme Schemes
- Vote
- Report out

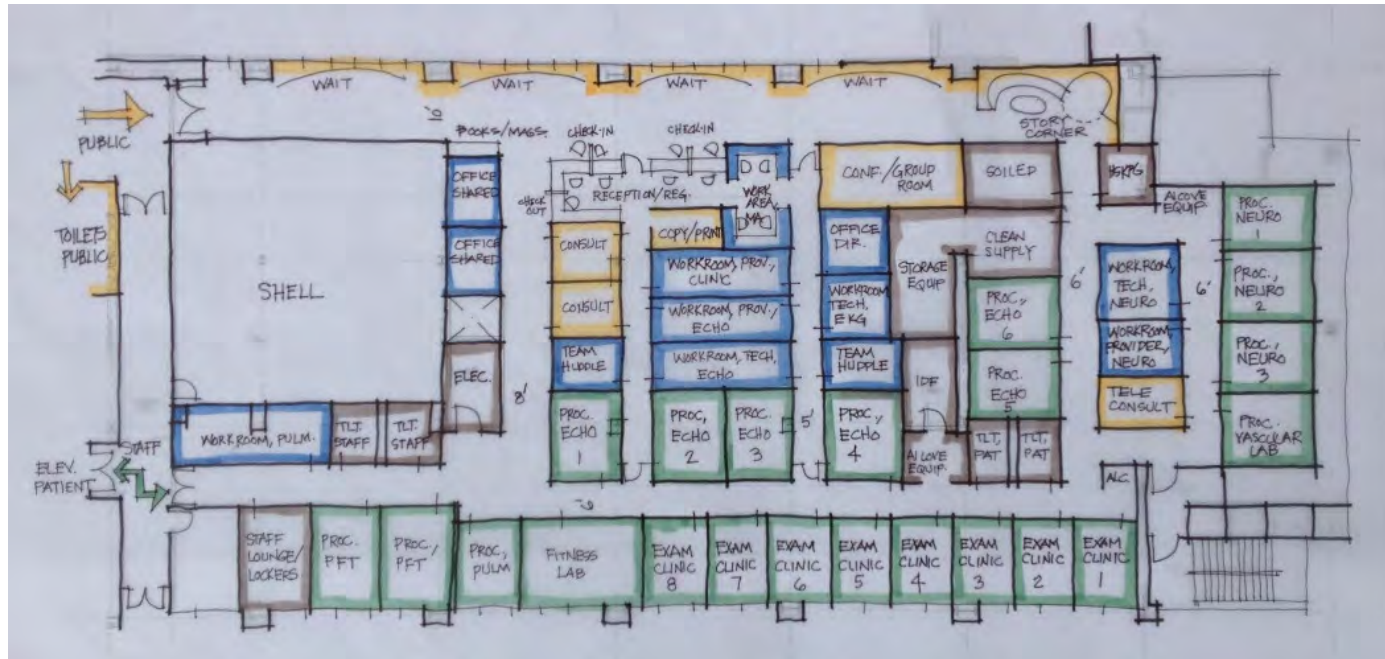


Designing to one perspective allows valued design responses to surface . . . And how does that stack up to the collective goals and criteria of ALL the stakeholders.



Cordilleras “3P”

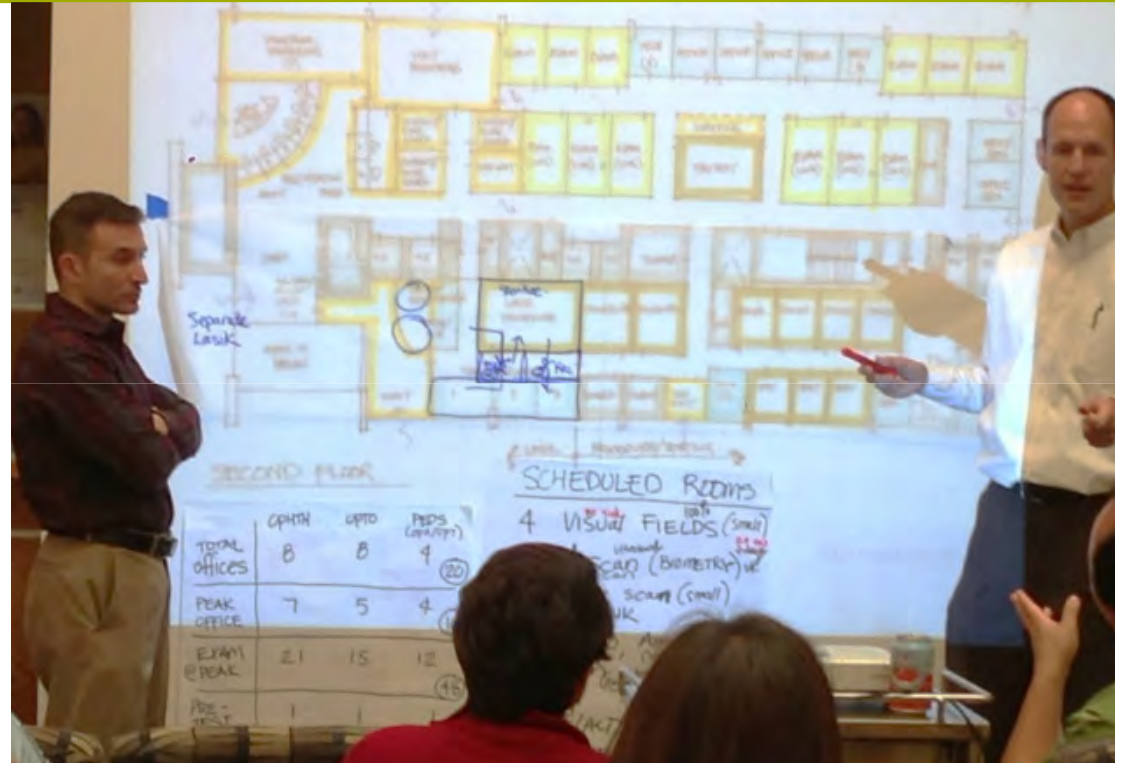
Generate Hybrid Scheme(s)



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"



Cordilleras Mental Health Rehabilitation Center Cordilleras 3P Day 1

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.

San Mateo County Health System
Behavioral Health and Recovery Services

March 28, 2014



Cordilleras Mental Health Rehabilitation Center Cordilleras 3P Day 1

Vision Statement Goals

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*

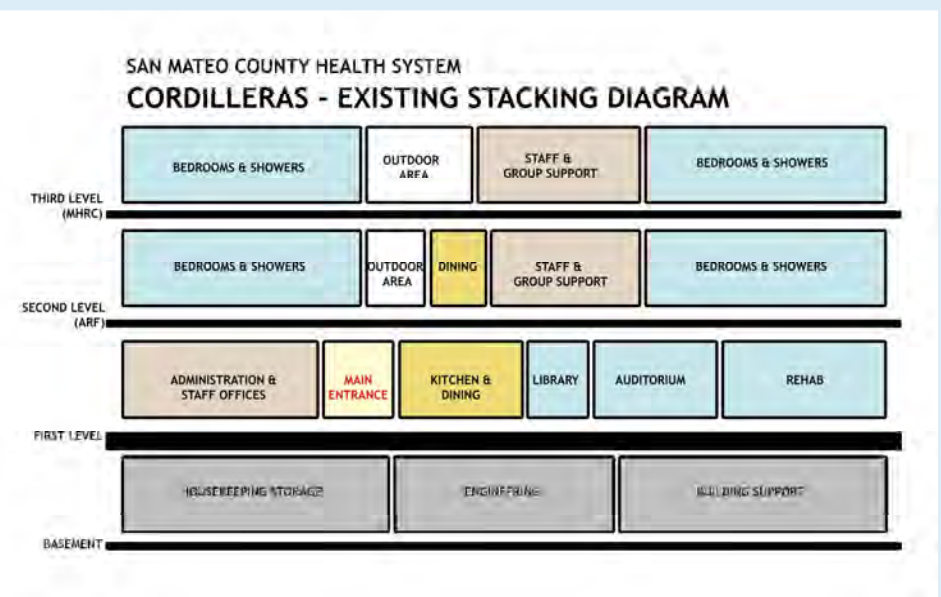
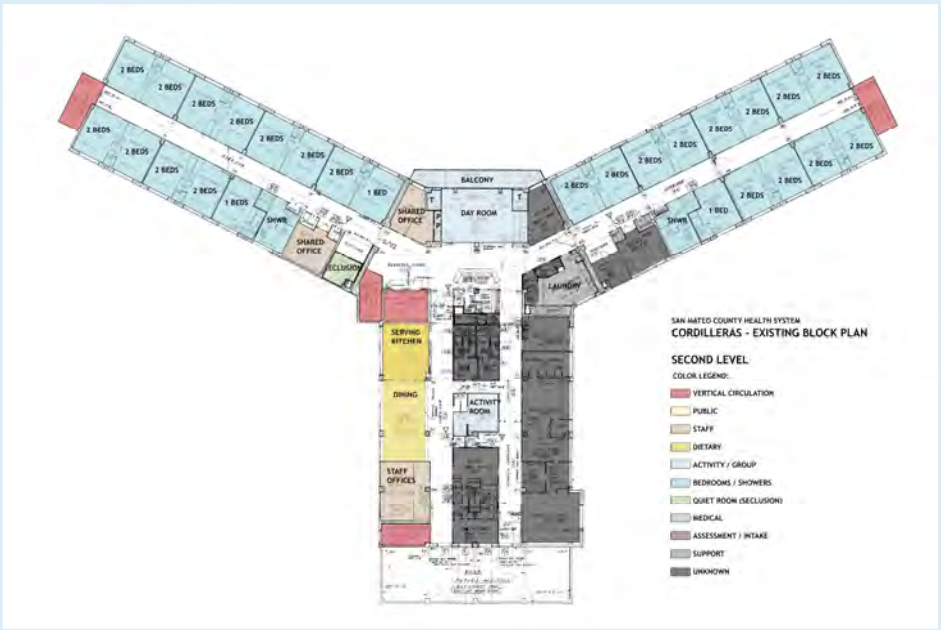
Goals:

- Be innovative
- Rethink Medication Process
- Create an effective and accessible environment
- Facilitate each consumer's success to progress out of Cordilleras facility

San Mateo County Health System
Behavioral Health and Recovery Services

March 28, 2014





Cordilleras 3P Day 1

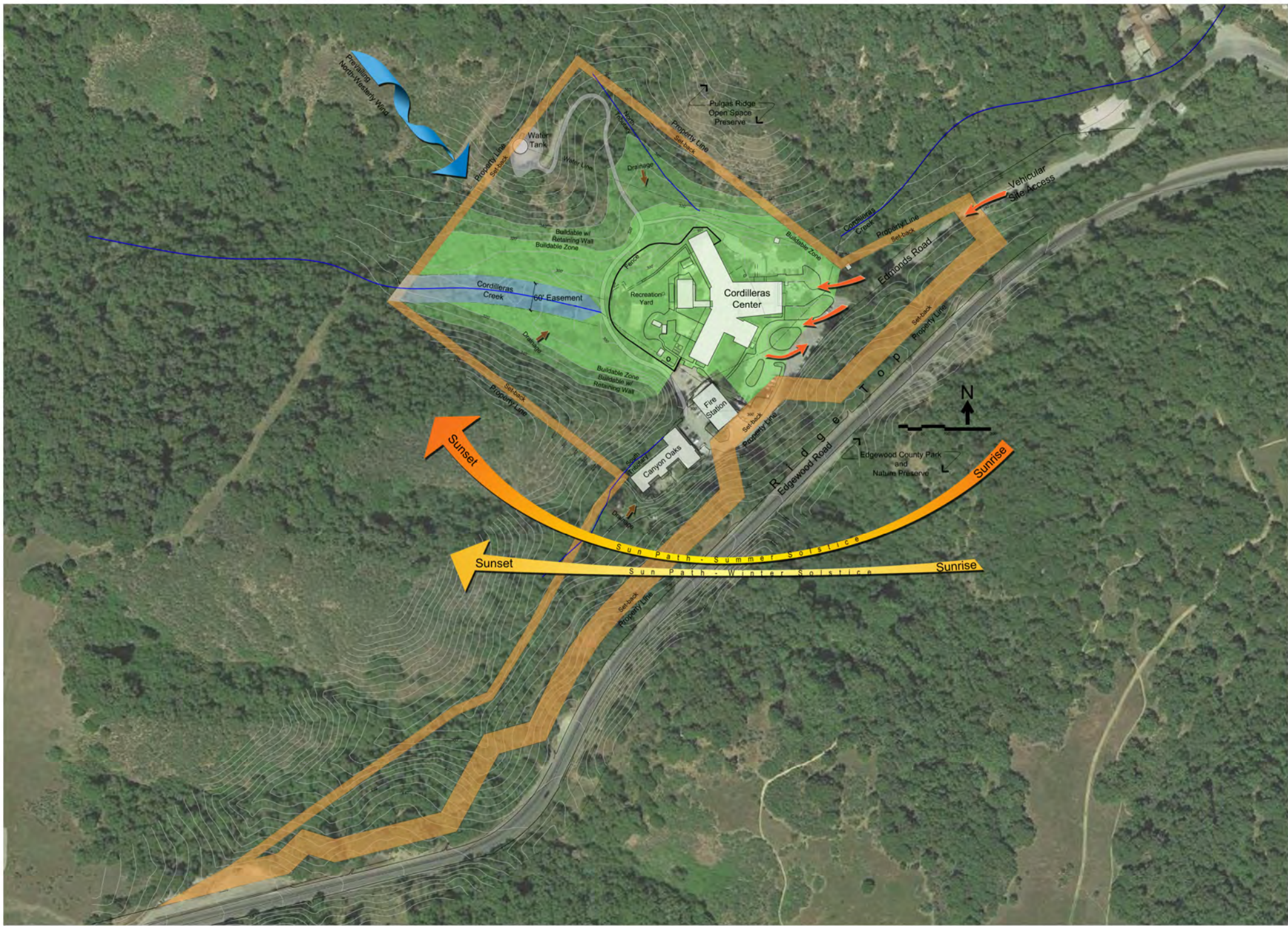
Existing Building Diagrams

Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 1

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 the 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.





Dietary

Big Ideas

- Eliminate lines / waiting @ meal time
- Community scale decentralized dining
- Explore models of serving restaurant style versus Cafeteria (or family style)
- Views to nature
- Daylight
- Serving clients in homelike atmosphere
- Set menu and balanced meals
- Increase food from garden
- Client engagement
- Music

Constraints

- Dining / kitchen / store room connectivity
- Need large assembly room for big events
- Equipment storage space and walk-in refrigerator + freezer space
- Overloaded sewer flow
- 3rd floor residents come down to suites - staff bring food up to servery
- More opportunity for clients to help clean up etc. @ suites

Housekeeping

Big Ideas

- Consider assistance program
- Future proximity cards / hotel keying for security

Constraints

- Bigger Closets - space to have local inventory for daily access
- Floor sinks in housekeeping closets
- Centralized locked closets
- Capacity issue @ laundry rooms
- Keeping client property secure (laundry room and rooms)
- Maintenance of locks (breaks easily)
- Larger room for storage

Nursing

Big Ideas

- Wireless for clients
- Multiple Med Rooms (PODS)
- Toilet/shower for each room
- Single Rooms = better bed placement
- Few sized for doubles as flexibility; some patients prefer roommates
- Water control from Nurse station for specific client population

Constraints

- Lines for medications
- Only one med room for 65 clients
- No automated med dispenser
- Larger exam/treatment rooms
- Wireless access

Rehab (MHRC)

Big Ideas

- Closer proximity (visual) to Rehab & group areas
- POD Organization
- Smaller activities @ each POD
- Bigger central group rooms
- Add occupational therapies
- Add spiritual programs
- Team sport facilities outside
- Trails with 1 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 MHR & suites

Training

Big Ideas

- Large Training Room (30)
- Flexible set up
- Multi Purpose
- AV Technology
- Assistant Staff
- Small conference room on floor
- E-learning for standard training 'reliant learning'

Constraints

- Δ 24/7 Staff (3 shifts), difficult to schedule
- State required training
- Telecare required training
- Orientation - New employees

Social Work

Big Ideas

- Electronic Charting
- Private offices for meeting clients - safety concern, Dual egress
- Family meeting space
- Sallyport at entry vestibule
- Pods or grouping of bedrooms that can acknowledge and celebrate progress
- Goal is to get to discharge
- Delayed egress option

Constraints

- Connection to outside world and personal connections
 - Δ Wireless and Internet
 - Δ Access to client phones
- Coordinate discharge, currently shared office
 - Δ Shared office (3)
- Client conversation noise
 - Δ Availability of conference room space
- Proximity to patients, access to staff (reduce anxiety)
- More staff amenities
 - Kitchen
 - Break
 - Toilets/shower

The Suites

Big Ideas

- Proper front door
- Private showers
- Variety of group rooms
- Meditation room

Constraints

- Cable and internet access
- Transportation to community
- Easy access to outdoors

Medical

Big Ideas

- Daylight to exam rooms
- More private bedrooms for better infection control
- Telemedicine capabilities
- PNF between inpatient and acute and MHRC
- Help with placements
- Enhanced residency program

Constraints

- Exam room too small
- Consider dual access exam/treatment
- Computer access
- Wireless access
- Software system integration (County & Health System)
- Primary care integration with "The Suites" (ARF)

Cordilleras Site Visit/Interviews 3P Day 1

San Mateo County Health System Behavioral Health and Recovery Services

March 28, 2014





SAN MATEO COUNTY
HEALTH SYSTEM

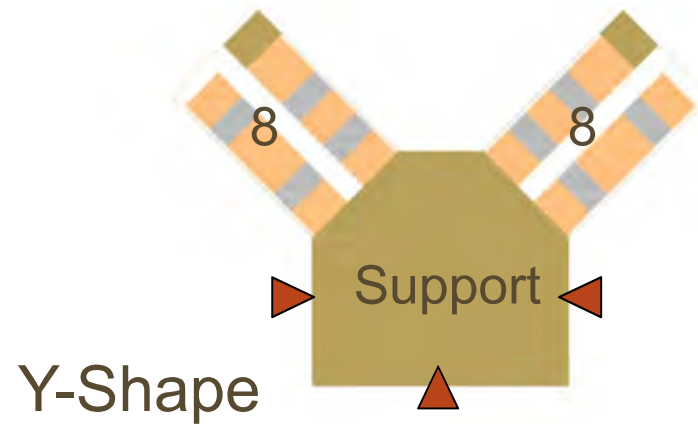
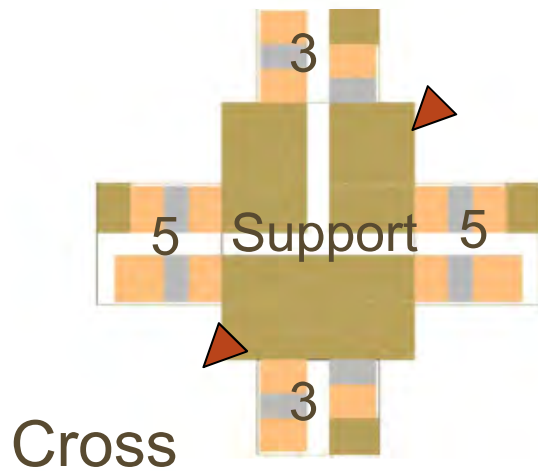
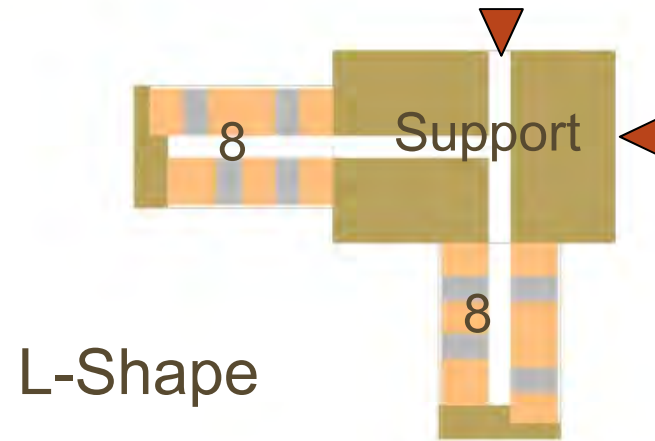
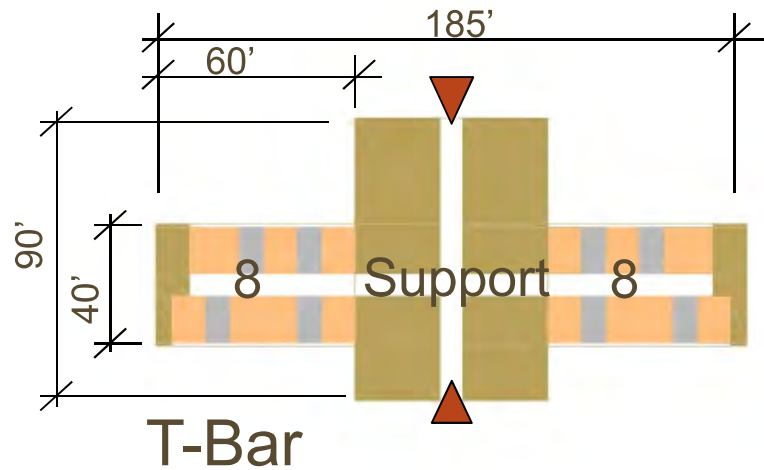
Pod & Room Configurations

San Mateo County Behavioral Health
and Recovery Services, Cordilleras

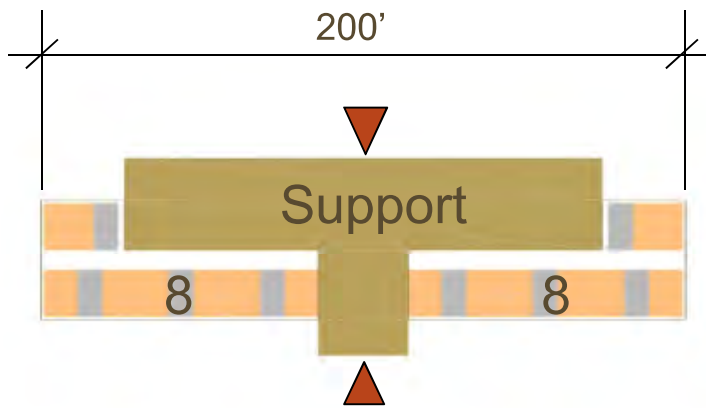
March 28, 2014



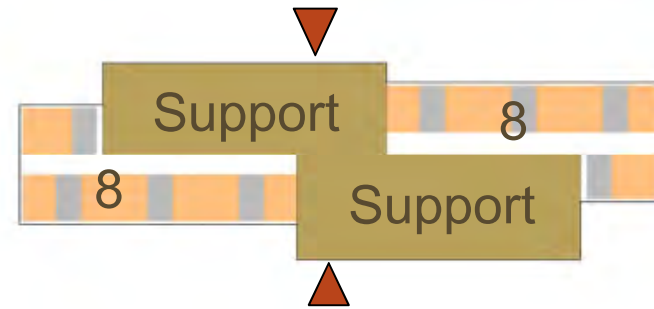
PODS: Double Loaded Rooms (No courtyard)



PODS: Single Loaded Rooms (No courtyard)



Bar

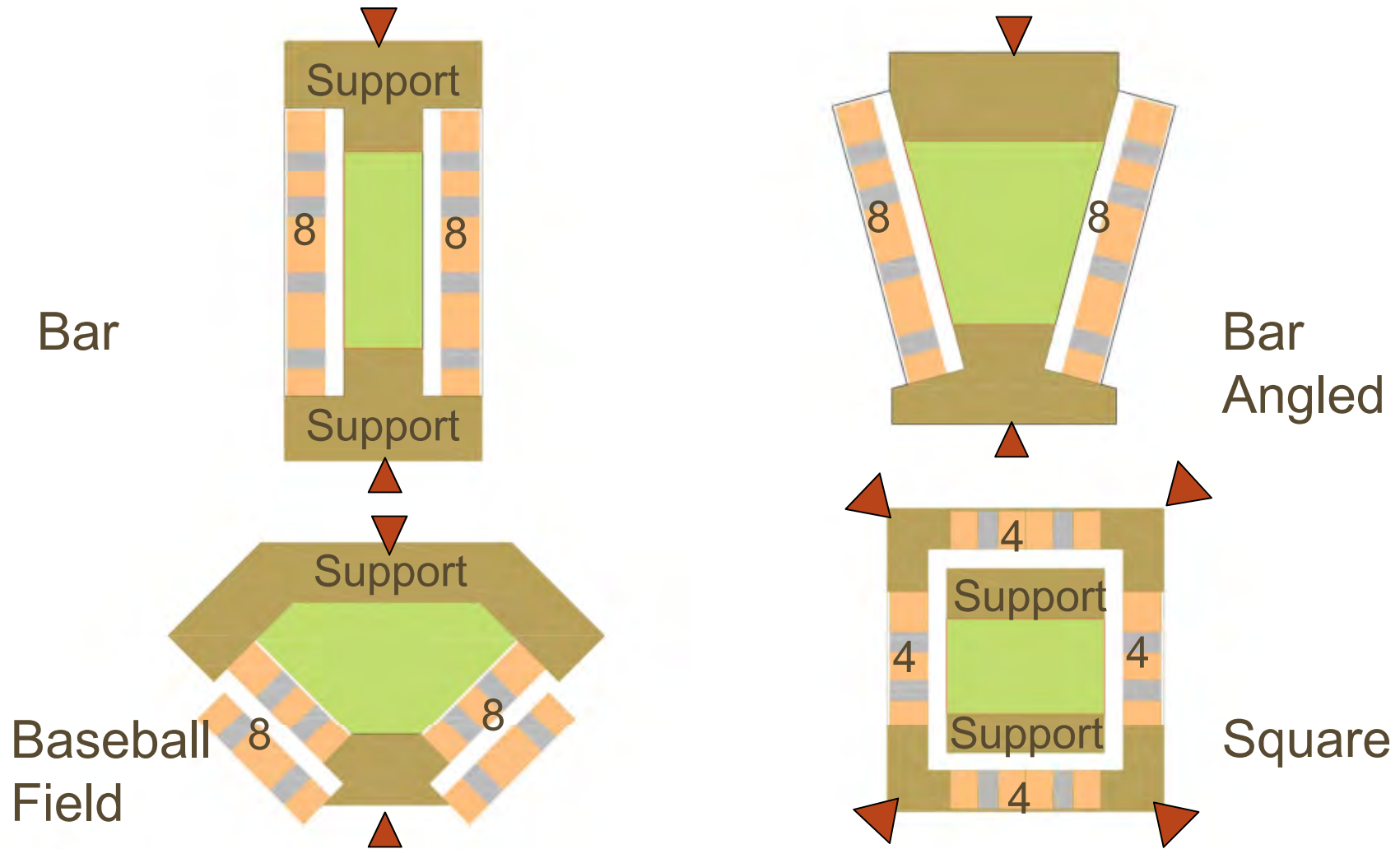


Z-Bar



Cordilleras 3P Day 1

PODS: Single Loaded Rooms (Courtyard)



Cordilleras 3P Day 1

BEDROOMS: Private Rooms



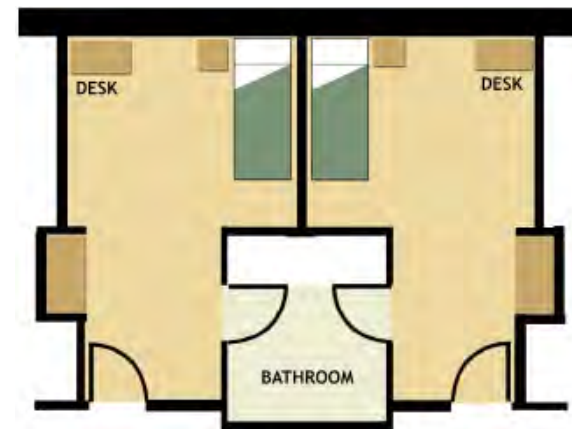
Inboard Toilet



Outboard Toilet



Stacked Toilet



Jack & Jill Toilet

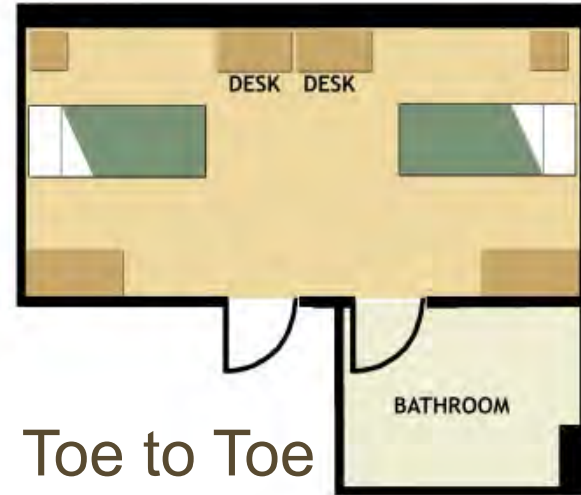


Cordilleras 3P Day 1

BEDROOMS: Semi-Private Rooms



Outboard Toilet



Toe to Toe



Side by Side



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

Support

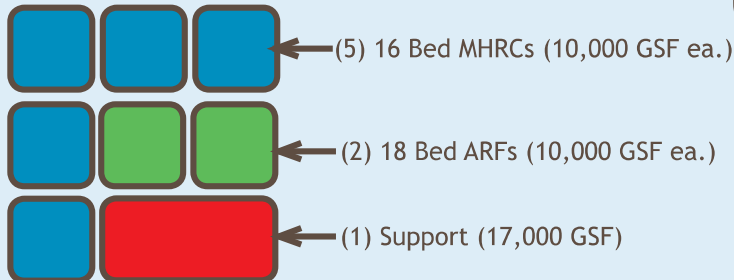
Support Services Building

- 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 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
- 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 Served 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

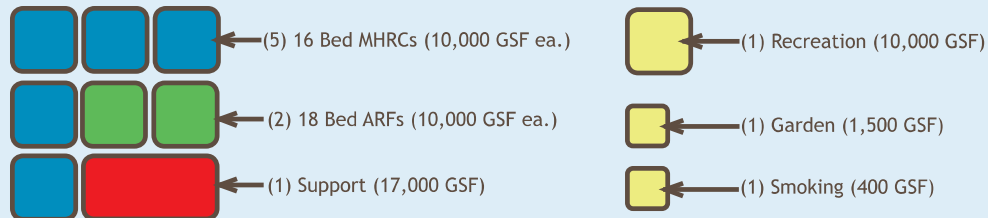


Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 1

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?)

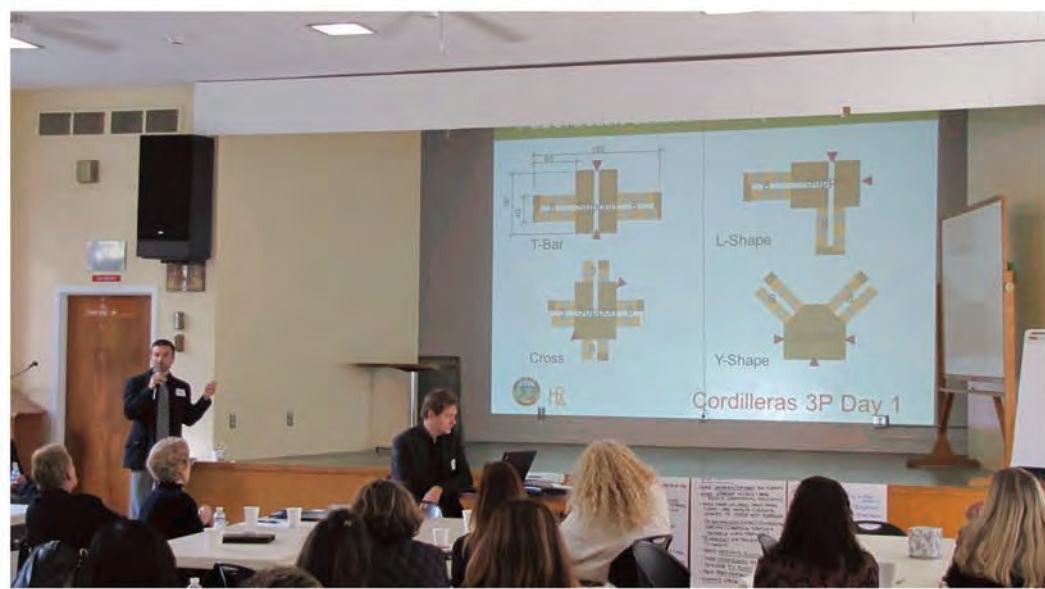


San Mateo County Health System
Behavioral Health and Recovery Services

March 28, 2014

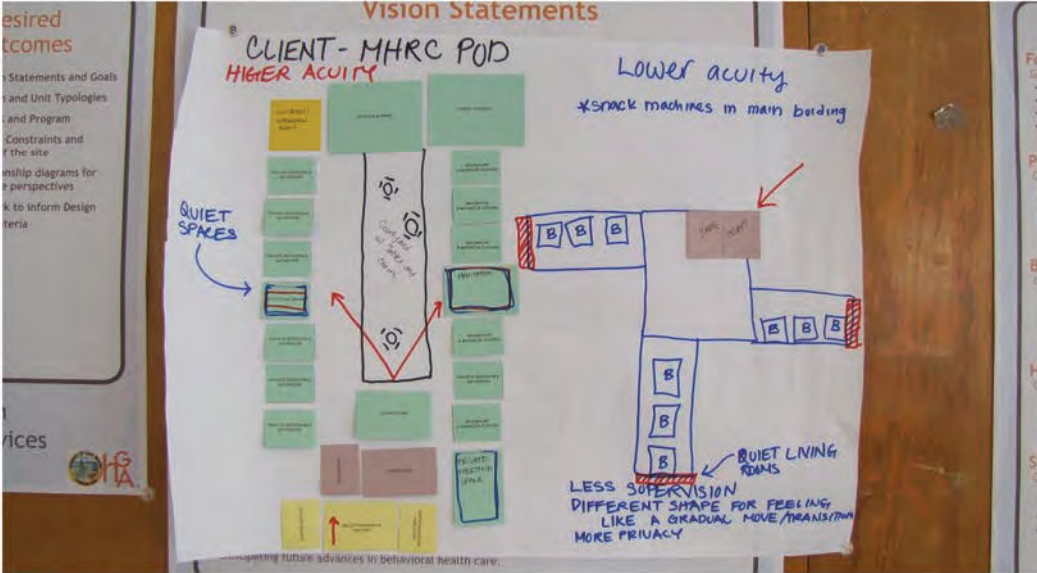


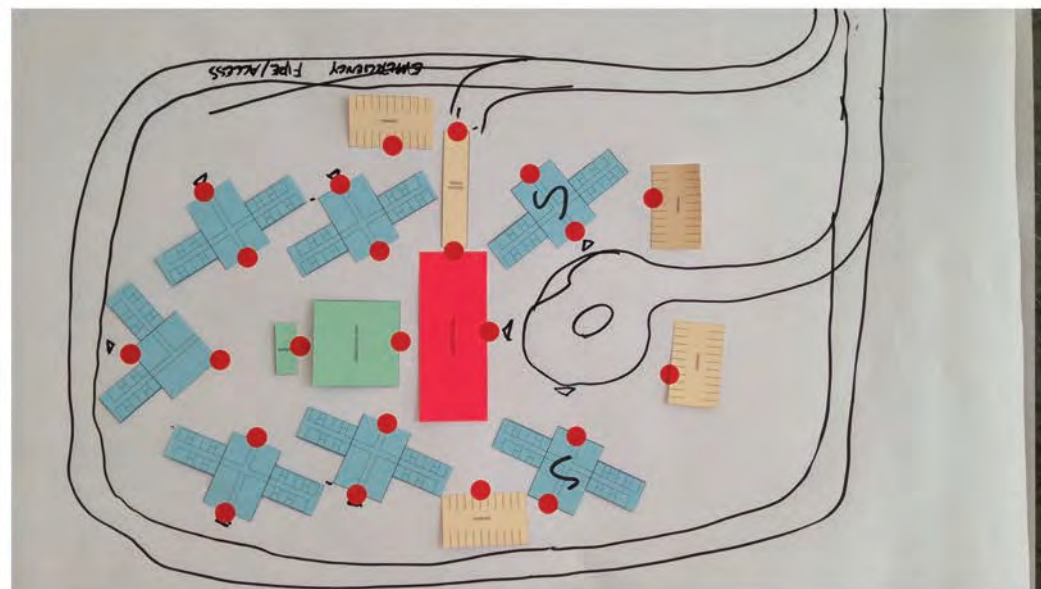
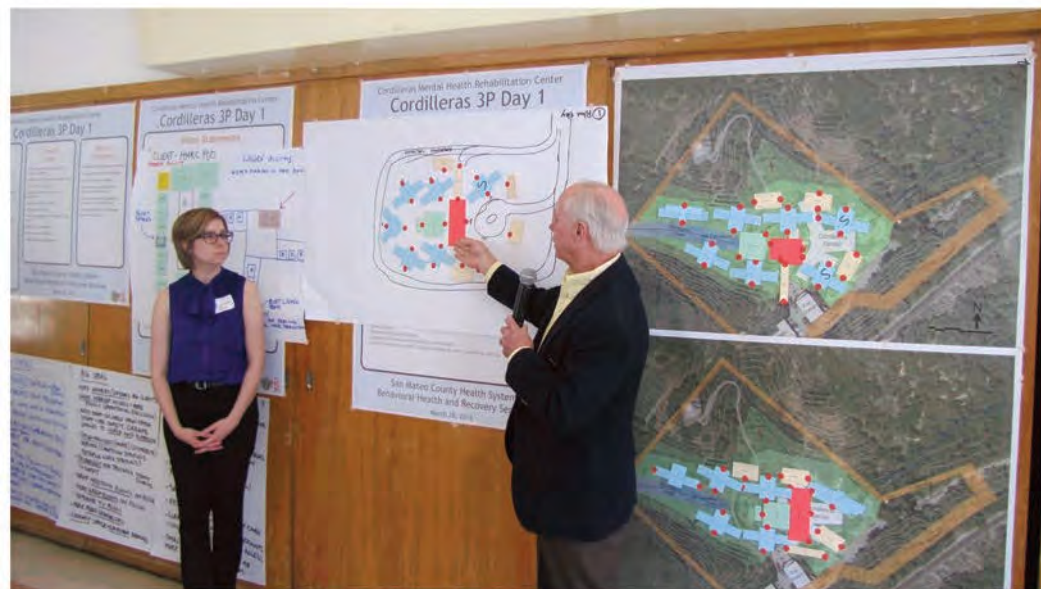
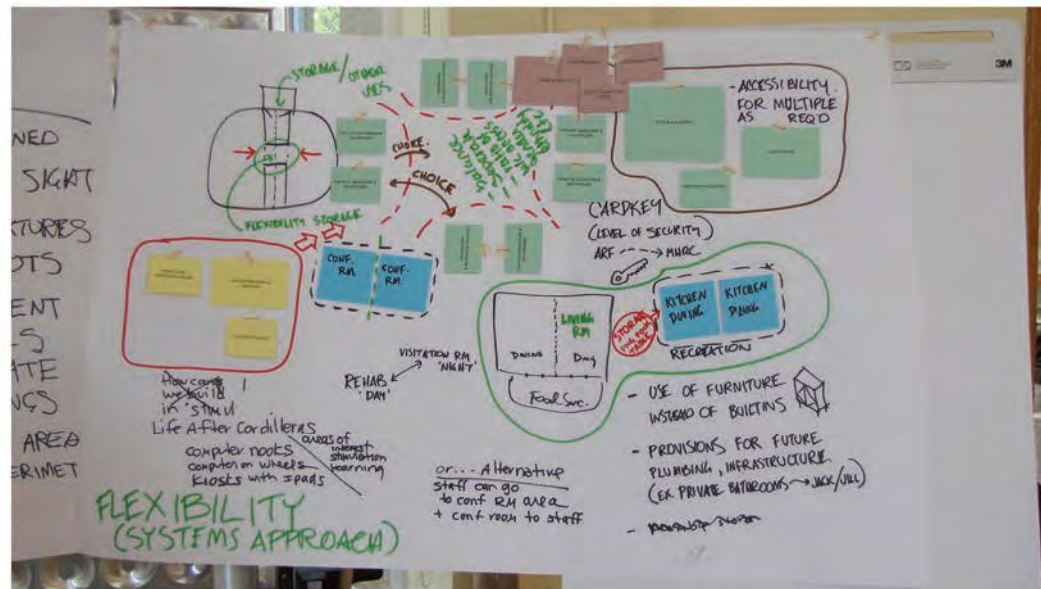


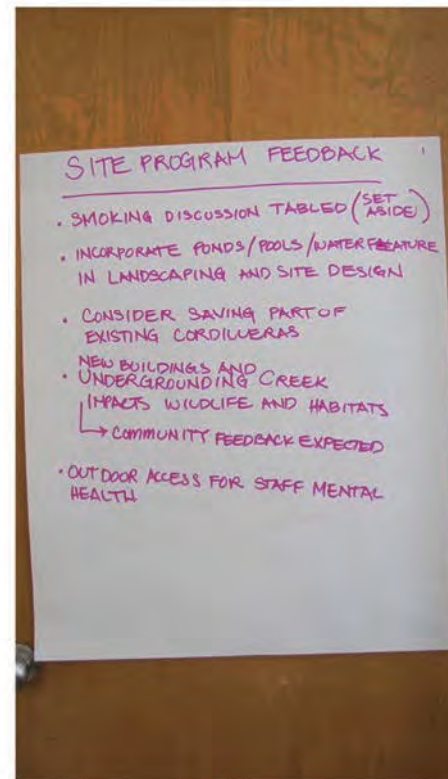












Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 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

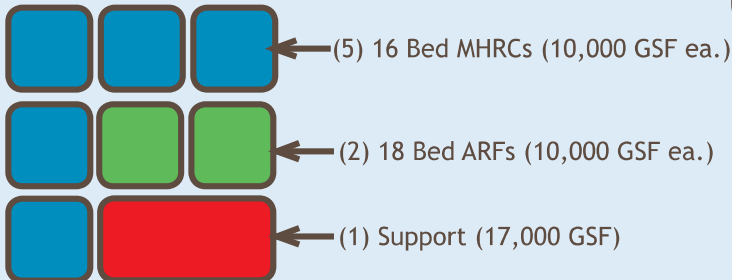
- 1 Reception Area w/ Waiting
- 1 Exam/Assessment Room
- 1 Therapy/Interview/ Visitation Room
- 1 Spa/Tub Room
- 1 Gymnasium/Auditorium + Storage
- 1 Art Room
- 1 Retail + Storage
- 1 Fitness Center +Storage
- 1 Kitchen (Food Prep)
- 7 Staff Private Offices
- 12 Shared Offices
- 1 Large Conference Room
- 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
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- 1 General Storage
- 1 Director Office
- 1 Staff Break/Locker Room
- 4 Toilets
- 1 Housekeeping Closet



Cordilleras 3P Day 2 Building Space Program

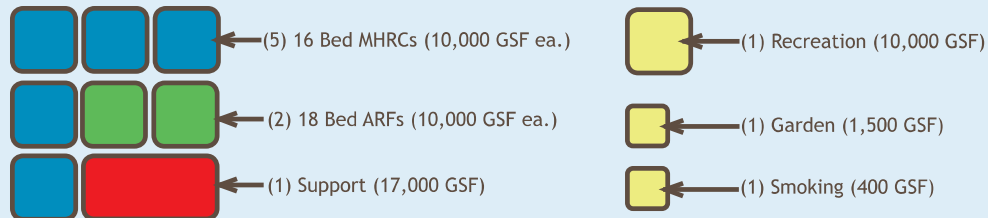


Cordilleras Mental Health Rehabilitation Center

Cordilleras 3P Day 1

Site Program

- (5) Secure MHRC licensed (“Rehab”) buildings @ 10,000 gsf
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- (1) Support Building @ 17,000 gsf
- Recreation yard, including basketball court @ approx. 10,000 sf
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- Parking spaces for 85 cars (current 65 spaces+ additional 20)
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- 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

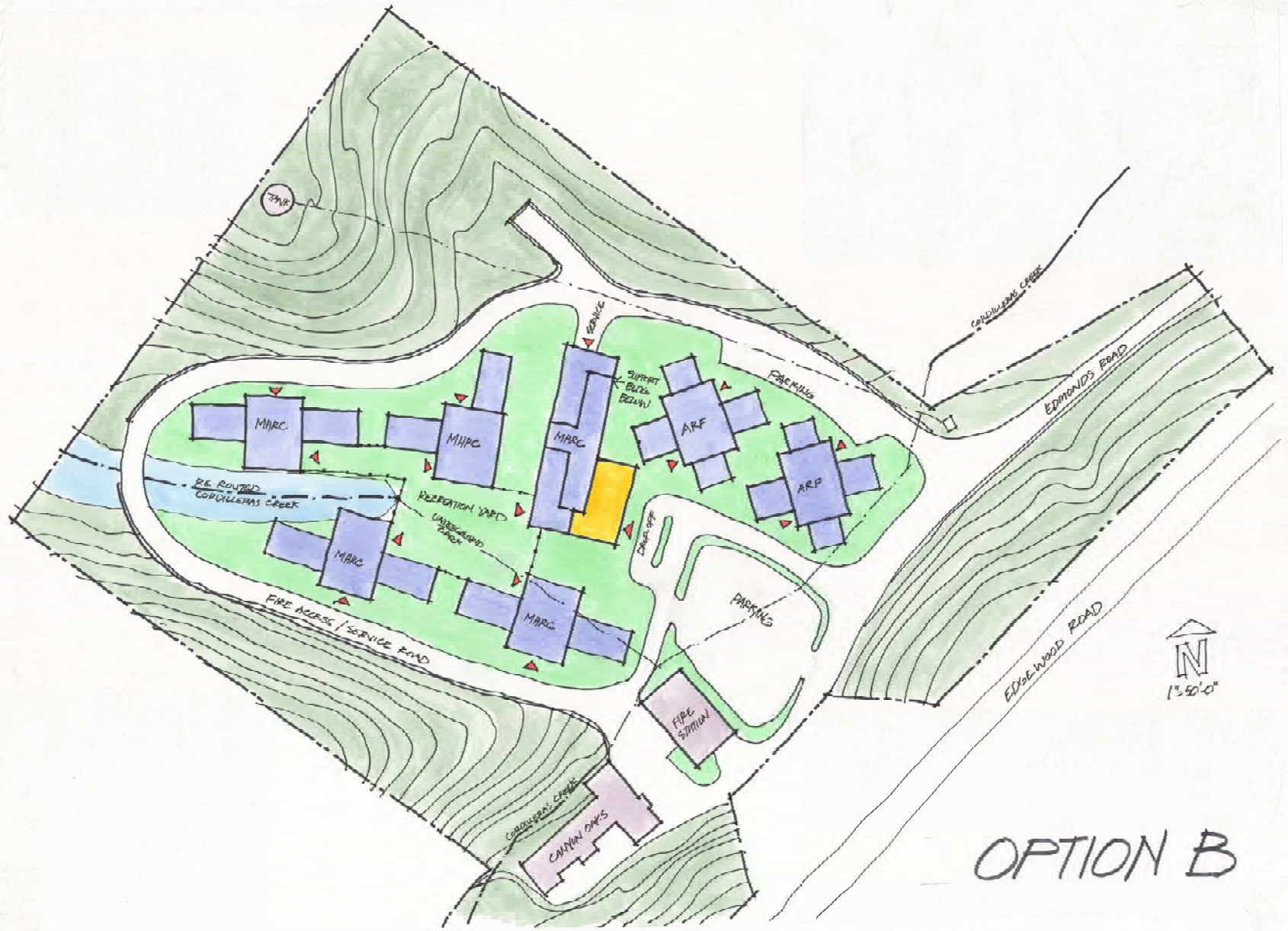




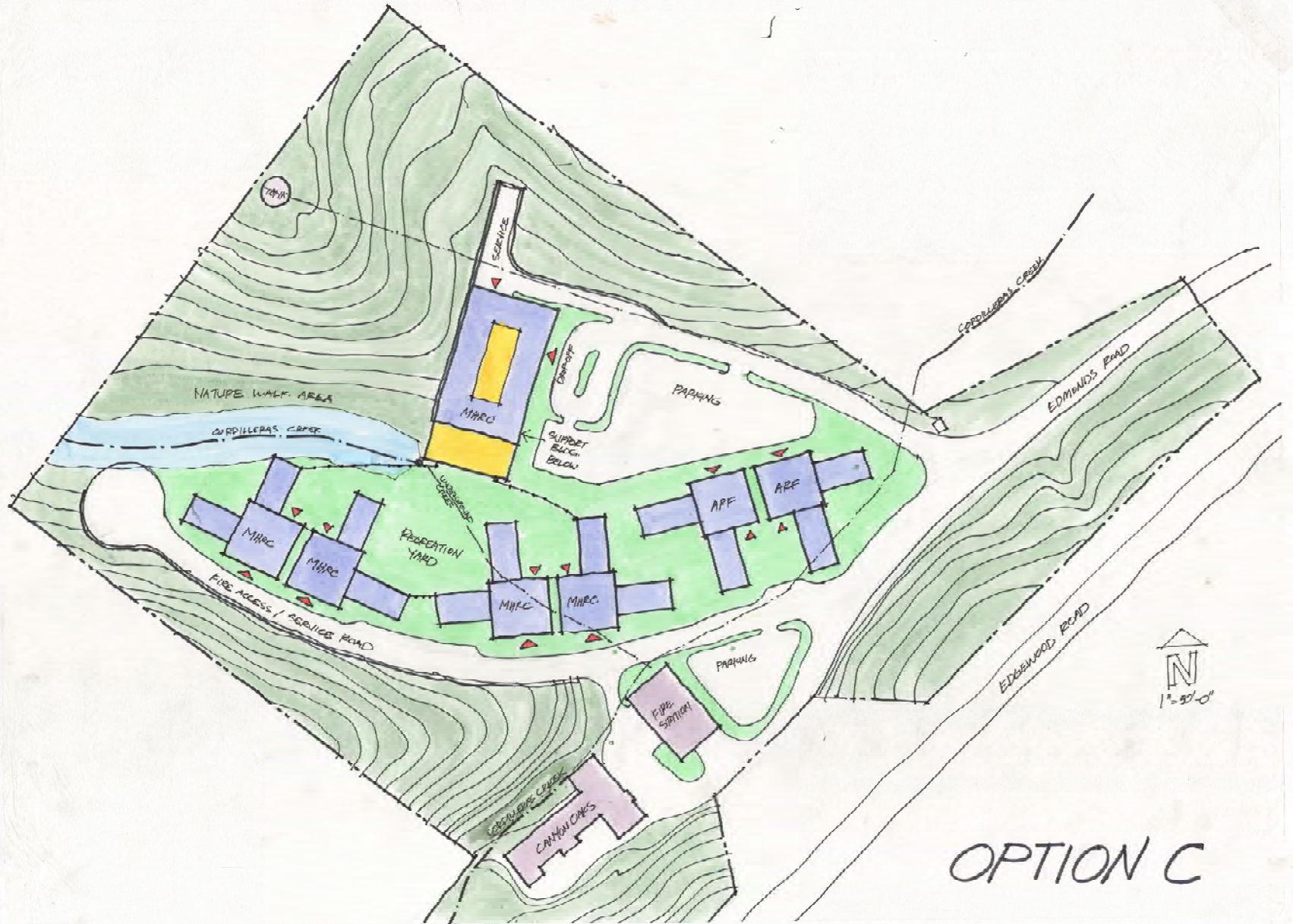




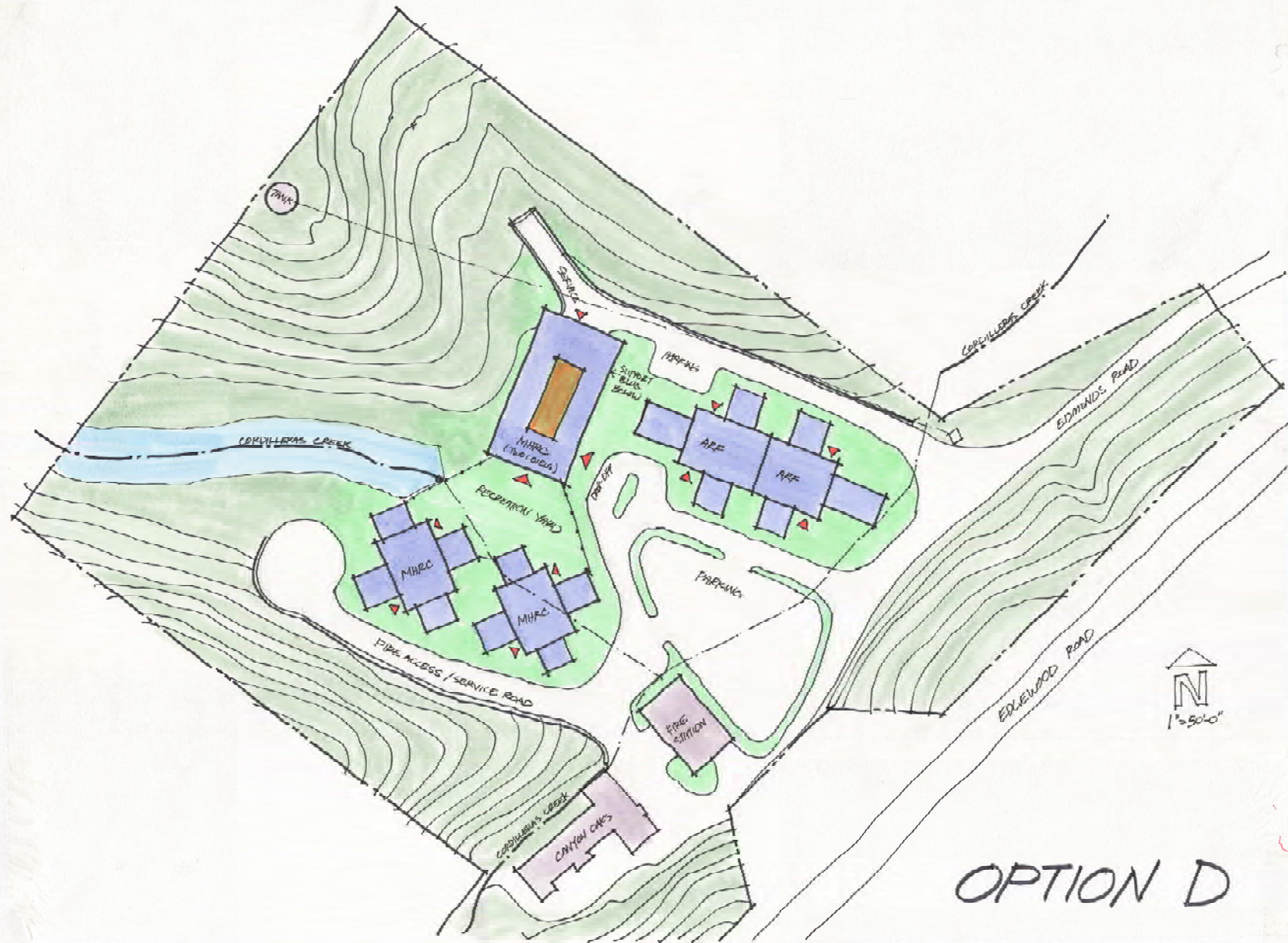
OPTION A

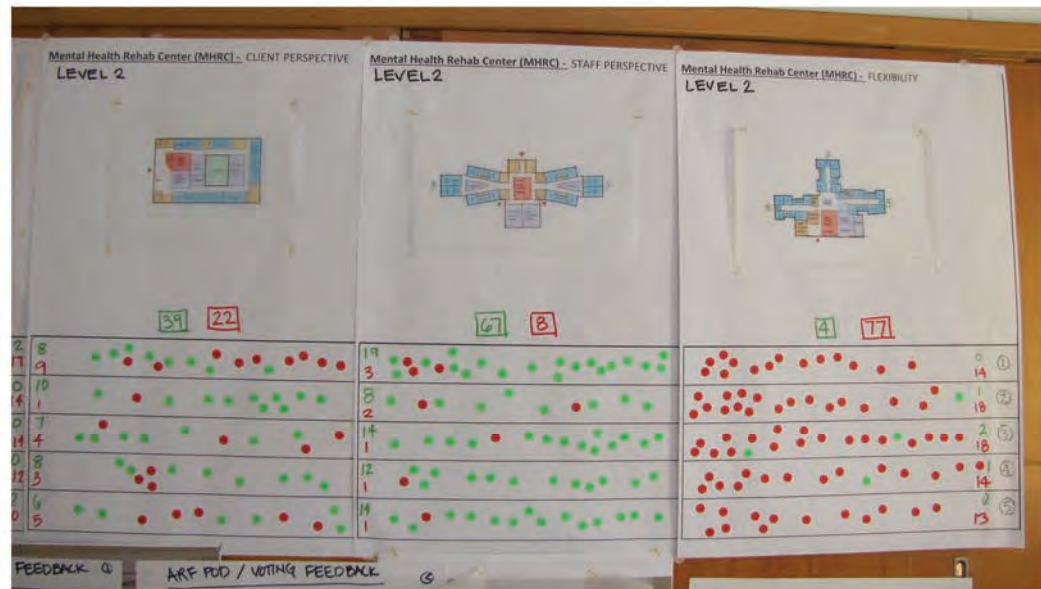


OPTION B



OPTION C









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

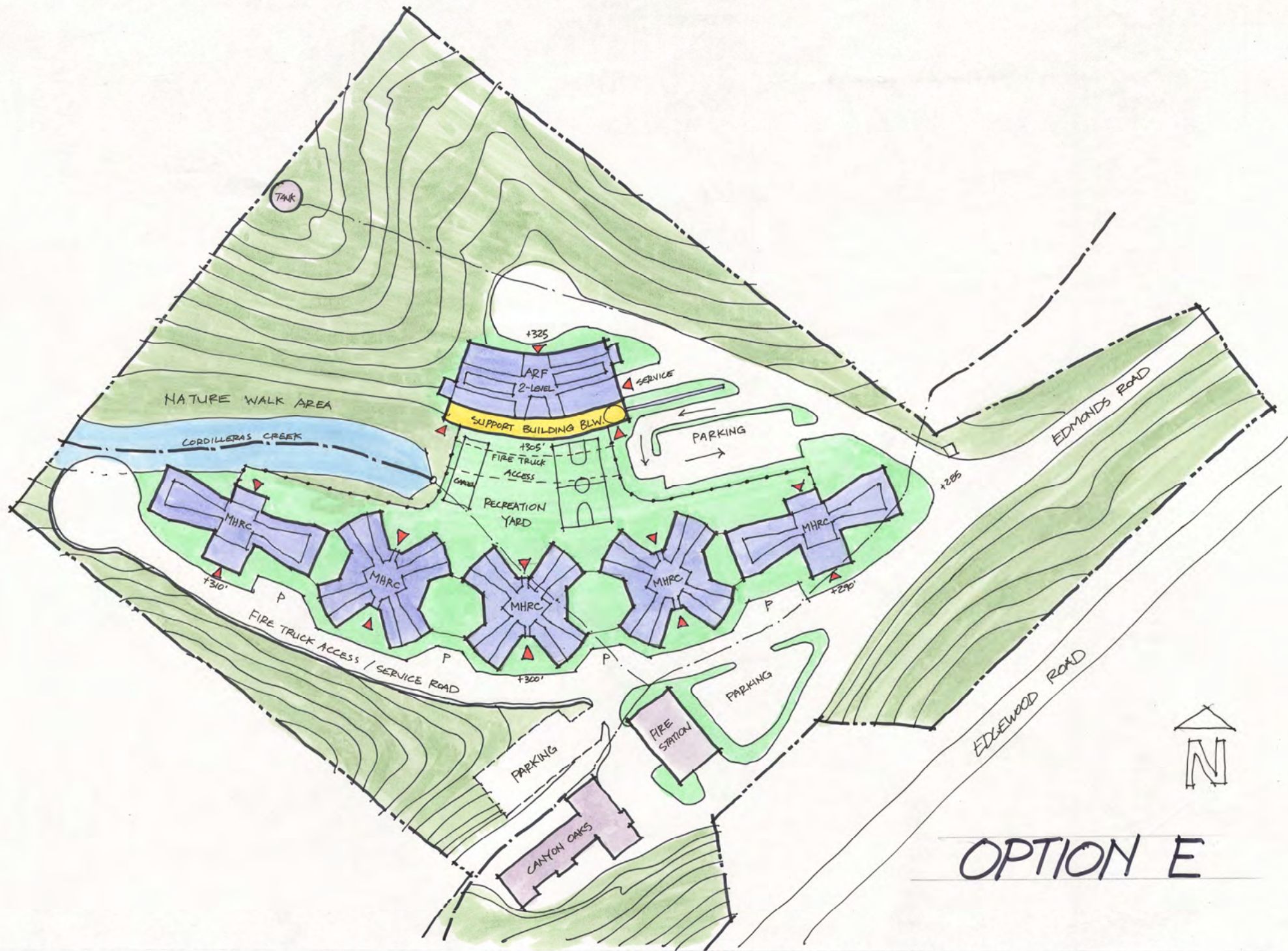
Desired Outcomes

- 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

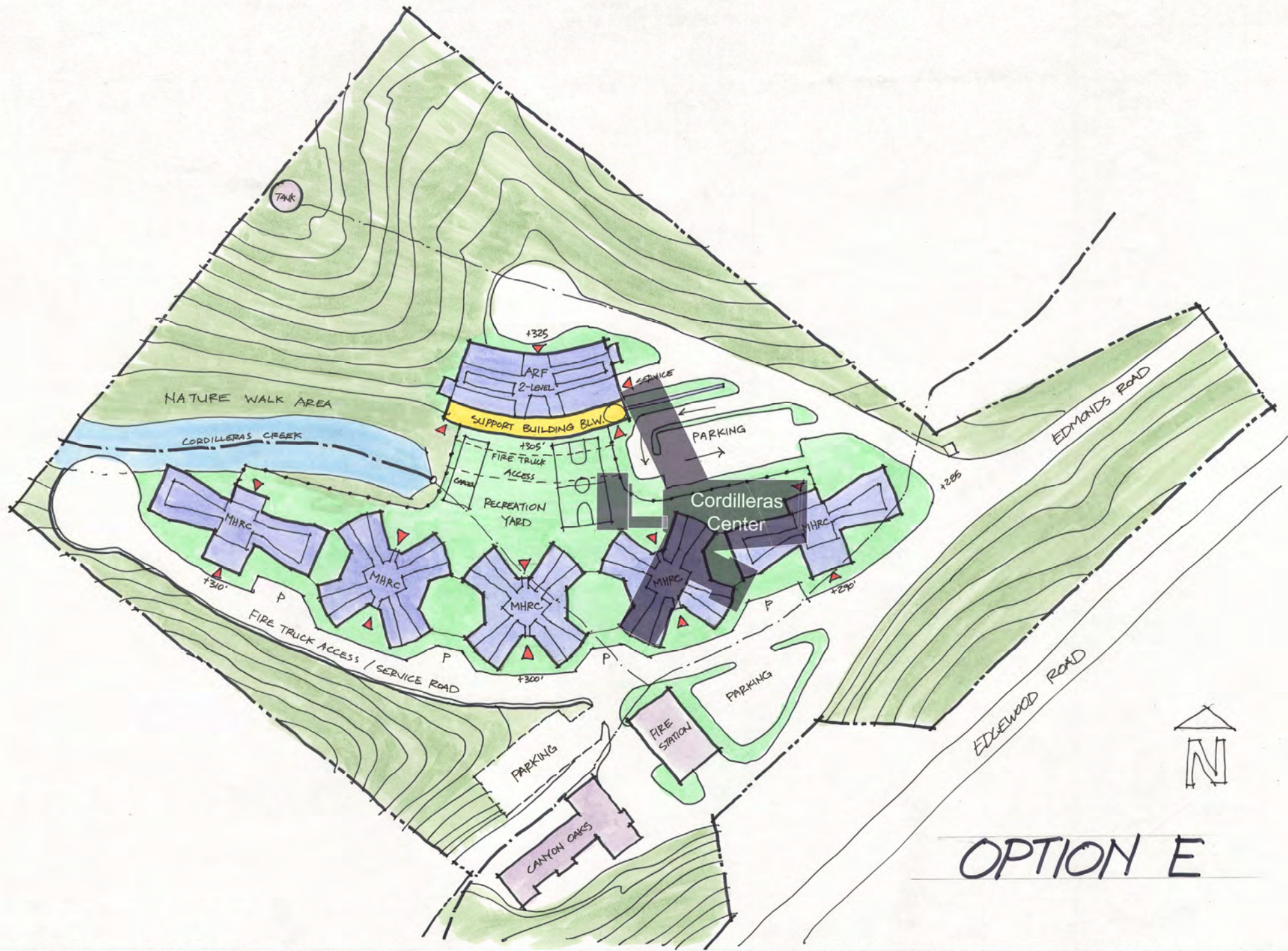
San Mateo County Health System
Behavioral Health and Recovery Services

April 11, 2014

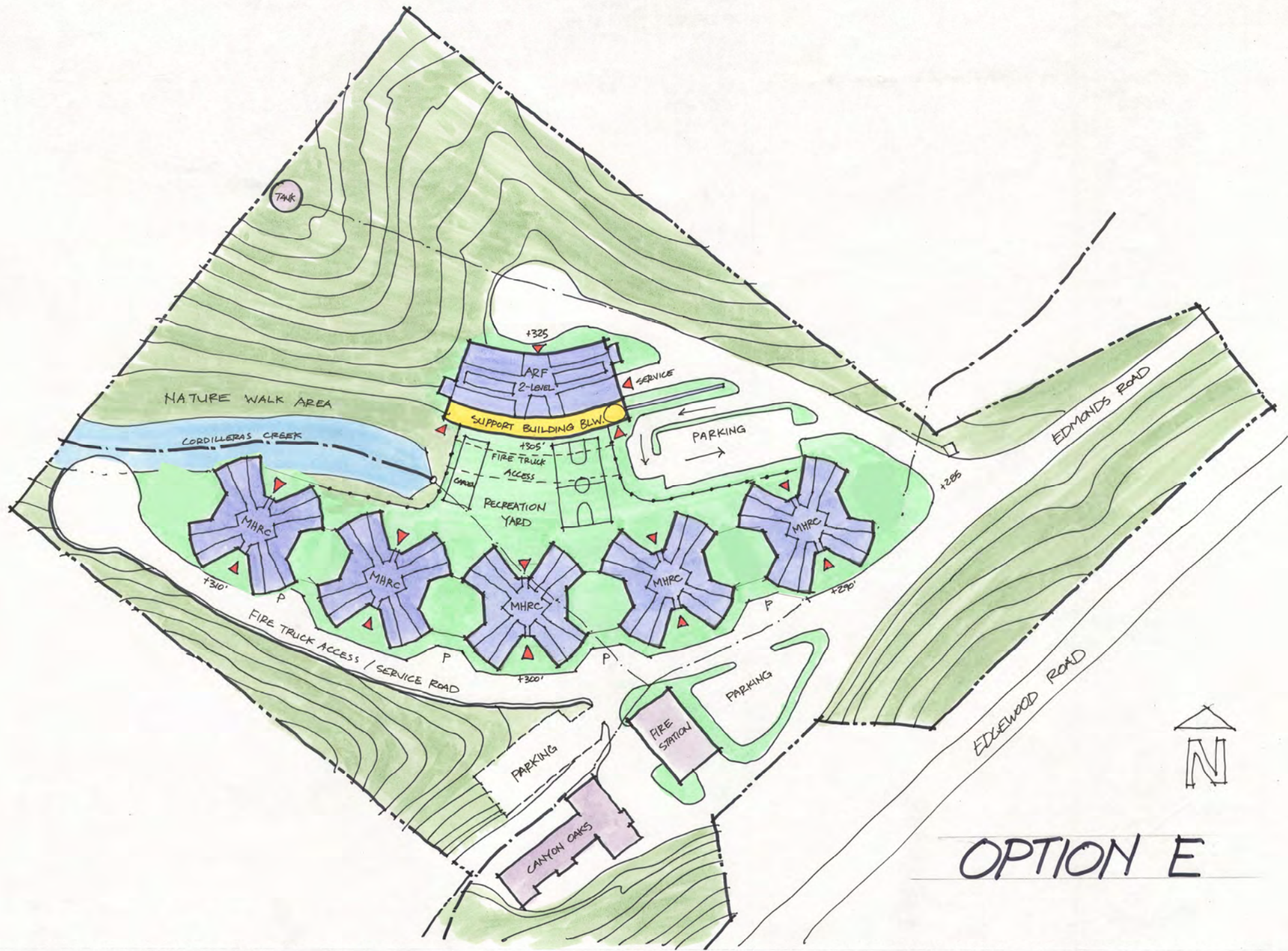




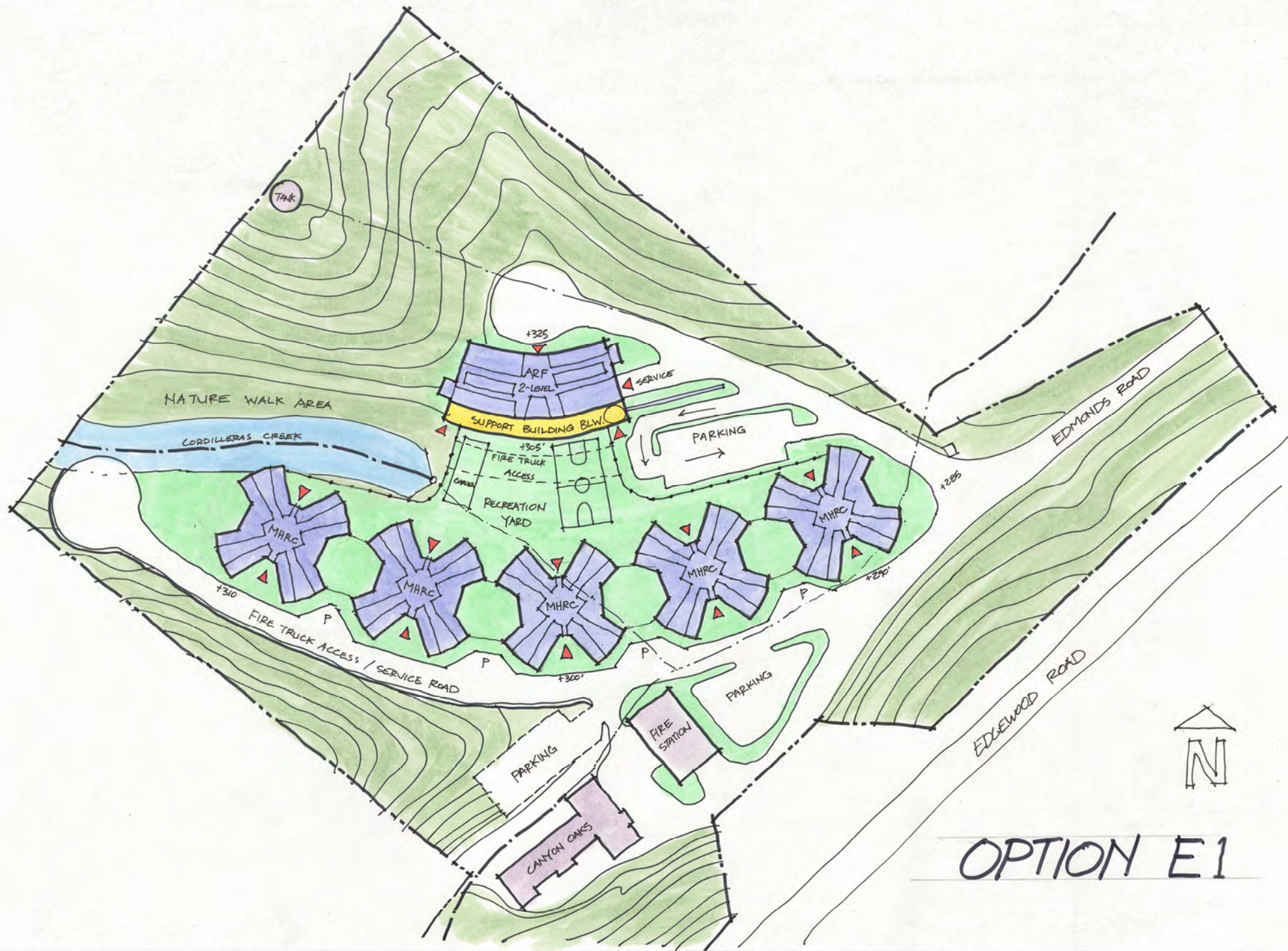
OPTION E



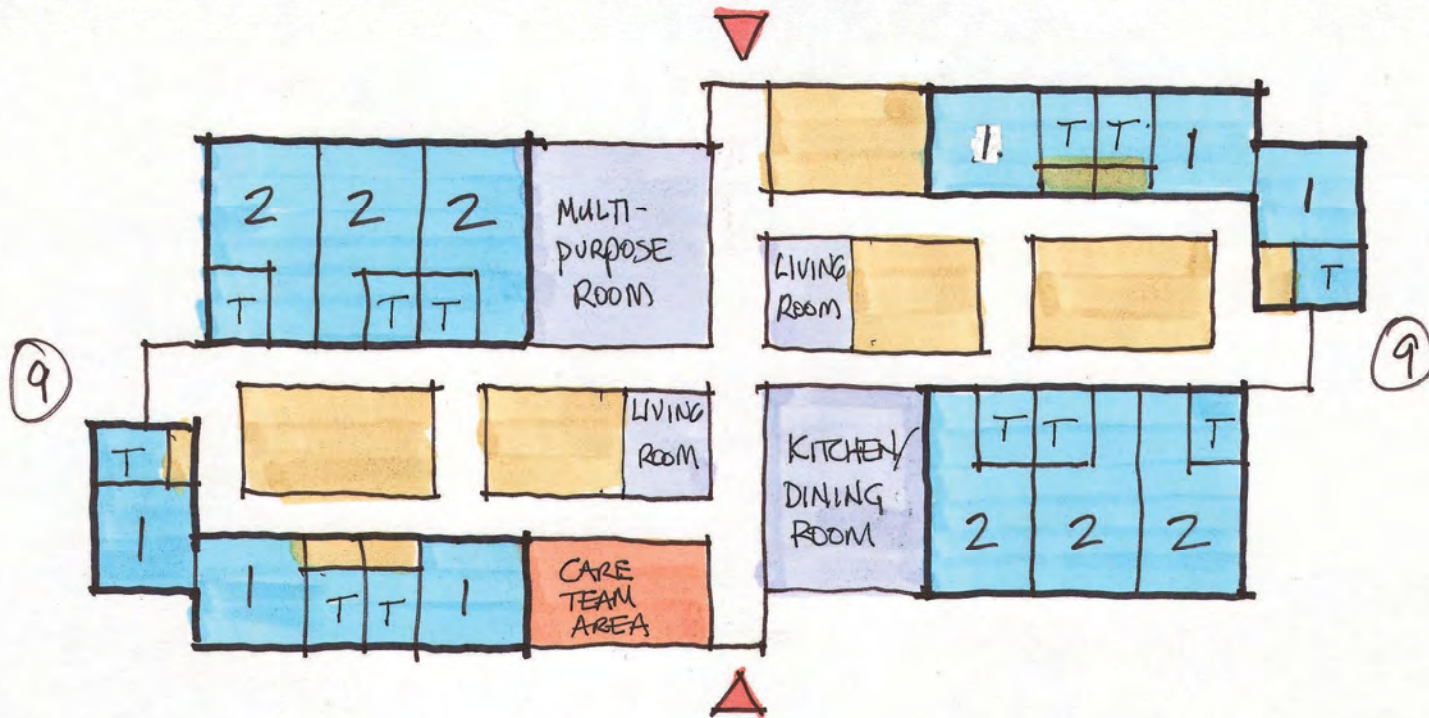
OPTION E



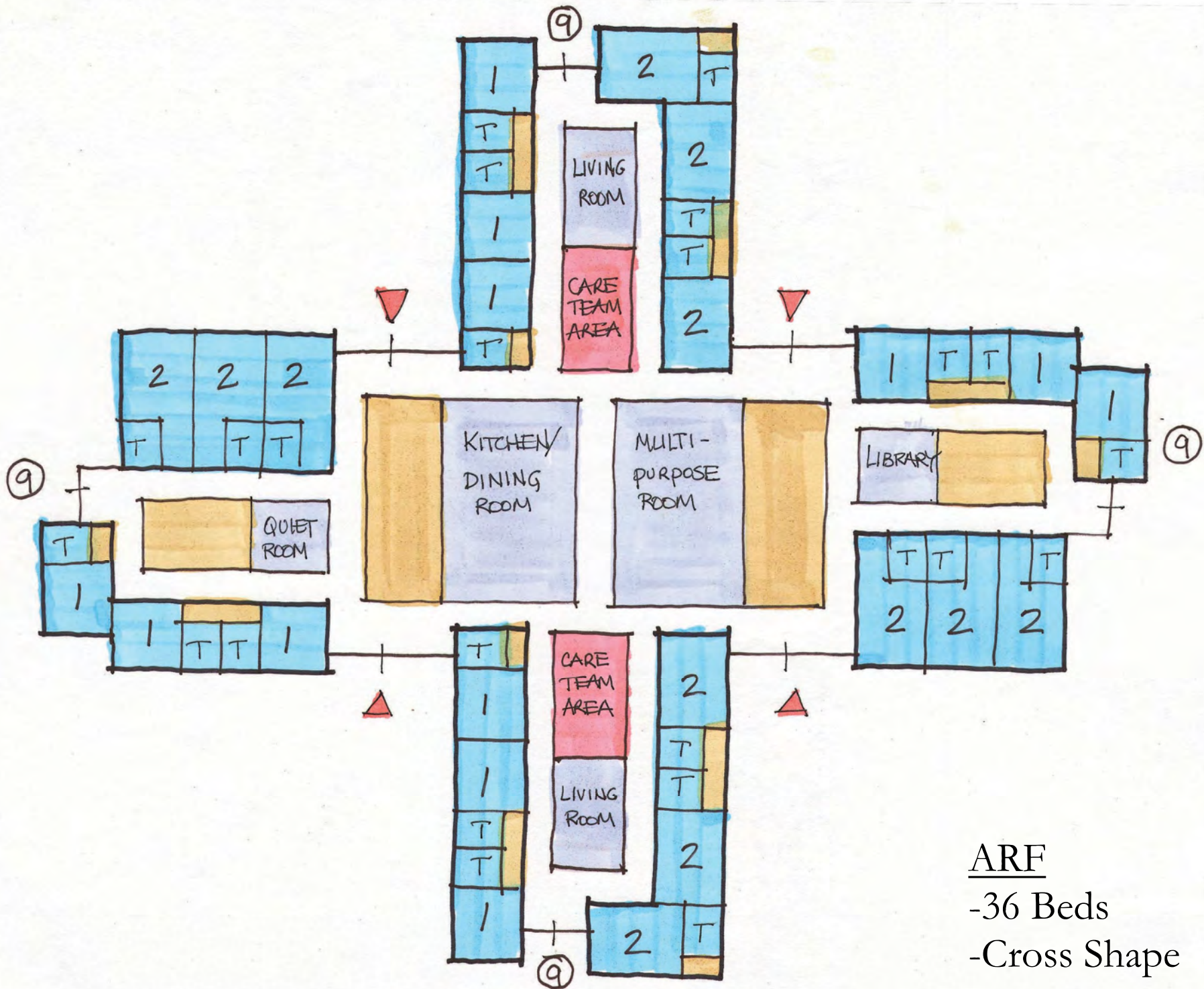
OPTION E



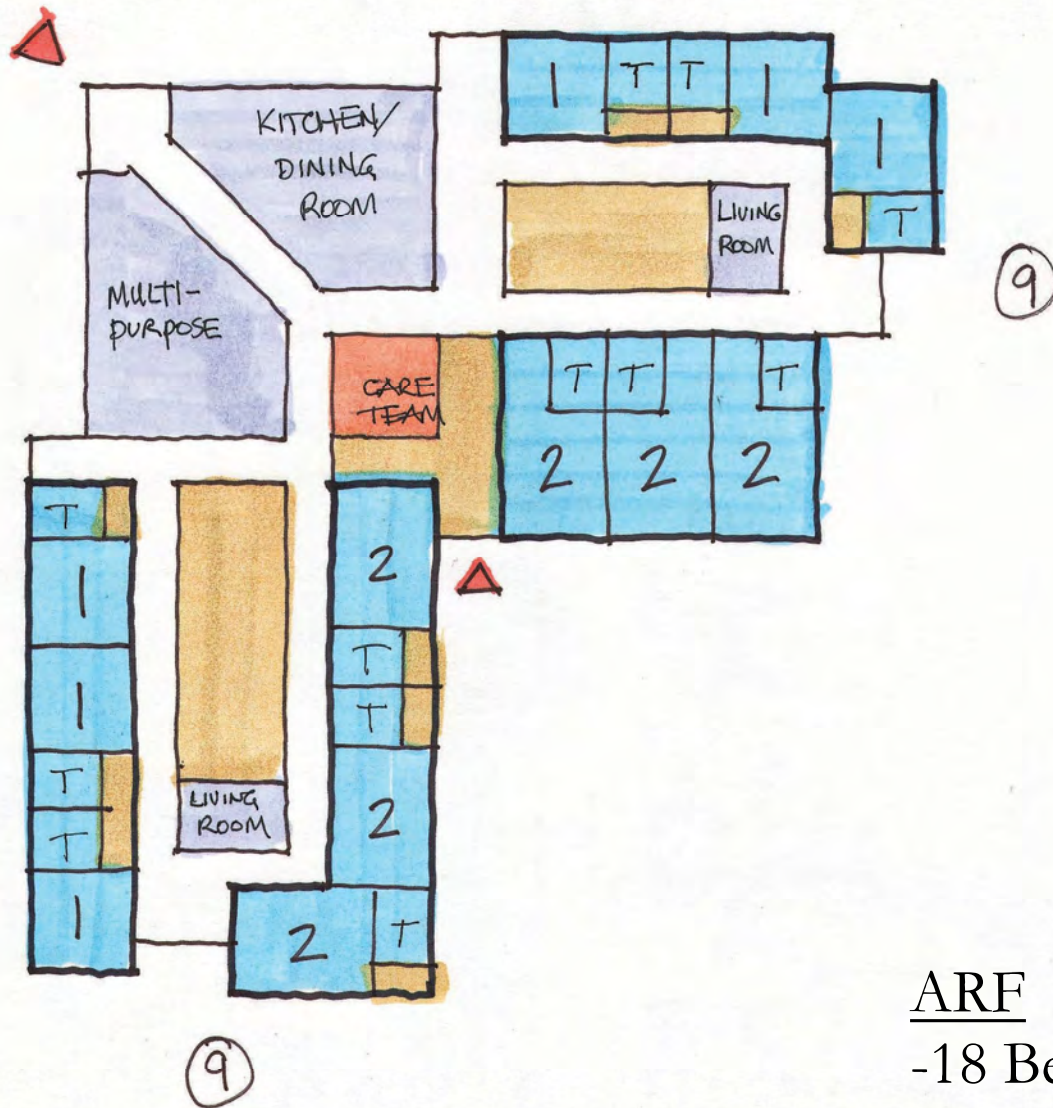
OPTION E1



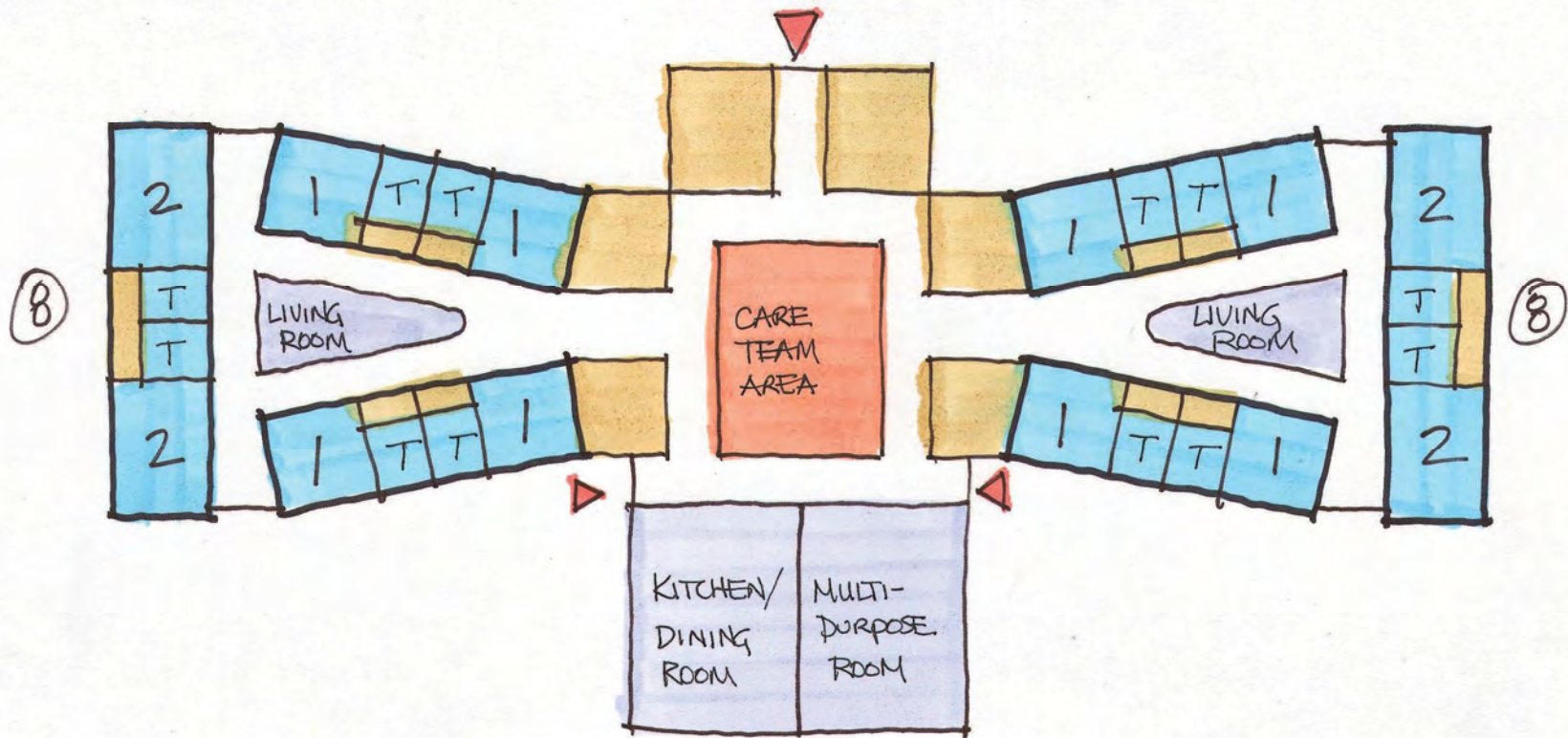
ARF
 -18 Beds
 -Bar Shape



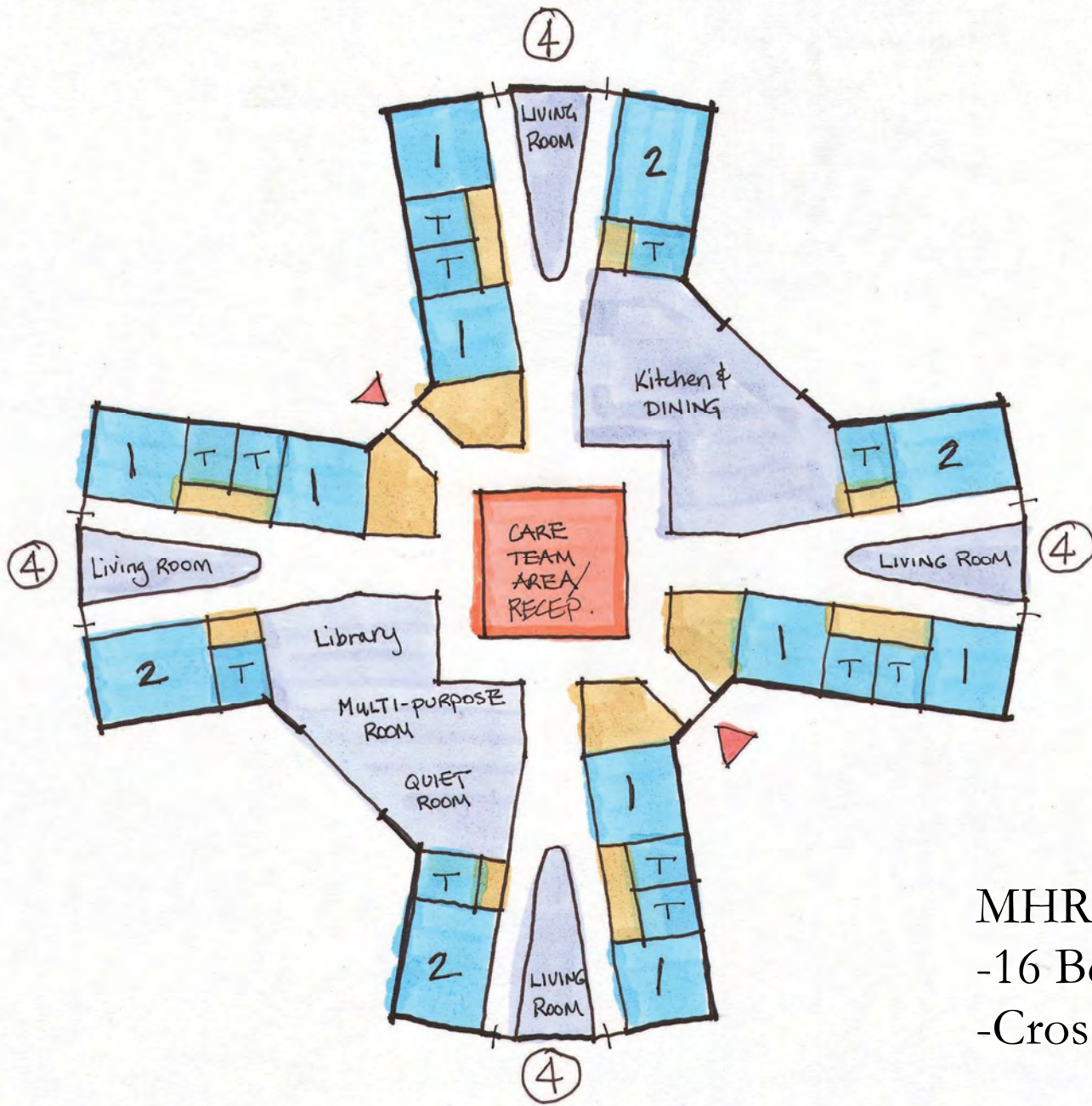
ARF
 -36 Beds
 -Cross Shape



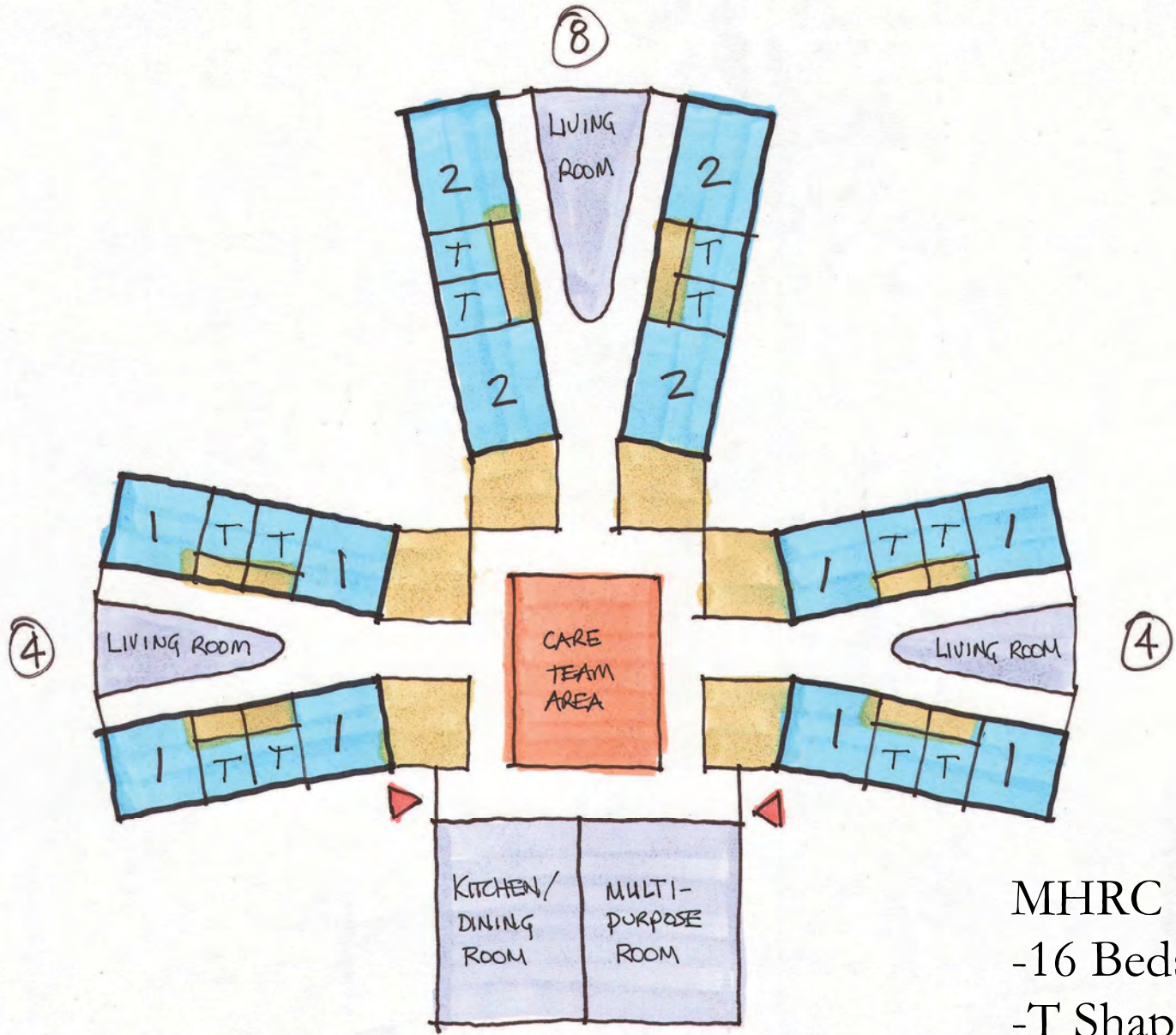
ARF
 -18 Beds
 -L Shape



MHRC
 -16 Beds
 -Bowtie Shape



MHRC
 -16 Beds
 -Cross Shape

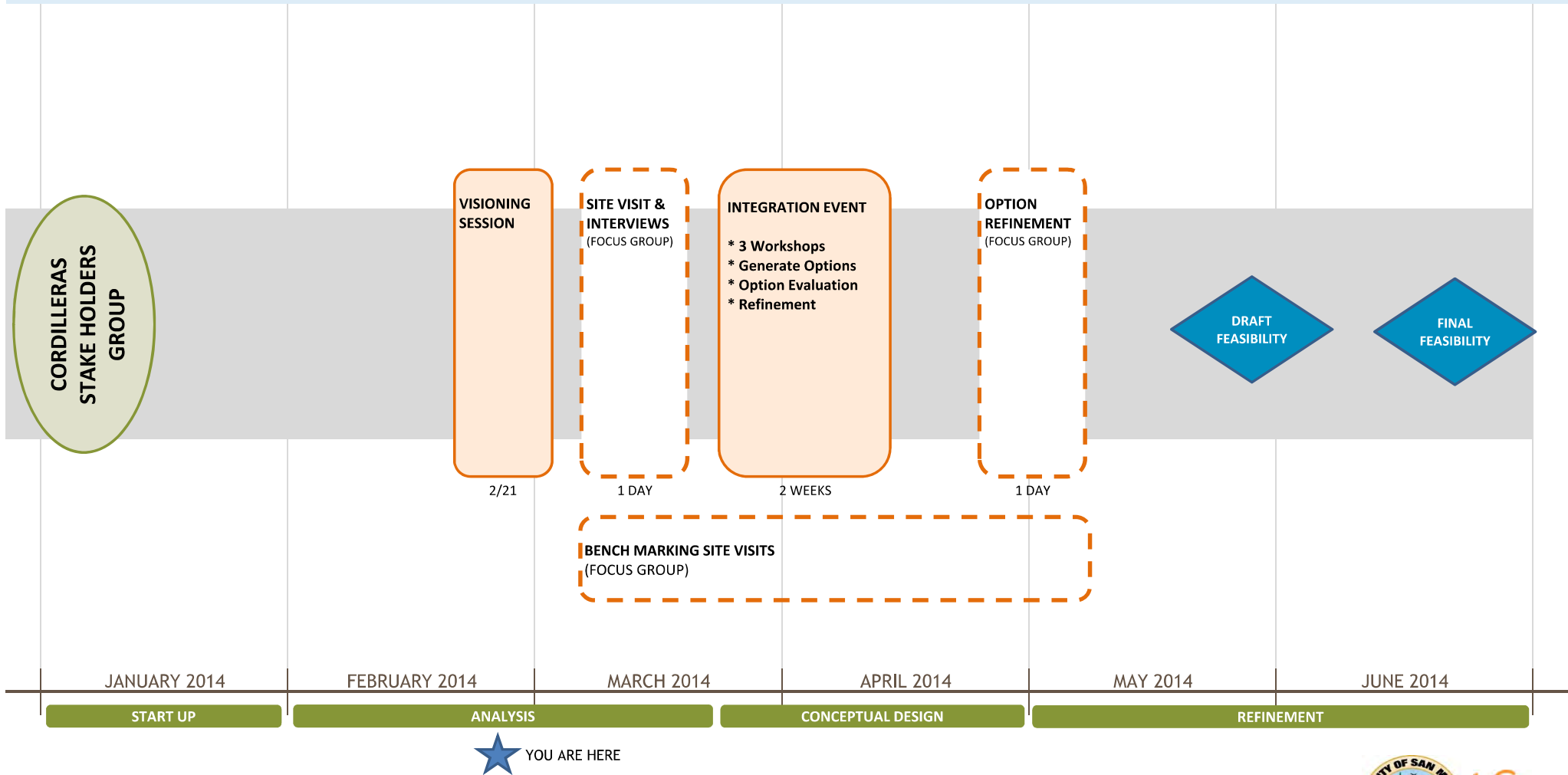


MHRC
 -16 Beds
 -T Shape

Cordilleras Mental Health Rehabilitation Center

Feasibility Study Process Diagram - Stakeholders Group

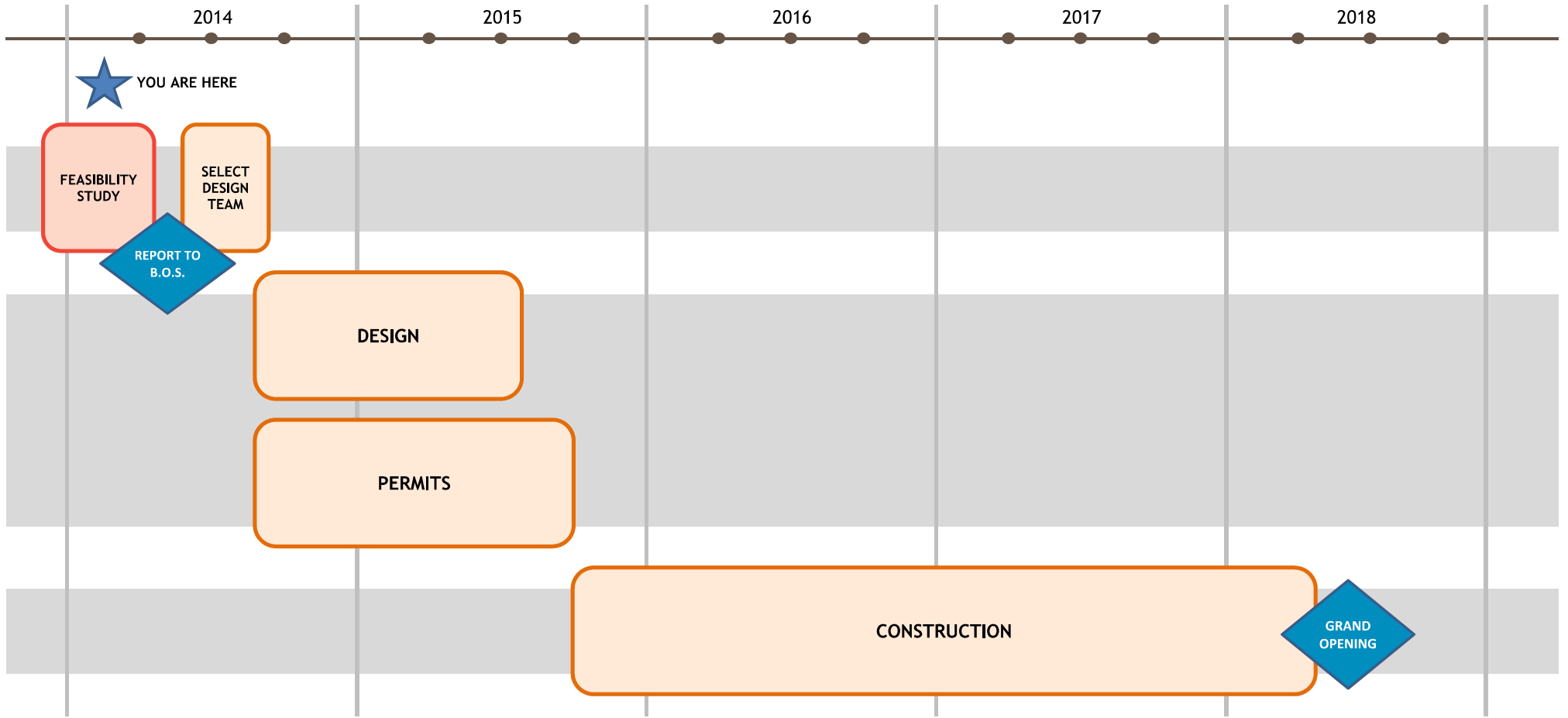
San Mateo County Health System
Behavioral Health and Recovery Services

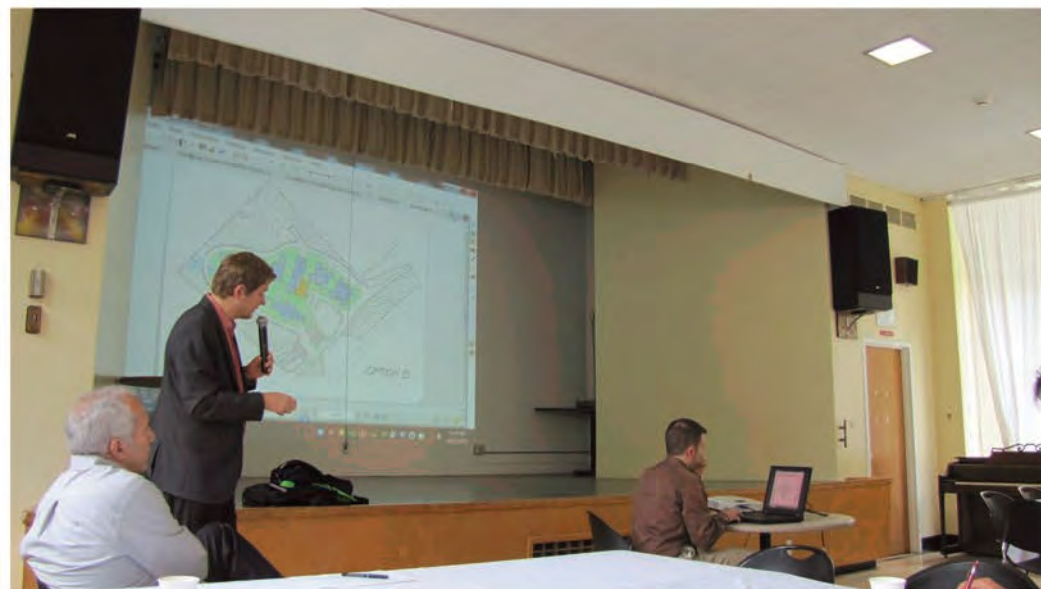
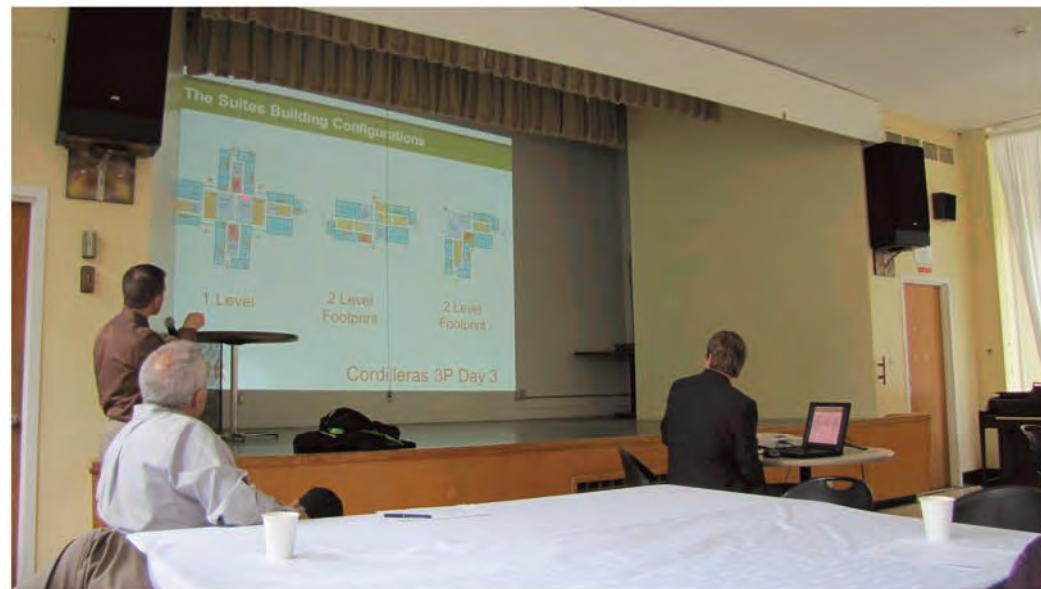


Cordilleras Mental Health Rehabilitation Center

Overall Project Schedule

San Mateo County Health System
Behavioral Health and Recovery Services









Appendix C

Best Practices/ Benchmarking Site Visits






Image	Facility Name	Location (Contact)	Owned/ Operated	Year Open	Campus Design?	# Beds/ # Rooms	GSF	Facility Type / License	Programs & Services	Design & Planning	Relevant Attributes	Sustainable Features	Site Visit Date	Lessons Learned	Link
1 	Adolescent Treatment Center of Winnebago	620 First Avenue S.W., Box 278 Winnebago, MN 56098 507-893-3885 (Naomi Ochsendorf, BS, LADC; program director)	United Hospital District/ United Hospital District	2010	Single Structure	24 beds/ 15 Rooms	19,450	Adolescent Residential Treatment (12-18) / Supervised Living Facility	Intense program; open facility; Assessment/ Intake (shower); DBT groups; Outreach/ O.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.	dining facilities and integrated open activities spaces. Design attributes (scale, massing, materials).	LEED Certified	6/26/14	Integrate offices. Prefer larger gym, entry/ reception visualization to waiting and check in window not ideal.	http://uhd-atcw.com
2 	Avera Behavioral Health	4400 West 69th Street Sioux Falls, SD 57108 605-322-4000 (Steven Lindquist; Assistant VP for Behavioral Health Services)	Avera/ Avera Behavioral Health (part of the Benedictine and Presentation Sisters)	2006	Part of the Avera Medical Center	112 beds/ 75% singles	130,000	Inpatient Acute Care Psych	5 Units (Children, Adolescent, Adult, and Senior); alliance with NAMI, NIMH 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.		6/26/14	visitor restroom quantity, could use more meeting spaces, offices, storage and a lab.	Online tour: http://www.avera.org/behavioral-health-center/#Take-a-Tour-Online
3 	Broderick Street Adult Residential Facility	1421 Broderick St. San Francisco, CA 94115 415-292-1760 (Michael Badolato, MFT; Administrator/DOO)	SF DPH/ Richmond Area Multi-Services (RAMS)	2001	Stand Alone	33 beds/ 17 rooms (all doubles; one single)		(Renovated SNF) Adult Residential Facility (ARF)/ Community Care License (CCL)	Medical and Psychiatry services. No Geropsych. Individual and group therapies (pet assist, movement, poetry, drama, singing), medical mgmt. assessment, case mgmt, med dispensing (1 med room on each floor). Patch money not available (only contract \$, B&C, 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: 18-59.		3/10/14		http://www.ramsinc.org/bsarf.html
4 	Casa de Esperanza & Hillmont House	1750 C South Lewis Road Camarillo, California 93012 805-437-2903	County of Ventura/ Telecare (ARFs) and Anka (MHRC)	mid 90's	campus of 5 casitas	75 beds in 5 buildings/ 75 rooms (all singles)		House of Transition & Long Term Residential/ MHRC and ARF	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.	Distinct 15-bed complexes. Campus plan. Gardens and outdoor recreation. Approved for security cameras in lieu of secured perimeter.		3/20/14	had one house for transitional aged youth. Didn't work. Now youth are dispersed. Combine kitchens and dining. Offices are separate in a separate building. Prefer integrated. Could use more clinical offices, group gathering spaces (too small).	http://www.telecarecorp.com/programs/88
5 	Contra Costa County Hope House	300 Ilene Street Martinez, CA 94553 925-313-7980	Contra Costa County/ Telecare	2014	Stand Alone on medical center campus	16 beds	7,500	Crisis Residential / Social Rehab Community Care License	Crisis intervention, voluntary, short-term services, ALOS 7 to 10 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). Gathering spaces open to corridor. Open kitchen dining. Living and dining spaces double as group activities/ therapies.	16 bed facility	daylight, operable windows	5/28/14	could use more storage, office space. Prefer to replace tubs with showers only.	http://www.telecarecorp.com/programs/162










Image	Facility Name	Location (Contact)	Owned/ Operated	Year Open	Campus Design?	# Beds/ # Rooms	GSF	Facility Type / License	Programs & Services	Design & Planning	Relevant Attributes	Sustainable Features	Site Visit Date	Lessons Learned	Link
6 	California Psych Transitions (CPT)	9234 Hinton Ave Delhi, CA 95315 Donna McGowan , Director PH: (209) 667-9304 ext. 101	CPT (Dr. Hackett)/ CPT	2002	Stand Alone (rural)	118 beds/ all doubles	36,000	MHRC/ Dept of Mental Health	Locked facility. High designed active security. Avg. Age: 25-30. ALOS: 12 months. Seclusion, Law enforcement/forensics unit. Participates in Community Integrated Work Program and Resident Community Integration program. Nutrition program to improve overall health, re-entry program, vocational rehab	several buildings joined together as a result of multiple additions. Two semi-private bedroom suites share one toilet/shower. Institutional. Large chain link fences.	locked down.		3/19/14		http://cptmhrc.com/
7 	Hazelden Addiction Treatment Center (addition and renovation)	11505 36th Ave. Plymouth, MN 55441 763-509-3800 (Michelle Moracco)	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. ALOS 50 days	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,	"units" / pods separated by gender.	daylight, operable windows	6/26/14		http://www.hazelden.org/web/public/plymouth_mn_substance_abuse_treatment_center_youth.page
8 	Laguna Honda Hospital and Rehab Center	375 Laguna Honda Blvd. San Francisco, CA 94116 415.759.2300	SF DPH	2010	Campus	60 beds Rehab (780 beds total)/ 15 rooms		SNF	Rehab and Skilled nursing. Dual & Triple diagnosis. Geriatrics, Rehabilitation, Stroke, Traumatic Brain Injury, Multiple Sclerosis, Alzheimer's and Dementia, HIV/AIDS, Hospice, Mental Health, Bioethics. Amenities/ Services: dental, diagnostic imaging, clinic, library, retail, art room, gym, therapy pool.	Singles, doubles and triple suites. Planned as "neighborhoods"/ wings. 1 floor in a Multistory structure. Different bed/ suite configurations,	exam room, washer/dryer for residents, "Aeroscout" patient tracking system, living rooms at end of corridors. Decentralized support.	LEED Silver	3/10/14	no observation into wings. Central nurse station. Nurse station too open to dining (need staff quiet room), acoustics issue with open dining, galley not used/ not needed.	http://lagunahonda.org
9 	Millbrae Manor	1001 Hemlock Ave Millbrae, CA 94030 650-689-5776 (Mary Ann Lucero)	ANC/ ANC	2007	stand alone	48 beds/ 24 rooms (all doubles)		Residential Care Facility for Elderly (RFCE) 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		
10 	Nueva Vista	18225 Hale Avenue Morgan Hill, CA 95037 (408) 465-8280 (Lynda Kaufmann)	Psynergy/ Psynergy	2004	Acquired adjacent properties to add multiple bldgs. Multiple site system.	66 beds with singles, doubles and quads. Converting to doubles		Adult Residential Facility (ARF)	Unlocked facility. Residential model key to success. Programs: Health and wellness, equine therapy, life skills. ALSO: 7 months. Modified therapeutic community model. Client development, residential treatment, live-in and live-out re-entry.	converted SNF. Single story. Have transitional studio apartments. New rooms will have shared toilets.	level of care and achievement at \$60 - \$125 per day (residential services and support) . cost-effective approach. Cascaded rate system. Well designed space will promote respect.	courtyard access	3/19/14		http://www.psynergy.org/residences/cielo_vista/

Image	Facility Name	Location (Contact)	Owned/ Operated	Year Open	Campus Design?	# Beds/ # Rooms	GSF	Facility Type / License	Programs & Services	Design & Planning	Relevant Attributes	Sustainable Features	Site Visit Date	Lessons Learned	Link
11 	Redwood Place	18949 Redwood Road Castro Valley, California 94546 (510) 881-1606	Telecare/ Telecare	2012 (renova tion)	stand alone	15 beds/ 15 rooms (all singles)		MHRC/ DHCS	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 SNF. Removed nurse station. Convereted to all privates with private toilet/ shower. Double loaded corridor.			3/17/14	could use more outdoor space	http://www.telecarecorp.com/programs/68
12 	San Francisco Behavioral Health Center (MHRF)	887 Potrero Avenue, 1st Floor San Francisco, CA 94110 (415) 206-6300	SF DPH/ SF DPH	1996	building on SF General Medical Center campus	41 bed ARF + 59 bed SNF + 47 bed MHRC (split 23 MHRC + 23 Psych respite)		MHRC/ DHCS	short and long-term mental health services to the severely and persistently mentally ill. ALOS: 7 months	pod design with mostly all semi-privates. 3-story Courtyard plan. Separate entries for different levels of care.	pod design, flexible standard design helps accommodate change of programs/ levels of care over time.		3/10/14		http://sanfrancisco.net/workofcare.org/veterans/services/agency.aspx?pid=SanFranciscoBehavioralHealthCenterformerlyMHRF_871_17_0
13 	Sanger Place	2511 Jensen Avenue Sanger, California 93657 510-333-1234 (Cliff Morrison)	Telecare/ Telecare	2011	Stand Alone	15 beds/ 15 rooms (all singles)	15,000	MHRC/ DHCS	delayed egress. Regional center. sub-acute secure facility serving adults with SMI and developmental disability. Client council.	Tennant Improvement, single story, perimeter rooms with open central day room. No nurse station. Not institutional looking, no seclusion. Locked perimeter.	<16 bed program; open day room.		3/19/14	prefer offices integrated into the center	http://www.telecarecorp.com/programs/122
14 	VA Palo Alto Mental Health Center	3801 Miranda Avenue Palo Alto, CA 94304 650.493.5000	VA/ VA	2012	Campus	80 beds (singles and semi-privates)	90,000sf	Inpatient Acute Care Psych	Women's, Gero 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	Flexible unit sizes and pod design. Sally port. Interview room with toilet.	LEED Silver Equivalent	3/17/14	acoustics concern at nursestation, anti-ligature changes required. Intake/ interview room has only one door (Security concern), climbing element changes.	http://www.paloalto.va.gov/construction_mhc.asp
15 	Ventura Crisis Residential Treatment Center	250 Hillmont Ave Ventura, CA 93003	Ventura County/ Anka	2013	building on Ventura County Medical Center campus	15 beds	12,000	Crisis Residential (attached to Ventura County Medical Center)/ Short Term Social Rehab	voluntary short term (up to 30 days). ALOS = 16 days. Unlocked. 91% discharged to home.	"vision for a more welcomeing and inviting environment". All private bedrooms, open living rooms and dining rooms, outdoor sports court.	walking gardens, central group/ dining spaces. Integrated staff workrooms overlooking group spaces. Modular construction. Short construction time.		3/20/14		https://ankabehavioralhealth.wordpress.com/2013/07/16/county-fulfills-its-promise-for-crisis-center/



SAN MATEO COUNTY
HEALTH SYSTEM

Benchmarking & Facility Site Visits

(Visited between March 2014 and June 2014)

San Mateo County Behavioral Health
and Recovery Services, Cordilleras

July 1, 2014



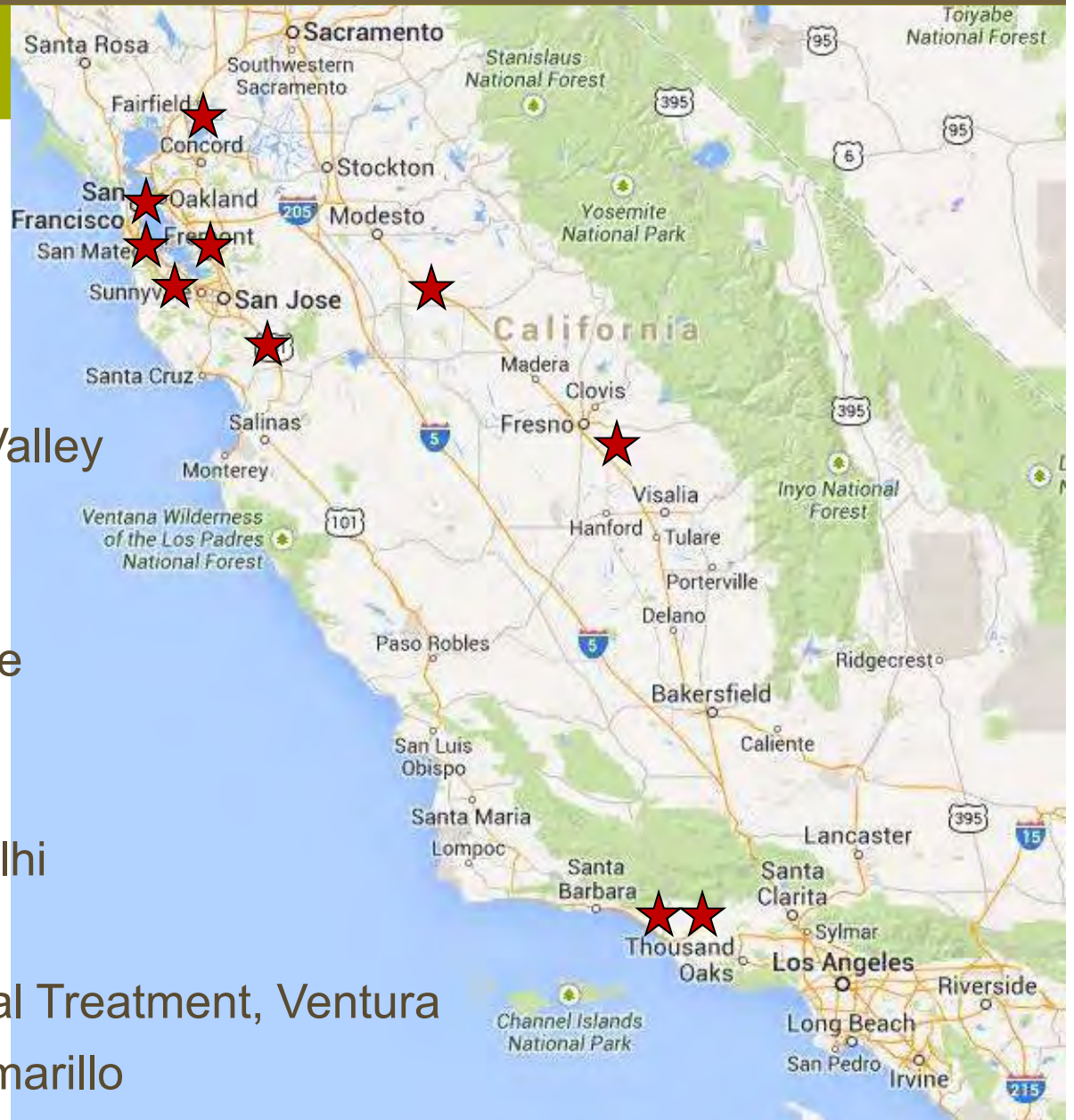
CA Sites

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 Psych Treatment, Delhi
- Sanger Place, Sanger
- Ventura Crisis Residential Treatment, Ventura
- Case de Esperanza, Camarillo



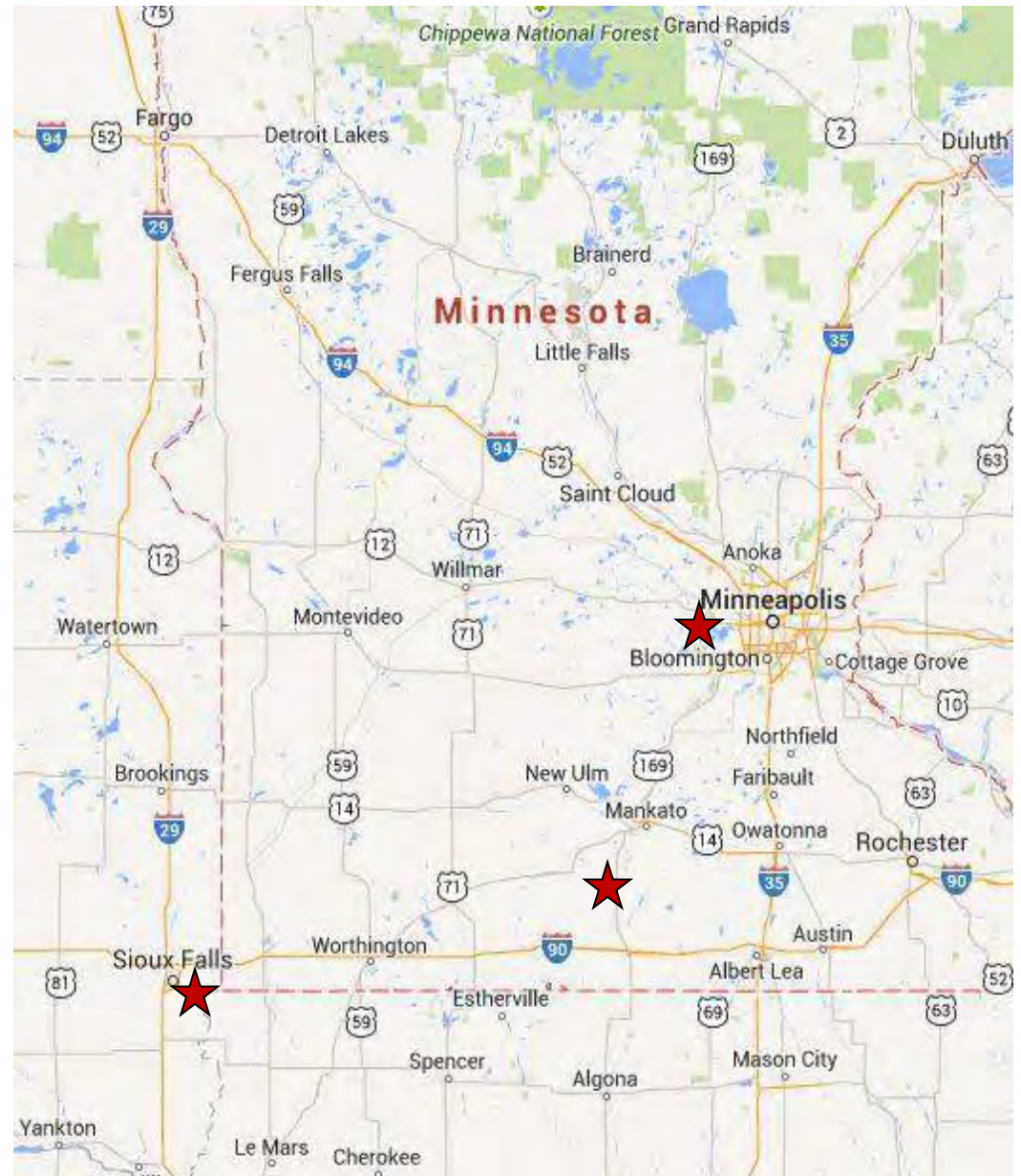
Midwest Sites

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

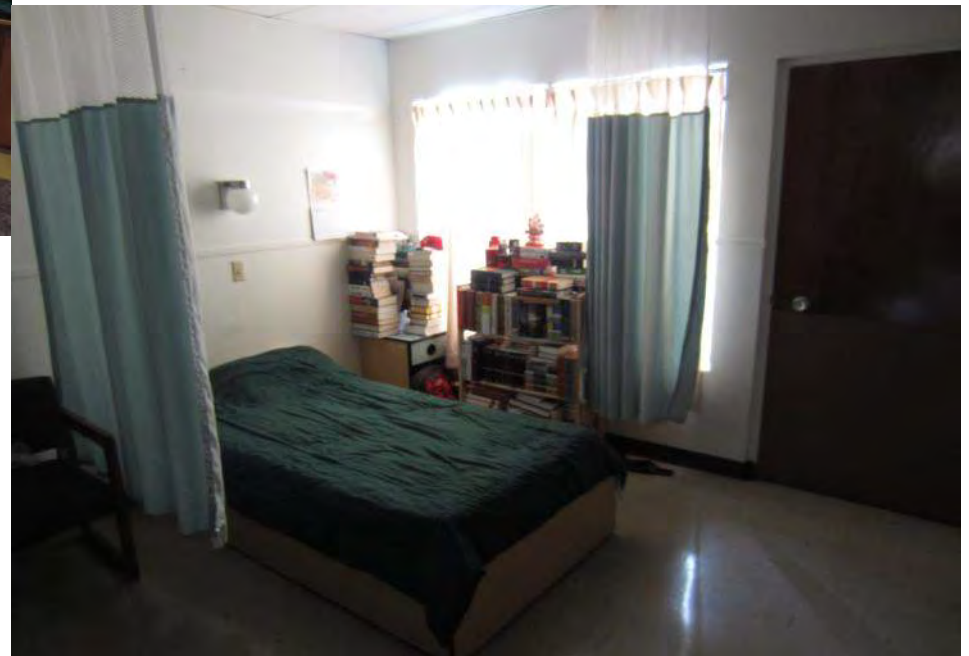


Broderick Adult Residential Care



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 green house



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.

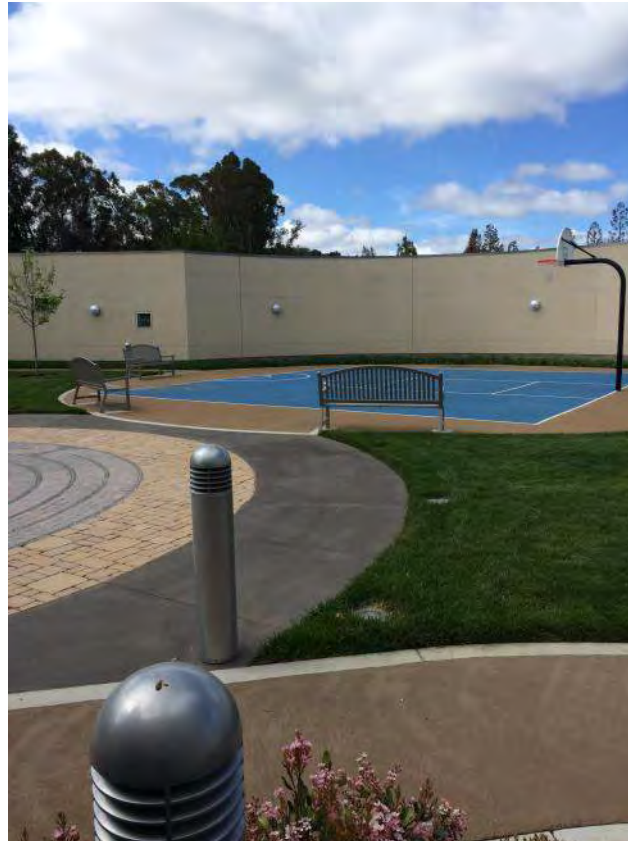


VA Palo Alto: Observations

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

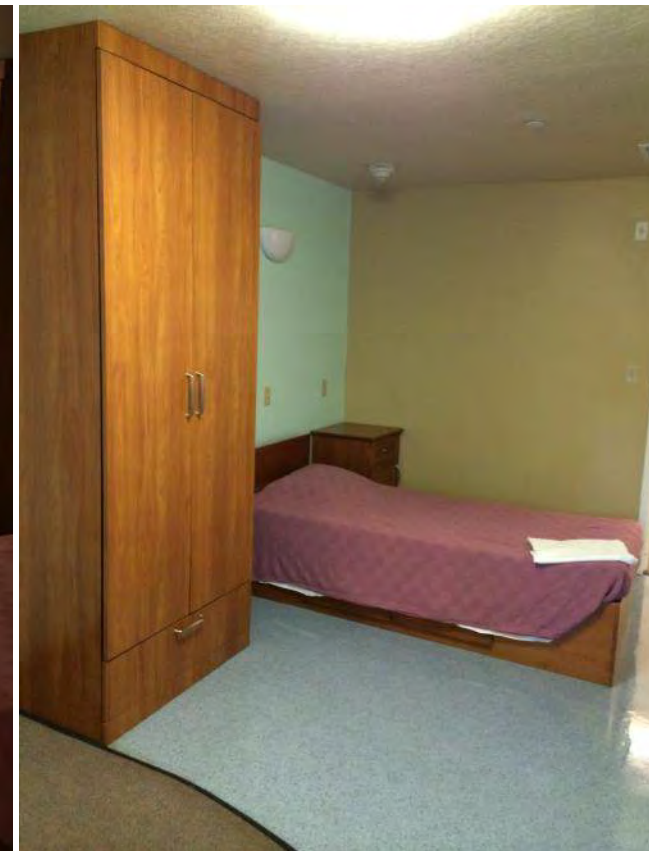
Cove lighting and wainscot



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

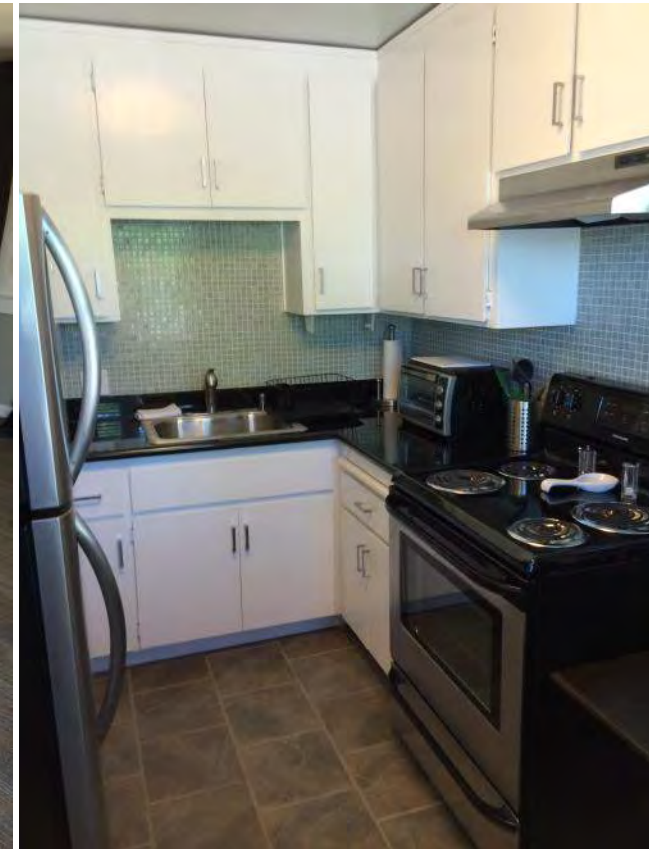
1 bedroom
transitional studios



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

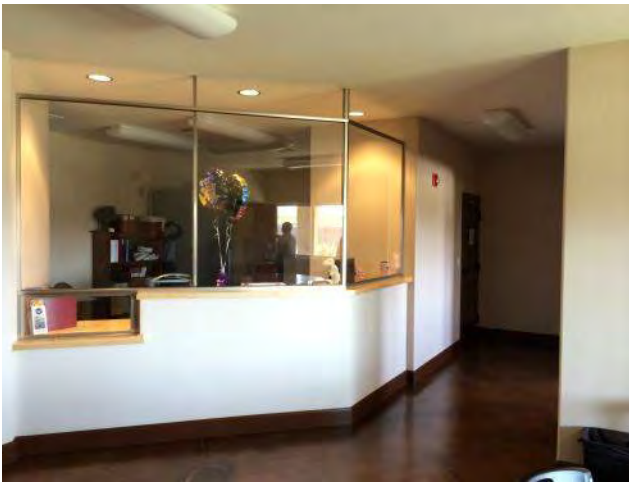


- All doubles as suites
- One story



California Psychiatric Treatment: Observations

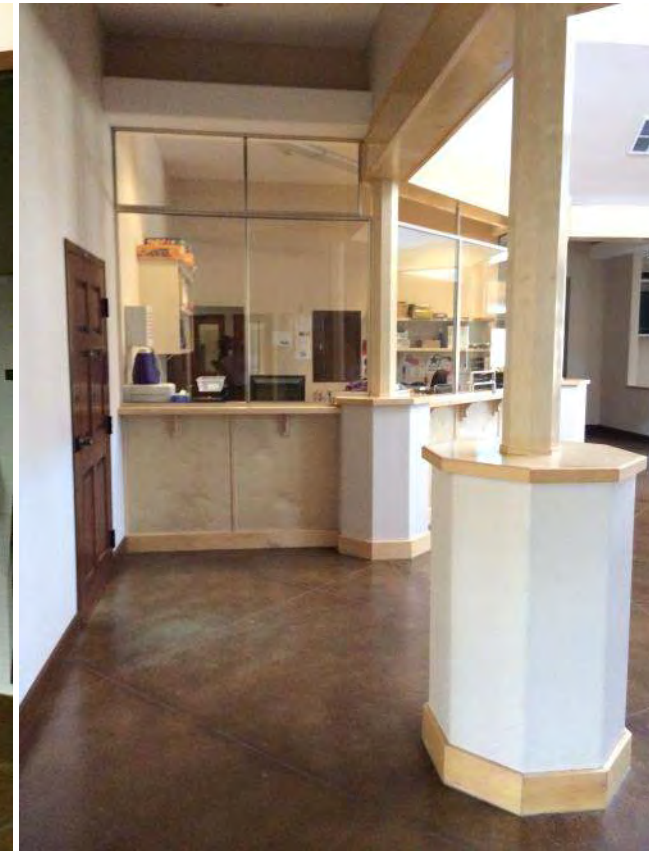
Secure enclosed care team stations with glass



Sally port for forensics

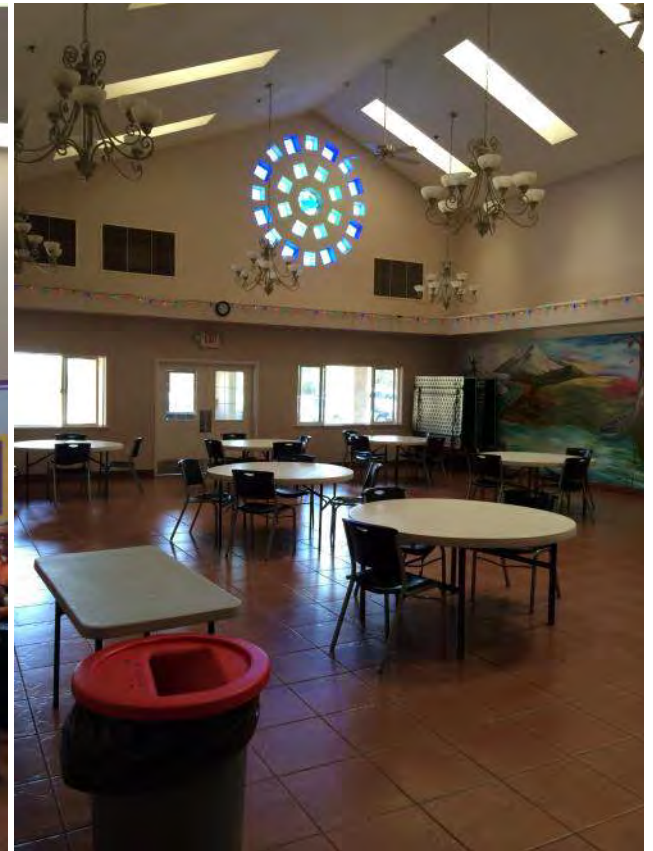


Glass enclosed care team areas



California Psychiatric Treatment: Observations

Large group rooms
with daylight

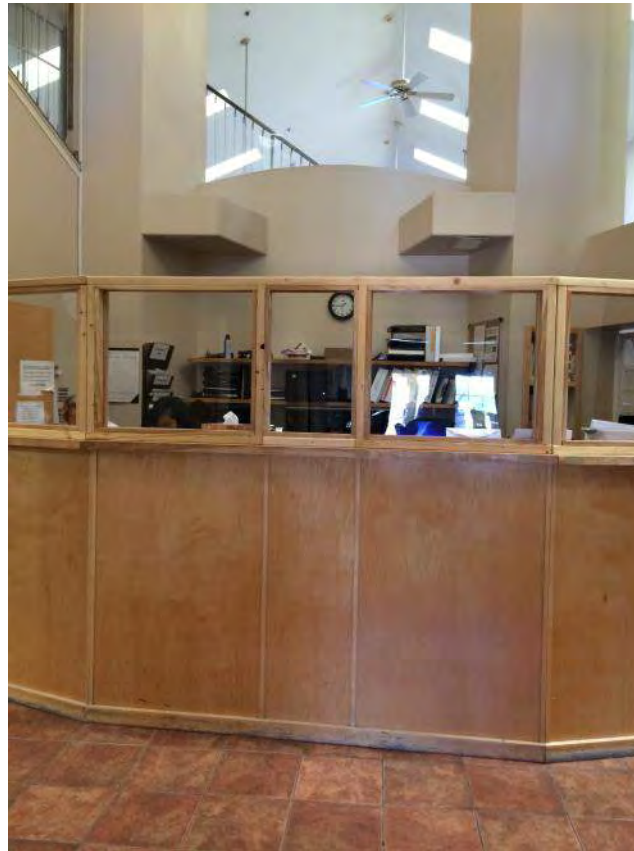


California Psychiatric Treatment: Observations

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

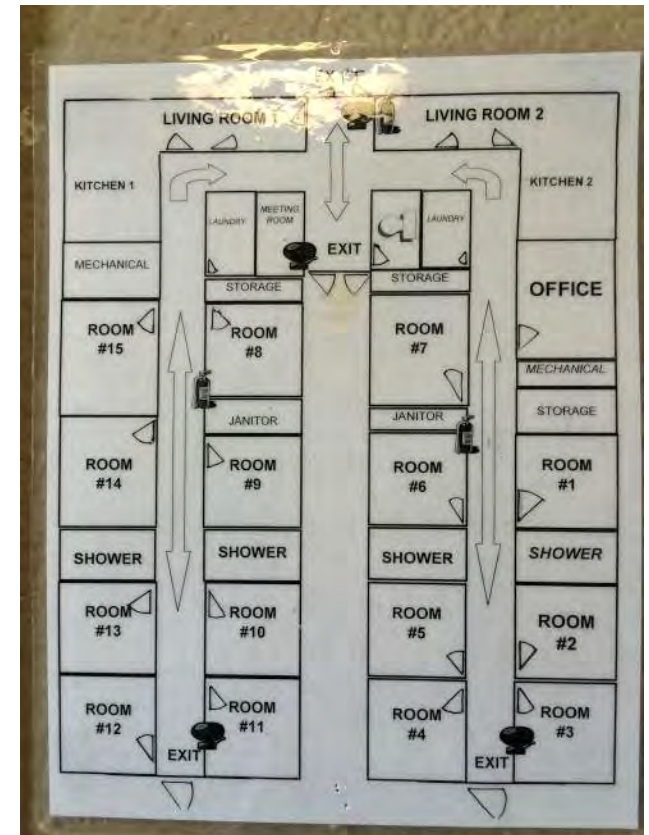
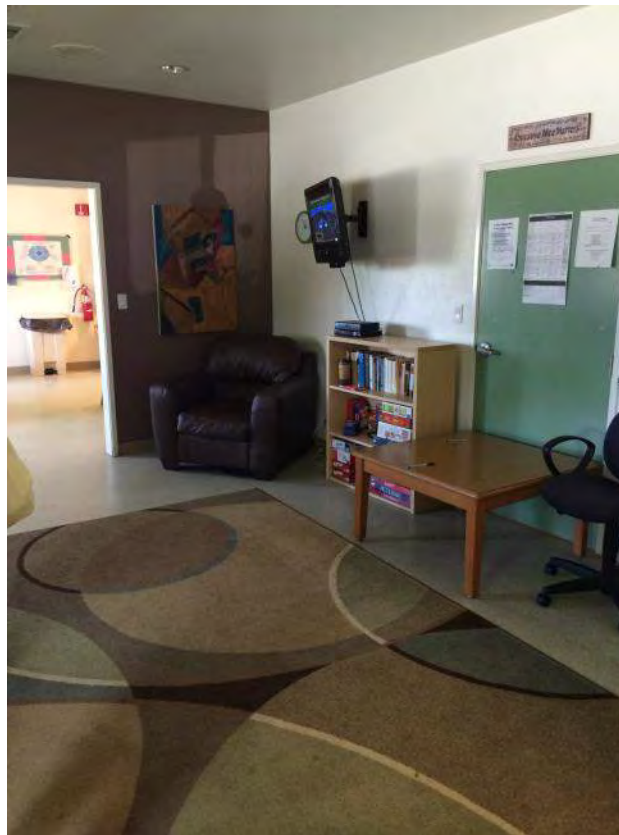
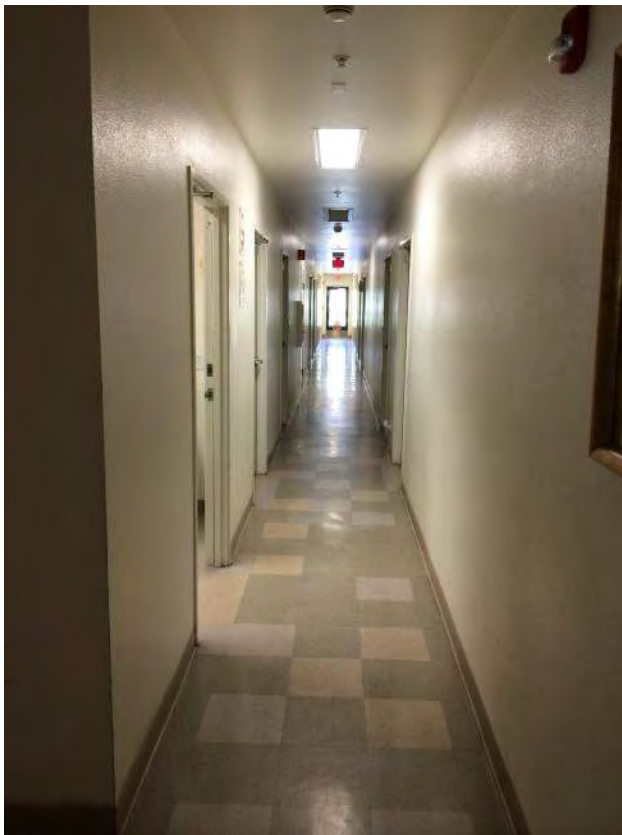


Case de Esperanza & Hillmont: Observations

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

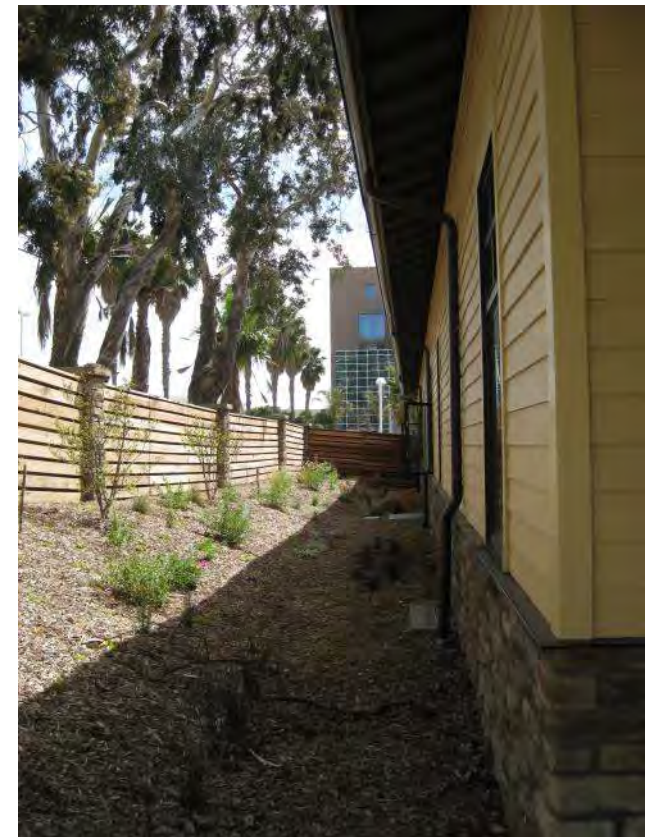
Bedroom doors set back from corridor



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

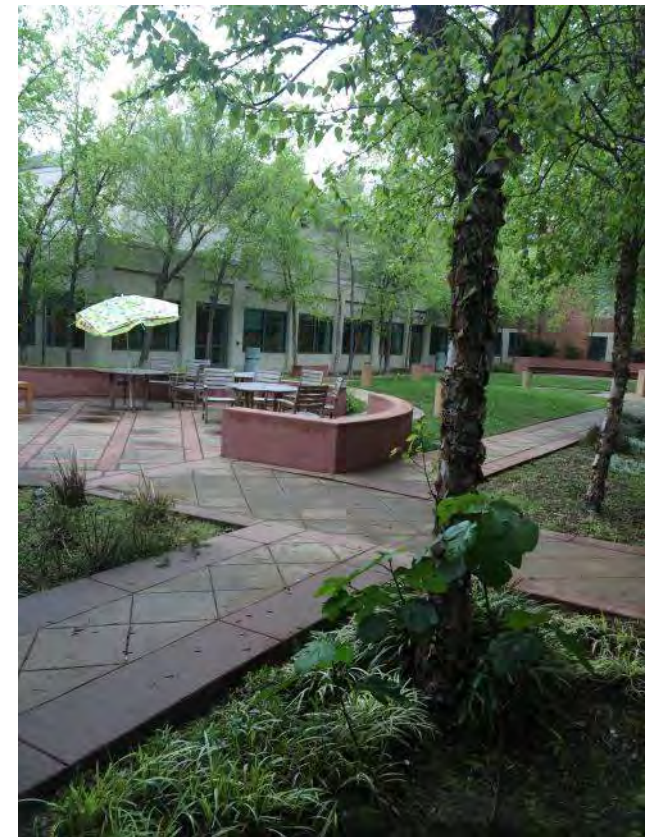
Community Artwork



Raised gardens



Courtyard



San Francisco General MHRF: Observations

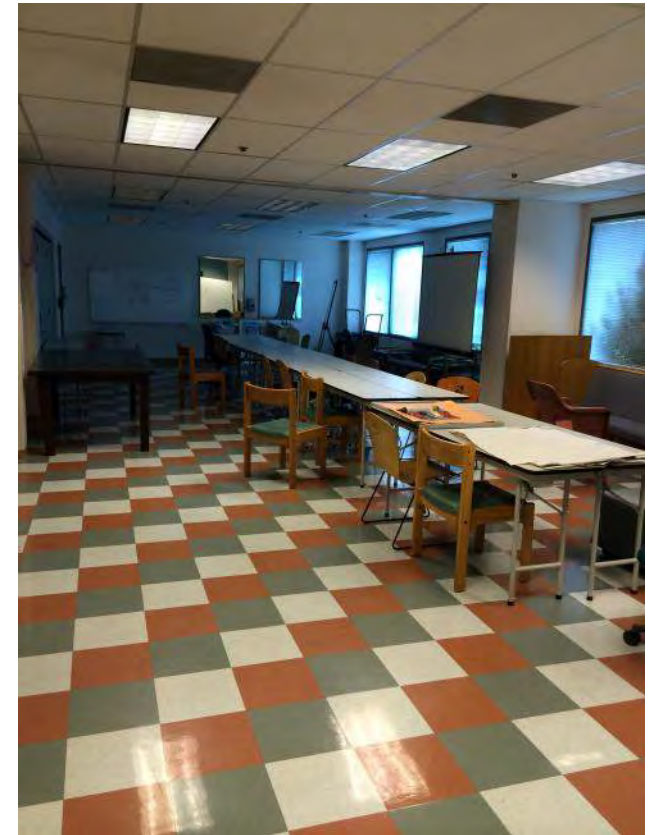
General Store/
Vocational work



Library



Group Activity/
Art Room



San Francisco General MHRF: Observations

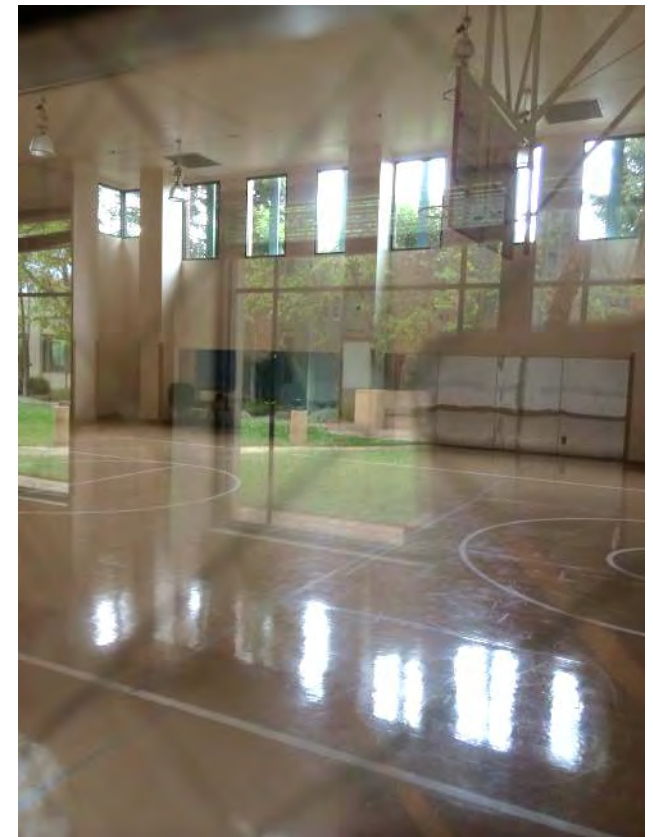
Dining with visual access and daylight



TV rooms



Gymnasium



San Francisco General MHRF: Observations

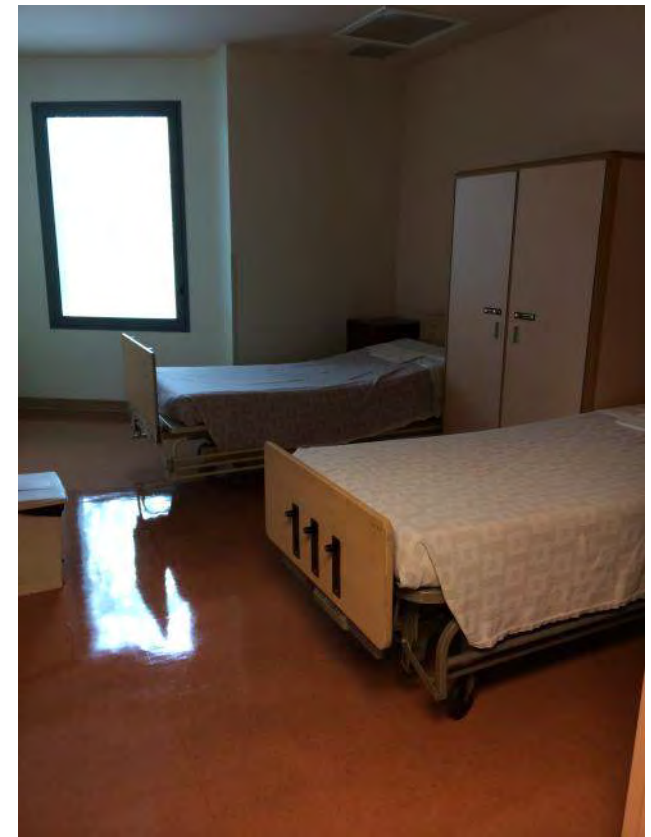
Living Room with court views



Color themes identifying pods



Double Bedrooms



San Francisco General MHRF: Observations

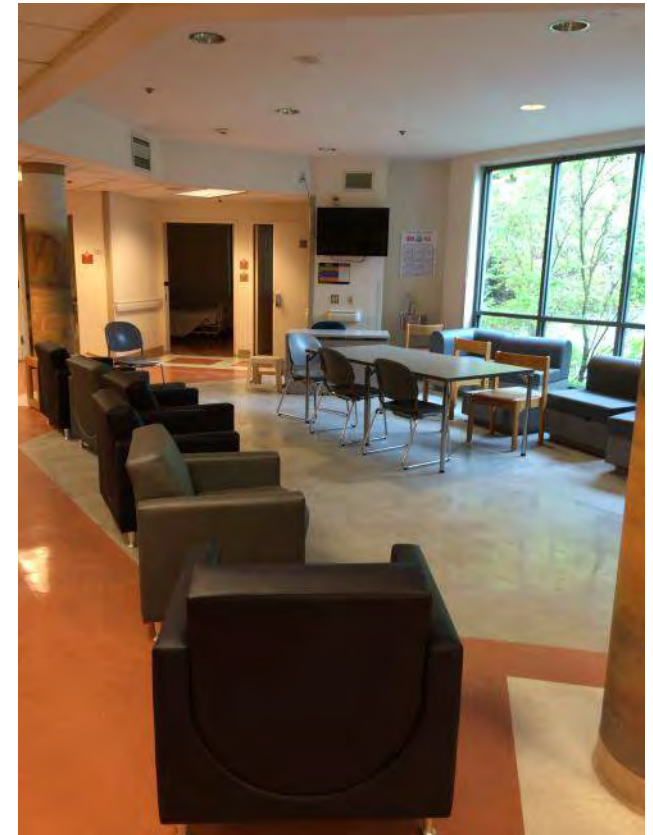
Open care team areas, no glass



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



Contra Costa Hope House: Observations

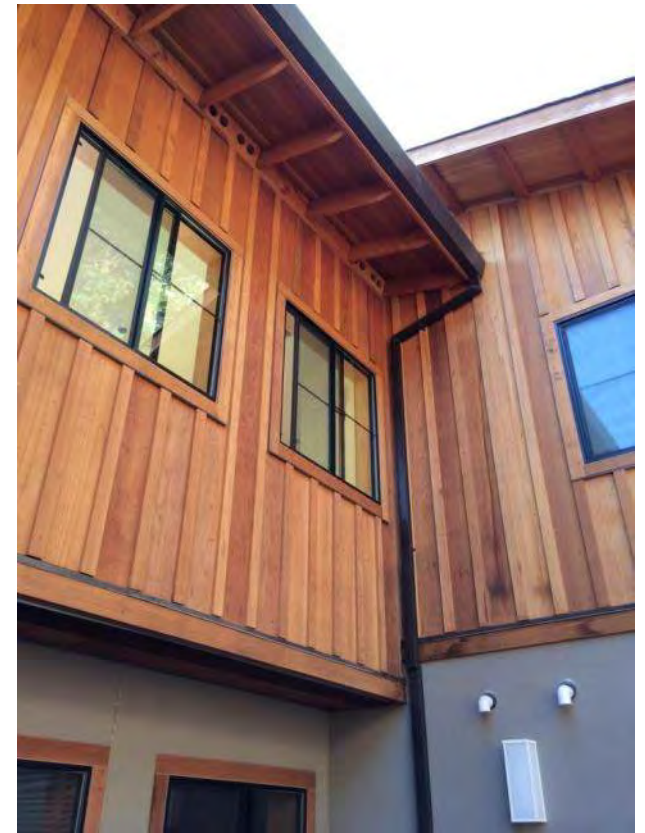
Very tight/ narrow site



Residential design, fit into environment



Natural Materials



Contra Costa Hope House: Observations

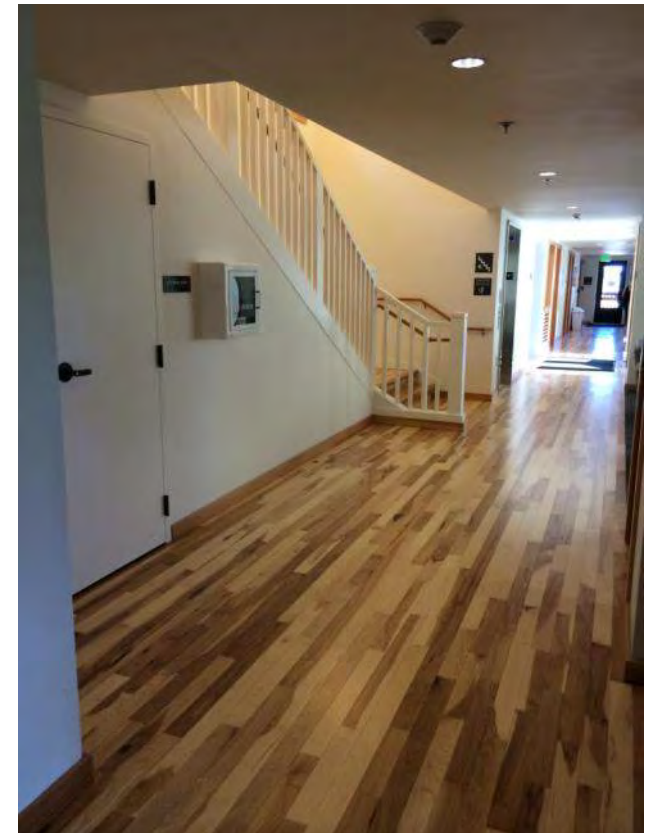
Arrival/ Entry /
Lobby zone



Interior Mechanical

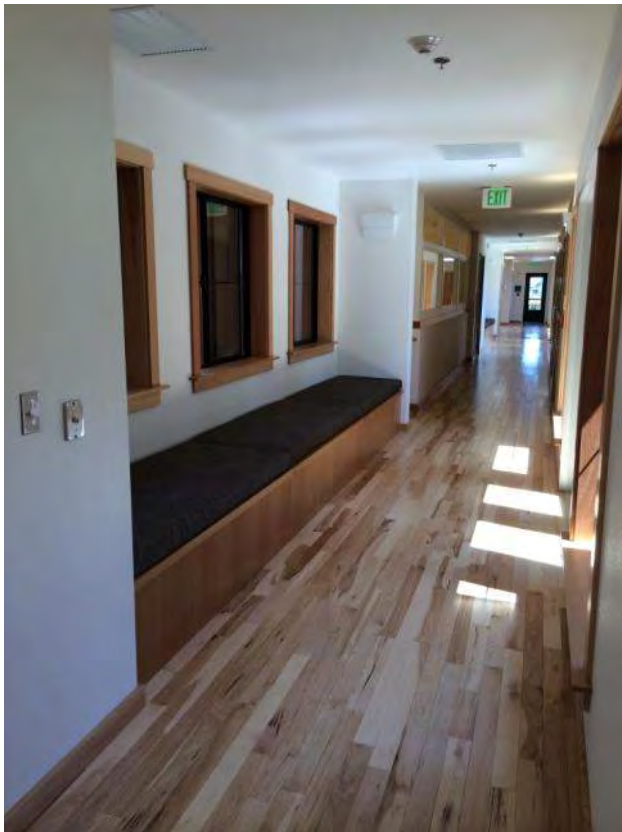


Two level structure
with open stair



Contra Costa Hope House: Observations

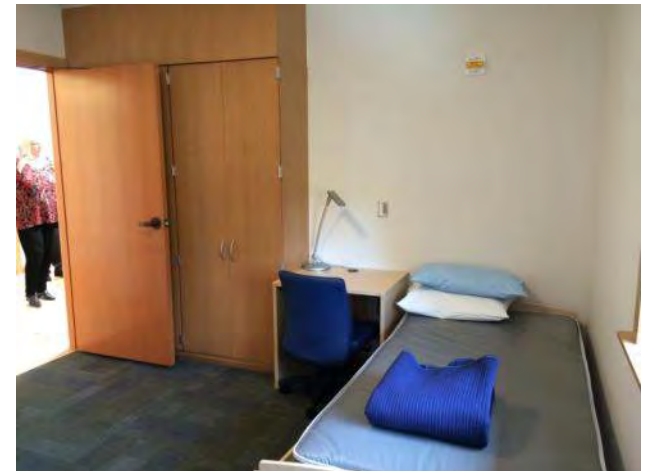
Long corridor relief
and lots of daylight



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

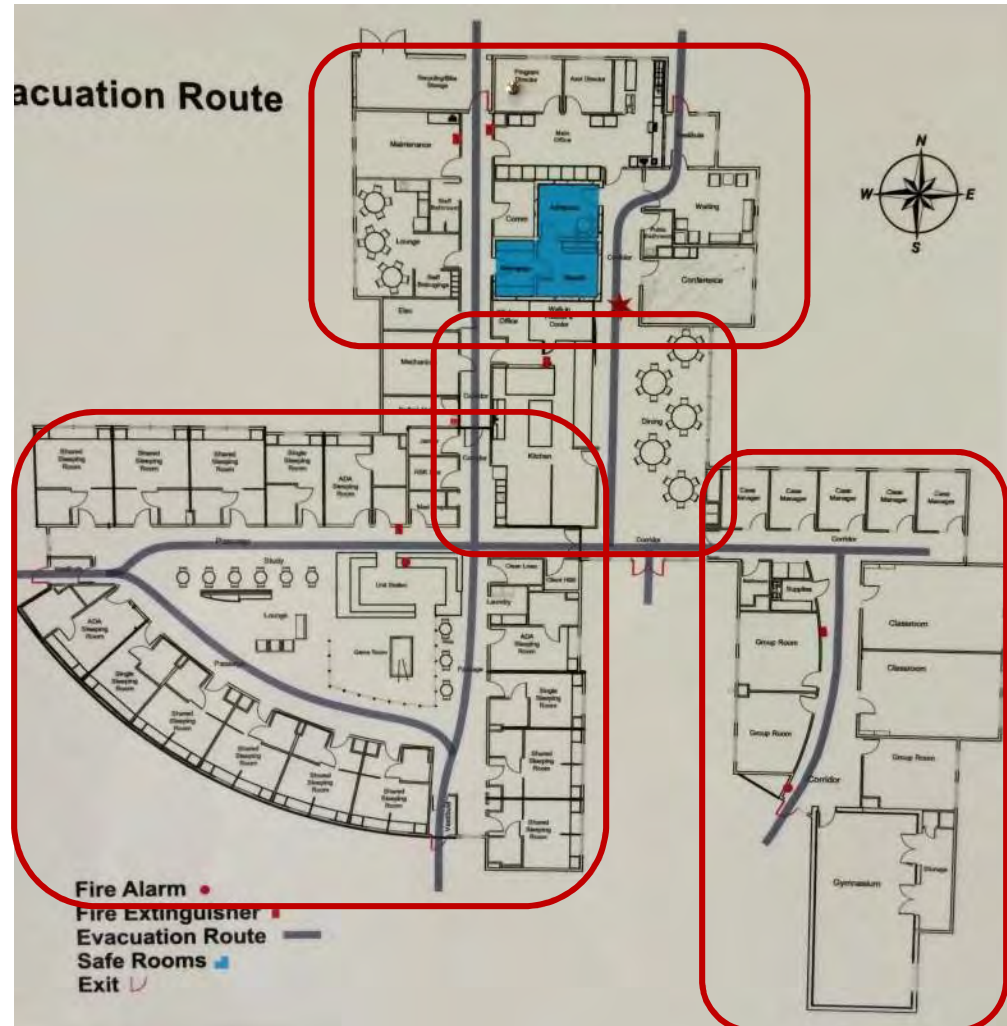
- Winnebago, MN
- Rural
- Licensed as: Supervised Living Facility
- Operator: United Hospital District
- New Facility
- 2010
- 24 Placements
- ALOS: 40 days
- Mostly doubles



ATC of Winnebago: Observations

4 Distinct Zones

Entry/ Admin/ Support



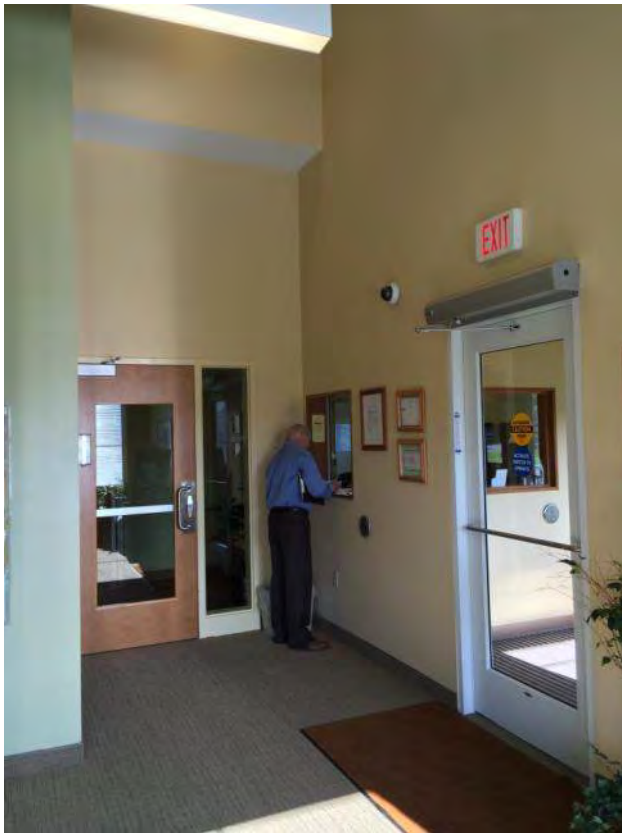
Dining/ Gathering

Offices/ Education classrooms/ group rooms/ Exercise

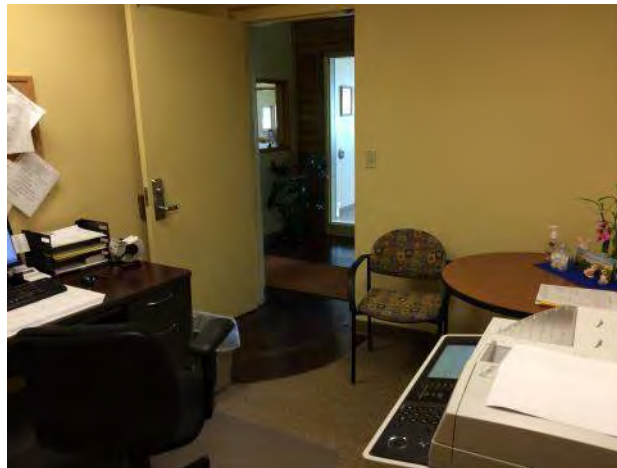


ATC of Winnebago: Observations

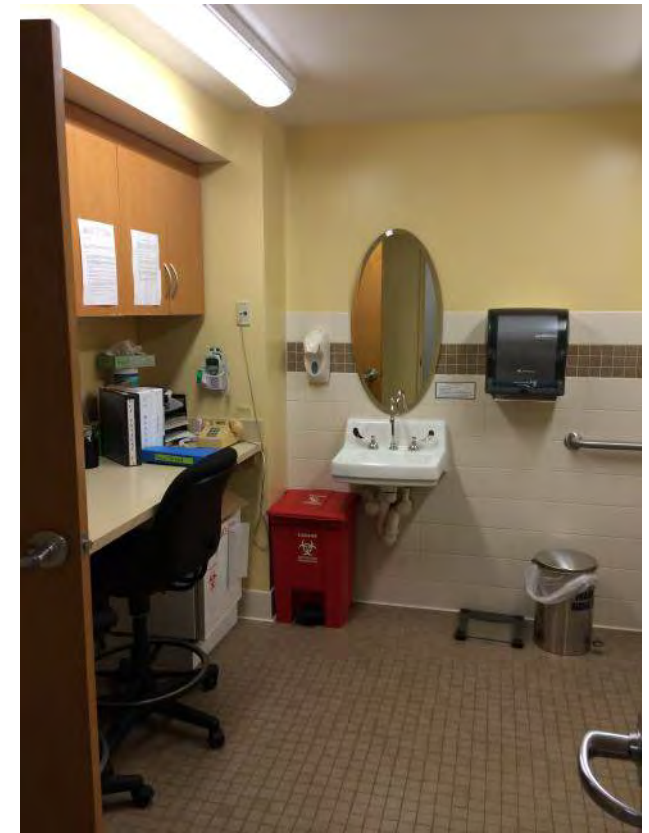
Enclosed check-in/
limits views to waiting



Assessment/ Intake
Room at entry



Adjoining exam/
toilet with shower



ATC of Winnebago: Observations

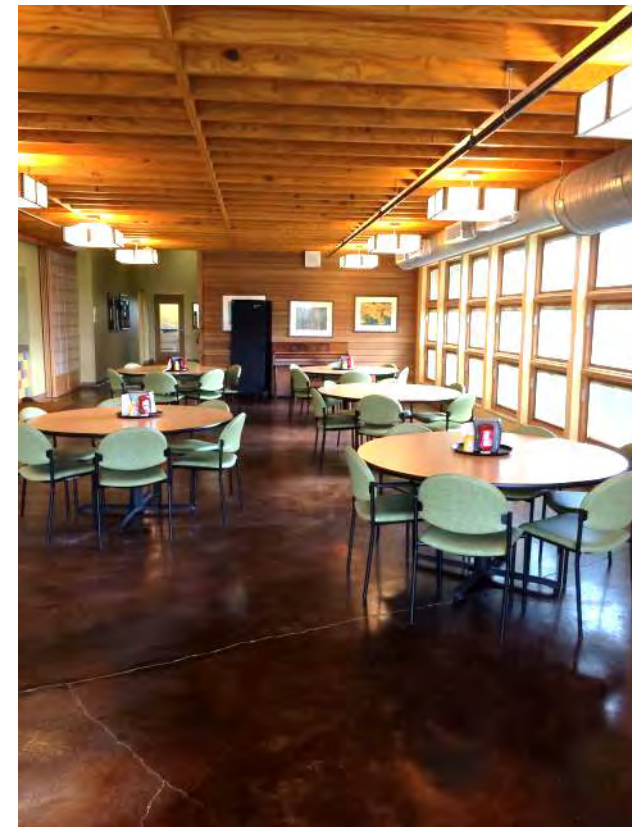
Wide corridors with open central dining



Cafeteria style dining, open kitchen



Dining: natural materials/ daylight



ATC of Winnebago: Observations

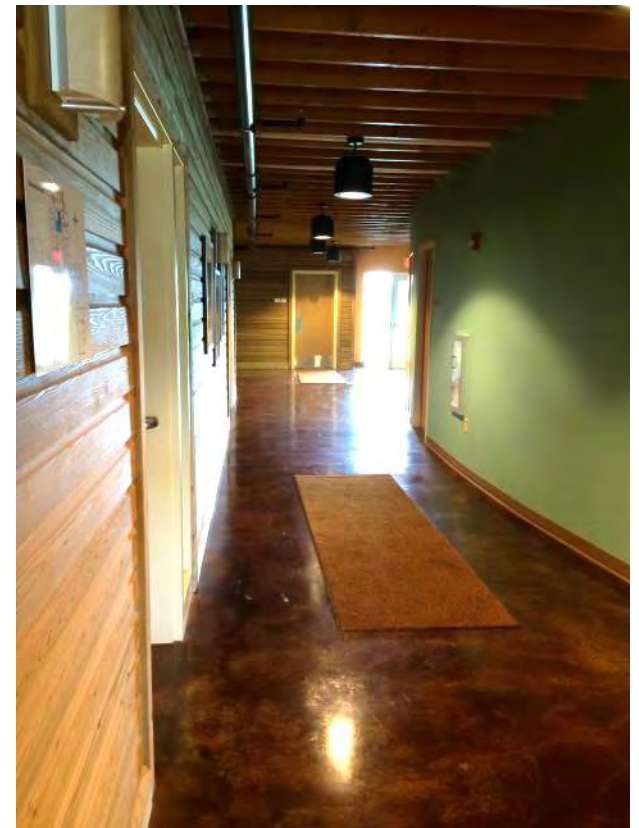
Commercial Kitchen



Classrooms for 10



Use of color and natural materials



ATC of Winnebago: Observations

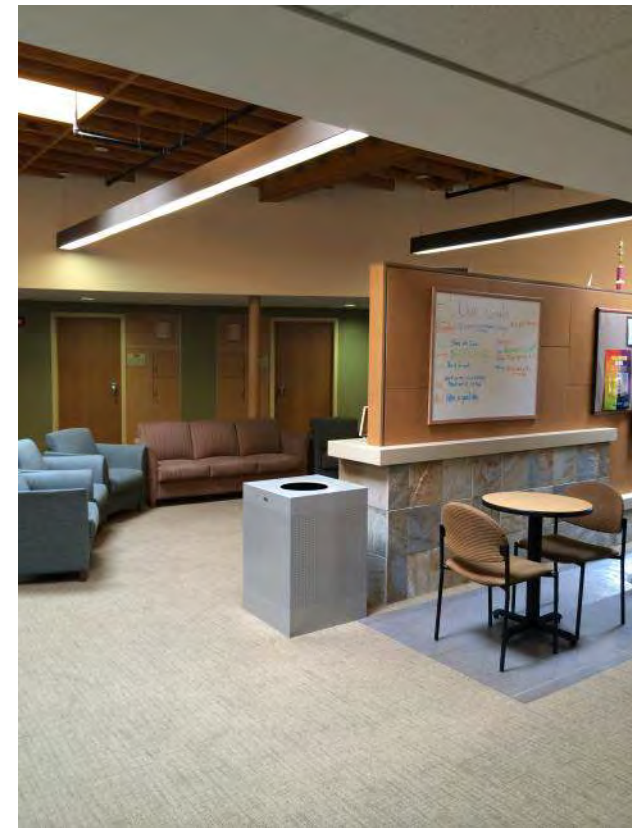
Exercise room
(800sf)



Large staff station
and pool tables



Variety of seating:
lounge and work



ATC of Winnebago: Observations

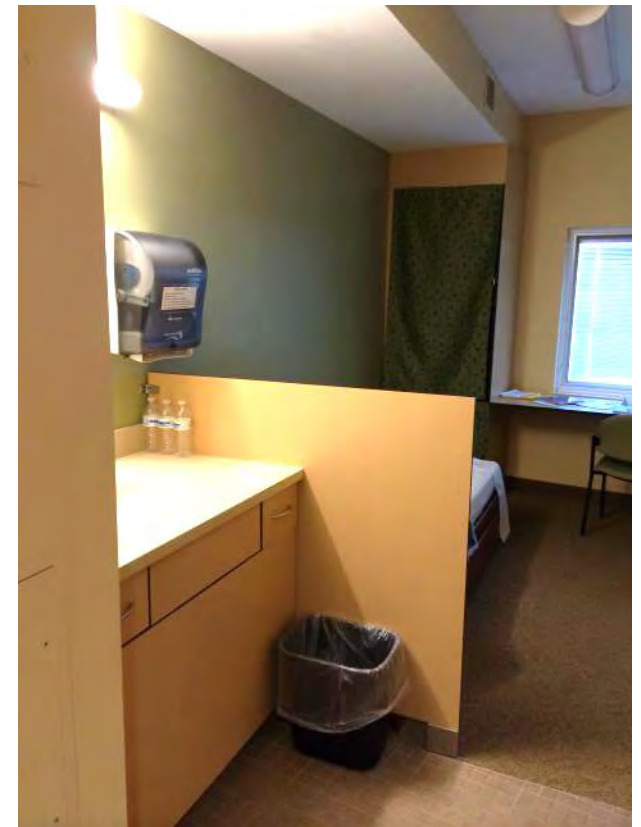
Open entertainment area with daylight



Doubles: side by side, inboard toilet/ sink



Sink outside toilet room, flexible



ATC of Winnebago: Observations

Entrance,
residential



Outdoor court areas
with shading



Outdoor 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

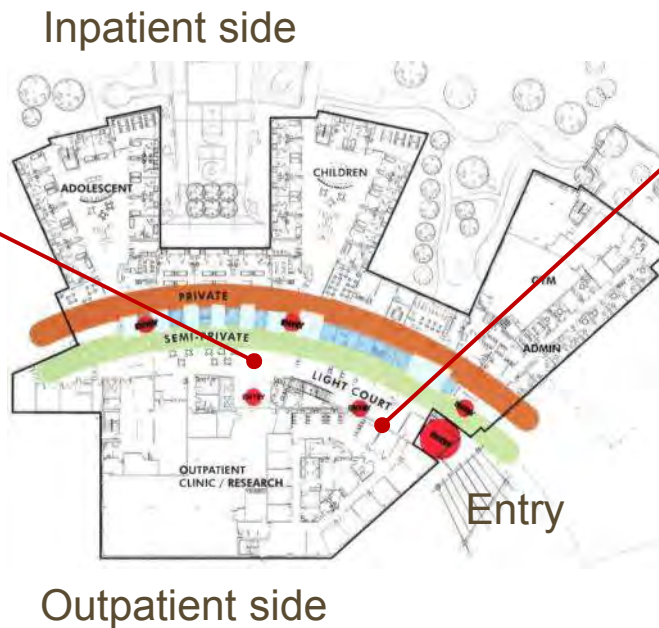


Avera Behavioral Health: Observations

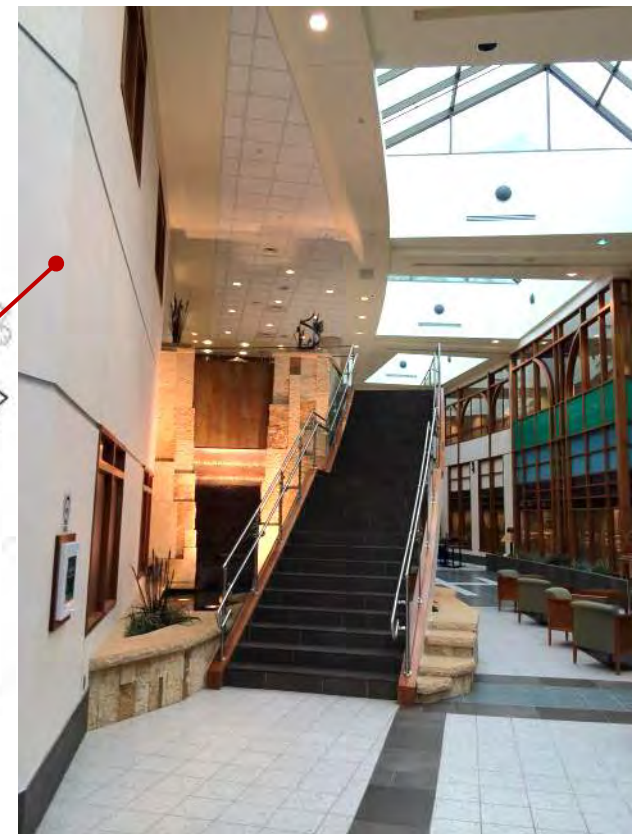
Separate Inpatient side; glass; open feel



Outpatient and Inpatient separated by atrium/ public spine

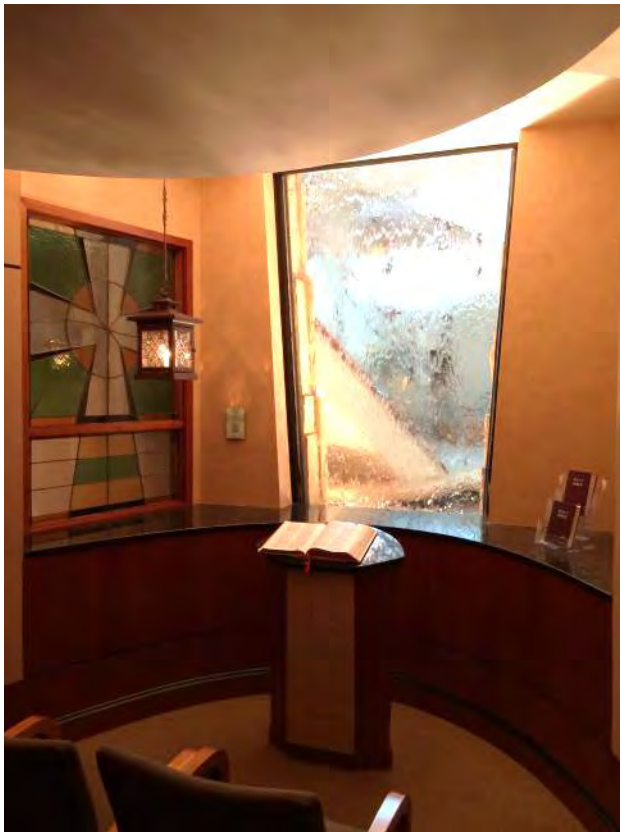


Entrance, public spine, daylight/ open



Avera Behavioral Health: Observations

Religious, chapel,
water, light, intimate



Integrated artwork



Distinct Unit entry/
arrival, recessed



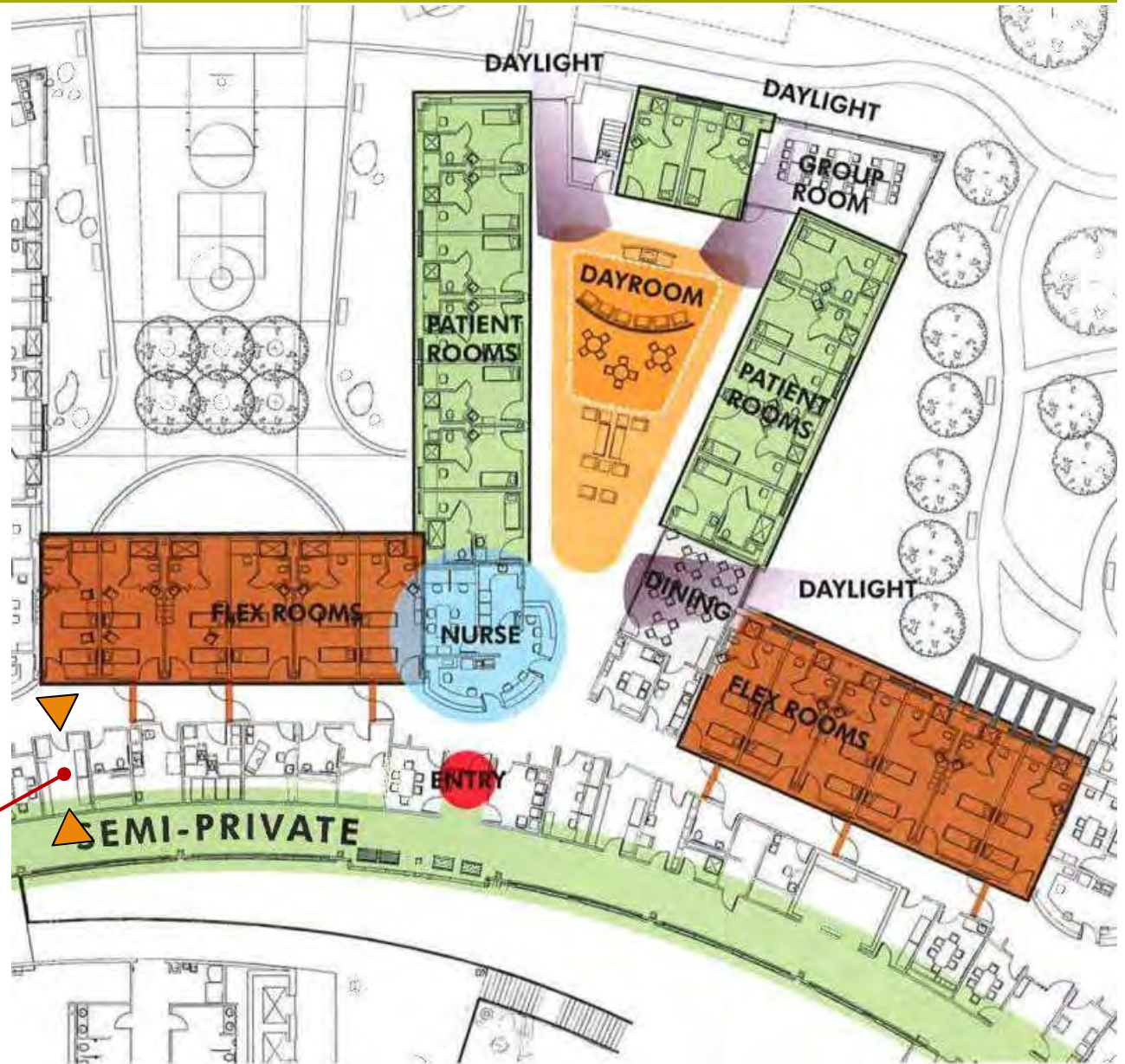
Avera Behavioral Health: Observations

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

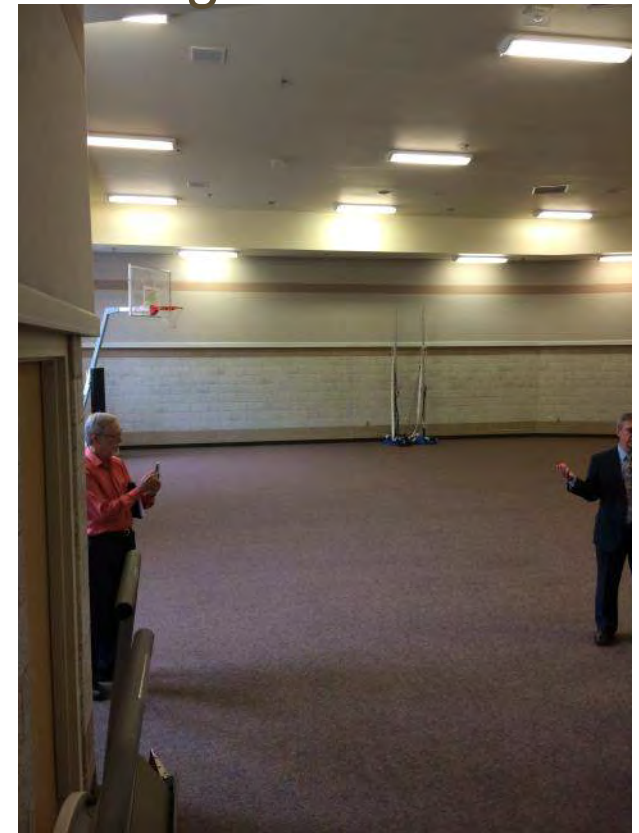
Outdoor court, meditation garden



High fence at end of wings; custom design



Indoor gym/ large gatherings/ video training



Fitness room



Avera Behavioral Health: Observations

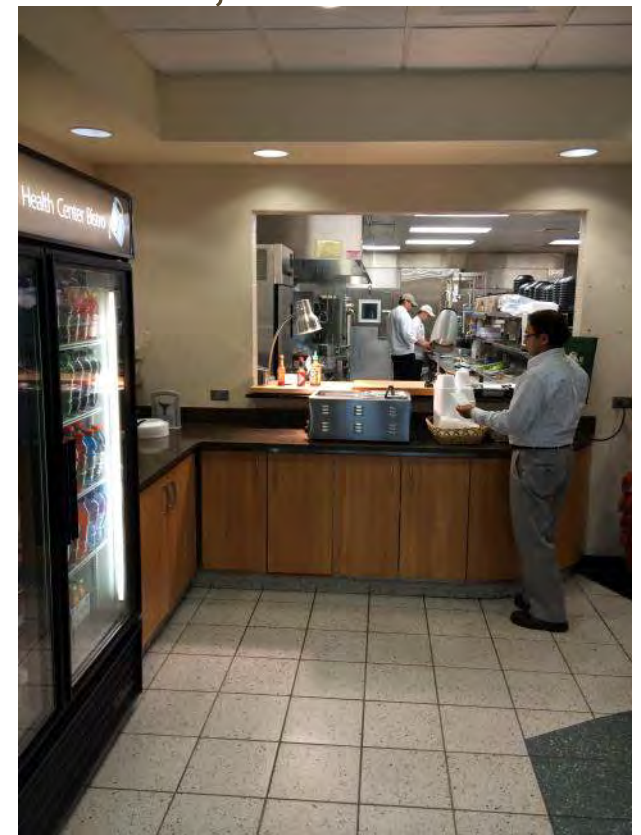
Retail/ Amenity: The Bistro coffee bar



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
- 2013 Addition and Renovation of 1983 bldg.
- 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



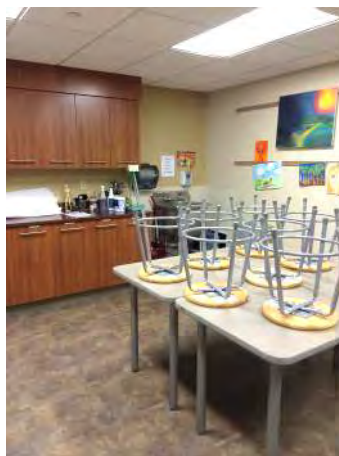
Lecture Hall



Computer Lab



Art Room



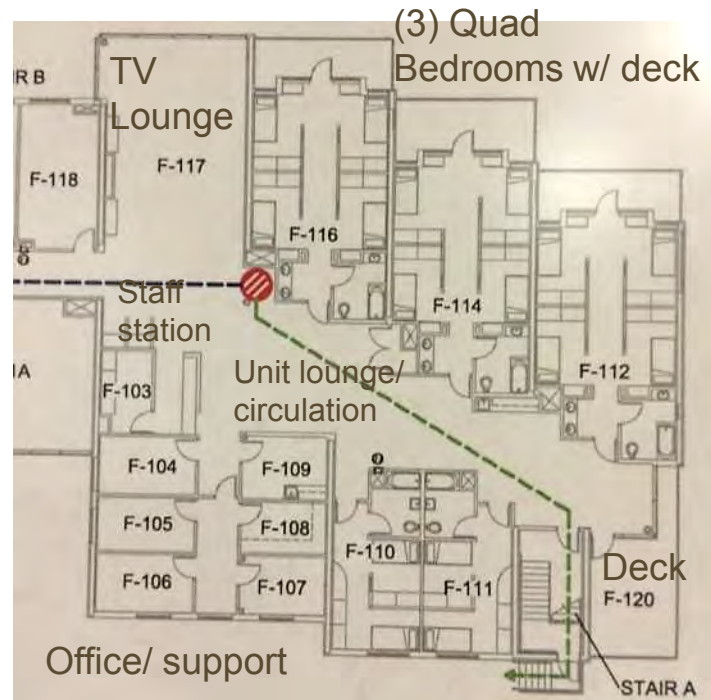
Music Room



Hazelden: Observations

Campus Setting:

- Multiple buildings
- Additions over time

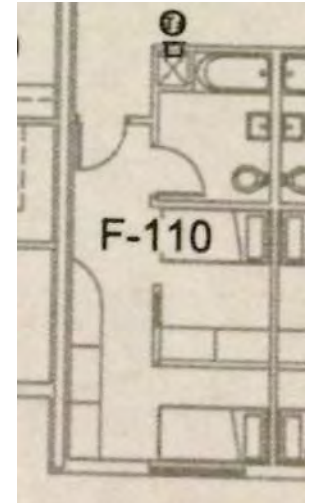


(2) doubles

Quad



Double



New Addition:

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

- Sinks inside and outside toilet room
- tubs; clients like



Hazelden: Observations

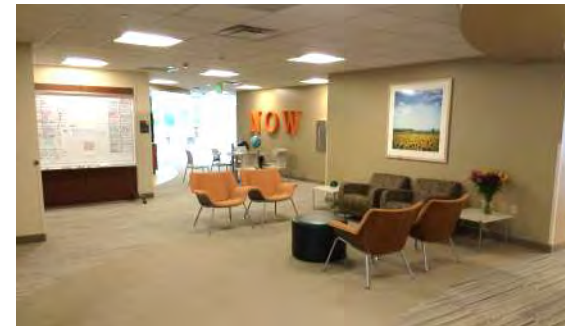
Unit entry, daylight



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



On unit kitchenette



Unit Lounge/ groups



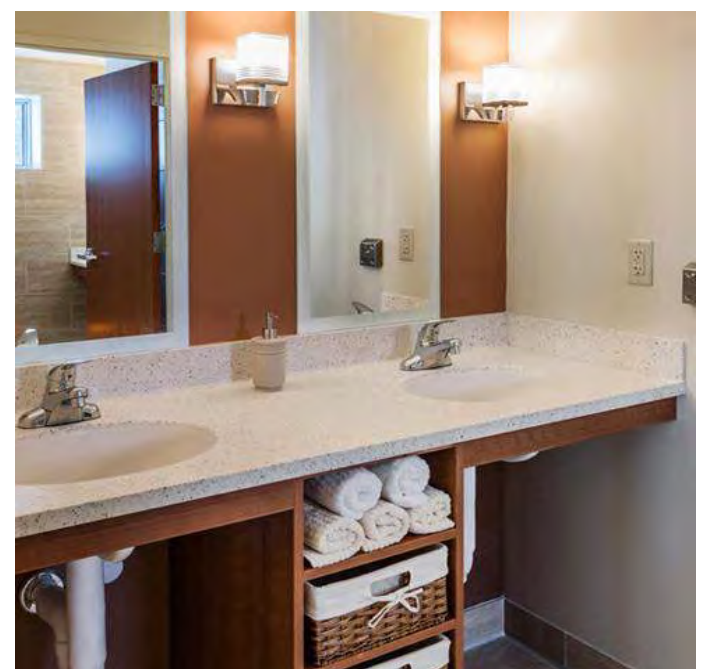
Unit Lounge/ TV



Hazelden: Observations

Client bedrooms:

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



Appendix D

Draft Space Program

San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

Functional Working Assumptions (Baseline)

Baseline Assumptions		11/1/14
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)	
	Each MHRC and ARF to comply with current California Building Code (CBC) housing accessibility requirements.	
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 personnell offices in the community building. Office program space to be reviewed and finalized.	

San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

Summary

11/1/14

Facility Type	Program			Bldgs (4)	Total (3)x(4)=(5)	Comments
	NSF (1)	Multiplier (2)	GSF (1 X 2)=(3)			
Mental Health Rehabilitation Facility (MHRC) - 16 Bed Household (75% private)	7,742	1.35	10,452	5	52,259	single story buildings
<i>Sub Total</i>	7,742		10,452		52,259	
Campus Center	10,642		15,963			includes fresh prepared food preparation for 117 clients. excludes supply chain accommodations for MHRC. <u>Multistory building.</u>
Adult Residential Facility (ARF) - 37 beds (25% private)	12,767		19,151			2 level ARF on top of Community Building
<i>Sub Total</i>	23,409	1.50	35,114	1	35,114	
Total				6	87,372	

San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

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

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Req' d by CCR T9	Comments
VISITOR AREAS			282		
Reception Desk	1	50	50		1 person, may be integrated with care team station
Waiting Space	4	25	100		
Locker Alcove	4	3	12		4 high, visitor belongings
Toilet/ Lav, Visitor, Accessible	2	60	120		male/ female
CLIENT AREAS			3,750		
Bedroom, Private	12	140	1680	Y	includes bed, desk, chair, wardrobe unit. Act as medical isolation. True negative pressure not required.
Bedroom, Semi-Private	2	220	440	Y	includes bed, desk, chair, wardrobe unit.
Bathroom, Accessible	14	70	980	Y	Lav, Toilet, roll in shower
Storage, Client Belongings	1	80	80	Y	
Meditation/ Seclusion	1	140	140	Y	Meditation or Seclusion depending on household population/ level of care.
Library/ Computer Room	1	140	140	Y	
Visitation/ Assessment/ Interview Room	2	120	240	Y	shared for visitation, TB screening, assessment/ intake, interview, consult, individual therapy, exam. Provide dual egress
Therapy/ Interview Room	0	120	0		shared with Visitation/ Assessment above
Exam/ Vitals Room	0	120	0		shared with assessment above. Clinical exam room(s) provided in community bldg.
Phone Room	1	50	50		accessible
CLINICAL CARE SUPPORT AREAS			460		
Care Team Station, Open			80		shared by physicians, nursing, social work
<i>Work Station(s) (4 LF)</i>	2	40	80		
<i>Alcove, Accessible Hand Sink & receptacle</i>	0	20	0		
<i>Alcove, Medication (4 LF)</i>	0	20	0		see med room
<i>Alcove, Nourishment (4 LF)</i>	0	20	0		see kitchen
Care Team Workroom			200	Y	enclosed; shared by physicians, nursing, social work, charting. Used as staff meeting room.
<i>Work Station(s) (4 LF)</i>	2	25	50		computers
<i>Meeting Table</i>	6	25	150		for 6-8, staff mtgs, in-service training.
Copy/ Print/ Office Supply Alcove	1	60	60		copy, printer, fax, supplies, forms
Medication Room	1	120	120	Y	hand sink, computer, work counter, med storage, under counter ref. , dispensing



San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

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

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Req'd by CCR T9	Comments
			1785		
Group Areas					
Kitchen/ Servery			405	Y	used for fresh meal preparation and required Access to nourishment at all times, ADL, snacks. Fresh meal preparation will NOT occur in community bldg.
<i>Receiving and Breakdown Area</i>	1	20	20		<i>staging alcove</i>
<i>Storage, Dry Food</i>	1	80	80		<i>includes emergency storage</i>
<i>Storage, Supplies</i>	1	80	80		<i>paper products, seasonal decorations</i>
<i>Storage, Meat Refrigerator</i>	0	80	0		<i>walk-in</i>
<i>Storage, Dairy Refrigerator</i>	0	80	0		<i>walk-in</i>
<i>Storage, Vegetable Refrigerator</i>	0	80	0		<i>walk-in</i>
<i>Cold Prep Station</i>	2	25	50		
<i>Cook Prep Station</i>	2	25	50		<i>ranges with ovens</i>
<i>Oven</i>	0	20	0		<i>in range, part of cook prep area</i>
<i>Refrigerator, Reach In</i>	2	25	50		<i>for all meat, diary and vegetables</i>
<i>Ice Machine Alcove</i>	0	10	0		<i>in refrigerator</i>
<i>Handwash Alcove</i>	0	10	0		<i>part of dishwashing sink station</i>
<i>Assembly & Cart Staging</i>	0	100	0		
<i>Dishwashing</i>	2	25	50		<i>includes potwash</i>
<i>Potwash</i>	0	25	0		<i>dishwasher</i>
<i>Soiled Holding</i>	1	25	25		<i>waste, compost, recycle</i>
<i>Dietary Director Office</i>	0	120	0		<i>in community building</i>
<i>Dietician Workroom</i>	0	120	0		<i>in community building</i>
<i>Lounge/ Conference</i>	0	120	0		<i>see shared support</i>
<i>Locker Room, Male, Accessible</i>	0	100	0		<i>see shared support</i>
<i>Locker Room, Female, Accessible</i>	0	100	0		<i>see shared support</i>
<i>Toilet, Lav, Shower; Male, Accessible</i>	0	70	0		<i>see shared support</i>
<i>Toilet, Lav, Shower; Female, Accessible</i>	0	70	0		<i>see shared support</i>
<i>Housekeeping Closet</i>	0	50	0		<i>shared with building</i>
Dining Room/ Activity Room	16	25	400	Y	Shared for dinning and group activities
Storage, Activity	1	50	50		
Rehab/ Activity Space	16	25	400	Y	for structured and non-structured therapies (movement, group discussion, music, education, etc.), may be divided with moveable partition.
Storage, Rehab	1	50	50		
Living Room	4	120	480		TV, sofa, chairs, coffee table, 4 person; may centralize
			1015		
STAFF & GENERAL SUPPORT					
Laundry, Residents	1	120	120	Y	1 washer/ 1 dryer, lockable storage
Storage, Clean Supplies			50		for nursing service
<i>Wire Shelving (5H; 48" x 24")</i>	2	25	50		
Storage, Clean Linen			75	Y	



San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

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

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Req'd by CCR T9	Comments
<i>Wire Shelving (5H; 48" x 24")</i>	3	25	75		
Soiled Holding			100	Y	
<i>Accessible hand sink and Counter (6 LF)</i>	1	30	30		
<i>Waste/ Compost Receptacle</i>	2	10	20		
<i>Biohazardous Waste Receptacle</i>	1	10	10		
<i>Recycle Receptacle</i>	1	10	10		
<i>Soiled Linen Receptacle</i>	1	10	10		
<i>Wire Shelving</i>	1	20	20		
Storage, General	1	120	120		equipment, furniture
Office, Facility Director	1	120	120	Y	desk with meeting table
Office, Shared, Nursing/ Physicians	0	120	0		2 person, see support building
Office, Shared, Social Work/ Rehab	1	120	120		2 person, see support building
Conference Room	0	120	0		see Care team workroom and support building
Staff Break/ Locker Room	1	140	140		
Toilet/ Lav, Staff, Accessible	2	60	120	Y	male/ female
Housekeeping Closet	1	50	50	Y	floor sink, cart, supplies

San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

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

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Req'd by CCR T9	Comments
Building Support			450		
Receiving/ Staging Area	1	50	50		
Storage, Maintenance	1	50	50		
Technology Room	1	100	100		to be verified
Electrical Room	1	100	100		to be verified
Mechanical Room	1	150	150		incl AHU, boilers, pumps, fire protection; to be verified
Total Household Grossing Factor			7,742 1.35		single story, no internally dedicated courtyard, 6ft corridors
Total Building GSF			10,452		

San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

Campus Center

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Comments
VISITOR AREAS			282	
Reception Desk	1	50	50	1 person, may be integrated with administration
Waiting Space	4	25	100	
Locker Alcove	4	3	12	4 high
Visitation/ Assessment/ Interview Room	0	120	0	in each household
Toilet/ Lav, Accessible	2	60	120	male/ female
CLINICAL CARE SUPPORT AREAS			360	
Care Team Workroom/ Conference			0	shared by physicians, nursing, social work, charting,
<i>Work Station(s) (4 LF)</i>	0	25	0	computers
<i>Meeting Table</i>	0	25	0	for 6-8, staff mtgs, in-service training.
Copy/ Print/ Office Supply Alcove	0	60	0	copy, printer, fax, supplies, forms
Exam/ Vitals Room	1	120	120	
Medication Room	0	120	0	in each household
Therapy/ Interview Room	2	120	240	shared, used as consult room (4-5 per).
Shared Activity Areas			3020	
Spa/ Tub Room	1	120	120	
Gymnasium/ Auditorium	1	2000	2000	used for sports, large group movement, group exercise classes, dance, large dining, etc.; may be subdivided.
Storage, Gym	1	200	200	equipment/ stacking chairs/ tables
Artroom	1	200	200	
Retail	1	140	140	to be determined
Storage, Retail	1	20	20	
Fitness Center	1	200	200	cardio machines and strength training equipment
Library	0	200	0	in each household
Toilet/ Lav, Staff/ Client, Accessible	2	60	120	male/ female
Alcove, Drinking fountain	1	20	20	
Dietary			2150	
Kitchen			2150	in each household. Servery only for special events.
<i>Receiving and Breakdown Area</i>	1	120	120	
<i>Storage, Dry Food</i>	1	200	200	<i>includes emergency storage</i>
<i>Storage, Supplies</i>	1	120	120	<i>paper products, seasonal decorations</i>
<i>Storage, Meat Refrigerator</i>	1	80	80	
<i>Storage, Dairy Refrigerator</i>	1	80	80	
<i>Storage, Vegetable Refrigerator</i>	1	80	80	
<i>Cold Prep Station</i>	1	60	60	
<i>Hot Prep Station</i>	2	60	120	



San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

Campus Center

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Comments
Oven (s)	1	20	20	
Refrigerator, Reach In	1	20	20	
Ice Machine Alcove	1	10	10	
Handwash Alcove	2	10	20	
Assembly & Cart Staging	1	100	100	
Dishwashing	1	120	120	
Potwash	1	120	120	
Soiled Holding	1	120	120	waste, soiled linen, compost, recycle
Dietary Director Office	1	120	120	see offices
Dietician Workroom	1	120	120	see offices
Lounge/ Conference	1	120	120	
Locker Room, Male, Accessible	1	100	100	(10) 2-H lockers
Locker Room, Female, Accessible	1	100	100	(10) 2-H lockers
Toilet, Lav, Shower; Male, Accessible	1	70	70	
Toilet, Lav, Shower; Female, Accessible	1	70	70	
Housekeeping Closet	1	60	60	incl. cleaning chemicals
Dining	0	25	0	Dining occurs in households or gymnasium for very large groups
Staff / Administrative Offices			1640	
Office, Facility/ Program Director	0	120	0	in each household
Office, Administrator	1	120	120	desk with meeting table
Office, Business	1	120	120	desk with meeting table
Office, HR	1	120	120	desk with meeting table
Office, Medical Director	1	120	120	
Office, Nursing Director	1	120	120	
Office, Rehab/ Program Director	1	120	120	
Office, Training Director	1	120	120	
Office, Shared, Nursing	3	120	360	2 person
Office, Shared, Social Work	1	120	120	2 person; one shared between social work/ rehab in each household
Office, Shared, Rehab	1	120	120	2 person; one shared between social work/ rehab in each household
Dietary Director Office	0	120	0	see Dietary
Dietician Workroom	0	120	0	shared 2 person; see Dietary
Office, Facilities/ Engineering Director	1	120	120	
Copy/ Print/ Office Supply Alcove	1	80	80	copy, printer, fax, supplies, forms
Shared Support			2170	
Conference Room, large	1	400	400	20-25 person
Conference Room, medium	1	200	200	training, 2 computer stations see therapy/ interview/ consult room
Conference Room, small	0	120	0	above and director offices with meeting tables



San Mateo County Cordilleras

Adult Residential Facility & Mental Health Rehabilitation Center

SPACE PROGRAM (Baseline)

Campus Center

11/1/14

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Comments
Staff Break Room	1	140	140	
Locker Room, Accessible	1	150	150	all non-dietary, non-clinical staff, no changing occurs, belongings only; may combine with break room (16) 2-H lockers.
Toilet/ Lav, Staff, Accessible	4	60	240	equal male/ female
Housekeeping Closet	1	50	50	floor sink, cart, supplies
Laundry, Housekeeping	1	120	120	1 washer/ 1 dryer, storage
Storage/ Holding, Clean Supplies	0	200	0	in each household.
Storage/ Holding, Clean Linen	0	200	0	in each household.
Soiled Holding	1	140	140	accessible handwash sink, linen, biohazard, shelf; large metal bins are located in service yard for waste, recycle and compost
Storage, Propane Tanks	1	30	30	verify need
Storage, General	1	200	200	equipment, furniture, donations
Storage, Housekeeping	1	200	200	equipment, bulk supplies
Engineering/ Maintenance Shop	1	300	300	maintenance shop, storage
Building Support			1020	
Loading Dock Bay	1	120	120	area for receiving, excludes outdoor space
Technology Room	0	120	0	
Electrical Room	0	120	0	
Main Technology Room	1	200	200	includes work station
Main Electrical Room	1	200	200	
Mechanical Room	1	500	500	incl AHU, boilers, pumps, fire protection
			10,642	
Sub Total NSF				
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

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Comments
VISITOR AREAS			352	
Reception Desk	0	50	0	1 person
Lobby/ Entry Area	4	25	100	
Lockers	4	3	12	4 high
Visitation Room	1	120	120	may also be used for therapy or family consult
Toilet/ Lav, Accessible	2	60	120	male/ female
CLIENT AREAS			6,270	
Bedroom, Private	9	140	1260	includes bed, desk, chair, wardrobe unit.
Bedroom, Semi-Private	14	220	3080	includes bed, desk, chair, wardrobe unit.
Bathroom, Accessible	23	70	1610	Lav, Toilet, roll in shower
Storage, Belongings	1	80	80	
Meditation	1	120	120	
Library	1	120	120	
CLINICAL CARE SUPPORT AREAS			380	
Care Team Workroom/ Conference			200	
<i>Work Station(s) (4 LF)</i>	2	25	50	computers
<i>Meeting Table</i>	6	25	150	for 6-8, staff mtgs, in-service training.
Copy/ Print/ Office Supply Alcove	1	60	60	copy, printer, fax, supplies, forms
Exam/ Vitals Room	0	120	0	
Medication Room	1	120	120	hand sink, computer, work counter, med storage, under counter ref. , dispensing
Therapy/ Interview Room	0	120	0	shared with Visitation
Group Areas			3520	
Kitchen/ Servery			1140	used for fresh meal preparation and access to nourishment at all times,snacks. Fresh meal preparation will NOT occur in community bldg. One Kitchen to serve both floors.
<i>Receiving and Breakdown Area</i>	1	100	100	
<i>Storage, Dry Food Pantry</i>	2	100	200	includes emergency storage, sub divide portion to other floor.
<i>Storage, Supplies</i>	2	80	160	paper products, seasonal decorations. One on each floor.
<i>Storage, Meat Refrigerator</i>	0	80	0	walk-in
<i>Storage, Dairy Refrigerator</i>	0	80	0	walk-in
<i>Storage, Vegetable Refrigerator</i>	0	80	0	walk-in
<i>Cold Prep Station</i>	3	25	75	
<i>Cook Prep Station</i>	3	25	75	
<i>Oven (s)</i>	1	20	20	
<i>Refrigerator, Reach In</i>	4	20	80	for all meat, diary and vegetables
<i>Ice Machine Alcove</i>	1	10	10	
<i>Handwash Alcove</i>	1	10	10	part of dishwashing sink station
<i>Assembly & Cart Staging</i>	1	20	20	



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

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Comments
<i>Dishwashing</i>	1	60	60	
<i>Potwash</i>	1	60	60	
<i>Soiled Holding</i>	1	60	60	<i>waste, soiled linen, compost, recycle</i>
<i>Dietary Director Office</i>	0	120	0	<i>in community building</i>
<i>Dietician Workroom</i>	0	120	0	<i>in community building</i>
<i>Lounge/ Conference</i>	0	120	0	
<i>Alcove, Lockers</i>	1	20	20	
<i>Toilet, Lav, Shower; Male, Accessible</i>	1	70	70	
<i>Toilet, Lav, Shower; Female, Accessible</i>	1	70	70	
<i>Housekeeping Closet</i>	1	50	50	
Dining Room	37	25	925	may subdivide; Shared for dining and group activities
Rehab/ Activity Space	37	25	925	may subdivide; for structured and non-structured therapies (movement, group discussion, music, education, etc.)
Storage, Rehab/ Activity	1	50	50	
Living Room	4	120	480	TV, sofa, chairs, coffee table, 4-6 person
STAFF & GENERAL SUPPORT			1545	
Laundry, Residents	2	120	240	1 washer/ 1 dryer, lockable storage
Storage, Clean Supplies/ Linen			225	
<i>Wire Shelving (5H; 48" x 24")</i>	3	25	75	
<i>Clean Linen Cart</i>	6	25	150	
Soiled Holding			120	
<i>Accessible hand sink and Counter (6 LF)</i>	1	30	30	
<i>Waste/ Compost Receptacle</i>	2	10	20	
<i>Biohazardous Waste Receptacle</i>	1	10	10	
<i>Recycle Receptacle</i>	1	10	10	
<i>Soiled Linen Receptacle</i>	1	10	10	
<i>Wire Shelving</i>	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
Conference Room	0	120	0	share with Care team workroom. See support building
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	

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

Functional Area and Room Components	Qty. (1)	Area (NSF) (2)	Net Square Feet (NSF) (1 X 2)=3	Comments
Mechanical Room	2	150	300	incl AHU, boilers, pumps, fire protection

Total Household
Grossing Factor

12,767

1.5 two story, no internally dedicated
courtyard, 6ft corridors

Total Building GSF

19,151

Appendix E

Geotechnical Report

County of San Mateo, Facilities
Planning, Design and Construction

**Cordilleras Mental Health Center
Replacement**

Preliminary Engineering Geology
and Geotechnical Engineering
Feasibility Report

Issue 2 | June 12, 2014

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

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ARUP

Document Verification

ARUP

Job title		Cordilleras Mental Health Center Replacement		Job number 236594	
Document title		Preliminary Engineering Geology and Geotechnical Engineering Feasibility Report		File reference 4-05	
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Revision	Date	Filename	2014-06-06 Report_Prelim Geo Feasibility.docx		
Draft 1	June 6, 2014	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Tom Curran / Cheyenne Waldman	Martin Walker	Jeff Dunn
		Signature			
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		Name	Tom Curran / Cheyenne Waldman	Martin Walker / John Baldwin	Jeff Dunn
Issue 2	June 12, 2014	Filename			
		Description	Incorporated comments from client representatives		
			Prepared by	Checked by	Approved by
		Name	Cheyenne Waldman	Martin Walker	Jeff Dunn / John Baldwin
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		Name			
		Signature			
Issue Document Verification with Document					
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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:

- Jo Crosby & Associates. (2000). Geotechnical Investigation Report for the planned Water Storage Tank Site, off Edmonds Road, San Mateo County, California. Project 4200C-7, November.
- Jacobson Silverstein Winslow Architects. (1999) Feasibility Study for the Cordilleras Community Treatment Facility Youth Crisis House, off Edmonds Road, San Mateo County, California. January.
- Jo Crosby & Associates, (1998). Geotechnical Investigation Report for the planned CDF Cordilleras Fire Station, off Edmonds Road, San Mateo County, California. Project 4200-9. October.

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

Date	Scale (ft)	Source	Description
1902	1:125,000	Santa Cruz, CA, Historical Map	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.
1948	N/A	Google Earth Pro Historical Aerial Photography	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.
1953	1:24,000	Woodside, CA, Historical Map	Cordilleras Creek shown to have been diverted to the south of the Mental Health Center and the County Sanatorium, 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.
1956	1:250,000	San Francisco, CA, Historical Map	Reviewed – Low resolution, no discernible information for the site.
1957	1:250,000	San Francisco, CA, Historical Map	Reviewed – Low resolution, no discernible information for the site.
1960	1:250,000	San Francisco, CA, Historical Map	Reviewed – Low resolution, no discernible information for the site.
1961	1:24,000	Woodside, CA, Historical Map	Reviewed – high resolution. No change noted on the site or in the immediate surrounding area.
1964	1:250,000	San Francisco, CA, Historical Map	Reviewed – Low resolution, no discernible information for the site.
1982	1:100,000	Palo Alto, CA, Historical Map	Reviewed – Medium resolution, no discernible change noted on the site. Highway 280 noted on the map.
1991	N/A	Google Earth Pro Historical Aerial Photography	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.
2002	N/A	Google Earth Pro Historical Aerial Photography	Reviewed – No change noted on the site or in the immediate surrounding area.

Date	Scale (ft)	Source	Description
2006	N/A	Google Earth Pro Historical Aerial Photography	Reviewed – No change noted on the site or in the immediate surrounding area.
2014	N/A	Google Earth Pro Historical Aerial Photography	Reviewed – No change noted on the site or in the immediate surrounding area.

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 2 Summary of Field Observations and Photographs

Figure 4 Key	Photograph Log Reference No (Attachment A)	Observation
1	1	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.
2	N/A	Highly weathered sandstone exposed along water tank access road – highly to completely weathered sandstone, friable and intermixed with slope colluvium.
3	N/A	Rock cut exposure directly south of water tower. Shows a concrete patch within the bedrock that is assumed to cap a water delivery pipe.
4	2	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.

Figure 4 Key	Photograph Log Reference No (Attachment A)	Observation
5	3 and 4	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.
6	5	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.
7	6	Cut slope near building loading area – outcrop of highly weathered sandstone intermixed with loose and friable colluvium.
8	7	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.
9 and 10	8 and 9	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.
11	N/A	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.
12	N/A	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.
13	N/A	Sandstone outcrop on north slope of northern valley – disintegrated, structureless, fractures spacing of 2 to 5 inches.
14	N/A	Center recreation area boundary fence – engineered fill slope used for access road and burial of former tributary constructed from reworked alluvium and colluvium.
15	N/A	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.
16	10	Trail north of Edmonds Road – outcrop of Whiskey Formation, red fine to medium grained massive sandstone outcrop, fractured with apparent bedding.
17	N/A	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.

Figure 4 Key	Photograph Log Reference No (Attachment A)	Observation
18	11	Junction between Edmonds road and Edgewood Road – cut slope of sheared sandstone and shale, material completely weathered comprising disintegrated sandstone and shale, unit KJfs (Brabb et al., 1998). Slope angle 65°, supported with temporary soil netting and straw wattles with stakes.
19	12	Road cut on Edgewood Road, east of site 1:1 rock cut slope within mélangé unit KJfsr (Brabb et al., 1998) that consists of loose material; highly weathered and sheared rocks suggests a risk for raveling and slide debris during periods of heavy rainfall. Sandstone boulders, 4 feet in diameter at the base of the slope.
20	13	Road cut on Edgewood Road, south-east of site – sandstone, appears to be similar in composition to material found at the site. Rock mass structure is very blocky, more homogeneous than material from the site, appears to be fewer areas of disintegrated material. Slope cut to approximately 70°, little to no raveling of slope materials.
21	14	Road cut on Edgewood Road, south of the site – very competent, blocky sandstone. Steep slope angle with no apparent sign of raveling or instability.

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”.
- **Whiskey 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)

- 050°/88°SE
- 020°/25°NE

Franciscan Complex mélangé 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 mélangé 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 mélangé 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 030° (strike) and 23°NW (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 mélangé (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 mélangé) (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 gravely 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 closest 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

Fault Name/ Zone	Fault Type	Slip Rate (mm/yr)	Distance and Bearing to Cordilleras Site	*Maximum Predicted Earthquake		*Estimated Recurrence Interval (yr)	
				Moment (M _w)	MMI Shaking	Maximum Event	Magnitude 5.5 Event
Faults with ground rupture within recorded history – since 1776							
San Andreas Fault (including Canada Fault)	Right-Lateral Strike-Slip	>5	2 miles west	8.4	XI	1,000	4
Hayward Fault Zone	Right-Lateral Strike-Slip	>5	20 miles east	6.9	IX	200	10
Greenville Fault	Right Lateral Strike-Slip with Normal movement	1-5	45 miles east	6.9	IX	No Data	No Data
Butano Fault	Right Lateral Strike-Slip	<0.2	40 miles south	No Data	No Data	No Data	No Data
Faults with Holocene activity							
Seal Cove-San Gregorio	Right-Lateral Strike-Slip	0.75	15 miles north- west	No Data	No Data	No Data	No Data
San Gregorio Fault	Right-Lateral Strike-Slip	0.75	12 miles west	7.1	IX	200	10
Calaveras Fault Zone	Right-Lateral Strike-Slip	1	25 miles east	6.9	IX	300	10
Greenville Fault	Right Lateral Strike-Slip with Normal movement	1-5	45 miles east	6.9	IX	No Data	No Data
Green Valley Fault	Right-Lateral Strike-Slip	0.75	50 miles north- east	7.0	IX	200	10
Concord Fault	Right-Lateral Strike-Slip	0.75	50 miles north- east	7.0	IX	200	10
Rodgers Creek Fault	Right-Lateral Strike-Slip	>5	50 miles north- east	No Data	No Data	No Data	No Data
Mount Diablo Thrust Fault	Thrust Fault	Unknown	42 miles north- east	No Data	No Data	No Data	No Data
Sargent Fault	Normal with Right Slip movement	0.3	40 miles south east	6.4	VIII	No Data	No Data

Fault Name/ Zone	Fault Type	Slip Rate (mm/yr)	Distance and Bearing to Cordilleras Site	*Maximum Predicted Earthquake		*Estimated Recurrence Interval (yr)	
				Moment (M _w)	MMI Shaking	Maximum Event	Magnitude 5.5 Event
Monte Vista Fault	Thrust Fault with Right Lateral movement	0.2-1	15 miles south- east	7.1	IX	No Data	No Data
Pleasanton	Right-Lateral Strike-Slip	<0.2	40 miles north- east	5.5	VII	300	10
Verona Fault	Thrust	N/A	35 miles east	6.8	IX	No Data	No Data
Los Politas Fault	Left Lateral Strike-Slip	Unknown	38 miles east	6.3	VIII	No Data	No Data
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)

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC (%g)	<0.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL (cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X

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

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

Latitude: 37.4737° N Longitude: 122.2859° W	ASCE 7-10 Table/Figure	Factor/Coefficient	Value
Mapped Peak Ground Acceleration MCE_G	Figure 22-7	PGA	0.911g
Short-Period MCE_R at 0.2s	Figure 22-1	S_s	2.363g
1.0s Period MCE_R	Figure 22-2	S_1	1.134g
Soil Profile Type	Table 20.3-1	Site Class	B
PGA Site Coefficient	Table 11.8-1	F_{PGA}	1.0
Short Period Site Coefficient	Table 11.4-1	F_a	1.00
1.0s Period Site Coefficient	Table 11.4-2	F_v	1.00
Adjusted MC Spectral Response Parameters	Equation 11.8-1	PGA_M	0.911g
	Equation 11.4-1	S_{MS}	2.363g
	Equation 11.4-2	S_{MI}	1.134g
Spectral Acceleration Parameters	Equation 11.4-3	S_{DS}	1.575g
	Equation 11.4-4	S_{D1}	0.756g
Long-Period Transition Period	Figure 22-12	T_L	12s

Table 7 USGS Hazard Calculator Seismic Parameters for Site Class D

Latitude: 37.4737° N Longitude: 122.2859° W	ASCE 7-10 Table/Figure	Factor/Coefficient	Value
Mapped Peak Ground Acceleration MCE_G	Figure 22-7	PGA	0.911g
Short-Period MCE_R at 0.2s	Figure 22-1	S_s	2.363g
1.0s Period MCE_R	Figure 22-2	S_1	1.134g
Soil Profile Type	Table 20.3-1	Site Class	D
PGA Site Coefficient	Table 11.8-1	F_{PGA}	1.0
Short Period Site Coefficient	Table 11.4-1	F_a	1.0
1.0s Period Site Coefficient	Table 11.4-2	F_v	1.5
Adjusted MC Spectral Response Parameters	Equation 11.8-1	PGA_M	0.911g
	Equation 11.4-1	S_{MS}	2.363g
	Equation 11.4-2	S_{M1}	1.701g
Spectral Acceleration Parameters	Equation 11.4-3	S_{DS}	1.575g
	Equation 11.4-4	S_{D1}	1.134g
Long-Period Transition Period	Figure 22-12	T_L	12s

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 in 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 mélangé (KJfsr) (Brabb et al, 1998). A literature review of the Franciscan Complex mélangé indicates that serpentine is often found within the mélangé 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

Hazard	Likelihood			Consequence			Risk	Management/Mitigation	Comments
	L	M	H	L	M	H			
Faulting Hazard – Surface Rupture	X					X	Low to Medium	Detailed mapping of the site, to investigate the potential for obscured fault traces.	Low risk assigned due to very low likelihood.
Seismic Hazard – Ground Shaking			X		X		Medium to High	Seismic shaking to be accounted for during the detailed design stage.	Medium to high risk assigned due to frequency of maximum event and possibility to mitigate during design.
Seismic Hazard – Liquefaction			X			X	High	Deep foundations should support structures above one-story in height and retaining structures higher than 8 feet retained height.	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.
Slope instability – Static Landslip	X	X				X	Medium to High	Additional ground investigation data will lower the risk by confirming the presence/absence of any shear planes. Risk can be mitigated during detailed design.	Medium risk assigned based upon the consequence and the limited information. Greater determination of the likelihood can reduce risk.
Rainfall induced Slope Instability	X	X			X	X	Low to Medium	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.	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

Hazard	Likelihood			Consequence			Risk	Management/Mitigation	Comments
	L	M	H	L	M	H			
Seismically Induced Slope Instability	X	X			X	X	Low to Medium	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.	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.
Debris Flow	X	X			X	X	Low to Medium	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.	Low to medium hazard assigned. Assumed thin soil mantle based upon the walkover survey.
Adverse bedding near proposed retaining structures	X				X		Low to Medium	Additional ground investigation will confirm the presence of adverse bedding near proposed structure.	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.
Incidental Rockfall		X	X	X	X		Medium	Detailed mapping of all rock exposure in the valley above the slopes. Support of the rock face can assessed during the detailed design stage.	Highly fractured bedrock within a steep sided valley.
Post-fire debris flow	X					X	Medium to High	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	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.
Flash Flooding	X	X			X		Low	Modeling of flood potential – regarding of channel to accommodate flood waters.	Low risk due to ease of mitigation/management of the hazard.
Debris Flow Induced Flooding	X				X		Low	Mobilize equipment to clear any debris flow blockages. Design open channel replacement to reduce risk of debris blockage.	Low risk due to ease of mitigation/management of the hazard.

Hazard	Likelihood			Consequence			Risk	Management/Mitigation	Comments
	L	M	H	L	M	H			
Development Hazard – activating deep-seated landslide	X	X				X	Medium	Unknown likelihood – limited information. Ground investigation to investigate the likelihood.	Medium risk assigned due to lack of information – risk rating can be lowered during the ground investigation and detailed design stages.
Development Hazard – Debris Flow/Slope Raveling		X	X	X	X		Medium	Loose material on slope, removing support at the toe could exacerbate slope instability. Monitoring and supporting of slope, phased construction could reduce the hazard.	Medium risk – hazard can be monitored during construction and mitigated in the specification to carry out the work.
NOA – Naturally Occurring Asbestos	X			X			Low	Presence of asbestos unlikely, if encountered during further works, can be easily managed/mitigated through the work plan.	Typical mitigations include dust monitoring and continual dust reduction measures.
Construction Asbestos	X	X		X			Low	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.	
Post-construction differential settlement	X				X		Low	Full-time earthwork observation and frequent compaction testing during fill prism construction will be vital to achieving stable final grades.	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.

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 upper 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

Structure	Boreholes		Trenches	
	Quantity	Depth (feet)	Quantity	Depth (feet)
Five Single Story Buildings	6	5 feet into rock	2	10 feet or to rock
Multi Story Building	5-8	10 feet into rock below the proposed final floor	0	N/A
South Valley Slope Retaining Structure	4	15 feet below retained level, minimum 5 feet into rock, whichever is deeper	2	10 feet or to rock

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.

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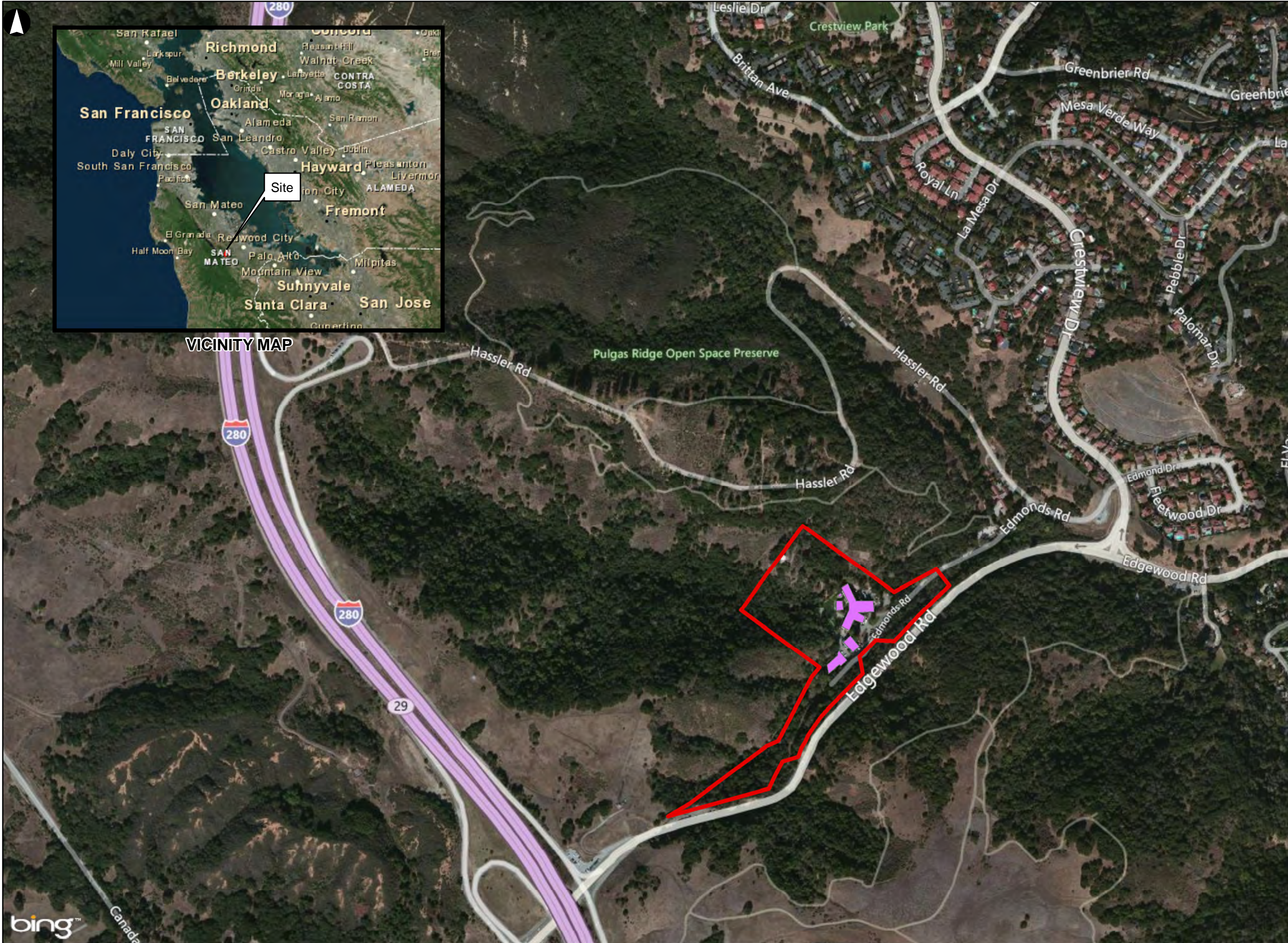
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Figures



VICINITY MAP

Legend

- Building
- Site Boundary

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Image courtesy of USGS © 2014 Microsoft Corporation © 2013 Nokia © AND Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS

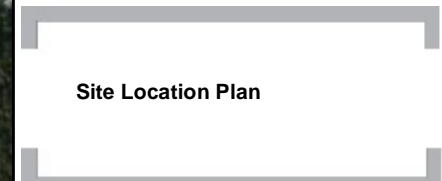
PO	2014-06-03	JLB	MJW	JD
Issue	Date	By	Chkd	Appd

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Client
**County of San Mateo,
Facilities Planning,
Design and Construction**

Job Title
**Cordilleras Mental Health
Center Replacement**



Site Location Plan

Scale at 11x17

1:7,200

Job No
236594-00

Drawing Status
Preliminary

Drawing No
Figure 1

Issue
P0



Legend

- - - - - Cordilleras Creek (per site survey)
- — — — — 20 ft contours
- Site Boundary

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

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Job Title

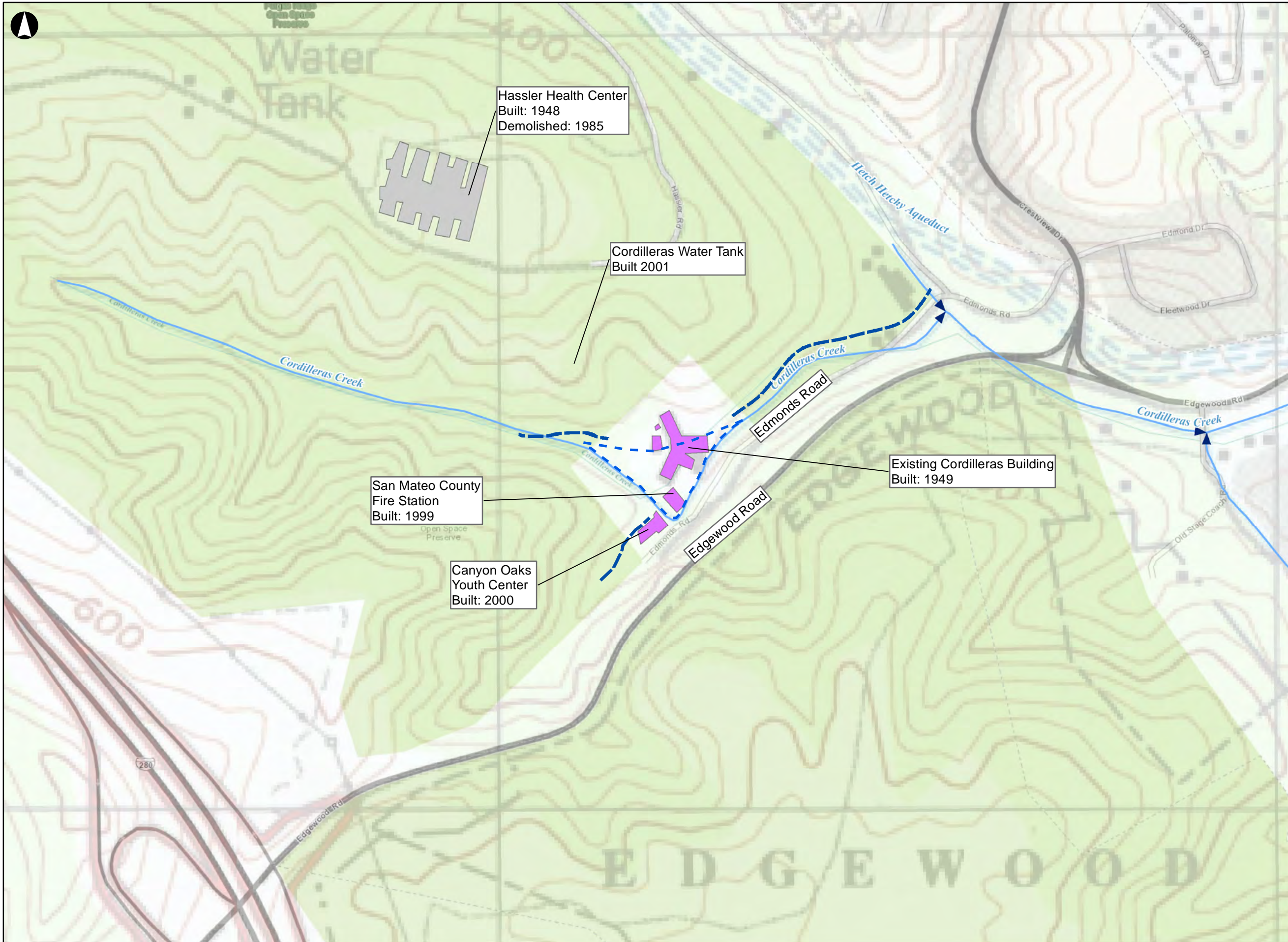
**Cordilleras Mental Health
 Center Replacement**

Existing Site Plan

Scale at 11x17

1:2,400

Job No	Drawing Status
236594-00	Preliminary
Drawing No	Issue
Figure 2	P0



- Legend**
- Culverted Cordilleras Creek (approximate course)
 - Historical Stream
 - Cordilleras Creek (per survey)
 - Historical Buildings
 - Building

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

Topographic Map Courtesy of the U.S. Geological Survey 1997

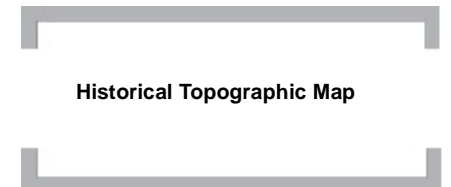
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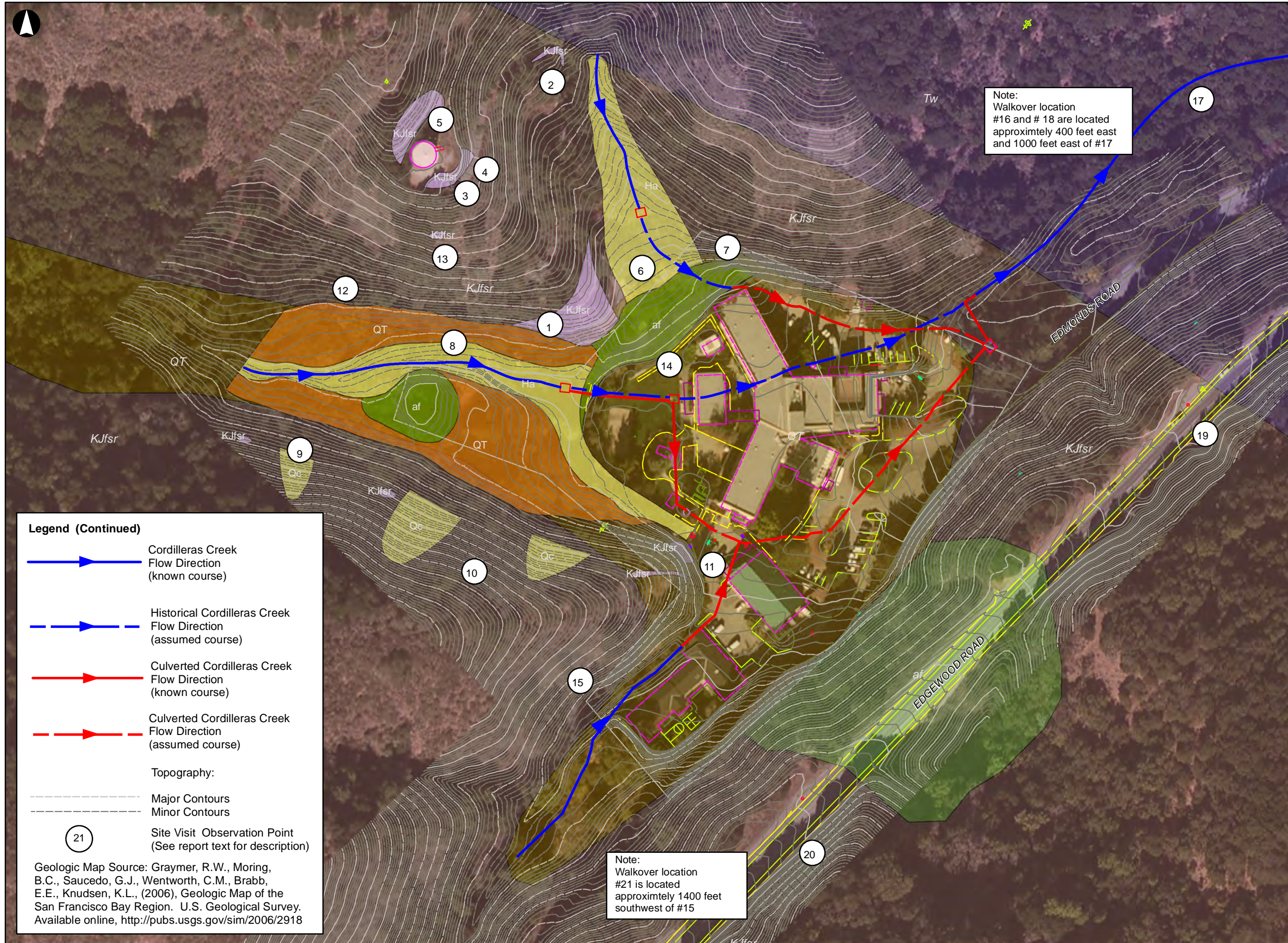
Job Title
**Cordilleras Mental Health
 Center Replacement**



Scale at 11x17
1:4,800

Job No 236594-00	Drawing Status Preliminary
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Drawing No Figure 3	Issue P0
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Note:
Walkover location
#16 and # 18 are located
approximately 400 feet east
and 1000 feet east of #17

Note:
Walkover location
#21 is located
approximately 1400 feet
southwest of #15

Legend (Continued)

- Cordilleras Creek Flow Direction (known course)
- Historical Cordilleras Creek Flow Direction (assumed course)
- Culverted Cordilleras Creek Flow Direction (known course)
- Culverted Cordilleras Creek Flow Direction (assumed course)
- Topography:
 - Major Contours
 - Minor Contours
- Site Visit Observation Point (See report text for description)

Geologic Map Source: Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., Knudsen, K.L., (2006), Geologic Map of the San Francisco Bay Region. U.S. Geological Survey. Available online, <http://pubs.usgs.gov/sim/2006/2918>

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,

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Job Title
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Center Replacement**

Site Reconnaissance Preliminary Geologic Map

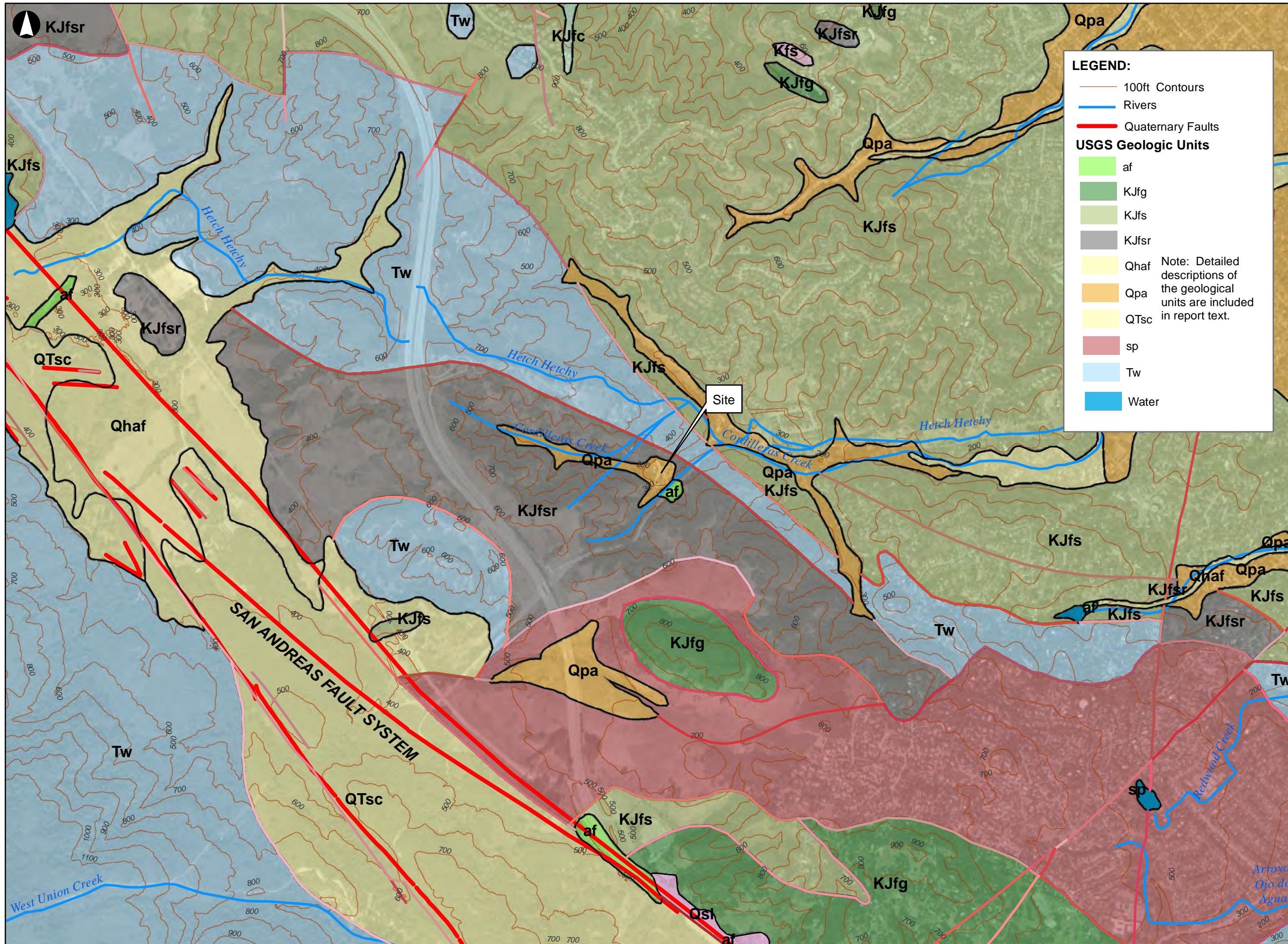
Scale at 11x17
1:1,440

Job No
236594-00

Drawing Status
Preliminary

Drawing No
Figure 4

Issue
P0



LEGEND:

- 100ft Contours
- Rivers
- Quaternary Faults

USGS Geologic Units

- af
- KJfg
- KJfs
- KJfsr
- Qhaf Note: Detailed descriptions of the geological units are included in report text.
- Qpa
- QTsc
- sp
- Tw
- Water

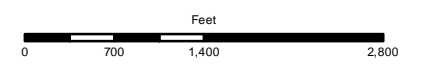
NOTE:
 Boundaries between geologic units are either faults, erosional contacts, or stratigraphic. See source map for further detail.

Geologic Map Source: Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., Knudsen, K.L., (2006), Geologic Map of the San Francisco Bay Region. U.S. Geological Survey. Available online, <http://pubs.usgs.gov/sim/2006/2918>

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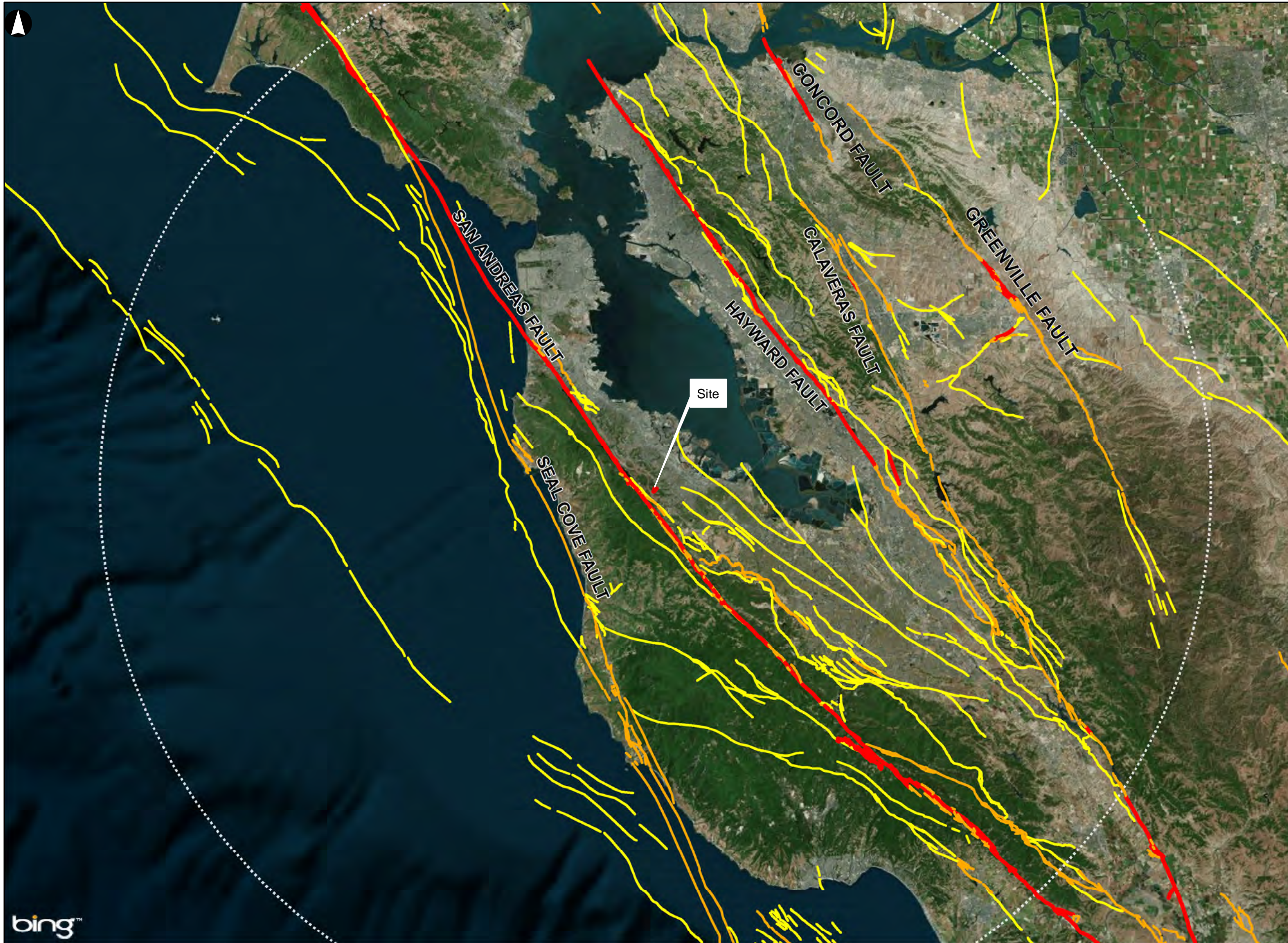
Job Title
**Cordilleras Mental Health
 Center Replacement**

Surficial and Bedrock Geologic Map

Scale at 11x17
1:18,000

Job No 236594-00	Drawing Status Preliminary
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Drawing No Figure 5	Issue P0
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Legend

Fault Age

- Faults with historic ground rupture
- Holocene active fault
- Late Quaternary active fault
- Quaternary active fault
- 50 mile radius of site

Service Layer Credits: © Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © 2014 Microsoft Corporation

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Job Title
**Cordilleras Mental Health
 Center Replacement**

Regional Fault Map

Scale at 11x17
1:540,000

Job No 236594-00	Drawing Status Preliminary
----------------------------	--------------------------------------

Drawing No Figure 6	Issue P0
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Attachment A



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

Appendix 1. Site Reconnaissance Survey Photos



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

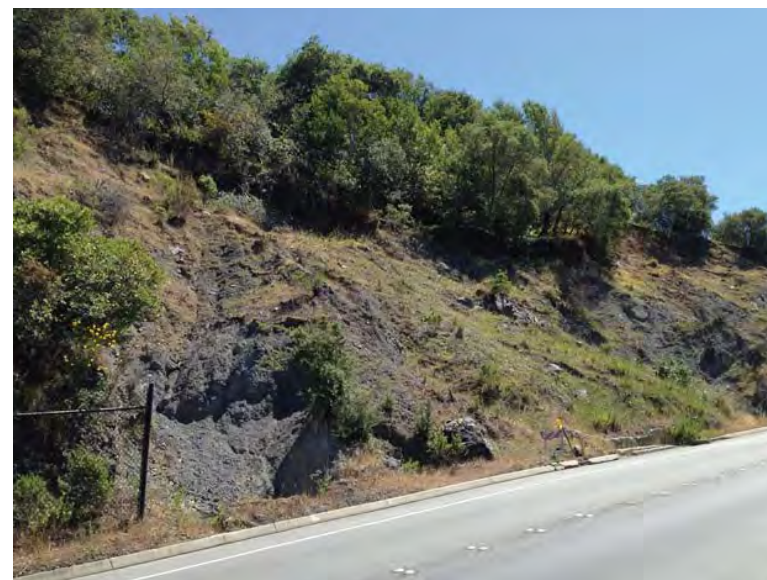


Photo 12: Road cut on Edgewood Road (east of site) composed of melange

Appendix 1. Site Reconnaissance Survey Photos



Photo 13: Road cut on Edgewood Road (southeast of site) composed of blocky sandstone

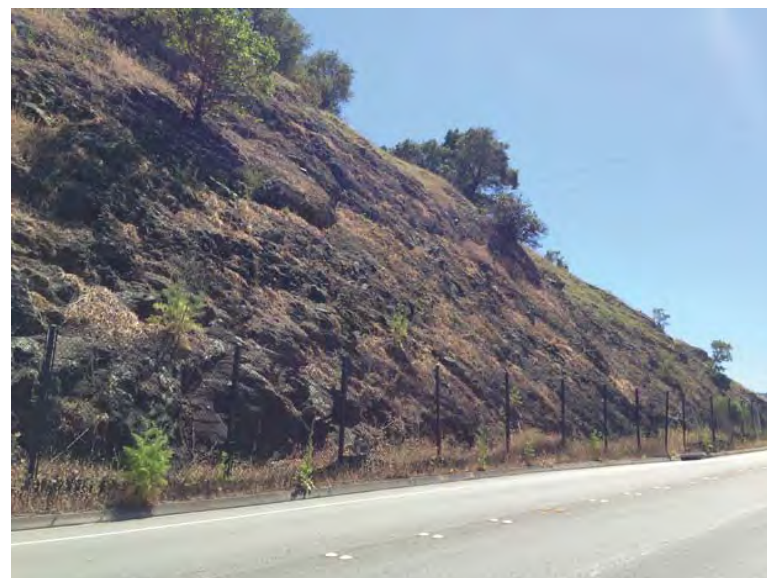


Photo 14: Road cut on Edgewood Road (south of site) composed of competent sandstone

Appendix 1. Site Reconnaissance Survey Photos

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
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October 2014

Biological Constraints Analysis

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.

Cordilleras Mental Health Center Biological Constraints Analysis

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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 (*Sylvilagus 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 (*Melospiza 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

(*Zonotrichia leucophrys*), wrenit (*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 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

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 CNDDDB 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

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 dusky-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 dusky-footed woodrat is an herbivore and eats grasses, leaves, fresh fruits, small bulbs, bark, and flowers (English 1923). San Francisco dusky-footed woodrat also stores dry foods like hazel nuts and acorns (English 1923). San Francisco dusky-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 dusky 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 dusky 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 dusky 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 (CNDDDB). The CNDDDB 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 CNDDDB. 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 inches¹ 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.”

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.

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**CORDILLERAS MENTAL HEALTH CENTER
BIOLOGICAL CONSTRAINTS ANALYSIS**

APPENDIX A

FIGURES

TRA Environmental Sciences, Inc.

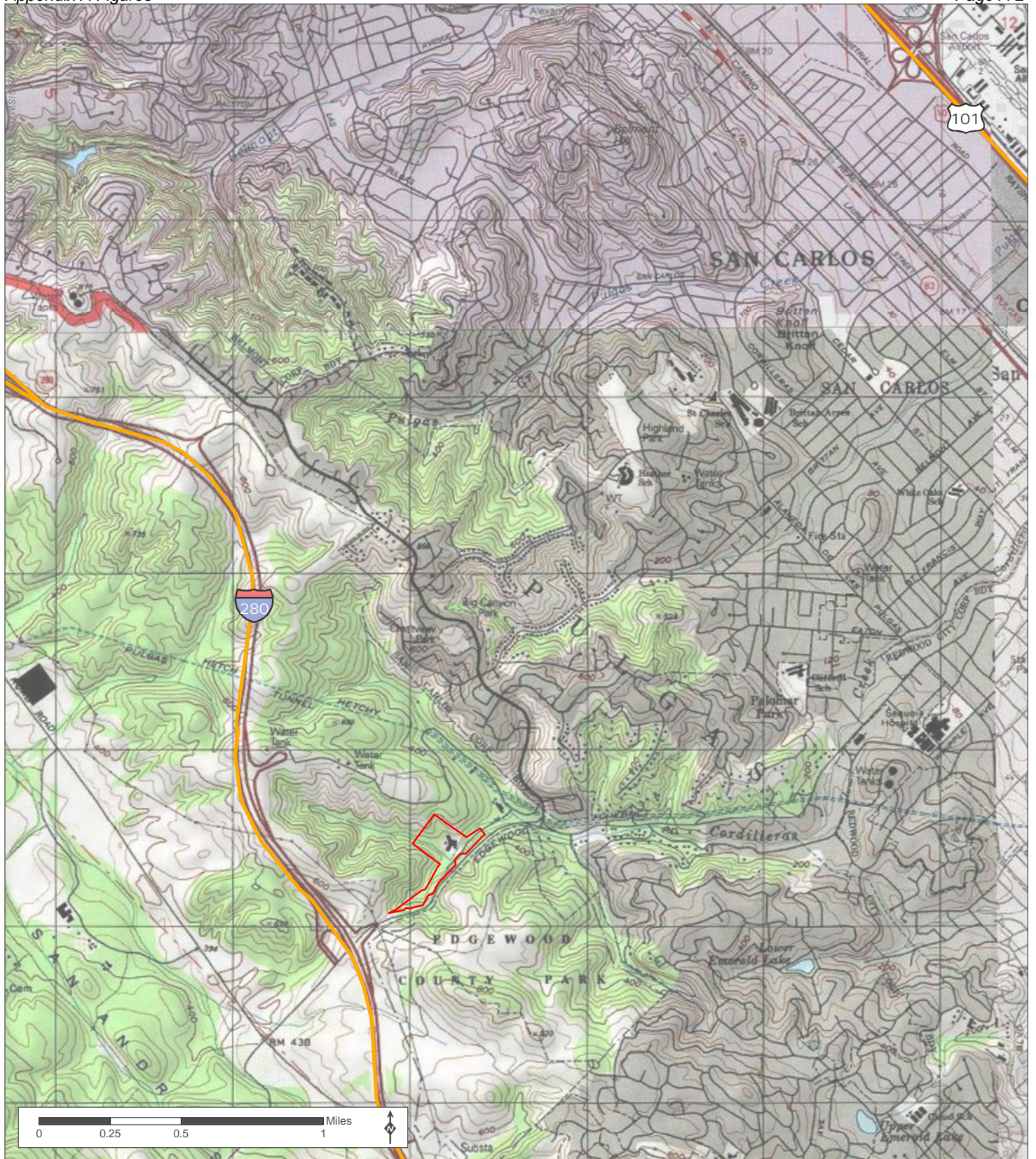


Source: ESRI 2014

 Property Boundary

Figure 1 Regional Location

Cordilleras Mental Health Center



Source: ESRI 2014

 Property Boundary

Figure 2 Site Vicinity Location

Cordilleras Mental Health Center

Figure 3
Aerial Photograph
with Property Boundary
Cordilleras Mental Health Center


 Property Boundary



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



LANDS OF
MID REG OPEN SPACE DIST
APN: 050-470-090

LANDS OF
MID REG OPEN SPACE DIST
APN: 050-470-090

LANDS OF
THE COUNTY OF SAN MATEO
300-400 EDMUNDS RD
APN: 050-470-050

EDGEWOOD ROAD
(CANTONMENT TRACT)
ES

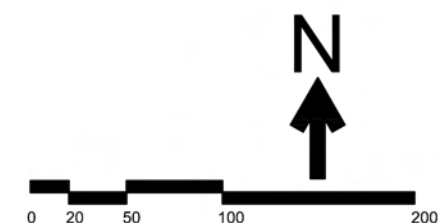


Figure 6 Photographs



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.**

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
San Mateo thorn-mint (<i>Acanthomintha duttonii</i>)	FE; SE; CRPR1B.1	Located in San Mateo County.	Chaparral, valley and foothill grassland, or coastal scrub. Locally occurs in serpentine bunchgrass grassland; 50-300 m.	Annual herb, April - June	None. Suitable habitat is not present.
Franciscan onion (<i>Allium peninsulare</i> var. <i>franciscanum</i>)	CRPR 1B.2	Coastal mid California, from Monterey to Mendocino Counties.	Cismontane woodland, valley and foothill grasslands. Often on dry hillsides and in serpentine bunchgrass grasslands; 52-300 m.	Perennial bulbiferous herb, May - June	None. Suitable habitat is not present.
bent-flowered fiddleneck (<i>Amsinckia lunaris</i>)	CRPR 1B.2	Mid California, including Monterey, Santa Cruz, San Mateo, Marin, Alameda, Contra Costa, Napa, Lake and Colusa counties.	Coastal bluff scrub, cismontane woodland or valley and foothill grassland; 3-500 m.	Annual herb, March - June	Moderate
Anderson's manzanita (<i>Arctostaphylos andersonii</i>)	CRPR 1B.2	Mid California including Monterey, Santa Cruz, San Mateo, Santa Clara, and Alameda counties.	Broadleaved upland forest, mixed evergreen forest, North coast coniferous forest including open sites in redwood forest, chaparral; 60-760 m.	Perennial evergreen shrub, November - May	None. Manzanita species are not present in the project footprint.
Montara manzanita (<i>Arctostaphylos montaraensis</i>)	CRPR 1B.2	Endemic to San Mateo County.	Maritime chaparral or coastal; 150-500 m.	Perennial evergreen shrub, January - March	None. Habitat not present in the project footprint

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
Kings Mountain manzanita (<i>Arctostaphylos regismontana</i>)	CRPR 1B.2	Mid California including Santa Cruz, San Mateo, and Santa Clara counties.	Granite or sandstone outcrops in chaparral, coniferous, broadleaved upland and evergreen forests; 305-730 m.	Perennial evergreen shrub, January – April	None. Suitable habitat not present in the project footprint.
Coastal marsh milk-vetch (<i>Astragalus pynostachyus</i> var. <i>pynostachyus</i>)	CRPR 1B.2	Endemic to Humboldt, Marin and San Mateo Counties.	Coastal dunes (mesic), coastal scrub or marshes and swamps (coastal salt, streamside); 0-30 m.	Perennial herb, April-October	None. Coastal scrub or dune habitat not present.
round-leaved filaree (<i>California macrophylla</i>)	CRPR 1B.1	Scattered locations throughout California west of the Sierra Nevada and south of Red Bluff.	Cismontane woodland or valley and foothill grassland on clay soils; 15-1200 m.	Annual herb, March-May	Low. Suitable habitat present but this species is not known to occur within 5 miles of the project.
Congdon's tarplant (<i>Centromadia parryi</i> ssp. <i>congdonii</i>)	CRPR 1B.2	Throughout western California from San Luis Obispo to Solano County.	Valley and foothill grasslands with alkaline or clay soils; 0-230 m.	Annual herb, May - November	None. Suitable habitat is not present in the project footprint.
Pappose tarplant (<i>Centromadia parryi</i> ssp. <i>parryi</i>)	CRPR 1B.2	Endemic to Butte, Colusa, Glenn, Lake, Napa, San Luis Obispo, San Mateo, Solano and Sonoma Counties.	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt) or valley and foothill grassland (vernally mesic); 2-420 m.	Annual herb, May - November	None. Suitable habitat is not present in the project footprint.
Point Reyes bird's beak (<i>Chloropyron maritimum</i> ssp. <i>palustre</i>)	CRPR 1B.2	Extant occurrences in Humboldt, Marin, San Francisco and Sonoma Counties.	Marshes and swamps (coastal salt); 0-10 m.	Annual herb (hemiparasitic), June-October	None. Suitable habitat is not present in the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
San Francisco Bay spineflower (<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>)	CRPR 1B.2	Endemic to Marin, San Francisco, San Mateo and possibly Sonoma Counties.	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub on sandy soils; 3-215 m.	Annual herb, April-August	None. Suitable habitat is not present in the project footprint.
robust spineflower (<i>Chorizanthe robusta</i> var. <i>robusta</i>)	FE, CRPR 1B.2	Endemic to the San Francisco Bay Area and Monterey Coast.	Chaparral (maritime), cismontane woodland (openings), coastal dunes and coastal scrub in sandy or gravelly soils; 3-300 m.	Annual herb, April-September	None. Suitable habitat is not present in the project footprint.
Franciscan thistle (<i>Cirsium andrewsii</i>)	CNPS 1B.2	Endemic to Contra Costa, Marin, San Francisco and San Mateo Counties.	Broadleaved upland forest, coastal bluff scrub, coastal prairie or coastal scrub on mesic, sometimes serpentinite sites; 0-150 m.	Perennial herb, March - July	None. Suitable habitat is not present in the project footprint.
Crystal Springs fountain thistle (<i>Cirsium fontinale</i> var. <i>fontinale</i>)	FE; SE; CRPR 1B.2	Found exclusively in San Mateo county.	Valley and foothill grasslands and chaparral including serpentine seeps and grassland; 45-175 m.	Perennial herb, May - October	None. Suitable habitat is not present in the project footprint.
San Francisco collinsia (<i>Collinsia multicolor</i>)	CRPR 1B.2	Mid-coastal California from Monterey to Marin county including Santa Clara county.	Moist shady woodland, closed-cone coniferous forests and coastal scrub. Occasionally found in serpentine; 30-250 m.	Annual herb, March – May	High. Suitable habitat is present in the project footprint. Observed to occur in the Cordilleras Creek channel in June 2014.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
western leatherwood (<i>Dirca occidentalis</i>)	CRPR 1B.2	San Francisco Bay area including Santa Clara to Marin county and east to Alameda county.	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.	Perennial deciduous shrub, January – April.	High. Suitable habitat present in the project footprint. Known to occur at Edgewood Natural Preserve.
Ben Lomond buckwheat (<i>Eriogonum nudum</i> var. <i>decurrens</i>)	CRPR 1B.1	Endemic to Alameda, Santa Clara and Santa Cruz Counties.	Chaparral, cismontane woodland, lower montane coniferous forest (maritime ponderosa pine sandhills); 50-800 m.	Perennial herb, June-October	Low. Marginally suitable habitat present. Not known to occur within 5 miles of the project site.
San Mateo woolly sunflower (<i>Eriophyllum latilobum</i>)	FE, SE, CNPS 1B.1	San Mateo and Napa counties.	Cismontane and oak woodland, often on roadcuts; found on and off of serpentine and on grassy hillsides; 45-150m.	Perennial herb, April – June	Low. Marginally suitable habitat present. Not known to occur within 5 miles of the site.
Hoover's button-celery (<i>Eryngium aristulatum</i> var. <i>hooveri</i>)	CRPR 1B.1	Endemic to Alameda, San Benito, Santa Clara, San Diego and San Luis Obispo Counties.	Vernal pools; 3-45 m.	Annual/perennial herb, July-August	None. Suitable habitat is not present in the project footprint.
Hillsborough chocolate lily (<i>Fritillaria biflora</i> var. <i>ineziana</i>)	CRPR 1B.1	Endemic to San Mateo County.	Cismontane woodland or valley and foothill grasslands on serpentine soils.	Perennial herb, March – April	None. Serpentine soils are not present in the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
fragrant fritillary (<i>Fritillaria liliacea</i>)	CRPR 1B.2	Found throughout northern and central California wherever there is suitable habitat.	Cismontane woodland and coastal scrub and prairie, in valley and foothill grasslands (often serpentine bunchgrass grassland); 3-410 m.	Perennial bulbiferous herb, February – April	None. Suitable habitat not present in the project footprint.
Short-leaved evax (<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>)	CRPR 1B.2	Occurs along the coast from the Oregon border to near Santa Cruz.	Coastal bluff scrub (sandy), coastal dunes or coastal prairie; 0-215 m.	Annual herb, March-June	None. Suitable habitat not present in the project footprint.
Marin western flax (<i>Hesperolinon congestum</i>)	FT; ST; CRPR 1B.1	Found only around the San Francisco peninsula in San Mateo and Marin Counties.	Chaparral, valley and foothill grassland, especially in serpentine bunchgrass grassland and serpentine barrens; 5-370 m.	Annual herb, April – July	None. Suitable habitat not present in the project footprint.
Kellog's horkelia (<i>Horkelia cuneata</i> var. <i>sericea</i>)	CRPR 1B.1	California endemic with extant occurrences in Monterey, Santa Barbara, Santa Cruz, San Luis Obispo and San Mateo Counties.	Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes or coastal scrub in sandy or gravelly openings; 10-200 m.	Perennial herb, May-October	None. Suitable habitat not present in the project footprint.
Point Reyes horkelia (<i>Horkelia marinensis</i>)	CRPR 1B.2	Endemic to Mendocino, Marin, Santa Cruz, San Mateo and Sonoma Counties.	Coastal dunes, coastal prairie or coastal scrub on sandy soils; 5-350 m.	Perennial herb, May-September	None. Suitable habitat not present in the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
perennial goldfields (<i>Lasthenia californica</i> ssp. <i>macrantha</i>)	CRPR 1B.2	Endemic to Mendocino, Marin, San Luis Obispo, San Mateo and Sonoma Counties.	Coastal bluff scrub, coastal dunes or coastal scrub; 5-520 m.	Perennial herb, January-November	None. Suitable habitat not present.
legenere (<i>Legenere limosa</i>)	CRPR 1B.1	Endemic to the Central Valley and Inner Coast Ranges from Redding to Salinas.	Vernal pools; 0-880 m.	Annual herb, April-June	None. Suitable habitat not present.
Coast yellow leptosiphon (<i>Leptosiphon croceus</i>)	CRPR 1B.1	California endemic; extant occurrences in Monterey and San Mateo Counties.	Coastal bluff scrub or coastal prairie; 10-150 m.	Annual herb, April-May	None. Suitable habitat not present.
rose leptosiphon (<i>Leptosiphon rosaceus</i>)	CRPR 1B.1	California endemic; extant occurrences in Marin and San Mateo Counties.	Coastal bluff scrub; 0-100 m.	Annual herb, April-July	None. Suitable habitat not present.
Crystal Springs lessingia (<i>Lessingia arachnoidea</i>)	CRPR 1B.2	Endemic to San Mateo county and Sonoma Counties.	Cismontane woodland, coastal scrub or valley and foothill grassland on serpentine soils, often on roadsides; 60 – 200m.	Annual herb ; July – October	Low. Suitable vegetative habitat present, but serpentine soil habitat not present. Occurs in the area around the project site.
Indian Valley bush mallow (<i>Malacothamnus aboriginum</i>)	CRPR 1B.2	Endemic to western California from San Mateo to Paso Robles.	Chaparral, cismontane woodland. Rocky, granitic soils, often in burned areas; 150-1700 m.	Perennial deciduous shrub, April-October	None. Suitable habitat not present in the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
arcuate bush mallow (<i>Malacothamnus arcuatus</i>)	CRPR 1B.2	Found throughout the San Francisco peninsula and the south bay area throughout San Mateo and Santa Clara counties and Merced county.	Ultramafic chaparral, gravelly alluvium. Locally, in openings in mixed evergreen forests; 15-355 m.	Perennial evergreen shrub, April – September	None. Suitable habitat not present in the project footprint.
Davidson's bush mallow (<i>Malacothamnus davidsonii</i>)	CRPR 1B.2	Throughout California, found in San Mateo, Monterey, San Luis Obispo, and Los Angeles counties.	Sandy washes within coastal scrub, chaparral, and riparian woodland, at elevations 185 – 855m.	Perennial deciduous shrub, June – January	None. Suitable habitat not present in the project footprint.
Hall's bush mallow (<i>Malacothamnus hallii</i>)	CRPR 1B.2	Endemic to western California from Mendocino and Lake Counties to Stanislaus County.	Chaparral and coastal scrub; 10-760 m.	Perennial evergreen shrub, May-October	None. Suitable habitat not present in project footprint.
marsh microseris (<i>Microseris paludosa</i>)	CRPR 1B.2	California endemic; extant occurrences in Mendocino, Monterey, Marin, San Benito, Santa Cruz, San Luis Obispo and Sonoma Counties.	Closed-cone coniferous forest, cismontane woodland, coastal scrub or valley and foothill grassland; 5-300 m.	Perennial herb, April-June	Low. Suitably moist habitat not present in project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
woodland woolythreads (<i>Monolopia gracilens</i>)	CRPR 1B.2	Through central California from San Mateo and Contra Costa counties south to San Luis Obispo county.	Grassy openings in chaparral, valley and foothill grasslands (serpentine), cismontane woodland, broadleaved upland forests, North coast coniferous forest. Sandy to rocky soils; 100-1200 m.	Annual herb, February – July	Moderate. Grassy openings and serpentine soils are not present in the project footprint. This species is known to occur near the project site.
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	SR; CRPR 1B.2	Throughout central coastal California from San Mateo county south to San Luis Obispo county.	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.	Perennial herb, April – June	None. Suitable habitat not present in the project footprint.
white-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	FE; SE; CNPS 1B.2	California endemic; extant occurrences in San Mateo County.	Cismontane woodland or valley and foothills grassland (often serpentinite); 35-620 m.	Annual herb, March – May	None. Suitable habitat not present in the project footprint.
white-flowered rein orchid <i>Piperia candida</i>	CRPR 1B.2	Through northern coastal California from Del Norte county south to Santa Cruz county.	Broadleaved 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.	Perennial herb, May - September	None. Suitable habitat not present in the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
Choris' popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>)	CRPR 1B.2	Endemic to coastal central California including Santa Cruz, San Francisco and San Mateo Counties.	Chaparral, coastal prairie or coastal scrub on mesic sites; 15-160 m.	Annual herb, March – June	None. Suitable habitat not present in the project footprint.
Oregon polemonium (<i>Polemonium carneum</i>)	CRPR 2.2	Occurs in northern California and in the San Francisco Bay Area.	Coastal prairie, coastal scrub or lower montane coniferous forest; 0-1830 m.	Perennial herb, April-September	None. Suitable habitat not present in the project footprint.
Hickman's cinquefoil (<i>Potentilla hickmanii</i>)	FE, SE, CRPR 1B.1	Endemic to Sonoma, San Mateo and Monterey Counties.	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic) or marshes and swamps (freshwater); 10-149 m.	Perennial herb, April-August	None. Suitable habitat not present in the project footprint.
San Francisco campion (<i>Silene verecunda</i> ssp. <i>verecunda</i>)	CRPR 1B.2	Endemic to Santa Cruz, San Francisco, San Mateo and Sutter Counties.	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub or valley and foothills grassland on sandy soils; 30-645 m.	Perennial herb, March – August	None. Suitable habitat not present in the project footprint.
slender-leaved pondweed (<i>Stuckenia filiformis</i>)	CRPR 2.2	Occurs in Northern California in the Inner Coast Ranges and Sierra Nevadas from east of Redding to near San Jose.	Marshes and swamps (assorted shallow freshwater); 300-2150 m.	Perennial rhizomatous herb, May-July	None. Suitable habitat not present in the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project^b
showy rancheria clover (<i>Trifolium amoenum</i>)	FE; CRPR 1B.1	Marin, Sonoma, Napa Solano, and San Mateo counties.	Coastal bluff scrub, valley and foothill grassland (sometimes serpentine), often open sunny sites; 5-415 m.	Annual herb, April – June	None. Suitable habitat not present in the project footprint.
saline clover (<i>Trifolium hydrophilum</i>)	CRPR 1B.2	Endemic to San Francisco Bay Area and surrounding counties.	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools; 0-300 m.	Annual herb, April – June	None. Suitable habitat not present in the project footprint.
San Francisco owl's clover (<i>Triphysaria floribunda</i>)	CRPR 1B.2	Endemic to Marin, San Francisco and San Mateo Counties.	Coastal prairie, coastal scrub or valley and foothill grassland, usually serpentine; 10-160 m.	Annual herb, April-June	None. Suitable habitat not present in the project footprint.
Coastal triquetrella (<i>Triquetrella californica</i>)	CRPR 1B.2	Found in scattered locations along the California coast.	Coastal bluff scrub or coastal scrub; 10-100 m.	Moss	None. Suitable habitat not present in the project footprint.

Table 1. Special-status Plants Potentially Occurring in the Project Area (9 quad search)					
Common Name (<i>Scientific Name</i>)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Life Form, Blooming Period	Potential to be impacted by the Project ^b
^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 CNDDDB 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: CNDDDB 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 CNDDDB 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: CNDDDB 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 specie's range.		

Table 2. Special-status Animals Potentially Occurring in the Project Area				
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project ^b
Invertebrates				
San Bruno elfin butterfly (<i>Callophrys mossii bayensis</i>)	FE	Endemic to only three locations in San Mateo County: Milagra Ridge, San Bruno Mountain and Montara Mountain.	Coastal, mountainous areas with grassy ground cover. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is <i>Sedum spatulifolium</i> .	None. Suitable habitat is not present in the project footprint. Host plant is not present. Highly restricted.
Bay checkerspot butterfly (<i>Euphydryas editha bayensis</i>)	FT	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.	<i>Plantago erecta</i> is the primary host plant, <i>Castilleja densiflorus</i> and <i>C. purpurascens</i> are secondary host plants.	None. Suitable habitat is not present in the project footprint. Host and nectar plants are not present.
Mission blue butterfly (<i>Plebejus icarioides missionensis</i>)	FE	Endemic to the grasslands of the San Francisco peninsula.	Three larval host plants: <i>Lupinus albifrons</i> , <i>L. variicolor</i> and <i>L. formosus</i> ; <i>L. albifrons</i> is favored.	None. Suitable habitat not present in the project footprint. Host plants are not present.
Callipe silverspot (<i>Speyeria callipe callipe</i>)	FE	Restricted to the Northern coastal scrub of the San Francisco Peninsula.	Host plant is <i>Viola pedunculata</i> . Most adults are found on east-facing slopes; males congregate on hilltops in search of females.	None. Suitable habitat not present in the project footprint.
Mrytle's silverspot (<i>Speyeria zerene myrtleae</i>)	FE	Restricted to foggy coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County.	Larval foodplant thought to be <i>Viola adunca</i> .	None. Suitable habitat not present in the project footprint.

Table 2. Special-status Animals Potentially Occurring in the Project Area				
Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project^b
Fish				
steelhead- Central California Coast DPS (<i>Oncorhynchus mykiss irideus</i>)	FT	This distinct population segment (DPS) includes all anadromous <i>O. mykiss</i> (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.	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.	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.
tidewater goby (<i>Eucyclogobius newberryi</i>)	FE CSSC	Occurs in brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River.	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	None. Suitable habitat is not present in the project area.
Amphibians and Reptiles				
California tiger salamander (<i>Ambystoma californiense</i>)	FT ST CSSC	Endemic to California, found in isolated populations the Central Valley and Central Coast ranges.	This species needs underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal wetlands for breeding.	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.
foothill yellow-legged frog (<i>Rana boylei</i>)	CSSC	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.	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.	None. Not known to occur within 5 miles of the project, and suitable breeding habitat is not present on site.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project^b
California red-legged frog (<i>Rana draytonii</i>)	FT	Endemic to California and northern Baja California.	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.	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.
Western pond turtle (<i>Actinemys marmorata</i>)	CSSC	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.	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.	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.

Table 2. Special-status Animals Potentially Occurring in the Project Area				
Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project^b
San Francisco garter snake (<i>Thamnophis sirtalis tetraetaenia</i>)	FE SE	Occurs in the vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County.	Prefers dense cover and water depths of at least one foot, upland areas near water are also very important.	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 CNDDB to occur in Cordilleras Creek.
Birds				
white-tailed kite (<i>Elanus lecurus</i>)	CFP	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.	Inhabits low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands are used for foraging.	Moderate. This species could occur in the Pulgas Ridge Open Space Preserve and Edgewood Natural Preserve. Potential nesting habitat occurs onsite.
Northern harrier (<i>Circus cyaneus</i>)	CSSC	Occurs throughout lowland California; has been recorded in fall at high elevations.	Inhabits grasslands, meadows, marshes, and seasonal and agricultural wetlands.	None. Suitable habitat for this species is not present.
golden eagle (<i>Aquila chrysaetos</i>)	CFP	Inhabits foothills and mountains throughout California.	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.	Low. Forage habitat is present on site; nesting habitat is not.

Table 2. Special-status Animals Potentially Occurring in the Project Area				
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project ^b
American peregrine falcon (<i>Falco peregrine anatus</i>)	CFP	Occurs throughout the Central Valley, coastal areas and northern mountains of California.	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.	Moderate. Peregrine could use the project site for forage, and potentially use the existing building for nesting.
California clapper rail (<i>Rallus longirostris obsoletus</i>)	FE SE	This California endemic inhabits salt water and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay.	Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	None. Suitable habitat is not present on the project site or near the project site.
Western snowy plover (<i>Charadrius alexandrinuss nivosus</i> -Pacific population)	FT CSSC	The Pacific population of western snowy plover occurs along the entire coastline of California.	Occurs on sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	None. Suitable habitat is not present on the project site or near the project site.
California least tern (<i>Sternula antillarum</i>)	FE SE	Nests along the coast from San Francisco Bay south to Northern Baja California.	Colonial breeder on bare or sparsely vegetated flat substrates, sandy beaches, alkali flats, landfills or paved areas.	None. Suitable habitat is not present on the project site or near the project site.
burrowing owl (<i>Athene cunicularia</i>)	CSSC	Year-round resident throughout much of the State, except the coastal counties north of Marin and mountainous areas.	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.	None. Suitable habitat does not occur within the project footprint.

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project^b
short-eared owl (<i>Asio flammeus</i>)	CSSC	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.	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.	None. Suitable habitat is not present on the project site or near the project site.
long-eared owl (<i>Asio otus</i>)	CSSC	Occurs throughout the state except in the Central Valley, in pockets along the coast and in the far central south.	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.	None. Suitable habitat is not present on the project site or near the project site. Not recorded in the CNDDDB to occur within 5 miles of the project site.
bank swallow (<i>Riparia riparia</i>)	ST	Occurs primarily around the remaining natural river banks of the Sacramento and Feather Rivers in the Sacramento Valley.	Colonial nester, nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine textured/sandy soils near streams, rivers, lakes or ocean to dig nesting hole.	None. Suitable habitat is not present on the project site or near the project site.
saltmarsh common yellow throat (<i>Geothlypis trichas sinuosa</i>)	CSSC	This subspecies of the common yellow throat (<i>Geothlypis trichas</i>) is endemic to the fresh and salt water marshes of the San Francisco Bay region.	Requires thick, continuous cover down to water surface for foraging; and tall grasses, tule patches and willows for nesting.	None. Suitable habitat is not present on the project site or near the project site.

Table 2. Special-status Animals Potentially Occurring in the Project Area				
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project ^b
Alameda song sparrow (<i>Melospiza melodia pusillula</i>)	CSSC	This California endemic subspecies of song sparrow (<i>Melospiza melodia</i>) is a resident of salt marshes bordering south arm of San Francisco Bay.	Inhabits <i>Salicornia</i> marshes, nests low in <i>Grindelia</i> bushes (high enough to escape high tides) and in <i>Salicornia</i> .	None. Suitable habitat is not present on the project site or near the project site.
Mammals				
pallid bat (<i>Antrozous pallidus</i>)	CSSC	Throughout California except high Sierra from Shasta to Kern Counties and northwest coast, primarily at lower and mid-elevations	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.	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 CNDDDB.
big free-tailed bat (<i>Nyctinomops macrotis</i>)	CSSC	Rare in California; found only in low lying arid areas of southern California and as a vagrant elsewhere.	Needs high cliffs or rocky outcrops for roosting, feeds principally on large moths.	Low. The project site does not include high cliffs or rocky outcrops.
Thompson's big-eared bat	State candidate for listing	Found in a patchy distribution across many habitat types	Roosts in caves or cave-like structures; roost temperature may be critical. Forages along stream edges in wooded areas.	Low. Roost habitat may not occur in the area. The project contains suitable foraging habitat.
San Francisco dusky-footed woodrat (<i>Neotoma fuscipes annectens</i>)	CSSC	This California endemic is found throughout the San Francisco Bay area in grasslands, scrub and wooded areas.	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.	Present.

Table 2. Special-status Animals Potentially Occurring in the Project Area				
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential to be impacted by the project ^b
saltmarsh harvest mouse (<i>Reithrodontomys raviventris</i>)	FE SE	This California endemic occurs only in the saline emergent wetlands of the San Francisco Bay and its tributaries.	Pickleweed is the primary habitat of this non-burrowing mammal. It builds loosely organized nests and requires higher areas to escape flooding.	None. Suitable habitat is not present on the project site or near the project site.
^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 CNDDDB 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: CNDDDB 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 CNDDDB 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: CNDDDB 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.		

**CORDILLERAS MENTAL HEALTH CENTER
BIOLOGICAL CONSTRAINTS ANALYSIS**

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

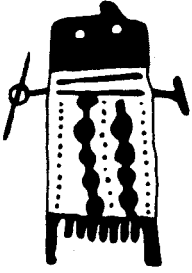
Waters of the United States are defined for regulatory purposes in the CFR as: (1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) all interstate 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

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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, 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

or history of the local area, California, or the nation.

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 Evaluation of the Hassler Health Home Property [P-41-000161 (CA-SMA-161H)] (Cartier 1978/S-3049).

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

area.

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 foot 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 Mulloy¹

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;

1. 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/](http://digital.lib.washington.edu/architect/architects/563/).

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.

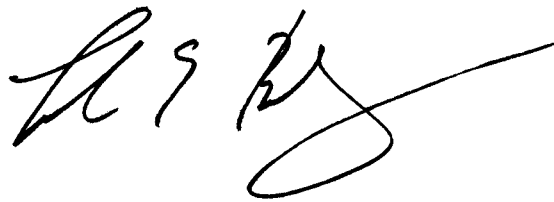
Treatment of any Native American burials exposed during construction should be in accordance with the State of California Public Resources Code in consultation with the Native American Heritage Commission.

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.

CLOSING 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

-
- e. distinctive changes in soil stratigraphy indicative of prehistoric activities.
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

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Levy, R.

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Price, David (CHRIS/NWIC staff)

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San Mateo County

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Whitney, A.D.
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Basin Research Associates, San Leandro.

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

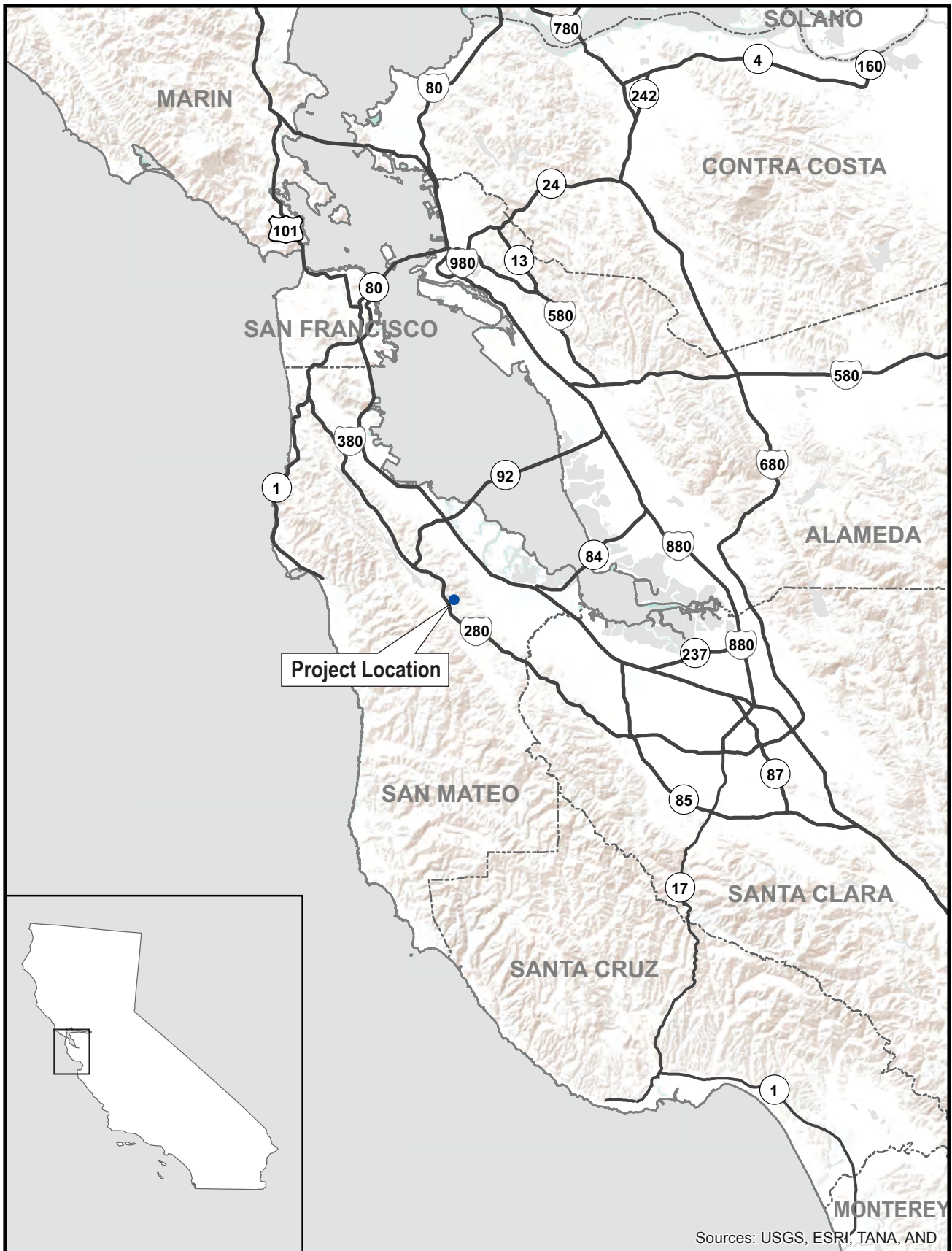


Figure 1: General Project Location

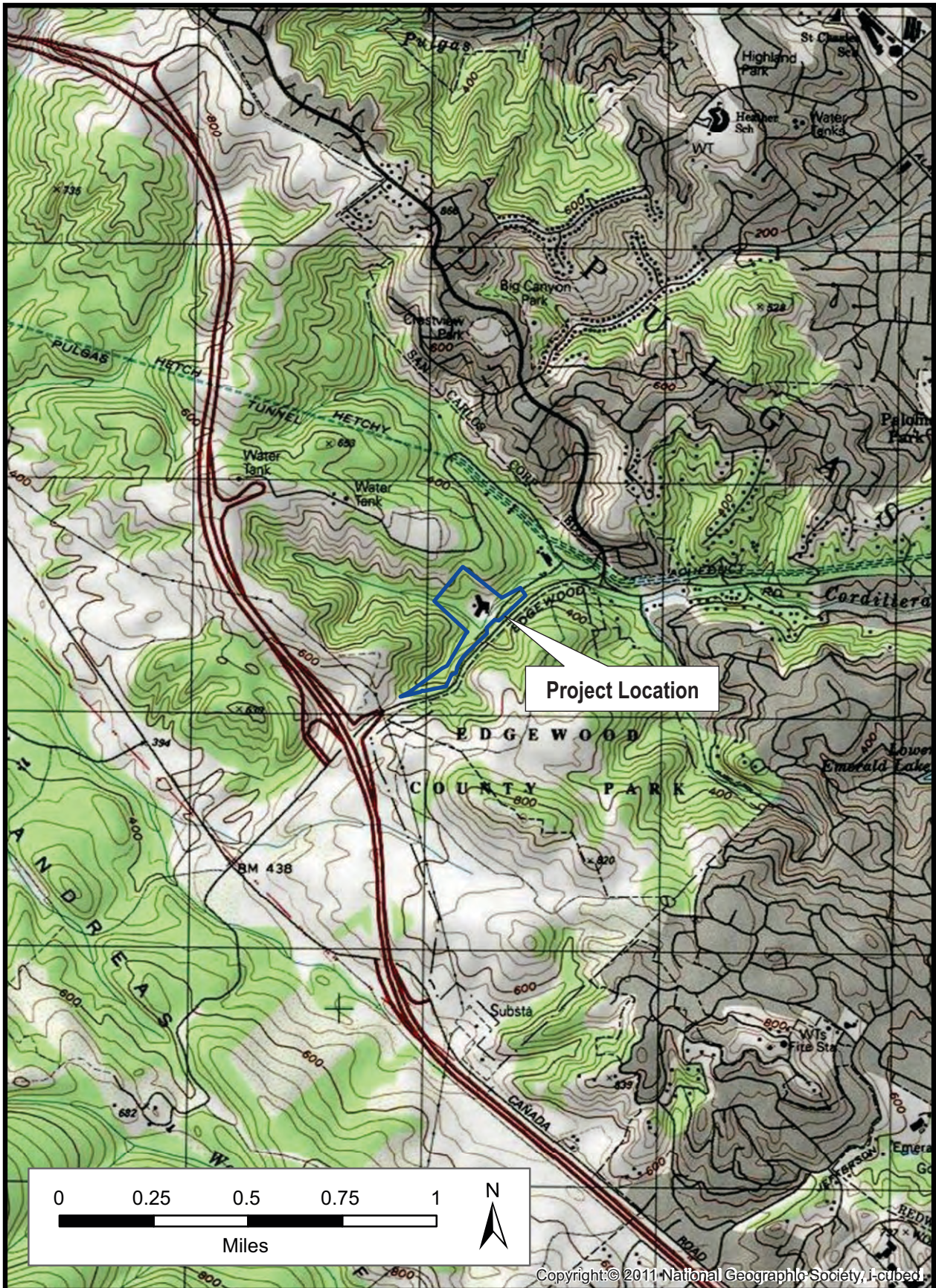


Figure 2: Project Area (USGS Woodside, CA 1997)

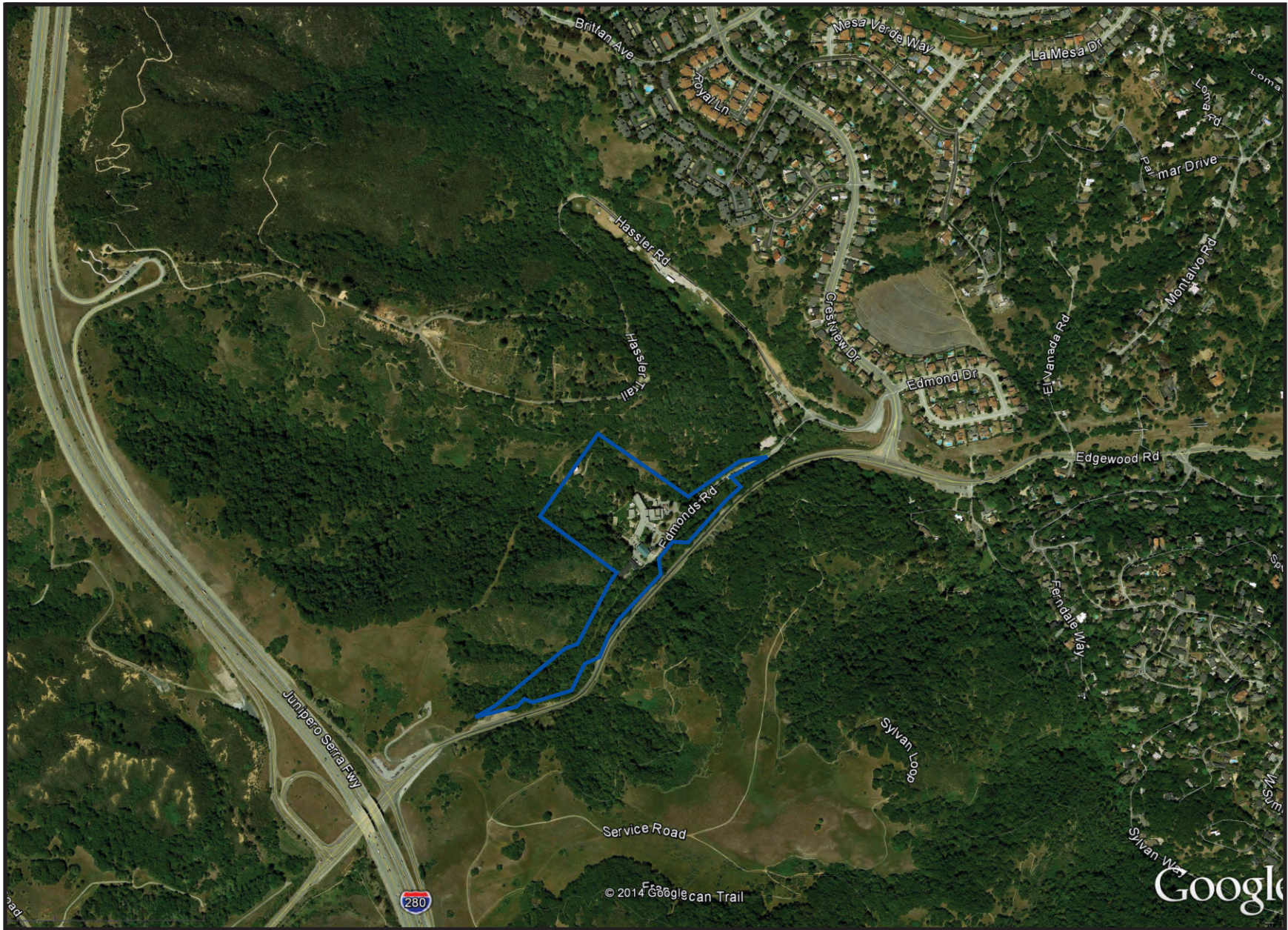


Figure 3: Aerial View of Project Area



May 2, 2014

BASIN
RESEARCH
ASSOCIATES

1933 DAVIS STREET
SUITE 210
SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

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 Basinres1@gmail.com). Thank you for your timely review of our request.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA
Principal

CIB/dg

BASIN RESEARCH ASSOCIATES

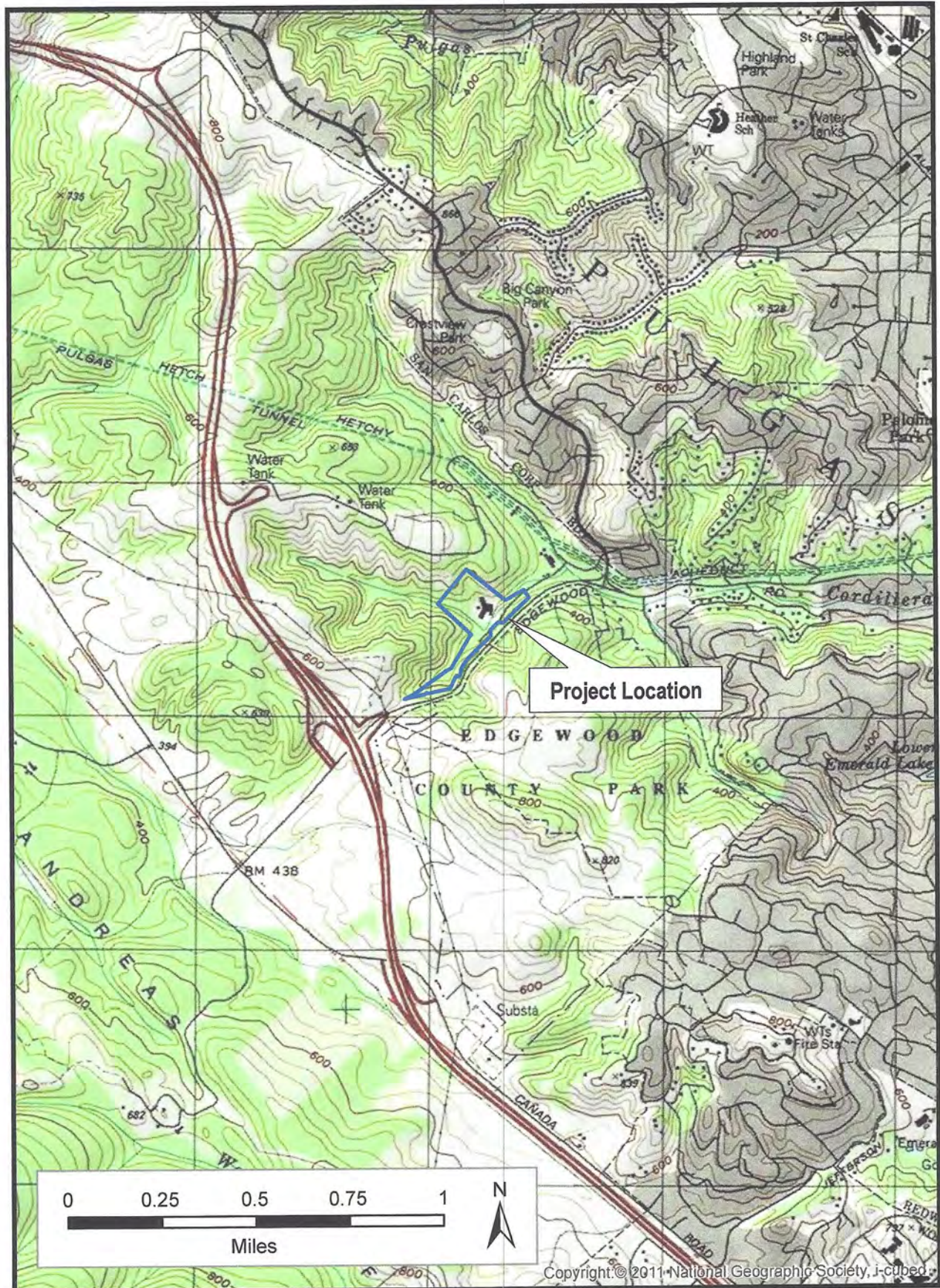


Figure 1: Project Area T5S R4W (USGS Woodside, CA 1997)

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 - Fax



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

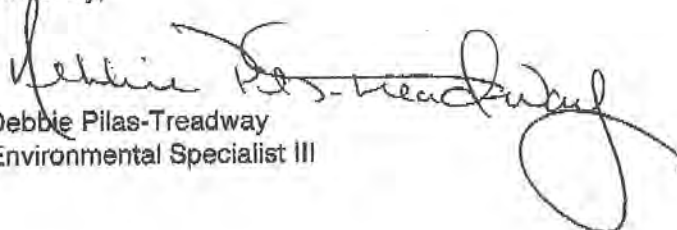
Dear Mr. Busby:

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**

Jakki Kehl
720 North 2nd Street
Patterson, CA 95363
(209) 892-1060

Ohlone/Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA 95024
arns@indiancanyon.org
831-637-4238

Ohlone/Costanoan

Linda G. Yamane
1585 Mira Mar Ave
Seaside, CA 93955
rumsien123@yahoo.com
831-394-5915

Ohlone/Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
PO Box 360791
Milpitas, CA 95036
muwekma@muwekma.org
408-205-9714
510-581-5194

Ohlone / Costanoan

Amah Mutsun Tribal Band of Mission San Juan Bautista
Irene Zwiertein, Chairperson
789 Canada Road
Woodside, CA 94062
amahmutsuntribal@gmail.com

Ohlone/Costanoan

The Ohlone Indian Tribe
Andrew Galvan
PO Box 3152
Fremont, CA 94539
chochenyo@AOL.com
(510) 882-0527 - Cell
(510) 687-9393 - Fax

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

650-400-4806 cell

650-332-1526 - Fax

Amah Mutsun Tribal Band of Mission San Juan Bautista
Michelle Zimmer
789 Canada Road
Woodside, CA 94062
amahmutsuntribal@gmail.com

Ohlone/Costanoan

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City, CA 94587
510-972-0645-home

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

(650) 851-7747 - Home

650-332-1526 - Fax

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
240 E, 1st Street
Pomona, CA 91766
rumsen@aol.com
(909) 524-8041 Cell
909-629-6081

Ohlone/Costanoan

soaprootmo@comcast.net

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 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Cordilleras Community Treatment Facility project, San Mateo County.

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 7

Resource Name or #: San Mateo County Tuberculosis Hospital

- 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) _____

P3a. Continued

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. Mulloy. Charles E. Smith, Dean of the School of Public Health, University of California, was the principal speaker at the dedication¹. The building was open for public inspection after the ceremony. 600 people attended the ceremony. The Hospital began admitting patients on March 4, 1952². 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"³, 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 units⁴.

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 Mulloy⁵

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.

2. "Many at TB Hospital Rites," *San Mateo Times*, March 3, 1952, pg. 11.

3. "Operation of New TB Hospital Set March 4," *San Mateo Times*, February 13, 1952, pg. 7.

4. "TB Hospital Now in 'Red'," *San Mateo Times*, December 17, 1952, pg. 18.

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/.

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Resource Name or #: San Mateo County Tuberculosis Hospital

Recorded by Ward Hill

Date: June 2014

Continuation Update

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 3⁶.

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.

P5. Photos



Main block, east façade – view to the west



Third floor roof deck – view to the northeast

Page 5 of 7

Resource Name or #: San Mateo County Tuberculosis Hospital

Recorded by Ward Hill

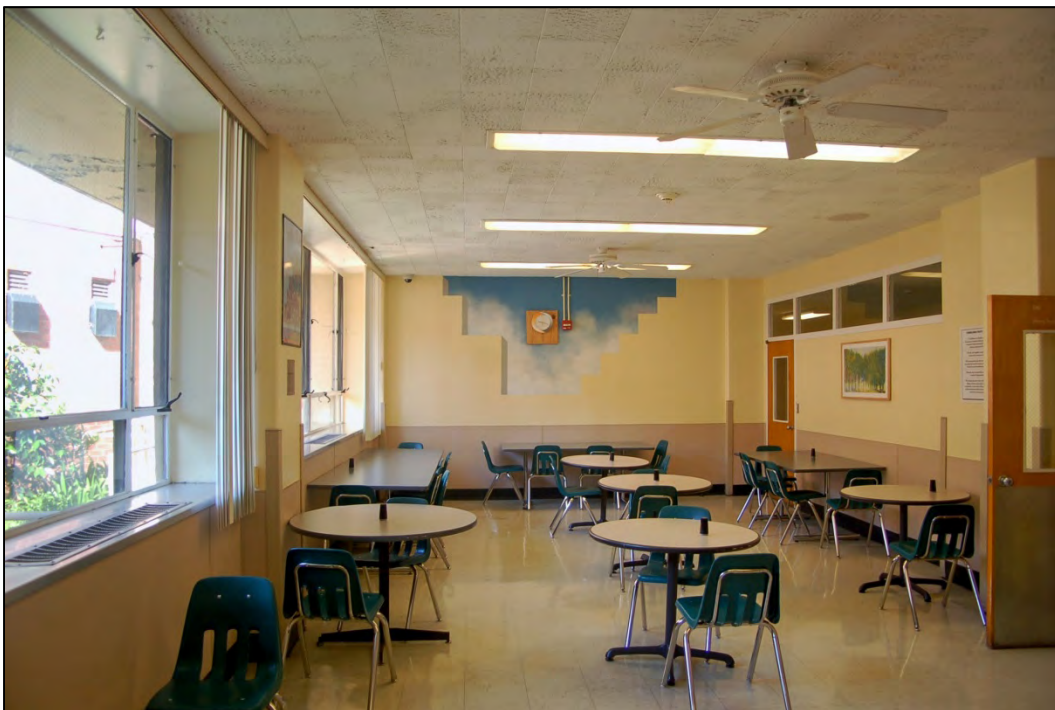
Date: June 2014

Continuation Update

P5. Photos



First floor entrance lobby



First floor dining room

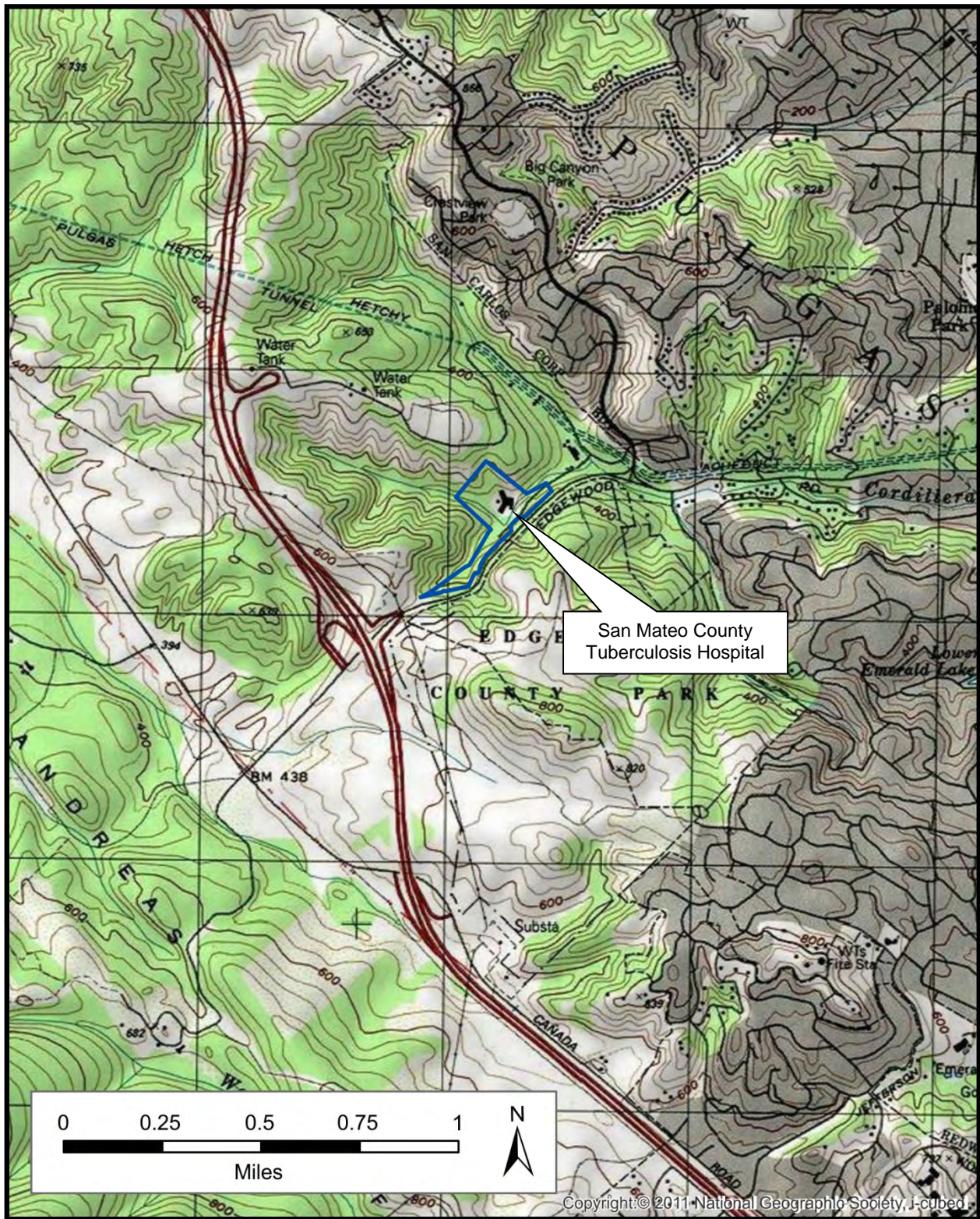
P5. Photos



Second floor corridor lined with doors to patient rooms



Aerial view



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

TABLE OF CONTENTS

Executive Summary	1
Heating, Ventilating and Air Conditioning Systems	2
Plumbing/Fire Protection Systems	8
Electrical/Lighting/Fire Alarm Systems	12

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:
- California Building Code (2013).
 - California Mechanical Code (2013).
 - California Plumbing Code (2013).
 - California Fire Code (2013).
 - California Electrical Code (2013).
 - 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 – Guidelines for Seismic Restraints of Mechanical Systems.
 - 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.
 - NFPA 101 – Life Safety Code.

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 - 93degrees 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):

Space	Cooling (degrees F)	Heating (degrees F)	Relative Humidity (percent)
Residence Areas	72+/-2	70+/-2	Max 60%
Staff/ Administrative space	72+/-2	70+/-2	Max 60%
Building Support	72+/-2	70+/-2	Max 60%
Restrooms	72+/-2	70+/-2	No Control
Corridors	72+/-2	70+/-2	Max 60%
Private Offices / Conference rooms	72+/-2	70+/-2	TBD
Telecom, Data Room	78+/-4	No control	TBD
Unoccupied Areas (Elec. Closets, Mechanical Rooms, etc.)	No control	No control	No Control

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.
 - NFPA – National Fire Protection Association.
 - 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-70, National Electrical Code - 2011 with State of California Amendments ("California Electrical Code," "CEC - 2013")
 - NFPA-72, National Fire Alarm and Signaling Code - 2013
 - NFPA-101, Life Safety Code - 2012
 - ANSI Electrical Systems
 - ANSI Handicapped Code - A117.1
 - International Building Code - 2012 with State of California Amendments ("California Building Code," "CBC - 2013")
 - 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 foot candles 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

Area	Recommended Lighting Level (Footcandles) at 30" A.F.F.
Resident Area	30-50
Resident Support Core	30
Staff/ Administrative space	30
Building Support	20-30
Restrooms	10
Corridors	5-10
Private Offices / conference rooms	30-40
Telecom, Electrical Rooms	30
Exterior Lighting and Pedestrian Pathways	1-2

- 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.

- C. 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	ft ²
PV Production	1450	kWh/kW
Usable Roof Area	10	W/sf
Panel Cost	3.5	\$/W
Energy Cost	0.15	\$/kWh

		MHRC (x5)	Community Center/ARF	Total
Energy	Area/Floor (sf/flr)	11,000	36,000	
	Total Area (sf)	55,000	36,000	91,000
	EUI (kBtu/sf-yr)	25	30	
	kWh/yr	402,973	316,517	719,489
	Est. Annual Energy Cost (\$/yr)	60,446	47,478	107,923
PV	PV Size (kW)	278	218	496
	No. Panels	806	633	1,438
	Panel Area (sf)	14,151	11,115	25,266
	Est. Roof Area (sf)	27,791	21,829	49,620
	PV System Cost (\$)	1,806,429	1,418,868	3,225,297
Payback	Simple Payback (yrs)	30	30	30
	Escalated Energy Cost (\$)- 5 yrs	61,358	55,039	2,643,310
	Escalated Energy Cost (\$)- 10 yrs	81,234	63,806	1,918,110
	Escalated Energy Cost (\$)- 15 yrs	94,173	73,968	1,077,404
	Escalated Energy Cost (\$)- 20 yrs	109,172	85,750	102,795
	Escalated Energy Cost (\$)- 30 yrs	146,718	115,240	-1,206,997

- D. 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.
- E. A web-enabled monitoring system will graphically display the energy output of the PV system for educational purposes.

4.02 Fuel Cell System

- A. 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.

		Kitchen	Total
Energy	Total Area (sf)	6,293	
	EUI (kBtu/sf-yr)	95	
	kWh/yr	175,200	
	Est. Annual Energy Cost (\$/yr)	26,280	
Fuel Cell	Fuel Cell Size (kW)	20	
	Fuel Cell System Cost (\$)	250,000	
Payback	Simple Payback (yrs)	10	10
	Escalated Energy Cost (\$)- 5 yrs	26,677	116,617
	Escalated Energy Cost (\$)- 10 yrs	35,318	-59,973

END OF ELECTRICAL/LIGHTING/FIRE ALARM SECTION

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Cordilleras Mental Health Rehabilitation Center Mechanical, Electrical, Plumbing, and Fire-Life Safety Systems Assessment Report

Interface Project No. 2014-0216

prepared for:

Rob Kalkbrenner
Capital Projects Manager
Facilities Planning, Design and Construction
County of San Mateo

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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 out 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 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. (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

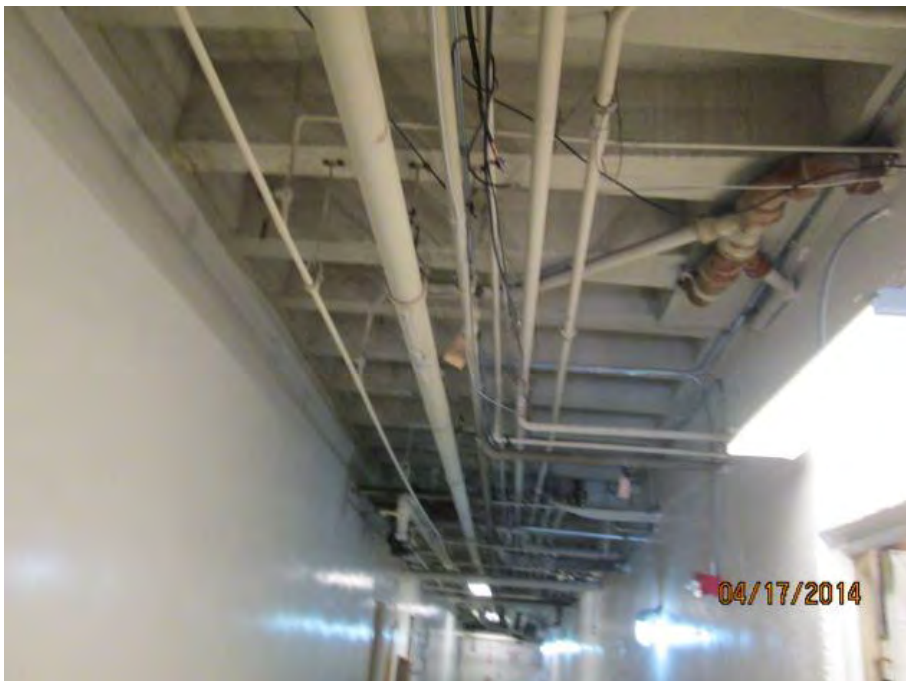


Photo P-2 - Hub & Spigot Cast Iron Piping



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-3 - Panel



Photo E-4 - Panel



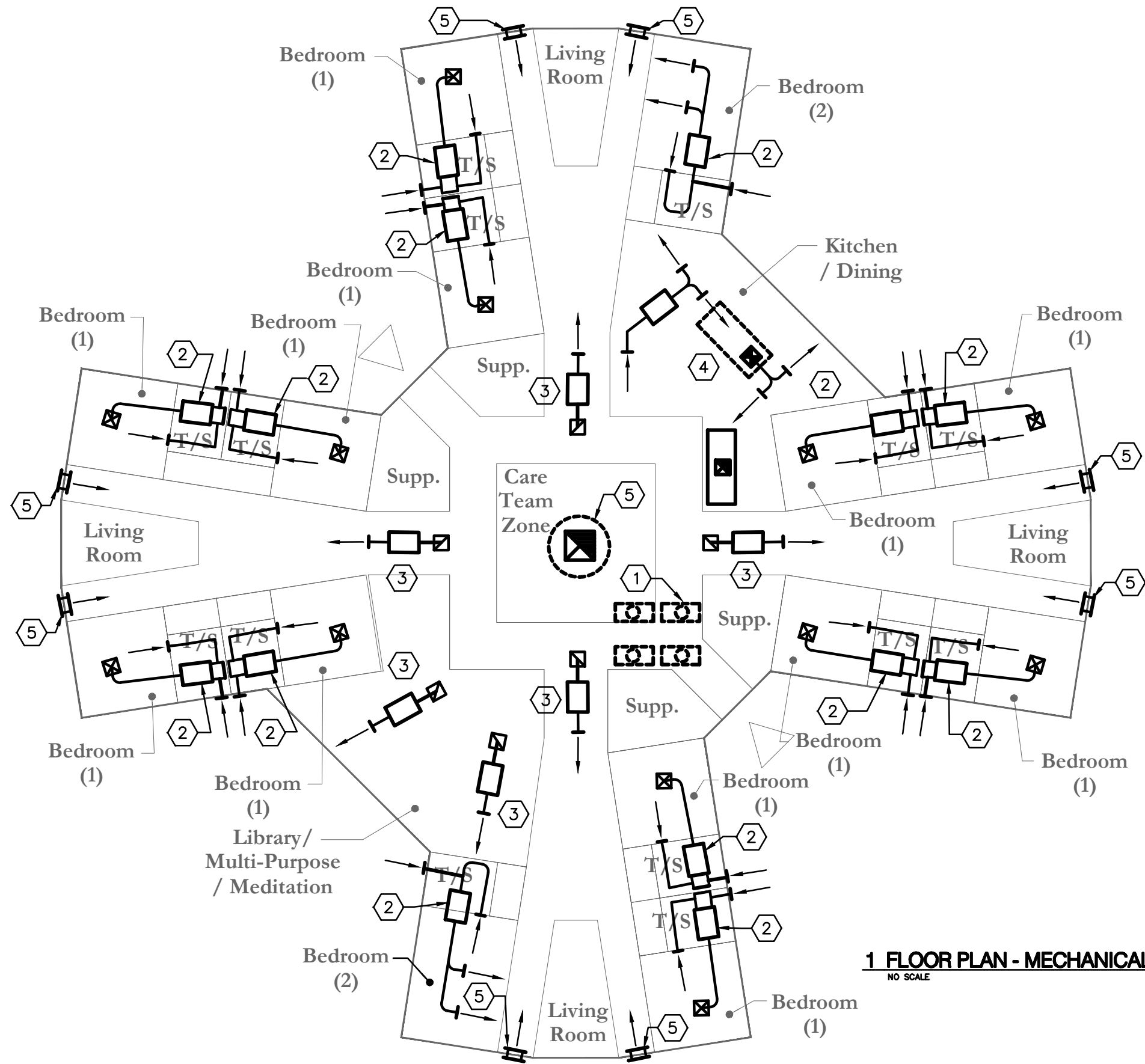
Photo E-5 -Main Switchboard



Photo E-6 - Switchboard



Photo E-7 - Electrical Panel



SHEET KEYNOTES

- 1 CONDENSING UNITS WITH ENERGY RECOVERY LOCATED ON ROOF. ESTIMATE 24-30.
- 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 /LOUVER OR WINDOWS.

1 FLOOR PLAN - MECHANICAL
NO SCALE

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San Mateo, California



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Project No.: 2014-0216
Contact: Roland Thomas
Sheet Ref.:
Sheet:

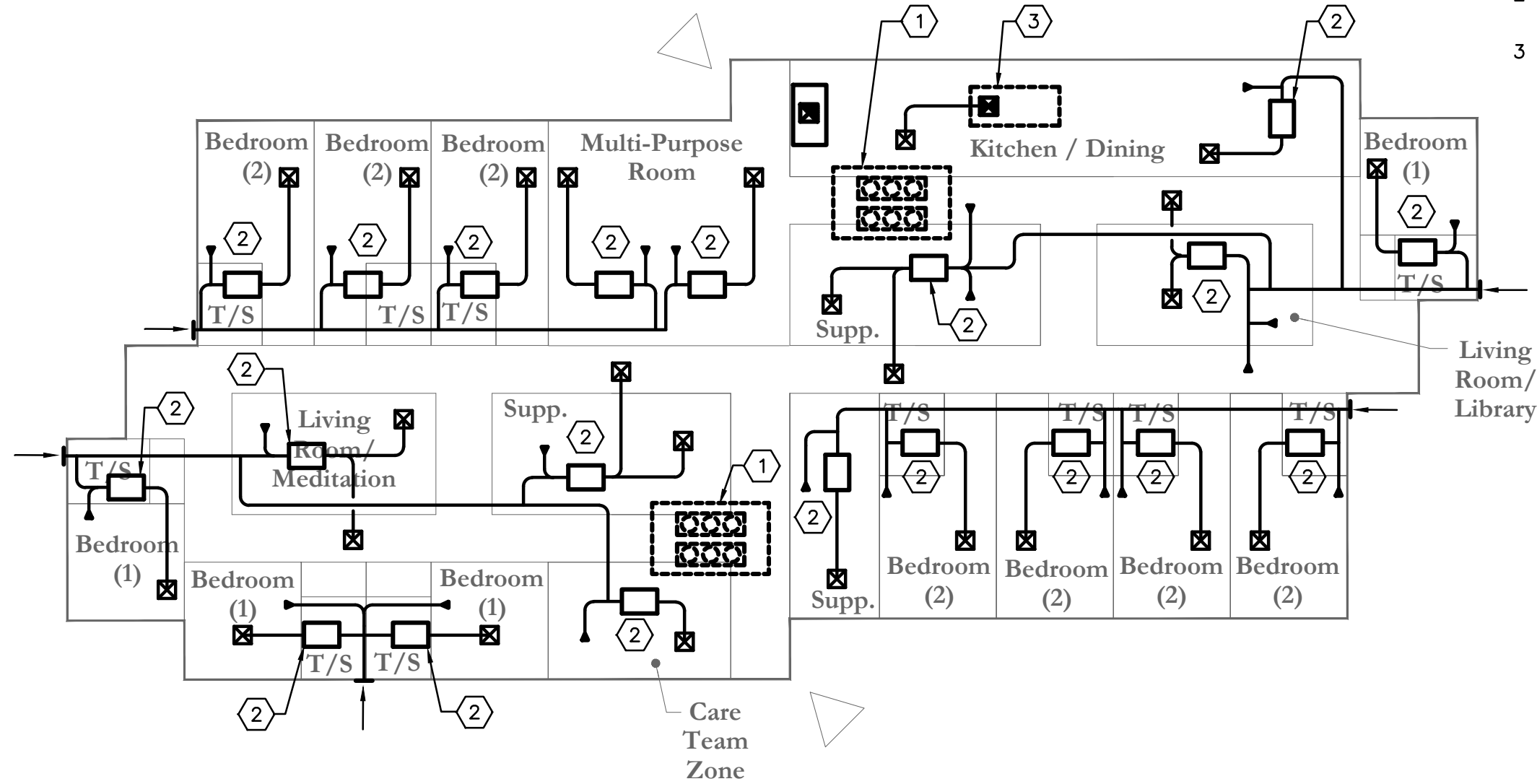
MSK-1

Revision:

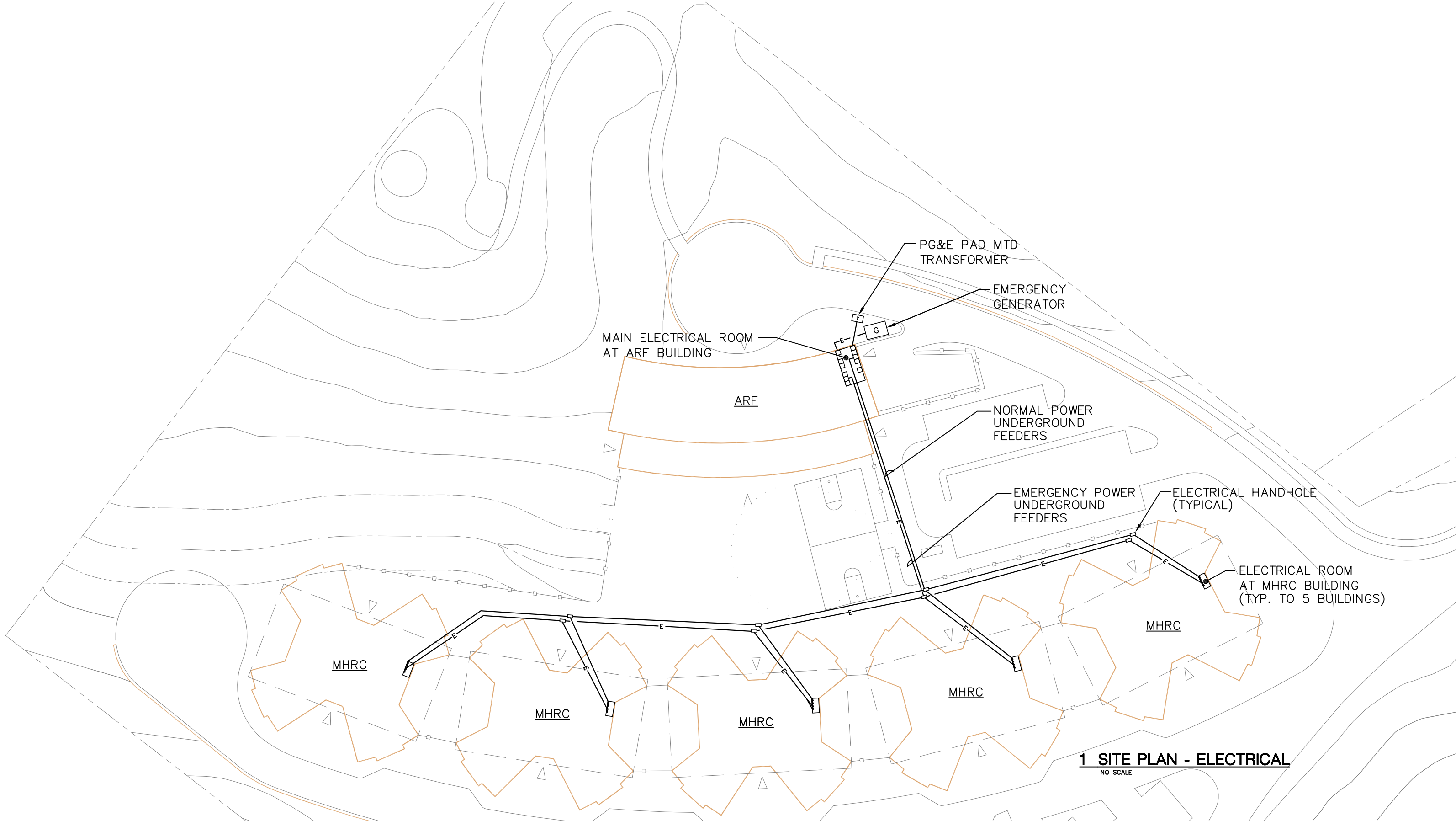
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⬡ SHEET KEYNOTES

- 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.



1 FLOOR PLAN - MECHANICAL
NO SCALE



1 SITE PLAN - ELECTRICAL
NO SCALE

Cordilleras Mental Health Rehabilitation Center
San Mateo, California

Revision:

Scale: NO SCALE



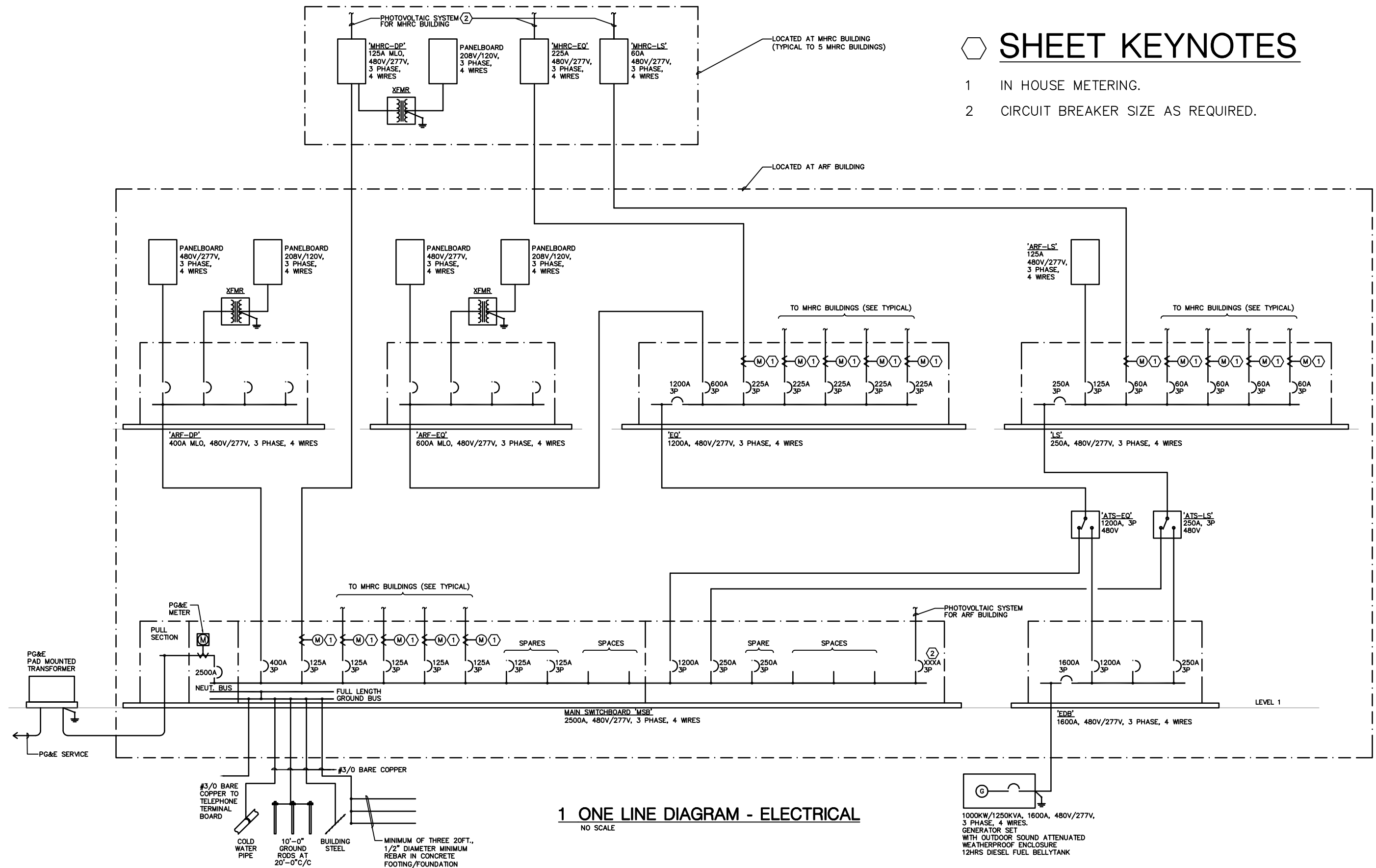
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ESK-1

SHEET KEYNOTES

- 1 IN HOUSE METERING.
- 2 CIRCUIT BREAKER SIZE AS REQUIRED.



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ESK-2

Revision:

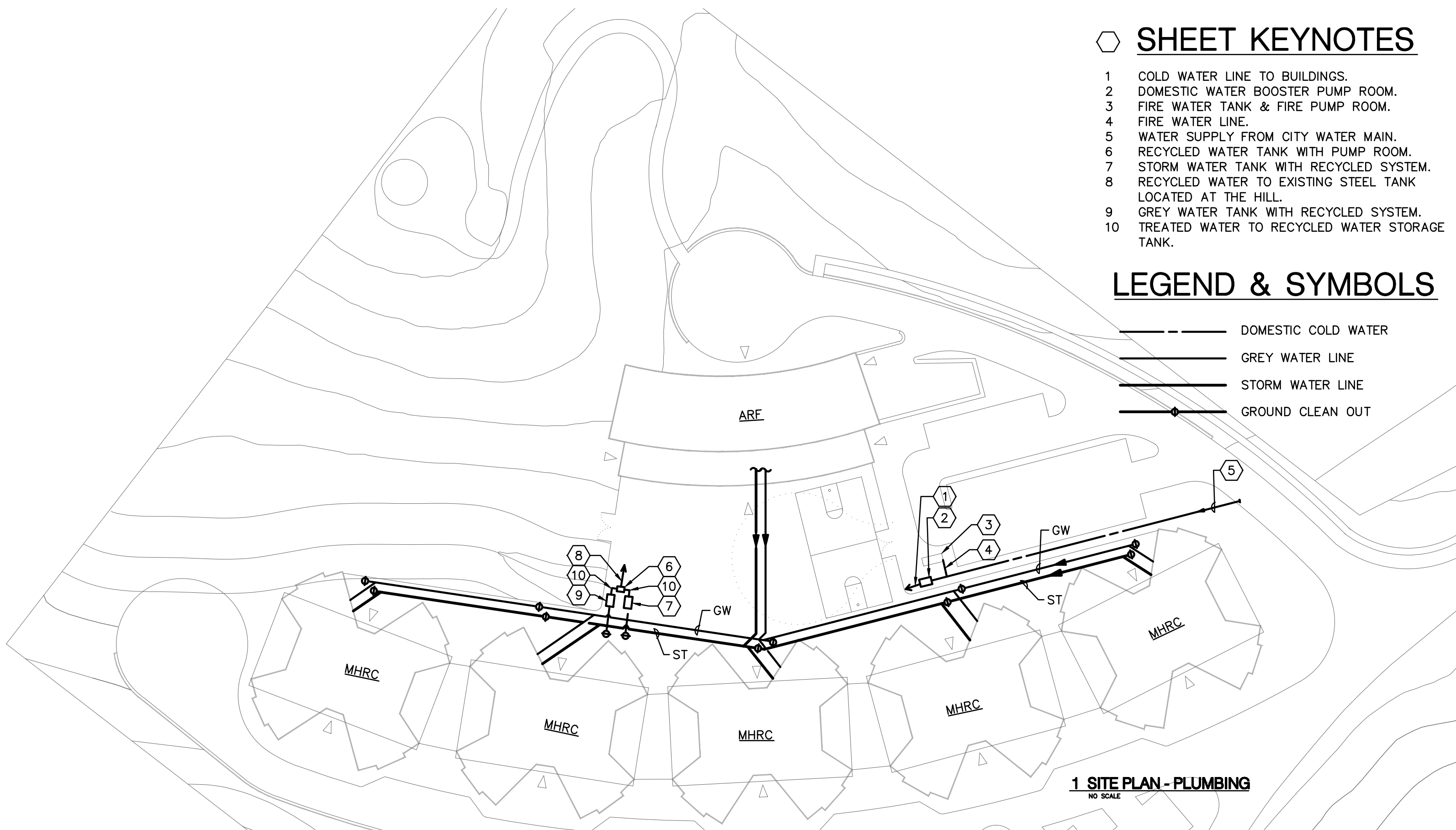
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○ SHEET KEYNOTES

- 1 COLD WATER LINE TO BUILDINGS.
- 2 DOMESTIC WATER BOOSTER PUMP ROOM.
- 3 FIRE WATER TANK & FIRE PUMP ROOM.
- 4 FIRE WATER LINE.
- 5 WATER SUPPLY FROM CITY WATER MAIN.
- 6 RECYCLED WATER TANK WITH PUMP ROOM.
- 7 STORM WATER TANK WITH RECYCLED SYSTEM.
- 8 RECYCLED WATER TO EXISTING STEEL TANK LOCATED AT THE HILL.
- 9 GREY WATER TANK WITH RECYCLED SYSTEM.
- 10 TREATED WATER TO RECYCLED WATER STORAGE TANK.

LEGEND & SYMBOLS

- DOMESTIC COLD WATER
- GREY WATER LINE
- STORM WATER LINE
- GROUND CLEAN OUT



1 SITE PLAN - PLUMBING
NO SCALE

Cordilleras Mental Health Rehabilitation Center San Mateo, California

Revision:

Scale: NO SCALE

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PSK-1

Appendix I

Hazardous Materials Investigation



ENVIRONMENTAL, INC.

June 2, 2014

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Redwood City, CA 94063

RE: Summary Report of Hazardous Building Materials
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 on-set 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 $50 \mu\text{g}/\text{m}^3$.
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								
Standards	TTLc	Leachable Lead						
Concentrations	1000 mg/kg	5 mg/L						
	Test Methods & Results			Classifications				
Condition	Total Pb (mg/kg)	STLC Pb (mg/L)	TCLP Pb (mg/L)	Non-haz waste	CalHaz (Non-RCRA)	Fed Haz (RCRA)	Stabilization Required	Landfill Class
1a	<50 (a1)	NA		Yes	no	no	no	III
1b	<100 (a2)		NA	Yes	no	no	no	III
2a	50 to <1000	<5	<5	Yes (c)	no	no	no	III or II (d)
2b		>5	<5	no	Yes	no	no	I
2c		>5	>5	no	Yes	Yes	Yes	I
2d (b)		<5	>5	no	no	Yes	Yes	I
3a	>1000	<5	<5	No	Yes	No	no	I
3b		>5	<5	no	Yes	no	no	I
3c		>5	>5	no	Yes	Yes	Yes	I
3d (b)		<5	>5	no	no	Yes	Yes	I
4	any	any	>5	no	no	Yes	Yes	I

(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 $\geq 1 \text{ mg/cm}^2$.
 - 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/EPA 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
Sr. Consultant



Chuck Siu, CIH, PE, CSP, CAC, CDPH
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

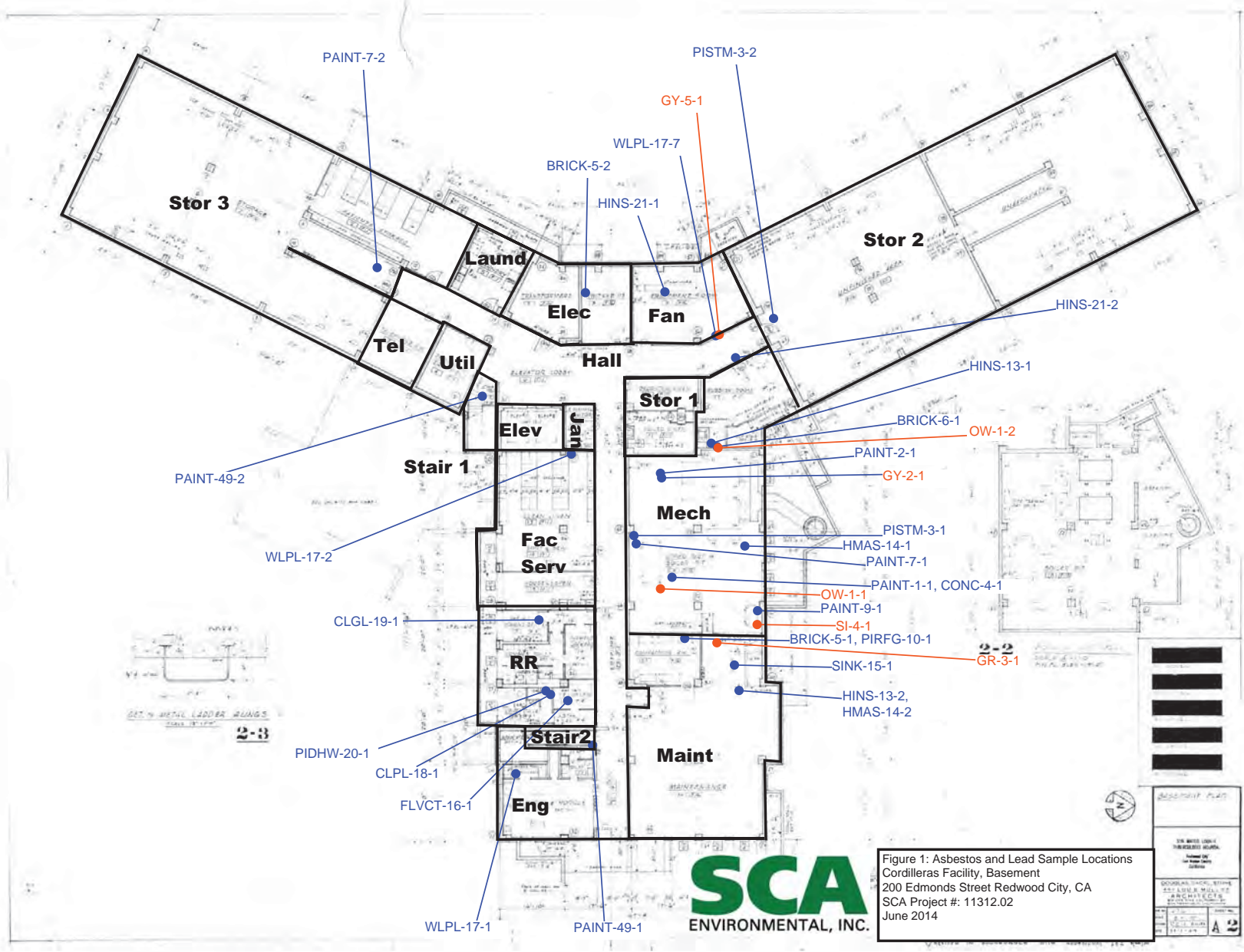
Materials Matrix Report

Room ID----- Material ID	Components	Asbestos: Positive, Negative, Trace, Assumed	Basement									1st Floor												2nd Floor																									
			Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9	Units	Mech	Maint	RR	Eng	Fac Serv	Jan	Stor 1	Fan	Elec	Stor 2	Laund	Util	Tel	Stor 3	Hall	Lobby	RR1	Admin	SW Offices	SE Offices	RR2	S Hall	Lounge	Auditorium	NW Rms	NE Rms	N Hall	Elev Lobby	Kitchen	E Offices (1)	E Hall	Elev Lobby	NW Rms	NE Rms	N Hall	SW Rms	SE Rms
ASBESTOS																																																	
PISTM-3	off-white insulation with yellow/green-painted canvas jacket on steam pipes and fittings (some of which are concealed within walls or above ceilings)		60-70% AM								LF	780	150	10	10	300		50	100	30	330	70	30	80	320	350	50		50	150	150			50	120	150	150		40	10	250		40	150	150		150	150	
FLVCT-16	9"x9" tan/brown/green with streaks vinyl floor tile (+) with black mastic (-)		ND (m)	ND (m)	ND (m)						SF			470	300														385	1425	1265		700	620		900	1675	800	700	1900	1050	1600	1400	1300	900	1400	1300	900	
PIDHW-20	off-white insulation with canvas jacket on domestic hot water pipes and fittings (some of which are concealed within walls or above ceilings)		1-5% CH; 10-20% AM								LF	200	125	200	100	75	30	50			320	60	30	30	110	150		75	100	100	100		150	150	120	100		75	300	230		150	100	100		100	100		
HINS-21	off-white insulation with canvas jacket on HVAC ducts (some of which are concealed above ceilings)		1-5% CH; 10-20% AM	NA							LF	75	100	50	50	100	20	40	300	20						780		30	50	40	150	100	25	30	75	100	50	80	40	50	200	175	75	50		50			
CAULK-26	grey caulk between brick wall and window frame		1-5% CH								LF																100																						
FLVCS-27	grey speckled vinyl floor sheeting (-) w/ yellow glue (-) over FLVCT-16 (+) w/ black mastic (-)		1-5% CH								SF																		150																				
SINK-34	black stainless steel sink undercoating		1-5% CH								EA																																						
PENMAS-38	black mastic/coating (+) with silver paint (-) on roofing penetrations		1-5% CH, ND paint	NA (mastic), ND paint	NA (mastic), ND paint						LF																																						
ASPHALT-43	black exterior asphalt (+) and assumed aggregate base (AAA) (destructive coring required to confirm presence of aggregate and asbestos content)		1-5% CH	NA	NA						SF																																						
TRANSITE-45	abandoned grey transite pipes (along the southwest ext side on the first floor level)		1-5% CR								LF																																						
CAULK-53	beige exterior caulk between brick wall and window frame		1-5% CH								LF																100																						
ASSUMED ASBESTOS (Destructive Testing Required to Confirm)																																																	
BOILER-AAA1	boiler insulation, gasket, flues, bricks, etc. associated with Bryan Gas Boilers (2x): Models AB 250-5-150/54-FDG)										EA	2																																					
TERRAZO-AAA2	beige/black terrazzo flooring										SF			300	625																20		220	100		280	150			1220	350	50	80	40		80	40		
FIREHOSES-AAA	fire hoses										EA																																						
FIREDOORS-AAA	fire doors with assumed asbestos-core insulation										EA	4	3		1	1				1	1			1	1																								
VAPBAR-AAA16	Exterior vapor barrier/waterproofing membrane on subgrade basement walls										SF																																						
WLCER-AAA4	4"x4" grey/yellow/blue/pink ceramic wall tile with associated grout & mortar										SF			500	750															350						250			990	350		80	680		80	670			
FLEX-AAA5	black flex duct connectors										EA																																						
FLCER-AAA5	2"x2" pink/white/green ceramic floor tile with associated grout and mortar										SF																																						
BRICK-AAA6	2"x8" red brick wall with associated mortar										SF									200	200																												
BBMAS-AAA7	mastic behind metal baseboard										LF																																						
WLMAS-AAA8	wall mirror mastic										SF			50																																			
FLCER-AAA9	6"x6" red quarry floor tile with covebase and associated grout and mortar										SF																																						
WLCER-AAA10	6"x12" beige ceramic wall tiles with associated grout and mortar										SF																																						
WLMAS-AAA10	mastic behind plastic wall panels										SF																																						
FORMICA-AAA11	yellow/wood-look Formica counter top with associated glue										SF																																						
LTWTCONC-37	light grey light weight concrete over roof deck (Note: Surface only sampled. Cores required for analysis of all concrete layers, including probable presence of another vaporbarrier @ its bottom)		ND	ND							SF																																						
WALL-AAA12	8"x8"x16" tan concrete masonry unit (CMU) wall with associated mortar										SF																																						
EL-AAA13	electrical wiring throughout										LF	400	400	100	100	100	300	300	300	500	300	100	100	100	300	400	200	100	200	500	500	100	400	200	300	500	500	400	250	500	500	400	250	500	500	400	500	500	400
CL-AAA14	4"x8" grey coarse fibrous acoustical ceiling panel with associated glue										LF	500																																					
CORE-AAA	felts, membranes and tars and aggregate baserock associated with volleyball courts										SF																																						
VAPOR-AAA16	vapor barrier under slab										SF	1600	2000	770	625	50	50	200	500	600	2000	400	200	200	2000	1500																							
VAPOR-AAA17	Vapor barriers under restrooms, laundry, former operating rooms, etc.										SF			770	110		50													230		125		220		350	350	150		1900	645		80	250		80	250		
FREEZER-AAA18	Insulation and/or mastics associated with walk-in freezers										EA																																						
CONC-AAA19	Concrete layers and aggregate baserock under surface concrete comprising building slab										SF	1600	2000	770	625	50	50	200	500	600	2000	400	200	200	2000	1500	530	230	385	900	680	220	900	330	350	900	900	900	600	2050	2950	900	600	900	900	900	900	900	900
CLGL-25	12"x12" light grey glued on ceiling tiles (-) with fissures (glue not accessible for all samples)-glu assumed ACM		ND for tile; Assumed mastic	ND for tile; Assumed mastic	ND for tile; Assumed mastic						SF																	530		620	1020	1020		1300	900	770	825	1125	900	2100	2150		1875	1400		900	1400	900	
NON-ASBESTOS																																																	
PAINT-1	off-white paint on concrete floors		ND								SF	200																																					
PAINT-2	grey paint on concrete floors		ND								SF	1000																																					
CONC-4	surface concrete floor slab-top layer only		ND								SF	1600	2000	770	625	50	50	200	500	600	2000	400	200	200	2000	1500																							

Room ID----- Material ID	Components	Asbestos: Positive, Negative, Trace, Assumed	3rd Fl									Other areas				Roof & Exterior											Other areas		TOTAL +/- 15%
			NW Rms	NE Rms	N Hall	SW Rms	SE Rms	S Hall	E Rms	Elev Lobby	Stair 1	Stair 2	Stairs 3 & 4	Elev	Elev Rm	PH Fan Room	Exterior	PH Roof	Elev Rm Roof	Main Roof	3F Roof Deck	2F Roof	1F Roof	Auditorium Roof Overhang/ Campy	Water tank	Pump House			
ASBESTOS																													
PISTM-3	off-white insulation with yellow/green-painted canvas jacket on steam pipes and fittings (some of which are concealed within walls or above ceilings)	Positive	150	150		150	150		250	40																			5310
FLVCT-16	9"x9" tan/brown/green with streaks vinyl floor tile (+) with black mastic (-)		1400	1300	900	1400	1300	900	2250	1600				120															32160
PIDHW-20	off-white insulation with canvas jacket on domestic hot water pipes and fittings (some of which are concealed within walls or above ceilings)		100	100		100	100		150	150					30														4260
HINS-21	off-white insulation with canvas jacket on HVAC ducts (some of which are concealed above ceilings)			120			75		100	150					50														3450
CAULK-26	grey caulk between brick wall and window frame																												100
FLVCS-27	grey speckled vinyl floor sheeting (-) w/ yellow glue (-) over FLVCT-16 (+) w/ black mastic (-)																												150
SINK-34	black stainless steel sink undercoating																												2
PENMAS-38	black mastic/coating (+) with silver paint (-) on roofing penetrations																				5								5
ASPHALT-43	black exterior asphalt (+) and assumed aggregate base (AAA) (destructive coring required to confirm presence of aggregate and asbestos content)															27000													27000
TRANSITE-45	abandoned grey transite pipes (along the southwest ext side on the first floor level)															120													120
CAULK-53	beige exterior caulk between brick wall and window frame																												100
ASSUMED ASBESTOS (Destructive Testing Required to Confirm)																													
BOILER-AAA1	boiler insulation, gasket, flues, bricks, etc. associated with Bryan Gas Boilers (2x): Models AB 250-5-150/54-FDG)		Assumed																										2
TERRAZO-AAA2	beige/black terrazzo flooring	80		40		80	40		150	50																			3995
FIREHOSES-AAA	fire hoses				1					1																			4
FIREDOORS-AAA	fire doors with assumed asbestos-core insulation																												24
VAPBAR-AAA16	Exterior vapor barrier/waterproofing membrane on subgrade basement walls														6000														6000
WLCER-AAA4	4"x4" grey/yellow/blue/pink ceramic wall tile with associated grout & mortar	80		680		80	670		80																				6290
FLEX-AAA5	black flex duct connectors														10														16
FLCER-AAA5	2"x2" pink/white/green ceramic floor tile with associated grout and mortar			250			250																						1230
BRICK-AAA6	2"x8" red brick wall with associated mortar																												400
BBMAS-AAA7	mastic behind metal baseboard													180															780
WLMAS-AAA8	wall mirror mastic	20		10		20	10																						180
FLCER-AAA9	6"x6" red quarry floor tile with covebase and associated grout and mortar			150			150			150																			2950
WLCER-AAA10	6"x12" beige ceramic wall tiles with associated grout and mortar			360			360																						4340
WLMAS-AAA10	mastic behind plastic wall panels				900			900		500																			5120
FORMICA-AAA11	yellow/wood-look Formica counter top with associated glue									100																			220
LTWTCONC-37	light grey light weight concrete over roof deck (Note: Surface only sampled. Cores required for analysis of all concrete layers, including probable presence of another vaporbarrier @ its bottom)																600	300	5800	1500	750	950	1950					11850	
WALL-AAA12	8"x8"x16" tan concrete masonry unit (CMU) wall with associated mortar																									380			380
EL-AAA13	electrical wiring throughout	500	500	400	500	500	400	500	250	200	200	200	400	200	100										200			17450	
CL-AAA14	4"x8" grey coarse fibrous acoustical ceiling panel with associated glue																											500	
CORE-AAA	felts, membranes and tars and aggregate baserock associated with volleyball courts														800													800	
VAPOR-AAA16	vapor barrier under slab																											12695	
VAPOR-AAA17	Vapor barriers under restrooms, laundry, former operating rooms, etc.	80	250		80	250		150						300	300													6970	
FREEZER-AAA18	Insulation and/or mastics associated with walk-in freezers																											3	
CONC-AAA19	Concrete layers and aggregate baserock under surface concrete comprising building slab	900	900	900	900	900	900	2950	600						300													41670	
CLGL-25	12"x12" light grey glued on ceiling tiles (-) with fissures (glue not accessible for all samples)-glu assumed ACM	1400		900	1400		900	2100	1875	450	450																	29210	
NON-ASBESTOS																													
PAINT-1	off-white paint on concrete floors	Negative																										200	
PAINT-2	grey paint on concrete floors																												1000
CONC-4	surface concrete floor slab-top layer only																												12695
BRICK-5	12"x12" red brick wall with grey mortar																												1050
BRICK-6	yellow fire brick & off-white mortar in incinerators (one in mechanical room and other outside of mechanical room)															250													750
PAINT-7	off-white paint with skim coat on concrete walls, columns and ceiling																												20170
CONC-8	green stained concrete floor												400	400															14810
PAINT-9	silver paint on water storage tank																												1
PIRFG-10	brown cork insulation on refrigeration lines																												100
WLSH-11	wall drywall with tape & joint compound																												2180
BBMAS-12	4"/6" tan/grey/green vinyl baseboard with off-white glue									60																			2370
HINS-13	fiberglass insulation with green painted canvas jacket on HVAC ducts																												110
HMAS-14	brown mastic under HINS-13																												660
SINK-15	off-white stainless steel sink undercoating																												1
WLPL-17	off-white skim coat over coarse grey wall plaster		3850	3700	1450	3850	3700	1450	2350	1550	600	600																	84175
CLPL-18	off-white skim coat over coarse grey ceiling plaster		1480	1350	900	1480	1350	900	2400	1875	450	450																	41415
CLGL-19	12"x12" off-white glued on ceiling tiles (-) with pinholes and brown mastic (-)																												150
FLVCT-22	over grey leveling compound (-)																												1315
CLSH-23	ceiling drywall with tape and mud																												1000
CARMAS-24	yellow carpet glue under multi-colored carpet		150				150			225																			10710
FLVCS-28	faux wood-look vinyl flooring (-) with yellow glue (-) and grey leveling compound (-)																												100
FLVCT-29	12"x12" off-white with brown streaks vinyl floor tile (-) with yellow glue (-)																												2200
PUTTY-30	off-white interior window putty		100	90		90	90		80																				1425

Appendix B

Sample Location Drawings



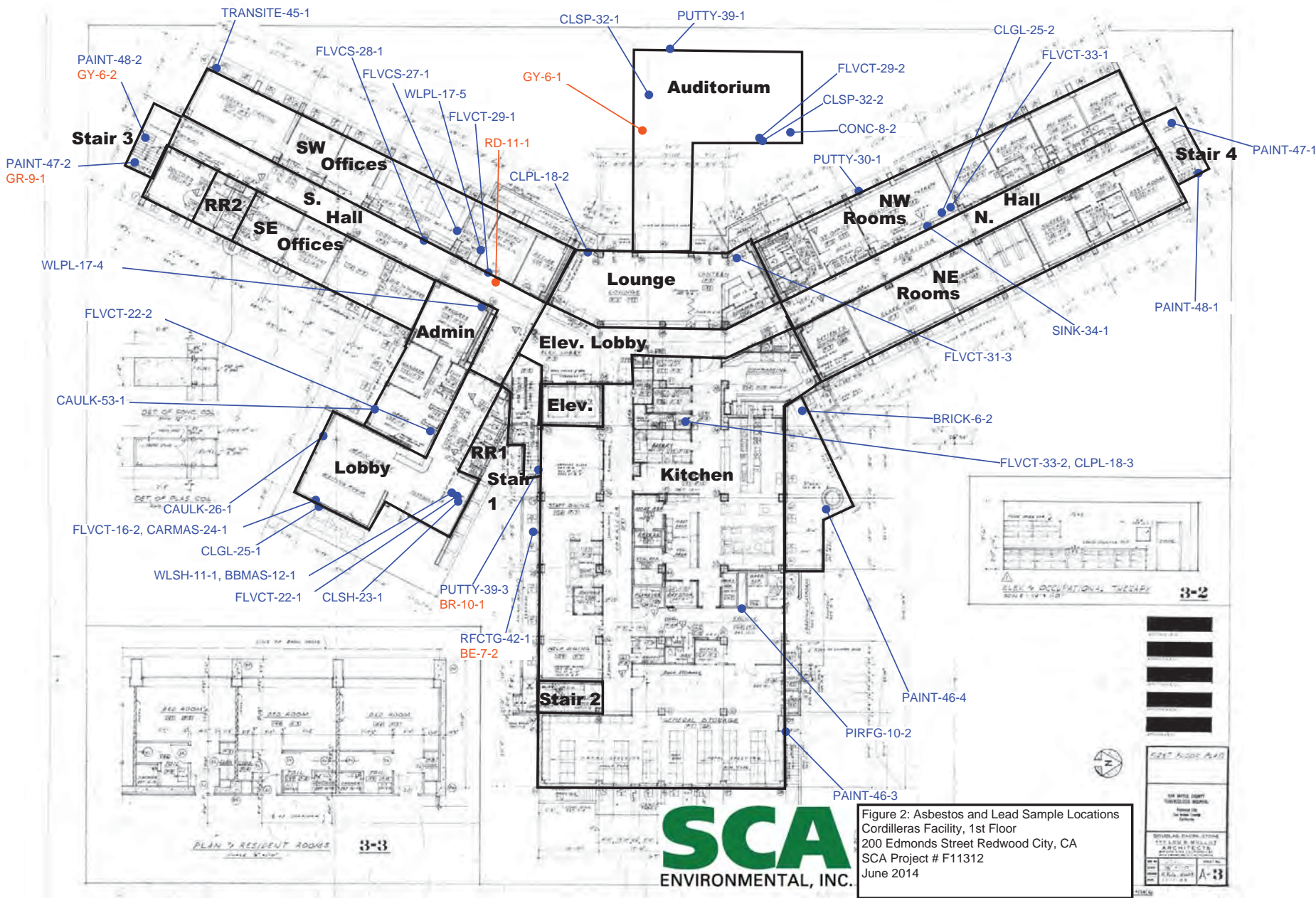
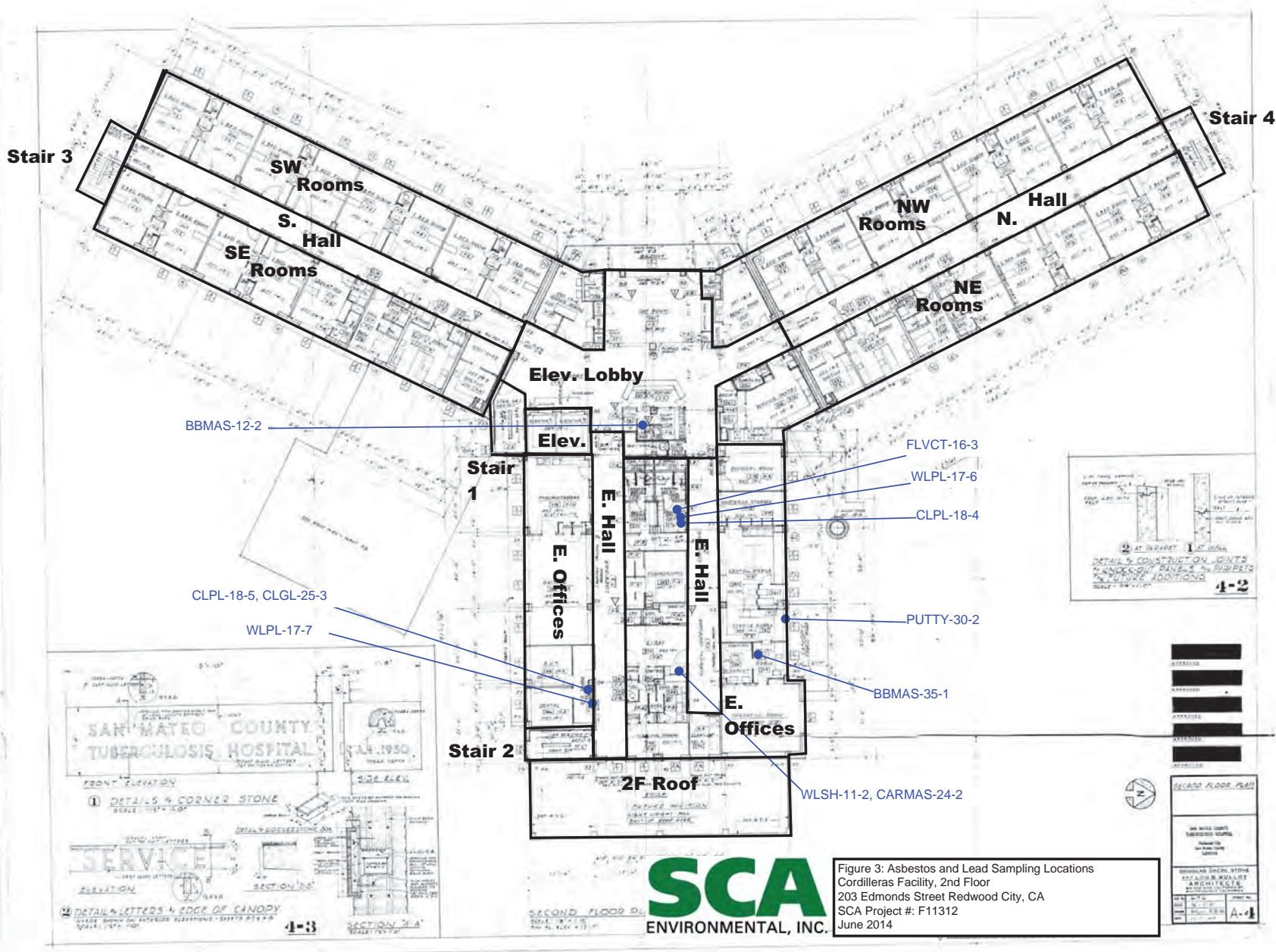


Figure 2: Asbestos and Lead Sample Locations
 Cordilleras Facility, 1st Floor
 200 Edmonds Street Redwood City, CA
 SCA Project # F11312
 June 2014



SCA
ENVIRONMENTAL, INC.

Figure 3: Asbestos and Lead Sampling Locations
 Cordilleras Facility, 2nd Floor
 203 Edmonds Street Redwood City, CA
 SCA Project #: F11312
 June 2014

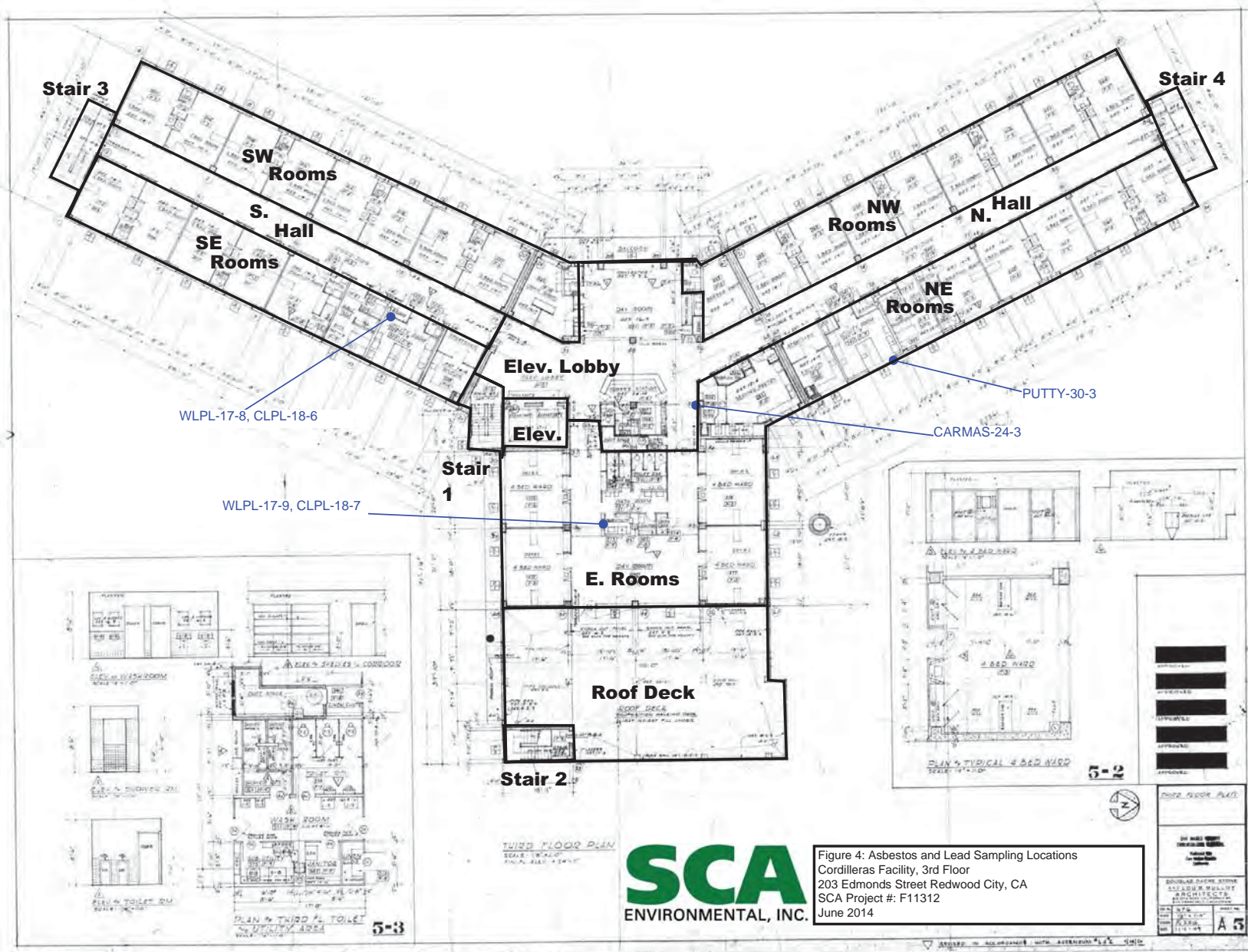


Figure 4: Asbestos and Lead Sampling Locations
 Cordilleras Facility, 3rd Floor
 203 Edmonds Street Redwood City, CA
 SCA Project #: F11312
 June 2014

SCA
 ENVIRONMENTAL, INC.

DATE: 06/04/14	SCALE: AS SHOWN
BY: [Signature]	CHECKED: [Signature]
DOUGLAS DAHL, 3030 SULLY DRIVE, REDWOOD CITY, CA 94061 ARCHITECTS 11/13/14	
PROJECT NO. F11312	5

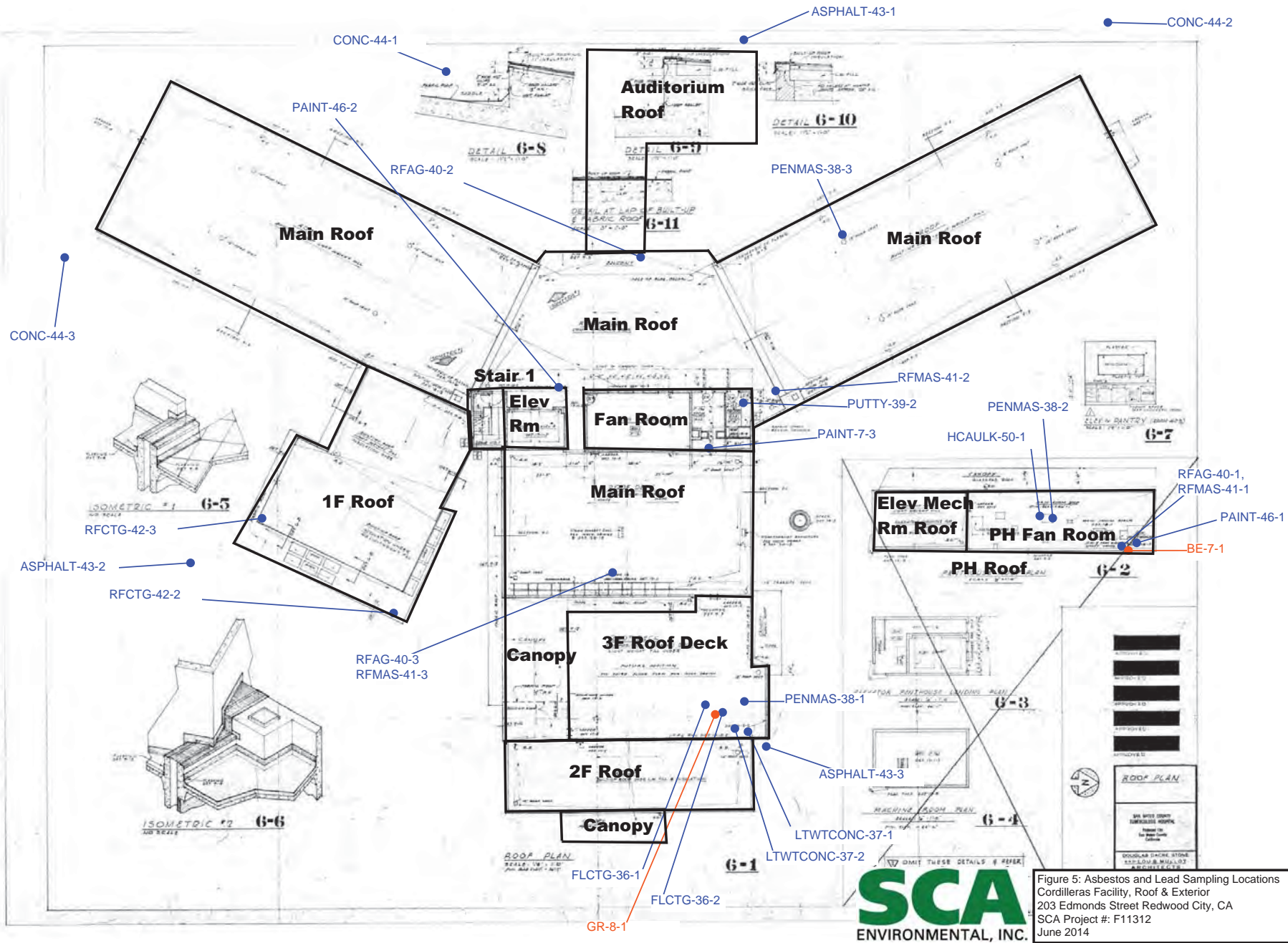
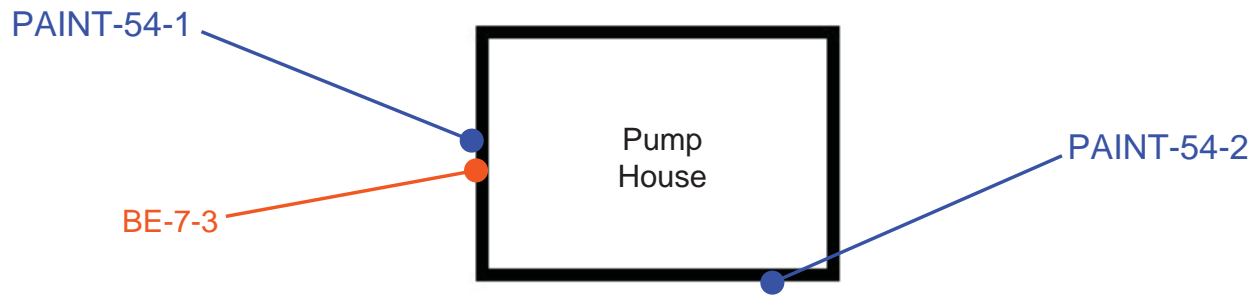


Figure 5: Asbestos and Lead Sampling Locations
 Cordilleras Facility, Roof & Exterior
 203 Edmonds Street Redwood City, CA
 SCA Project #: F11312
 June 2014

Cordilleras
Facility
General
Storage
Area

N →
(Drawing not to Scale)

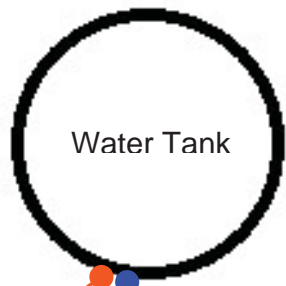


SCA
ENVIRONMENTAL, INC.

Figure 6: Asbestos & Lead Sample Locations
Cordilleras Facility Pump House
200 Edwards Street Redwood City, CA
SCA Project #: F11312
June 2014

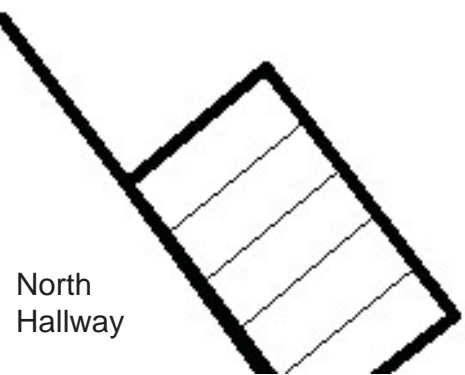


(Drawing not to scale)



BE-7-4

GASKET-51-1,
GASKET-51-2,
GASKET-52-1,
GASKET-52-2



North
Hallway

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

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 Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	Report No. 325726 Date Submitted: May-05-14 Date Reported: May-14-14
---	--	---

SAMPLE ID	ASBESTOS TYPE	OTHER DATA		DESCRIPTION
		1) Non-Asbestos Fibers	2) Matrix Materials	FIELD LAB
200-PAINT-1-1 Lab ID # 532-02326-001	None Detected	1) 1-5% Cellulose	2) 95-99% Glue, Opq, Calc, Other m.p.	
		3)	4) May-13-14	Paint-Beige
200-PAINT-2-1 Lab ID # 532-02326-002	None Detected	1) 1-5% Cellulose	2) 95-99% Glue, Opq, Calc, Other m.p.	
		3)	4) May-13-14	Paint-Beige
200-PISTM-3-1 Lab ID # 532-02326-003	60-70% Amosite	1) None Detected	2) 30-40% Calc	
		3)	4) May-13-14	Insulation-Off-White
200-PISTM-3-2 Lab ID # 532-02326-004	Not Analyzed	1)	2)	
		3)	4) May-13-14	
200-CONC-4-1 Lab ID # 532-02326-005	None Detected	1) 1-5% Cellulose	2) 95-99% Calc, Bndr, Mica, Other m.p.	
		3)	4) May-13-14	Concrete-Grey
200-BRICK-5-1 Lab ID # 532-02326-006A	None Detected	1) 1-5% Cellulose	2) 95-99% Calc, Bndr, Mica, Other m.p.	
		3)	4) May-13-14	Brick-Red
200-BRICK-5-1 Lab ID # 532-02326-006B	None Detected	1) 1-5% Cellulose	2) 95-99% Calc, Bndr, Mica, Other m.p.	
		3)	4) May-13-14	Brick-Grey
200-BRICK-5-2 Lab ID # 532-02326-007A	None Detected	1) 1-5% Cellulose	2) 95-99% Calc, Bndr, Mica, Other m.p.	
		3)	4) May-13-14	Brick-Red
200-BRICK-5-2 Lab ID # 532-02326-007B	None Detected	1) 1-5% Cellulose	2) 95-99% Calc, Bndr, Mica, Other m.p.	
		3)	4) May-13-14	Brick-Grey
200-BRICK-6-1 Lab ID # 532-02326-008	None Detected	1) 1-5% Cellulose	2) 95-99% Calc, Bndr, Mica, Other m.p.	
		3)	4) May-13-14	Brick-Grey

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental 650 Delancey Street, #222 San Francisco, CA 94107	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
	Split Layers Analyzed: 51	Date Reported: May-14-14
	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-PAINT-7-1 Lab ID # 532-02326-009A	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-13-14	Paint-Off-White
200-PAINT-7-1 Lab ID # 532-02326-009B	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-13-14	Texture-Yellow
200-PAINT-7-2 Lab ID # 532-02326-010A	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-13-14	Paint-Off-White
200-PAINT-7-2 Lab ID # 532-02326-010B	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-13-14	Texture-Yellow
200-CONC-8-1 Lab ID # 532-02326-011A	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-13-14	Concrete-Grey
200-CONC-8-1 Lab ID # 532-02326-011B	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-13-14	Floor Tile-Green
200-CONC-8-2 Lab ID # 532-02326-012A	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-13-14	Concrete-Grey
200-CONC-8-2 Lab ID # 532-02326-012B	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-13-14	Floor Tile-Green
200-PAINT-9-1 Lab ID # 532-02326-013	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-13-14	Paint-Silver/Beige
200-PIRFG-10-1 Lab ID # 532-02326-014	None Detected	1) 5-10% Cellulose 2) 90-95% Other m.p., Tar 3) 4) May-13-14	PIRFG-Brown/Black

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 3 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-PIRFG-10-2 Lab ID # 532-02326-015	None Detected	1) 5-10% Cellulose 2) 90-95% Other m.p., Tar 3) _____ 4) May-13-14	PIRFG-Brown/Black
200-WLSH-11-1 Lab ID # 532-02326-016A	None Detected	1) 1-5% Fiberglass 2) 95-99% Gyp, Other m.p. 3) _____ 4) May-13-14	Drywall-Off-White
200-WLSH-11-1 Lab ID # 532-02326-016B	None Detected	1) 1-5% Cellulose 2) 95-99% Calc, Bndr, Mica, Other m.p. 3) _____ 4) May-13-14	JointCom/Text-Off-White
200-WLSH-11-2 Lab ID # 532-02326-017A	None Detected	1) 1-5% Fiberglass 2) 95-99% Gyp, Other m.p. 3) _____ 4) May-13-14	Drywall-Off-White
200-WLSH-11-2 Lab ID # 532-02326-017B	None Detected	1) 1-5% Cellulose 2) 95-99% Calc, Bndr, Mica, Other m.p. 3) _____ 4) May-13-14	JointCom/Text-Off-White
200-BBMAS-12-1 Lab ID # 532-02326-018A	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Off-White
200-BBMAS-12-1 Lab ID # 532-02326-018B	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	Paint-Off-White
200-BBMAS-12-2 Lab ID # 532-02326-019A	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Off-White
200-BBMAS-12-2 Lab ID # 532-02326-019B	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	Paint-Off-White
200-HIWS-13-1 Lab ID # 532-02326-020	None Detected	1) 90-95% Fiberglass 2) 5-10% GlassFrgs, Opq 3) _____ 4) May-13-14	Insulation-Off-White

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 4 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-HIWS-13-2 Lab ID # 532-02326-021A	None Detected	1) 90-95% Fiberglass 2) 5-10% GlassFrgs, Opq 3) _____ 4) May-13-14	Insulation-Yellow
200-HIWS-13-2 Lab ID # 532-02326-021B	None Detected	1) 40-50% Cellulose 2) 50-60% Bndr, Other m.p. 3) _____ 4) May-13-14	Wallpaper-Off-White
200-HMAS-14-1 Lab ID # 532-02326-022A	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Brown
200-HMAS-14-1 Lab ID # 532-02326-022B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Insulation-Yellow
200-HMAS-14-2 Lab ID # 532-02326-023A	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Brown
200-HMAS-14-2 Lab ID # 532-02326-023B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Insulation-Yellow
200-SINK-15-1 Lab ID # 532-02326-024	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Sink-Off-White
200-FLVCT-16-1 Lab ID # 532-02326-025A	1-5% Chrysotile	1) 1-5% Cellulose 2) 90-98% Bndr, Calc, Qtz 3) _____ 4) May-13-14	Floor Tile-Beige
200-FLVCT-16-1 Lab ID # 532-02326-025B	None Detected	1) None Detected 2) 99-100% Tar, Opq, Qtz, Other m.p. 3) _____ 4) May-13-14	Mastic-Black
200-FLVCT-16-2 Lab ID # 532-02326-026A	None Detected	1) None Detected 2) 99-100% Tar, Opq, Qtz, Other m.p. 3) _____ 4) May-14-14	Mastic-Black

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 7 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION <u>FIELD</u> <u>LAB</u>
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	
200-CLPL-18-2 Lab ID # 532-02326-036A	None Detected	1) 6-15% Fiberglass, Cellulose 2) 85-94% Calc, Gyp, Other m.p. 3) _____ 4) May-13-14	Plaster-Off-White
200-CLPL-18-2 Lab ID # 532-02326-036B	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	PlastCoarse-Off-White
200-CLPL-18-2 Lab ID # 532-02326-036C	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	Paint-Off-White
200-CLPL-18-3 Lab ID # 532-02326-037A	None Detected	1) 6-15% Fiberglass, Cellulose 2) 85-94% Calc, Gyp, Other m.p. 3) _____ 4) May-13-14	Plaster-Off-White
200-CLPL-18-3 Lab ID # 532-02326-037B	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	PlastCoarse-Off-White
200-CLPL-18-3 Lab ID # 532-02326-037C	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	Paint-Off-White
200-CLPL-18-4 Lab ID # 532-02326-038A	None Detected	1) 6-15% Fiberglass, Cellulose 2) 85-94% Calc, Gyp, Other m.p. 3) _____ 4) May-13-14	Plaster-Off-White
200-CLPL-18-4 Lab ID # 532-02326-038B	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	PlastCoarse-Off-White
200-CLPL-18-4 Lab ID # 532-02326-038C	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-13-14	Paint-Off-White
200-CLPL-18-5 Lab ID # 532-02326-039A	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

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 8 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-CLPL-18-5 Lab ID # 532-02326-039B	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-13-14	PlastCoarse-Off-White
200-CLPL-18-5 Lab ID # 532-02326-039C	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-13-14	Paint-Off-White
200-CLGL-19-1 Lab ID # 532-02326-040A	None Detected	1) 40-60% FiberGlass, Cellulose 2) 40-60% GlassFrgs, GlassFoam, Bndr 3) 4) May-13-14	Ceiling Tile-Grey
200-CLGL-19-1 Lab ID # 532-02326-040B	None Detected	1) None Detected 2) 99-100% Glue 3) 4) May-13-14	Mastic-Brown
200-PIDHW-20-1 Lab ID # 532-02326-041	1-5% 10-20% Chrysotile Amosite	1) None Detected 2) 75-89% Calc, Other m.p. 3) 4) May-13-14	Insulation-White
200-HIWS-21-1 Lab ID # 532-02326-042	1-5% 10-20% Chrysotile Amosite	1) None Detected 2) 75-89% Calc, Other m.p. 3) 4) May-13-14	Insulation-White
200-HIWS-21-2 Lab ID # 532-02326-043	Not Analyzed	1) 2) 3) 4) May-13-14	
200-FLVCT-22-1 Lab ID # 532-02326-044A	None Detected	1) 1-5% Cellulose 2) 95-99% Calc, Bndr, Other m.p. 3) 4) May-13-14	Floor Tile-Black
200-FLVCT-22-1 Lab ID # 532-02326-044B	None Detected	1) None Detected 2) 99-100% Glue 3) 4) May-13-14	Mastic-Yellow
200-FLVCT-22-1 Lab ID # 532-02326-044C	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) 4) May-13-14	Floor Tile-Off-White

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 9 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-FLVCT-22-1 Lab ID # 532-02326-044D	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Off-White
200-FLVCT-22-1 Lab ID # 532-02326-044E	None Detected	1) None Detected 2) 99-100% Calc, Mica, Other m.p. 3) _____ 4) May-13-14	LevelCmpd-Grey
200-FLVCT-22-2 Lab ID # 532-02326-045A	None Detected	1) 1-5% Cellulose 2) 95-99% Calc, Bndr, Other m.p. 3) _____ 4) May-13-14	Floor Tile-Black
200-FLVCT-22-2 Lab ID # 532-02326-045B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-FLVCT-22-2 Lab ID # 532-02326-045C	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Floor Tile-Off-White
200-FLVCT-22-2 Lab ID # 532-02326-045D	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Off-White
200-FLVCT-22-2 Lab ID # 532-02326-045E	None Detected	1) None Detected 2) 99-100% Calc, Mica, Other m.p. 3) _____ 4) May-13-14	LevelCmpd-Grey
200-CARMAS-24-1 Lab ID # 532-02326-046	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-CARMAS-24-2 Lab ID # 532-02326-047	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-CLGL-25-1 Lab ID # 532-02326-048	None Detected	1) 70-80% Cellulose 2) 20-30% GlassFoam, Other m.p. 3) _____ 4) May-13-14	Ceiling Tile-Grey

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 10 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC	
	F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-CLGL-25-2 Lab ID # 532-02326-049	None Detected	1) 70-80% Cellulose 2) 20-30% GlassFoam, Other m.p. 3) _____ 4) May-13-14	Ceiling Tile-Grey
200-CLGL-25-3 Lab ID # 532-02326-050	None Detected	1) 70-80% Cellulose 2) 20-30% GlassFoam, Other m.p. 3) _____ 4) May-13-14	Ceiling Tile-Grey
200-CAULK-26-1 Lab ID # 532-02326-051	1-5% Chrysotile	1) None Detected 2) 95-99% Calc, Tar, Qtz, Bndr 3) _____ 4) May-13-14	Caulk-Beige
200-FLVCS-27-1 Lab ID # 532-02326-052A	None Detected	1) 10-20% Cellulose 2) 80-90% Bndr, Calc, Glue, Qtz 3) _____ 4) May-13-14	Floor Tile-Tan
200-FLVCS-27-1 Lab ID # 532-02326-052B	None Detected	1) 10-20% Cellulose 2) 80-90% Bndr, Calc, Glue, Qtz 3) _____ 4) May-13-14	Sheet Floor/Backing-Off-White
200-FLVCS-27-1 Lab ID # 532-02326-052C	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-FLVCS-28-1 Lab ID # 532-02326-053A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Linoleum-Off-White
200-FLVCS-28-1 Lab ID # 532-02326-053B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-FLVCS-28-1 Lab ID # 532-02326-053C	None Detected	1) None Detected 2) 99-100% Calc, Mica, Other m.p. 3) _____ 4) May-13-14	LevelCmpd-Grey
200-FLVCT-29-1 Lab ID # 532-02326-054A	None Detected	1) 10-20% Cellulose 2) 80-90% Bndr, Calc, Glue, Qtz 3) _____ 4) May-13-14	Floor Tile-Off-White

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 11 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-FLVCT-29-1 Lab ID # 532-02326-054B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-FLVCT-29-2 Lab ID # 532-02326-055A	None Detected	1) 10-20% Cellulose 2) 80-90% Bndr, Calc, Glue, Qtz 3) _____ 4) May-13-14	Floor Tile-Off-White
200-FLVCT-29-2 Lab ID # 532-02326-055B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-PUTTY-30-1 Lab ID # 532-02326-056	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Putty-Grey
200-PUTTY-30-2 Lab ID # 532-02326-057	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Putty-Grey
200-FLVCT-31-1 Lab ID # 532-02326-058A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Floor Tile-Blue
200-FLVCT-31-1 Lab ID # 532-02326-058B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-CLSP-32-1 Lab ID # 532-02326-059	None Detected	1) 70-80% Cellulose 2) 20-30% GlassFoam, Other m.p. 3) _____ 4) May-13-14	Ceiling Tile-Off-White
200-CLSP-32-2 Lab ID # 532-02326-060	None Detected	1) 70-80% Cellulose 2) 20-30% GlassFoam, Other m.p. 3) _____ 4) May-13-14	Ceiling Tile-Off-White
200-FLVCT-33-1 Lab ID # 532-02326-061A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Floor Tile-Beige

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 12 of 12

Contact: Christina Codemo	Samples Indicated: 65	Report No. 325726
Address: SCA Environmental	Reg. Samples Analyzed: 63	Date Submitted: May-05-14
650 Delancey Street, #222	Split Layers Analyzed: 51	Date Reported: May-14-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-FLVCT-33-1 Lab ID # 532-02326-061B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-FLVCT-33-2 Lab ID # 532-02326-062A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-13-14	Floor Tile-Beige
200-FLVCT-33-2 Lab ID # 532-02326-062B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Yellow
200-SINK-34-1 Lab ID # 532-02326-063	1-5% Chrysotile	1) None Detected 2) 95-99% Gyp, Bndr, Calc, Opq 3) _____ 4) May-13-14	Sink-Black
200-BBMAS-35-1 Lab ID # 532-02326-064A	None Detected	1) 10-20% Cellulose 2) 80-90% Bndr, Calc, Glue, Qtz 3) _____ 4) May-13-14	Baseboard-Tan
200-BBMAS-35-1 Lab ID # 532-02326-064B	None Detected	1) None Detected 2) 99-100% Glue 3) _____ 4) May-13-14	Mastic-Brown
200-CLGH-23-1 Lab ID # 532-02326-065A	None Detected	1) 1-5% Fiberglass 2) 95-99% Gyp, Other m.p. 3) _____ 4) May-13-14	Drywall-Off-White
200-CLGH-23-1 Lab ID # 532-02326-065B	None Detected	1) 1-5% Cellulose 2) 95-99% Calc, Gyp, Mica, Qtz 3) _____ 4) May-13-14	Texture-Off-White
Lab ID #		1) _____ 2) _____ 3) _____ 4) _____	
Lab ID #		1) _____ 2) _____ 3) _____ 4) _____	

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst



CHAIN OF CUSTODY FORM

Environmental, Inc.

650 Delancey St, #222, SF, CA 94107
334 19th St, Oakland, CA 94612
5777 W. Century Blvd, #1055, LA, CA 90045

Tel
415-8821675
510-6456200
310-2580460

Fax
415-9620736
415-9620736
415-9620736

CALL/TEXT with results:

@messaging.sprintpcs.com

Email rpt / COC & invoice:

CCODEMO

@sca-enviro.com

EMAIL HEADING: (Project #) - (Project Manager Initials) - (Site Name/Address) - (Date MMDD)

CITY OF SAN CORDILLERAS BAY F-11312 CC CORDILLERAS MENTAL HEALTH CTR, 5/2

LAB

A1EM LABS

RWC

Email Prj Mgr Name:

Chuck Siu Glenn Cass Christina Codemo

Accounting Data:

COURIER

UPA

LAB REP NOTIFIED:
AIRBILL/FLIGHT NO.:
EST ARRIVAL DATE:

Notification DATE/TIME:
Shipper REFERENCE I.D.
EST. ARRIVAL TIME:

Method Reference 7400 PCM AHERA TEM CARB-AHERA TEM 0.001 s/cc Detection Limit

Sample Media 25-37 mm 0.45 0.8 micron MCEF Bulk Water Wipe

RESULTS DUE: 6 DAYS AM / PM

CHAIN OF CUSTODY DATA:

Sending Info: 65 samples submitted by DL (SCA) on 5/2 at 4:00 P
Received by Lab: 65 samples received by RY on 05-05-14 A 11:09
Received by Analyst: samples received by on at

Table with columns: SAMPLE ID, LITERS, Results, SAMPLE ID, Ins/Blanks/Outs, SAMPLE ID. Contains handwritten entries for various sample types like PAINT, CONC, BRICK, PIPING, etc.

INSTRUCTIONS TO LAB (delete items not applicable AND circle items applicable):

- 1. Pickup requested:
2. Call SCA's contact to acknowledge receipt of samples.
3. Analyze samples by PCM only.
4. Analyze inside samples by PCM first; if any sample > 0.01 f/cc, contact SCA.
5. If all samples are < 0.01 f/cc, proceed with items 6, 7 or 8, as noted.
6. Analyze inside samples only; stop if Avg > 70 str/mm^2, contact SCA before analyzing outside or blanks.
7. Analyze all samples, including outside samples and blanks.
8. Do NOT analyze outside or blank samples.
9. Analyze by TEM only the inside air sample with the highest PCM result.
10. Serial analysis; stop at first positive (>1%); first trace (<0.1%); except sheetrock and plaster samples.
11. Analyze all bulk samples, unless otherwise indicated.

Table with columns: Report Number, Invoice Number, Supplies/Equipment, Qty. Includes handwritten numbers 325726 and 65.

Large table with columns for various testing methods (Units (each), PCM NIOSH 7400, PLM Bulk, etc.) and rows for different sample types (ASBESTOS, LEAD, etc.).

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 2 of 7

Contact: Christina Codemo	Samples Indicated: 52	Report No. 325758
Address: SCA Environmental	Reg. Samples Analyzed: 50	Date Submitted: May-07-14
650 Delancey Street, #222	Split Layers Analyzed: 12	Date Reported: May-16-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-CARMAS-24-3 Lab ID # 532-02327-007	None Detected	1) None Detected 2) 99-100% Glue 3) 4) May-15-14	Mastic-Yellow
200-FLCTG-36-1 Lab ID # 532-02327-008A	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-15-14	Paint-Green
200-FLCTG-36-1 Lab ID # 532-02327-008B	None Detected	1) None Detected 2) 99-100% Tar 3) 4) May-15-14	Asphalt-Grey
200-FLCTG-36-2 Lab ID # 532-02327-009A	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-15-14	Paint-Purple
200-FLCTG-36-2 Lab ID # 532-02327-009B	None Detected	1) None Detected 2) 99-100% Tar, Calc 3) 4) May-15-14	Asphalt-Grey
200-LTWTCONC-37-1 Lab ID # 532-02327-010	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-15-14	Concrete-Grey
200-LTWTCONC-37-2 Lab ID # 532-02327-011	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) 4) May-15-14	Concrete-Grey
200-PENMAS-38-1 Lab ID # 532-02327-012A	1-5% Chrysotile	1) None Detected 2) 95-99% Tar, Bndr, Calc, Other m.p. 3) 4) May-15-14	Mastic-Black
200-PENMAS-38-1 Lab ID # 532-02327-012B	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) 4) May-15-14	Paint-Silver
200-PENMAS-38-2 Lab ID # 532-02327-013	None Detected	1) 1-5% Cellulose 2) 95-99% Glue, Opq, Calc, Other m.p. 3) 4) May-16-14	Paint-Silver

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 3 of 7

Contact: Christina Codemo	Samples Indicated: 52	Report No. 325758
Address: SCA Environmental	Reg. Samples Analyzed: 50	Date Submitted: May-07-14
650 Delancey Street, #222	Split Layers Analyzed: 12	Date Reported: May-16-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-PENMAS-38-3 Lab ID # 532-02327-014	None Detected	1) 1-5% Cellulose 2) 95-99% Glue, Opq, Calc, Other m.p. 3) _____ 4) May-16-14	Paint-Silver
200-PUTTY-39-1 Lab ID # 532-02327-015	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Putty-Off-White
200-PUTTY-39-2 Lab ID # 532-02327-016	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Putty-Off-White
200-PUTTY-39-3 Lab ID # 532-02327-017A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Putty-Off-White
200-PUTTY-39-3 Lab ID # 532-02327-017B	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Paint-Brown
200-RFAG-40-1 Lab ID # 532-02327-018	None Detected	1) 10-20% Cellulose, Fiberglass 2) 80-90% Calc, Tar, Qtz, Opq 3) _____ 4) May-15-14	Roofing Felt/Tar-Black
200-RFAG-40-2 Lab ID # 532-02327-019	None Detected	1) 10-20% Cellulose, Fiberglass 2) 80-90% Calc, Tar, Qtz, Opq 3) _____ 4) May-15-14	Roofing Felt/Tar-Black
200-RFAG-40-3 Lab ID # 532-02327-020	None Detected	1) 10-20% Cellulose, Fiberglass 2) 80-90% Calc, Tar, Qtz, Opq 3) _____ 4) May-15-14	Roofing Felt/Tar-Black
200-RFMAS-41-1 Lab ID # 532-02327-021	None Detected	1) None Detected 2) 99-100% Tar, Opq, Qtz, Other m.p. 3) _____ 4) May-15-14	Roof Mastic-Black
200-RFMAS-41-2 Lab ID # 532-02327-022	None Detected	1) None Detected 2) 99-100% Tar, Opq, Qtz, Other m.p. 3) _____ 4) May-15-14	Roof Mastic-Black

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 4 of 7

Contact: Christina Codemo	Samples Indicated: 52	Report No. 325758
Address: SCA Environmental	Reg. Samples Analyzed: 50	Date Submitted: May-07-14
650 Delancey Street, #222	Split Layers Analyzed: 12	Date Reported: May-16-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC F11312 - CC	

SAMPLE ID	ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-RFMAS-41-3 Lab ID # 532-02327-023	None Detected	1) None Detected 2) 99-100% Tar, Opq, Qtz, Other m.p. 3) _____ 4) May-15-14	Roof Mastic-Black
200-RFCTG-42-1 Lab ID # 532-02327-024A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Caulk-Tan
200-RFCTG-42-1 Lab ID # 532-02327-024B	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Caulk-Off-White
200-RFCTG-42-2 Lab ID # 532-02327-025A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Caulk-Tan
200-RFCTG-42-2 Lab ID # 532-02327-025B	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Caulk-Off-White
200-RFCTG-42-3 Lab ID # 532-02327-026A	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Caulk-Tan
200-RFCTG-42-3 Lab ID # 532-02327-026B	None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Caulk-Off-White
200-ASPHALT-43-1 Lab ID # 532-02327-028	1-5% Chrysotile	1) None Detected 2) 95-99% Tar, Other m.p. 3) _____ 4) May-15-14	Asphalt-Black
200-ASPHALT-43-2 Lab ID # 532-02327-029	Not Analyzed	1) _____ 2) _____ 3) _____ 4) May-15-14	
200-ASPHALT-43-3 Lab ID # 532-02327-030	Not Analyzed	1) _____ 2) _____ 3) _____ 4) May-15-14	

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst Jo Ann Hester

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 5 of 7

Contact: Christina Codemo	Samples Indicated: 52	Report No. 325758
Address: SCA Environmental	Reg. Samples Analyzed: 50	Date Submitted: May-07-14
650 Delancey Street, #222	Split Layers Analyzed: 12	Date Reported: May-16-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC F11312 - CC	

SAMPLE ID	% ASBESTOS TYPE	OTHER DATA	DESCRIPTION
		1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD <hr/> LAB
200-CONC-44-1 Lab ID # 532-02327-031	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Concrete-Grey
200-CONC-44-2 Lab ID # 532-02327-032	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Concrete-Grey
200-CONC-44-3 Lab ID # 532-02327-033	None Detected	1) None Detected 2) 99-100% Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Concrete-Grey
200-TRANSITE-45-1 Lab ID # 532-02327-034	30-40% 1-5% Chrysotile Crocidolite	1) None Detected 2) 55-69% Calc 3) _____ 4) May-15-14	Transite-Grey
200-PAINT-46-1 Lab ID # 532-02327-035	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Paint-Beige
200-PAINT-46-2 Lab ID # 532-02327-035B	None Detected	1) 1-5% Cellulose 2) 95-99% Calc, Gyp, Mica, Qtz 3) _____ 4) May-15-14	Texture-White
200-PAINT-46-2 Lab ID # 532-02327-036	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Paint-Beige
200-PAINT-46-3 Lab ID # 532-02327-037	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Paint-Beige
200-PAINT-46-4 Lab ID # 532-02327-038	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Paint-Beige
200-PAINT-47-1 Lab ID # 532-02327-039	None Detected	1) None Detected 2) 99-100% Glue, Qtz, Opq, Other m.p. 3) _____ 4) May-15-14	Paint-Green

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Page: 7 of 7

Contact: Christina Codemo	Samples Indicated: 52	Report No. 325758
Address: SCA Environmental	Reg. Samples Analyzed: 50	Date Submitted: May-07-14
650 Delancey Street, #222	Split Layers Analyzed: 12	Date Reported: May-16-14
San Francisco, CA 94107	Job Site / No. Cordilleras Mental Health Center, 200 Edmonds Rd RWC F11312 - CC	

SAMPLE ID	%	ASBESTOS TYPE	OTHER DATA	DESCRIPTION
			1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	FIELD LAB
200-CAULK-53-1 Lab ID # 532-02327-050	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 Lab ID # 532-02327-051		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 Lab ID # 532-02327-052		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 Lab ID # 532-02327-052		None Detected	1) None Detected 2) 99-100% Calc, Bndr 3) _____ 4) May-15-14	Putty-Beige
Lab ID #			1) _____ 2) _____ 3) _____ 4) _____	
Lab ID #			1) _____ 2) _____ 3) _____ 4) _____	
Lab ID #			1) _____ 2) _____ 3) _____ 4) _____	
Lab ID #			1) _____ 2) _____ 3) _____ 4) _____	
Lab ID #			1) _____ 2) _____ 3) _____ 4) _____	

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Analyst Jo Ann Hester



CHAIN OF CUSTODY FORM

650 Delancey St, #222, SF, CA 94107
334 19th St, Oakland, CA 94612
5777 W. Century Blvd, #1055, L.A, CA 90045

Tel 415-8821675
510-6456200
310-2580460
Fax 415-9620736
415-9620736
415-9620736

CALL/TEXT with results:

@messaging.sprintpcs.com
Email rpt / COC & invoice: @sca-enviro.com

EMAIL HEADING: (Project #) - (Project Manager Initials) - (Site Name/Address) - (Date MMDD)

CITY OF SAN CORDILLERAS GRY F-11312 CC CORDILLERAS MENTAL HEALTH CTR, 5/5

LAB A TEM LABS 200 EDMONDS RD, RHC

COURIER LAB REP NOTIFIED: AIRBILL/FLIGHT NO.: EST ARRIVAL DATE: Method Reference 7400 PCM AHERA TEM CARB-AHERA TEM 0.001 s/cc Detection Limit Sample Media 25 37 mm 0.45 0.8 micron MCEF Bulk Water Wipe

RESULTS DUE: 6 DAYS AM / PM

CHAIN OF CUSTODY DATA: Sending Info 52 samples submitted by DL (SCA) on 5/6 at 11:00A Received by Lab: 52 samples received by PC on 5/7 at 8 am Received by Analyst: samples received by on at

Table with columns: SAMPLE ID, LITERS, Results, SAMPLE ID, Ins/Blanks/Outs. Rows include: 200-BRICK-6-2, -PAINT-7-3, -WLPL-17-8,9, -CLPL-18-6,7, -CARMA-24-3, -FLCTG.-36-1,2, -LTLTCONC-37-1,2, -REMA-38-1,2,3, -PUTTY-39-1,2,3, -REAG-40-1,2,3, -REMA-41-1,2,3, -RFTG-42-1,2,3, -ASPHALT-43-1,2,3, -CONC-44-1,2,3, -TRANSLITE-45-1, -PAINT-46-1,2,3,4

- INSTRUCTIONS TO LAB (delete items not applicable AND circle items applicable): 1. Pickup requested: 11. Contact: Time of Call: 2. Call SCA's contact to acknowledge receipt of samples. 3. Analyze samples by PCM only. 4. Analyze inside samples by PCM first; if any sample >0.01 f/cc, contact SCA. 5. If all samples are <0.01 f/cc, proceed with items 6, 7 or 8, as noted. 6. Analyze inside samples only; stop if Avg >70 cr/mm^2, contact SCA before analyzing outsides or blanks. 7. Analyze all samples, including outside samples and blanks. 8. Do NOT analyze outside or blank samples. 9. Analyze by TEM only the inside air sample with the highest PCM result. 10. Serial analysis; stop at first positive (>1%); first trace (<0.1%); except sheetrock and plaster samples. 11. Analyze all bulk samples, unless otherwise indicated.

Report Number: 325758 Invoice Number: 325758 Supplies/Equipment: Hi-Vol (3040), Lo-Vol (3020), TEM / Pb cassettes (3520), PCM cassettes (3500), Bulk sampling supply (3710) Qty: 52

Large table with columns: ASBESTOS, LEAD, and various detection limits (>40, >6 hours, 24 hours, 48 hours, 3 to 5 days, >6 days). Rows include: Units (each), PCM NIOSH 7400, PLM Bulk, CARB 435 (400 Pt Cf) w/ prep, PLM Std Point Count 400, TEM AHERA, CARB AHERA 35-40 grid openings, CARB AHERA 10-15 grid openings.

Appendix D

PCB & Lead Laboratory Results



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1405113

Report Created for: SCA Enviromental, Inc.
334 19th Street
Oakland, CA 94612

Project Contact: Christina Codemo
Project P.O.:
Project Name: #F-11312; City of SM Cordilleras Svy

Project Received: 05/05/2014

Analytical Report reviewed & approved for release on 05/08/2014 by:

*Question about
your data?*

[Click here to email
McC Campbell](#)

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: SCA Enviromental, Inc.
Project: #F-11312; City of SM Cordilleras Svy
WorkOrder: 1405113

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	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.
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence

Analytical Qualifier

S	spike recovery outside accepted recovery limits
a3	sample diluted due to high organic content.
a4	the reporting limits were raised due to the sample's matrix prohibiting a full volume extraction.
a7	reporting limit raised due to limited sample amount
c1	surrogate recovery outside of the control limits due to the dilution of the sample.
h4	sulfuric acid permanganate (EPA 3665) cleanup

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD was out of acceptance criteria; LCS validated the prep batch.
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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: SW3550B
Analytical Method: SW8082
Unit: mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-CAULK-26	1405113-008A	Solid	05/02/2014	GC5A	90034

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Aroclor1016	ND	10	20	05/06/2014 17:11
Aroclor1221	ND	10	20	05/06/2014 17:11
Aroclor1232	ND	10	20	05/06/2014 17:11
Aroclor1242	ND	10	20	05/06/2014 17:11
Aroclor1248	ND	10	20	05/06/2014 17:11
Aroclor1254	ND	10	20	05/06/2014 17:11
Aroclor1260	ND	10	20	05/06/2014 17:11
PCBs, total	ND	10	20	05/06/2014 17:11

<u>Surrogates</u>	<u>REC (%)</u>	<u>Qualifiers</u>	<u>Limits</u>	Analytical Comments: a3,a4,c1,h4
Decachlorobiphenyl	171	S	70-130	05/06/2014 17:11

200-PUTTY-30	1405113-009A	Solid	05/02/2014	GC5A	90034
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<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Aroclor1016	ND	0.69	1	05/06/2014 17:49
Aroclor1221	ND	0.69	1	05/06/2014 17:49
Aroclor1232	ND	0.69	1	05/06/2014 17:49
Aroclor1242	ND	0.69	1	05/06/2014 17:49
Aroclor1248	ND	0.69	1	05/06/2014 17:49
Aroclor1254	ND	0.69	1	05/06/2014 17:49
Aroclor1260	ND	0.69	1	05/06/2014 17:49
PCBs, total	ND	0.69	1	05/06/2014 17:49

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	Analytical Comments: a7,h4
Decachlorobiphenyl	128	70-130	05/06/2014 17:49



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

Lead

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-OW-1-1	1405113-001A	Solid/TOTAL	05/02/2014	ICP-JY	90033
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	1200		6.0	1	05/07/2014 13:52
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	108		70-130		05/07/2014 13:52
200-OW-1-2	1405113-002A	Solid/TOTAL	05/02/2014	ICP-JY	90033
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	1700		5.0	1	05/07/2014 13:54
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	105		70-130		05/07/2014 13:54
200-GY-2-1	1405113-003A	Solid/TOTAL	05/02/2014	ICP-JY	90033
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	970		8.1	1	05/07/2014 13:57
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	107		70-130		05/07/2014 13:57
200-GR-3-1	1405113-004A	Solid/TOTAL	05/02/2014	ICP-JY	90033
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	90		5.1	1	05/07/2014 13:59
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	99		70-130		05/07/2014 13:59
200-SI-4-1	1405113-005A	Solid/TOTAL	05/02/2014	ICP-JY	90033
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	16,000		13	1	05/07/2014 14:01
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	104		70-130		05/07/2014 14:01

(Cont.)



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

Lead

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-GY-5-1	1405113-006A	Solid/TOTAL	05/02/2014	ICP-JY	90033

Analytes	Result	RL	DF	Date Analyzed
Lead	680	9.3	1	05/07/2014 14:03

Surrogates	REC (%)	Limits
Tb 350.917	102	70-130

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-GY-6-1	1405113-007A	Solid/TOTAL	05/02/2014	ICP-JY	90033

Analytes	Result	RL	DF	Date Analyzed
Lead	350,000	230	10	05/07/2014 12:12

Surrogates	REC (%)	Limits
Tb 350.917	107	70-130



Quality Control Report

Client: SCA Enviromental, Inc.
Date Prepared: 5/5/14
Date Analyzed: 5/6/14
Instrument: GC5A
Matrix: Soil
Project: #F-11312; City of SM Cordilleras Svy

WorkOrder: 1405113
BatchID: 90034
Extraction Method: SW3550B
Analytical Method: SW8082
Unit: mg/kg
Sample ID: MB/LCS-90034
 1405147-005AMS/MSD

QC Summary Report for SW8082

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Aroclor1016	ND	-	0.050	-	-	-	-
Aroclor1221	ND	-	0.050	-	-	-	-
Aroclor1232	ND	-	0.050	-	-	-	-
Aroclor1242	ND	-	0.050	-	-	-	-
Aroclor1248	ND	-	0.050	-	-	-	-
Aroclor1254	ND	-	0.050	-	-	-	-
Aroclor1260	ND	0.145	0.050	0.15	-	96.4	70-130
PCBs, total	ND	-	0.050	-	-	-	-

Surrogate Recovery

Decachlorobiphenyl	0.0631	0.0591		0.050	126	118	70-130
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Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aroclor1260	0.203	0.214	0.15	ND	135,F1	142,F1	70-130	5.20	30

Surrogate Recovery

Decachlorobiphenyl	0.0650	0.0693	0.050		130	139	70-130	6.32	30
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Quality Control Report

Client: SCA Enviromental, Inc.
Date Prepared: 5/5/14
Date Analyzed: 5/6/14
Instrument: ICP-JY
Matrix: Soil
Project: #F-11312; City of SM Cordilleras Svy

WorkOrder: 1405113
BatchID: 90033
Extraction Method: SW3050B
Analytical Method: SW6010B
Unit: mg/Kg
Sample ID: MB/LCS-90033
 1404A99-016AMS/MSD

QC Summary Report for SW6010B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	48.1	5.0	50	-	96.2	75-125
Surrogate Recovery							
Tb 350.917	511	509		500	102	102	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	62.6	62.3	50	10.25	105	104	75-125	4.30	25
Surrogate Recovery									
Tb 350.917	508	500	500		101	100	70-130	5.83	20

1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1405113

ClientCode: SCAO

WaterTrax
 WriteOn
 EDF
 Excel
 EQulS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:
 Christina Codemo
 SCA Enviromental, Inc.
 334 19th Street
 Oakland, CA 94612
 (510) 645-6200 FAX: (510) 839- 6200

Email: ccodemo@sca-enviro.com
 cc/3rd Party:
 PO:
 ProjectNo: #F-11312; City of SM Cordilleras Svy

Bill to:
 Accounts Payable
 SCA Enviromental, 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

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1405113-001	200-OW-1-1	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-002	200-OW-1-2	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-003	200-GY-2-1	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-004	200-GR-3-1	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-005	200-SI-4-1	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-006	200-GY-5-1	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-007	200-GY-6-1	Solid	5/2/2014	<input type="checkbox"/>		A											
1405113-008	200-CAULK-26	Solid	5/2/2014	<input type="checkbox"/>	A												
1405113-009	200-PUTTY-30	Solid	5/2/2014	<input type="checkbox"/>	A												

Test Legend:

1	8082A_PCB_Solid	2	PB_S	3		4		5	
6		7		8		9		10	
11		12							

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 ENVIROMENTAL, INC.

QC Level: LEVEL 2

Work Order: 1405113

Project: #F-11312; City of SM Cordilleras Svy

Client Contact: Christina Codemo

Date Received: 5/5/2014

Comments:

Contact's Email: ccodemo@sca-enviro.com

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Lab ID	Client ID	Matrix	Test Name	Number of Containers	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1405113-001A	200-OW-1-1	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-002A	200-OW-1-2	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-003A	200-GY-2-1	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-004A	200-GR-3-1	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-005A	200-SI-4-1	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-006A	200-GY-5-1	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-007A	200-GY-6-1	Solid	SW6010B (Lead)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-008A	200-CAULK-26	Solid	SW8082 (PCBs Only)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	
1405113-009A	200-PUTTY-30	Solid	SW8082 (PCBs Only)	1	Small Yellow Plasic	<input type="checkbox"/>	5/2/2014	5 days		<input type="checkbox"/>	

*** 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 Plasic =



Sample Receipt Checklist

Client Name: **SCA Enviromental, Inc.** Date and Time Received: **5/5/2014 9:53:46 AM**
 Project Name: **#F-11312; City of SM Cordilleras Svy** LogIn Reviewed by: **Maria Venegas**
 WorkOrder N°: **1405113** Matrix: Solid Carrier: UPS

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.

 Comments:



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1405194

Report Created for: SCA Enviromental, Inc.
334 19th Street
Oakland, CA 94612

Project Contact: Christina Codemo

Project P.O.:

Project Name: #F-11312; CT of SM Cordilleras SVY

Project Received: 05/06/2014

Analytical Report reviewed & approved for release on 05/08/2014 by:

*Question about
your data?*

[Click here to email
McC Campbell](#)

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: SCA Enviromental, Inc.
Project: #F-11312; CT of SM Cordilleras SVY
WorkOrder: 1405194

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	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.
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence

Analytical Qualifier

S	spike recovery outside accepted recovery limits
a7	reporting limit raised due to limited sample amount
h4	sulfuric acid permanganate (EPA 3665) cleanup

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD was out of acceptance criteria; LCS validated the prep batch.
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Analytical Report

Client: SCA Enviromental, Inc.
Project: #F-11312; CT of SM Cordilleras SVY
Date Received: 5/6/14 17:35
Date Prepared: 5/6/14

WorkOrder: 1405194
Extraction Method: SW3550B
Analytical Method: SW8082
Unit: mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-Putty-39	1405194-010A	Solid	05/05/2014	GC5A	90117

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Aroclor1016	ND	0.050	1	05/06/2014 22:48
Aroclor1221	ND	0.050	1	05/06/2014 22:48
Aroclor1232	ND	0.050	1	05/06/2014 22:48
Aroclor1242	ND	0.050	1	05/06/2014 22:48
Aroclor1248	ND	0.050	1	05/06/2014 22:48
Aroclor1254	ND	0.050	1	05/06/2014 22:48
Aroclor1260	ND	0.050	1	05/06/2014 22:48
PCBs, total	ND	0.050	1	05/06/2014 22:48
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Analytical Comments:</u> h4	
Decachlorobiphenyl	129	70-130	05/06/2014 22:48	

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-Caulk-53	1405194-011A	Solid	05/05/2014	GC5A	90117

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Aroclor1016	ND	0.050	1	05/06/2014 23:26
Aroclor1221	ND	0.050	1	05/06/2014 23:26
Aroclor1232	ND	0.050	1	05/06/2014 23:26
Aroclor1242	ND	0.050	1	05/06/2014 23:26
Aroclor1248	ND	0.050	1	05/06/2014 23:26
Aroclor1254	ND	0.050	1	05/06/2014 23:26
Aroclor1260	ND	0.050	1	05/06/2014 23:26
PCBs, total	ND	0.050	1	05/06/2014 23:26
<u>Surrogates</u>	<u>REC (%)</u>	<u>Qualifiers</u>	<u>Limits</u>	<u>Analytical Comments:</u> h4
Decachlorobiphenyl	146	S	70-130	05/06/2014 23:26



Analytical Report

Client: SCA Enviromental, Inc.
Project: #F-11312; CT of SM Cordilleras 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

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-GY-6-2	1405194-001A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	1000		5.6	1	05/07/2014 11:47
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	98		70-130		05/07/2014 11:47
200-BE-7-1	1405194-002A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	830		5.0	1	05/07/2014 11:54
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	99		70-130		05/07/2014 11:54
200-BE-7-2	1405194-003A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	1900		5.0	1	05/07/2014 11:57
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	109		70-130		05/07/2014 11:57
200-BE-7-3	1405194-004A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	ND		250	1	05/07/2014 11:59
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>	Analytical Comments: a7	
Tb 350.917	108		70-130		05/07/2014 11:59
200-BE-7-4	1405194-005A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	330		15	1	05/07/2014 12:01
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	106		70-130		05/07/2014 12:01

(Cont.)



Analytical Report

Client: SCA Enviromental, Inc.
Project: #F-11312; CT of SM Cordilleras 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

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
200-GR-8-1	1405194-006A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	5.6		5.0	1	05/07/2014 12:03
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	104		70-130		05/07/2014 12:03
200-GR-9-1	1405194-007A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	25		7.7	1	05/07/2014 12:05
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	108		70-130		05/07/2014 12:05
200-BR-10-1	1405194-008A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	220		100	1	05/07/2014 12:07
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	107		70-130		05/07/2014 12:07
200-RD-11-1	1405194-009A	Solid/TOTAL	05/05/2014	ICP-JY	90113
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	26		23	1	05/07/2014 12:09
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	104		70-130		05/07/2014 12:09



Quality Control Report

Client: SCA Enviromental, Inc.	WorkOrder: 1405194
Date Prepared: 5/6/14	BatchID: 90113
Date Analyzed: 5/7/14	Extraction Method: SW3050B
Instrument: ICP-JY	Analytical Method: SW6010B
Matrix: Soil	Unit: mg/Kg
Project: #F-11312; CT of SM Cordilleras SVY	Sample ID: MB/LCS-90113 1405184-006AMS/MSD

QC Summary Report for SW6010B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	50.5	5.0	50	-	101	75-125

Surrogate Recovery

Tb 350.917	541	529		500	108	106	70-130
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Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	NR	NR	50	100.5	NR	NR	75-125	NR	25

Surrogate Recovery

Tb 350.917	531	498	500		106	100	70-130	6.41	20
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(Cont.)



Quality Control Report

Client: SCA Environmental, Inc.
Date Prepared: 5/6/14
Date Analyzed: 5/7/14
Instrument: GC5A
Matrix: Soil
Project: #F-11312; CT of SM Cordilleras SVY

WorkOrder: 1405194
BatchID: 90117
Extraction Method: SW3550B
Analytical Method: SW8082
Unit: mg/kg
Sample ID: MB/LCS-90117
 1405217-004AMS/MSD

QC Summary Report for SW8082

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Aroclor1016	ND	-	0.050	-	-	-	-
Aroclor1221	ND	-	0.050	-	-	-	-
Aroclor1232	ND	-	0.050	-	-	-	-
Aroclor1242	ND	-	0.050	-	-	-	-
Aroclor1248	ND	-	0.050	-	-	-	-
Aroclor1254	ND	-	0.050	-	-	-	-
Aroclor1260	ND	0.154	0.050	0.15	-	102	70-130
PCBs, total	ND	-	0.050	-	-	-	-

Surrogate Recovery

Decachlorobiphenyl	0.0626	0.0617		0.050	125	123	70-130
--------------------	--------	--------	--	-------	-----	-----	--------

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aroclor1260	0.206	0.227	0.15	ND	137,F1	151,F1	70-130	9.83	30

Surrogate Recovery

Decachlorobiphenyl	0.0643	0.0650	0.050		129	130	70-130	1.04	30
--------------------	--------	--------	-------	--	-----	-----	--------	------	----



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1405194

ClientCode: SCAO

WaterTrax
 WriteOn
 EDF
 Excel
 EQuIS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Christina Codemo
SCA Enviromental, Inc.
334 19th Street
Oakland, CA 94612
(510) 645-6200 FAX: (510) 839- 6200

Email: ccodemo@sca-enviro.com
cc/3rd Party:
PO:
ProjectNo: #F-11312; CT of SM Cordilleras SVY

Bill to:

Accounts Payable
SCA Enviromental, Inc.
334 19th Street
Oakland, CA 94612
emuisse@sca-ic.com

Requested TAT: 5 days

Date Received: 05/06/2014

Date Printed: 05/06/2014

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1405194-001	200-GY-6-2	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-002	200-BE-7-1	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-003	200-BE-7-2	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-004	200-BE-7-3	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-005	200-BE-7-4	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-006	200-GR-8-1	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-007	200-GR-9-1	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-008	200-BR-10-1	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-009	200-RD-11-1	Solid	5/5/2014	<input type="checkbox"/>		A											
1405194-010	200-Putty-39	Solid	5/5/2014	<input type="checkbox"/>	A												
1405194-011	200-Caulk-53	Solid	5/5/2014	<input type="checkbox"/>	A												

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.

QC Level: LEVEL 2

Work Order: 1405194

Project: #F-11312; CT of SM Cordilleras SVY

Client Contact: Christina Codemo

Date Received: 5/6/2014

Comments:

Contact's Email: ccodemo@sca-enviro.com

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Lab ID	Client ID	Matrix	Test Name	Number of Containers	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1405194-001A	200-GY-6-2	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-002A	200-BE-7-1	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-003A	200-BE-7-2	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-004A	200-BE-7-3	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-005A	200-BE-7-4	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-006A	200-GR-8-1	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-007A	200-GR-9-1	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-008A	200-BR-10-1	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-009A	200-RD-11-1	Solid	SW6010B (Lead)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-010A	200-Putty-39	Solid	SW8082 (PCBs Only)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	
1405194-011A	200-Caulk-53	Solid	SW8082 (PCBs Only)	1	Small Yellow Plastic Container	<input type="checkbox"/>	5/5/2014	5 days		<input type="checkbox"/>	

*** 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 =



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

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.

 Comments:



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1405A20

Report Created for: SCA Environmental, Inc.
650 Delancey Street, #222
San Francisco, CA 94107

Project Contact: Christina Codemo
Project P.O.:
Project Name: #F11312.02; Cordilleras Survey

Project Received: 05/28/2014

Analytical Report reviewed & approved for release on 05/29/2014 by:

Question about
your data?

[Click here to email
McC Campbell](#)

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

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	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.
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence



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

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
FLVCT-16	1405A20-001A	Solid/TOTAL	05/28/2014	ICP-JY	90870
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Lead	97		12	1	05/29/2014 10:41
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Tb 350.917	91		70-130		05/29/2014 10:41



Quality Control Report

Client: SCA Environmental, Inc.
Date Prepared: 5/28/14
Date Analyzed: 5/29/14
Instrument: ICP-JY
Matrix: Soil
Project: #F11312.02; Cordilleras Survey

WorkOrder: 1405A20
BatchID: 90870
Extraction Method: SW3050B
Analytical Method: SW6010B
Unit: mg/Kg
Sample ID: MB/LCS-90870

QC Summary Report for SW6010B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	48.2	5.0	50	-	96.3	75-125
Surrogate Recovery							
Tb 350.917	492	474		500	98	95	70-130

1534 Willow Pass Rd
 Pittsburg, CA 94565-1701
 (925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1405A20

ClientCode: SCAF

WaterTrax
 WriteOn
 EDF
 Excel
 EQulS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:
 Christina Codemo
 SCA Environmental, Inc.
 650 Delancey Street, #222
 San Francisco, CA 94107
 (510) 459-8233 FAX: (415) 703-0701

Email: ccodemo@sca-enviro.com
 cc/3rd Party:
 PO:
 ProjectNo: #F11312.02; Cordilleras Survey

Bill to:
 Accounts Payable
 SCA Environmental, Inc.
 650 Delancey Street, #222
 San Francisco, CA 94107
 emuise@sca-ic.com

Requested TAT: 1 day

Date Received: 05/28/2014
Date Printed: 05/28/2014

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1405A20-001	FLVCT-16	Solid	5/28/2014	<input type="checkbox"/>	A												

Test Legend:

1	PB_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

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.



WORK ORDER SUMMARY

Client Name: SCA ENVIRONMENTAL, INC.

QC Level: LEVEL 2

Work Order: 1405A20

Project: #F11312.02; Cordilleras Survey

Client Contact: Christina Codemo

Date Received: 5/28/2014

Comments: 1 Day ASAP Rush

Contact's Email: ccodemo@sca-enviro.com

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Lab ID	Client ID	Matrix	Test Name	Number of Containers	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1405A20-001A	FLVCT-16	Solid	TCLP Extraction	3	Yellow Plastic	<input type="checkbox"/>	5/28/2014	1 day*		<input type="checkbox"/>	
			STLC Extraction			<input type="checkbox"/>		1 day*		<input type="checkbox"/>	
			SW6010B (Lead)			<input type="checkbox"/>		1 day		<input type="checkbox"/>	

*** 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 =



Sample Receipt Checklist

Client Name: **SCA Environmental, Inc.** Date and Time Received: **5/28/2014 11:43:13 AM**
 Project Name: **#F11312.02; Cordilleras Survey** LogIn Reviewed by: **Maria Venegas**
 WorkOrder N°: **1405A20** Matrix: Solid Carrier: Courier

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.

 Comments:



McC Campbell Analytical, Inc.

"When Quality Counts"

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.:
Project Name: #F11312.02; Cordilleras Survey

Project Received: 05/28/2014

Analytical Report reviewed & approved for release on 06/02/2014 by:

Question about
your data?

[Click here to email
McC Campbell](#)

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

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	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.
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence



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: CA Title 22
Analytical Method: SW6010B
Unit: mg/L

Lead

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
FLVCT-16	1405A20-001A	Solid/WET	05/28/2014	ICP-JY	90848

Analytes	Result	RL	DF	Date Analyzed
Lead	0.56	0.20	1	06/02/2014 11:03



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

Lead

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
FLVCT-16	1405A20-001A	Solid/TCLP	05/28/2014	ICP-JY	90849

Analytes	Result	RL	DF	Date Analyzed
Lead	ND	0.20	1	06/02/2014 11:05



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

QC Summary Report for SW6010B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	1.10	0.20	1	-	110	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	1.27	1.19	1	0.32	95.4	87	70-130	6.83	30



Quality Control Report

Client: SCA Environmental, Inc.
Date Prepared: 5/27/14
Date Analyzed: 5/30/14
Instrument: ICP-JY
Matrix: Soil
Project: #F11312.02; Cordilleras Survey

WorkOrder: 1405A20
BatchID: 90849
Extraction Method: SW1311/SW3050B
Analytical Method: SW6010B
Unit: mg/L
Sample ID: MB/LCS-90849
 1405517-002AMS/MSD

QC Summary Report for SW6010B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	1.09	0.20	1	-	109	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	1.12	0.996	1	ND	112	99.6	70-130	11.7	30



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1405A20 A **ClientCode: SCAF**

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:
Christina Codemo
SCA Environmental, Inc.
650 Delancey Street, #222
San Francisco, CA 94107
(510) 459-8233 FAX: (415) 703-0701

Email: ccodemo@sca-enviro.com
 cc/3rd Party:
PO:
 ProjectNo: #F11312.02; Cordilleras Survey

Bill to:
Accounts Payable
SCA Environmental, Inc.
650 Delancey Street, #222
San Francisco, CA 94107
emuisse@sca-ic.com

Requested TAT: 1 day

Date Received: 05/28/2014
Date Add-On: 05/29/2014
Date Printed: 06/02/2014

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1405A20-001	FLVCT-16	Solid	5/28/2014	<input type="checkbox"/>	A	A											

Test Legend:

1	STLC_PB_S	2	TCLP_PB_S	3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

Add-On Prepared By: Maria Venegas

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

Client Name: SCA ENVIRONMENTAL, INC.

QC Level: LEVEL 2

Work Order: 1405A20

Project: #F11312.02; Cordilleras Survey

Client Contact: Christina Codemo

Date Received: 5/28/2014

Comments: 1 Day ASAP Rush STLC and TCLP added 5/29/14 RTAT

Contact's Email: ccodemo@sca-enviro.com

Date Add-On: 5/29/2014

Lab ID	Client ID	Matrix	Test Name	Number of Containers	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1405A20-001A	FLVCT-16	Solid	SW6010B (Lead) (TCLP)	3	Yellow Plastic	5/28/2014	1 day*		<input type="checkbox"/>	
			SW6010B (Lead) (STLC)				1 day*		<input type="checkbox"/>	

*** 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 =

Appendix E

Abatement Cost Estimates

**ABATEMENT COST ESTIMATE: CORDILLERAS FACILITY, REDWOOD CITY, CA
SUMMARY**

Building	Total Abatement Cost Estimate	Positive Asbestos	Assumed Asbestos	Other Hazmats	Consultant Monitoring
Cordilleras Facility	\$1,935,094	\$439,074	\$1,143,816	\$29,689	\$322,516
Water Tower	\$10,800	\$0	\$0	\$9,000	\$1,800
Pump House	\$11,088	\$0	\$8,040	\$1,800	\$1,848
Total	\$1,956,982	\$439,074	\$1,151,856	\$40,489	\$326,164
% 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: Positive, Negative, Trace, Assumed	Units	TOTAL +/- 15%	Estimated Abatement Cost per unit	Total Estimated Cost
ASBESTOS						
PISTM-3	off-white insulation with yellow-painted canvas jacket on steam pipes	Pos	LF	5310	\$19.20	\$101,952.00
FLVCT-16	9"x9" tan with brown and white streaks vinyl floor tile (+) with black mastic (-)		SF	32160	\$1.80	\$57,888.00
PIDHW-20	off-white insulation with canvas jacket on pipes		LF	4260	\$19.20	\$81,792.00
HINS-21	off-white insulation with canvas jacket on HVAC ducts		LF	3450	\$19.20	\$66,240.00
CAULK-26	grey caulk between brick wall and window frame		LF	100	\$1.80	\$180.00
FLVCS-27	grey speckled vinyl floor sheeting (-) w/ yellow glue (-) over FLVCT-16 (+) & mastic (-)		SF	150	\$3.00	\$450.00
SINK-34	black stainless steel sink undercoating		EA	2	\$30.00	\$60.00
PENMAS-38	black mastic/coating (+) with silver paint (-) on roofing penetrations		LF	5	\$2.40	\$12.00
ASPHALT-43	black exterior asphalt and assumed aggregate base (destructive coring required to confirm presence of aggregate and asbestos content)		SF	27000	\$4.80	\$129,600.00
TRANSITE-45	abandoned grey transite pipes (along the southwest ext of the building on the first floor level)		LF	120	\$6.00	\$720.00
CAULK-53	beige exterior caulk between brick wall and window frame		LF	100	\$1.80	\$180.00
BOILER-AAA1	boiler insulation, gasket, flues, bricks, etc. associated with Bryan Gas Boilers (2x): Models AB 250-5-150/54-FDG)		EA	2	\$12,000.00	\$24,000.00
TERRAZO-AAA2	beige/black terrazzo flooring		SF	3995	\$12.00	\$47,940.00
FIREHOSES-AAA	fire hoses		EA	4	\$30.00	\$120.00
FIREDOORS-AAA	fire doors with assumed asbestos-core insulation		EA	24	\$30.00	\$720.00
VAPBAR-AAA16	Exterior vapor barrier/waterproofing membrane on perimeter basement walls		SF	6000	\$30.00	\$180,000.00
WLCER-AAA4	4"x4" grey/yellow/blue/pink ceramic wall tile with associated grout & mortar		SF	6290	\$8.40	\$52,836.00
FLEX-AAA5	black flex duct connectors	EA	16	\$12.00	\$192.00	
FLCER-AAA5	2"x2" pink/white/green ceramic floor tile with associated grout and mortar	SF	1230	\$8.40	\$10,332.00	
BRICK-AAA6	2"x8" red brick wall with associated mortar	SF	400	\$18.00	\$7,200.00	
BBMAS-AAA7	mastic behind metal baseboard	LF	780	\$2.40	\$1,872.00	
WLMAS-AAA8	wall mirror mastic	SF	180	\$2.40	\$432.00	
FLCER-AAA9	6"x6" red quarry floor tile with covebase and associated grout and mortar	SF	2950	\$8.40	\$24,780.00	
WLCER-AAA10	6"x12" beige ceramic wall tiles with associated grout and mortar	SF	4340	\$8.40	\$36,456.00	
WLMAS-AAA10	mastic behind plastic wall panels	SF	5120	\$2.40	\$12,288.00	
FORMICA-AAAA11	yellow/wood-look Formica counter top with associated glue	SF	220	\$5.40	\$1,188.00	
LTWTCONC-37	light grey light weight concrete over roof deck (Note: Surface only sampled. Cores required for analysis of all concrete layers.)	SF	11850	\$18.00	\$213,300.00	
EL-AAA13	electrical wiring throughout	LF	17250	\$3.00	\$51,750.00	
CL-AAA14	4'x8' grey coarse fibrous acoustical ceiling panel with associated glue	SF	500	\$3.00	\$1,500.00	
CORE-AAA	felts, membranes and tars and aggregate baserock associated with volleyball courts	SF	800	\$6.00	\$4,800.00	
VAPOR-AAA17	Vapor barriers under restrooms, laundry, former operating rooms, etc.	SF	6970	\$18.00	\$125,460.00	
FREEZER-AAA18	Insulation and/or mastics associated with walk-in freezers	EA	3	\$3,000.00	\$9,000.00	
VAPOR-AAA16/ CONC-AAA19	Concrete layers with vapor barrier and aggregate baserock under surface concrete comprising building slab	SF	41670	\$6.00	\$250,020.00	
CLGL-25	12"x12" light grey glued on ceiling tiles (-) with fissures (glue not accessible for all samples)-glue assumed ACM	SF	29210	\$3.00	\$87,630.00	
OTHER HAZMATS						
LEAD LINING-AAA	x-ray and dark rooms with lead lining in walls and doors assumed present	Assumed	SF	2000	\$4.80	\$9,600.00
LEAD PAINTS	Stabilization of Lead coatings	Present	SF	2500	\$6.00	\$15,000.00
TRANSFORMER-AAA15	PCB-containing oils (owned by PG&E)*	Assumed	EA	3	\$0.00	\$0.00
BALLASTS	Possible PCB-containing lighting ballasts	Present	EA	588	\$4.20	\$2,469.60
TUBES	Mercury-containing fluorescent tubes	Present	EA	873	\$3.00	\$2,619.00

[A] Transformers owned by PG&E. PG&E would be responsible for removal of PCB-containing fluids.

Contractor Total
 Consultant Monitoring
 Abatement Total

\$1,612,578.60
 \$322,515.72
 \$1,935,094.32

ABATEMENT COST ESTIMATE: CORDILLERAS FACILITY, REDWOOD CITY, CA
Water Tower

Room ID----- Material ID	Components	Present / not present	Units	TOTAL +/- 15%	Estimated Abatement Cost per unit	Total Estimated Cost
OTHER HAZMATS						
LEAD PAINTS	Stabilization of Lead coatings	Present	SF	750	\$12.00	\$9,000.00

Contractor Total	\$9,000.00
Consultant Monitoring	\$1,800.00
Abatement Total	\$10,800.00

**ABATEMENT COST ESTIMATE: CORDILLERAS FACILITY, REDWOOD CITY, CA
Pump House**

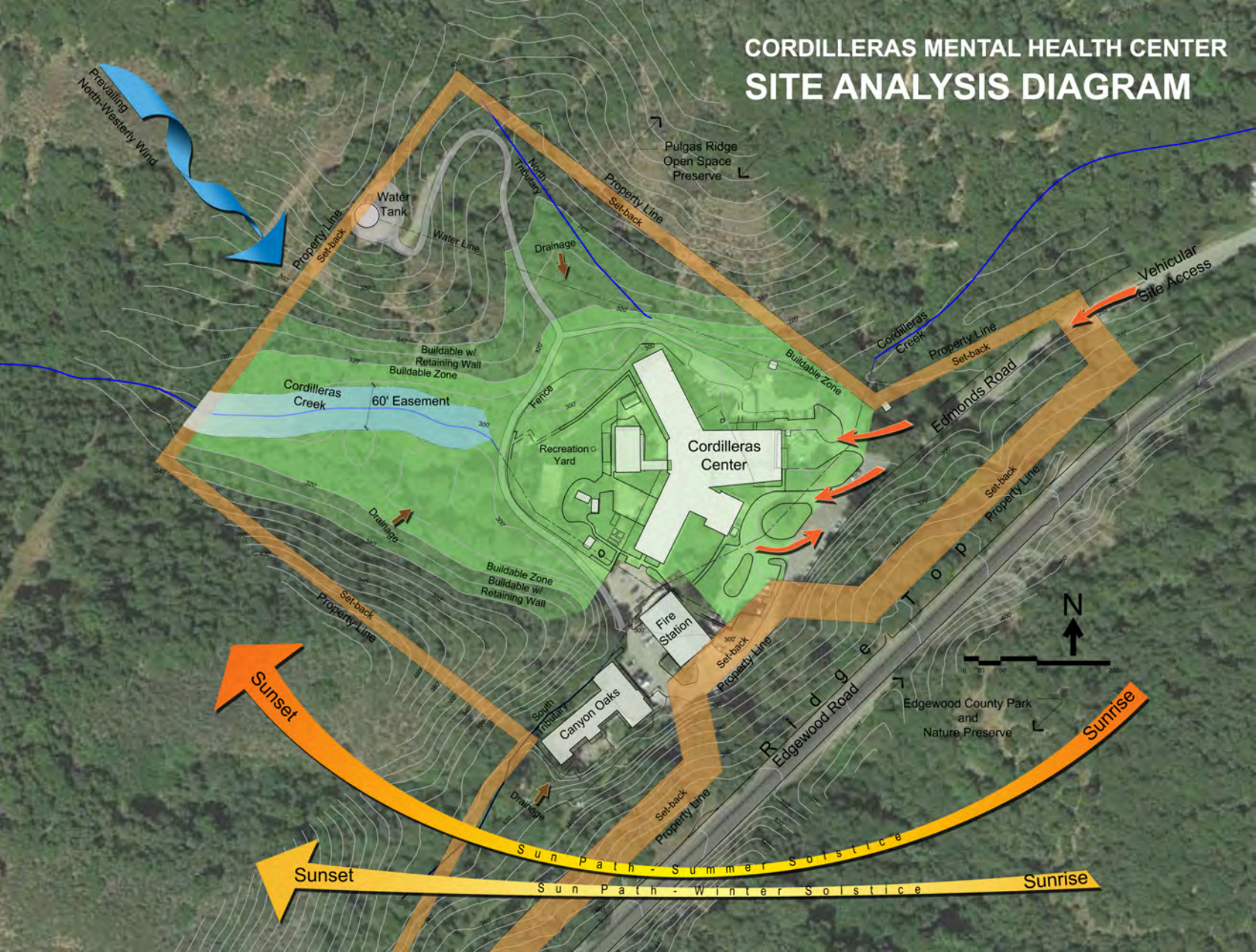
Room ID----- Material ID	Components	Asbestos: Positive, Negative, Trace, Assumed	Units	TOTAL +/- 15%	Estimated Abatement Cost per unit	Total Estimated Cost
ASBESTOS						
WALL-AAA12	8"x8"x16" tan concrete masonry unit (CMU) wall with associated mortar	Assumed	SF	380	\$18.00	\$6,840.00
EL-AAA13	electrical wiring throughout	Assumed	LF	200	\$6.00	\$1,200.00
OTHER HAZMATS						
LEAD PAINTS	Stabilization of Lead coatings	present	SF	500	\$2.40	\$1,200.00

Contractor Total	\$9,240.00
Consultant Monitoring	\$1,848.00
Abatement Total	\$11,088.00

Appendix J

Site Analysis and Site Survey

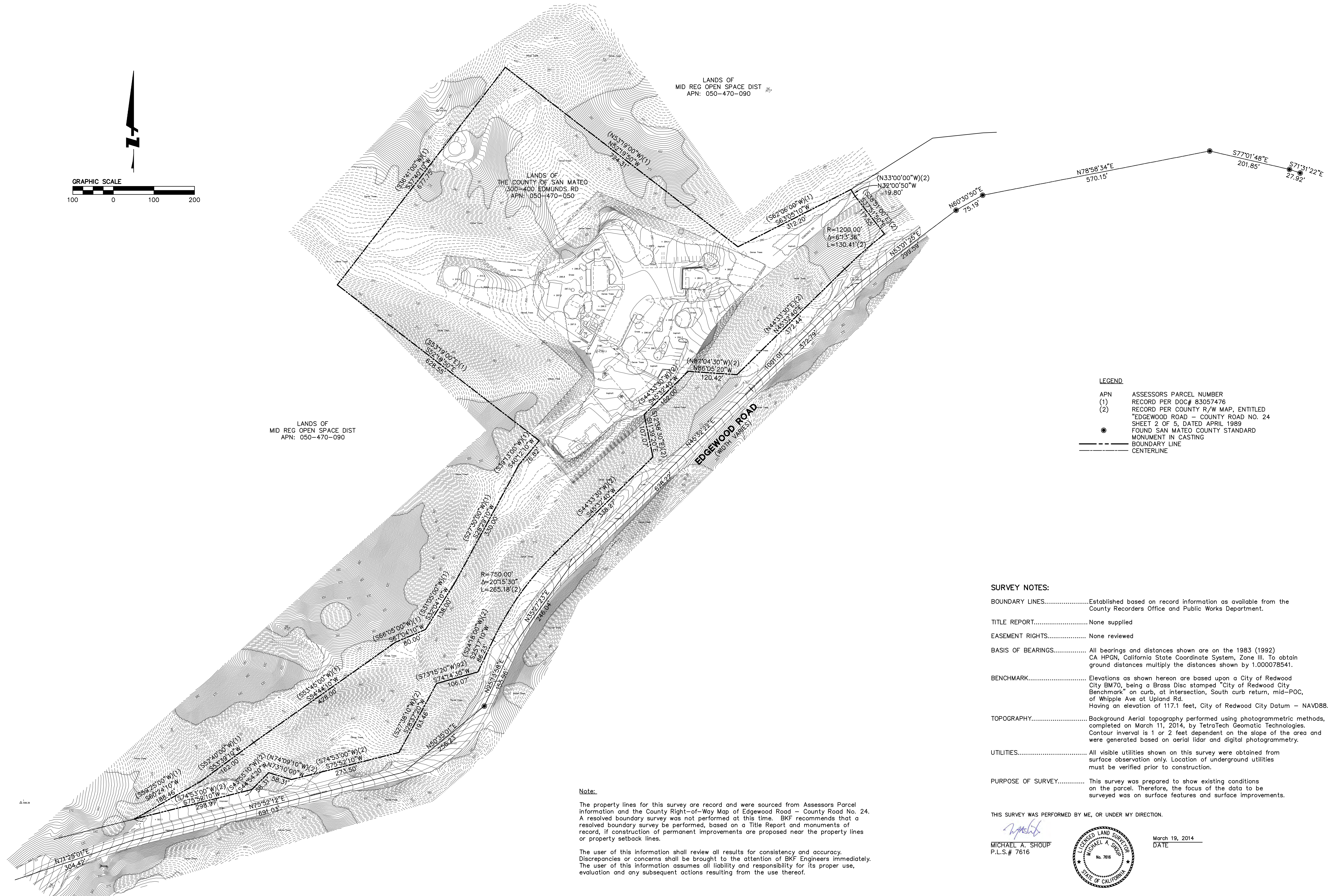
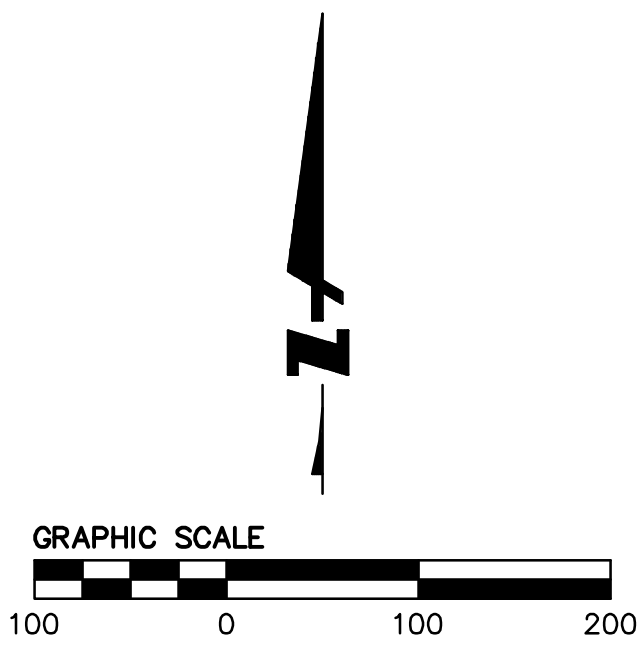
CORDILLERAS MENTAL HEALTH CENTER SITE ANALYSIS DIAGRAM



255 SHORELINE DR
SUITE 200
REDWOOD CITY, CA 94065
650-482-6300
650-482-6399 (FAX)



RECORD BOUNDARY
LANDS OF THE COUNTY OF SAN MATEO
300-400 EDMUNDS RD (APN: 050-470-050)
CITY OF REDWOOD CITY COUNTY OF SAN MATEO STATE OF CALIFORNIA



- LEGEND**
- APN ASSESSORS PARCEL NUMBER
 - (1) RECORD PER DOC# 83057476
 - (2) RECORD PER COUNTY R/W MAP, ENTITLED "EDGEWOOD ROAD - COUNTY ROAD NO. 24 SHEET 2 OF 5, DATED APRIL 1989 FOUND SAN MATEO COUNTY STANDARD MONUMENT IN CASTING
 - FOUND SAN MATEO COUNTY STANDARD MONUMENT IN CASTING
 - BOUNDARY LINE
 - CENTERLINE

SURVEY NOTES:

BOUNDARY LINES.....Established based on record information as available from the County Recorders Office and Public Works Department.

TITLE REPORT.....None supplied

EASEMENT RIGHTS..... None reviewed

BASIS OF BEARINGS..... All bearings and distances shown are on the 1983 (1992) CA HPGN, California State Coordinate System, Zone III. To obtain ground distances multiply the distances shown by 1.000078541.

BENCHMARK..... Elevations as shown hereon are based upon a City of Redwood City BM70, being a Brass Disc stamped "City of Redwood City Benchmark" on curb, at intersection, South curb return, mid-POC, of Whipple Ave at Upland Rd. Having an elevation of 117.1 feet, City of Redwood City Datum - NAVD88.

TOPOGRAPHY..... Background Aerial topography performed using photogrammetric methods, completed on March 11, 2014, by TetraTech Geomatic Technologies. Contour interval is 1 or 2 feet dependent on the slope of the area and were generated based on aerial lidar and digital photogrammetry.

UTILITIES..... All visible utilities shown on this survey were obtained from surface observation only. Location of underground utilities must be verified prior to construction.

PURPOSE OF SURVEY..... This survey was prepared to show existing conditions on the parcel. Therefore, the focus of the data to be surveyed was on surface features and surface improvements.

Note:

The property lines for this survey are record and were sourced from Assessors Parcel Information and the County Right-of-Way Map of Edgewood Road - County Road No. 24. A resolved boundary survey was not performed at this time. BKF recommends that a resolved boundary survey be performed, based on a Title Report and monuments of record, if construction of permanent improvements are proposed near the property lines or property setback lines.

The user of this information shall review all results for consistency and accuracy. Discrepancies or concerns shall be brought to the attention of BKF Engineers immediately. The user of this information assumes all liability and responsibility for its proper use, evaluation and any subsequent actions resulting from the use thereof.

THIS SURVEY WAS PERFORMED BY ME, OR UNDER MY DIRECTION.

Michael A. Shoup
MICHAEL A. SHOUP
P.L.S.# 7616

March 19, 2014
DATE

Revisions	
No.	Description

Date: 03/20/2014
Scale: 1"=100'
Design: M.A.S.
Drawn: RAB
Approved: MAS
Job No: 20140652-50

Drawing Number: 1 OF 1

BKF ENGINEERS
 255 SHORELINE DR
 SUITE 200
 REDWOOD CITY, CA 94065
 650-482-6300
 650-482-6399 (FAX)

Appendix K

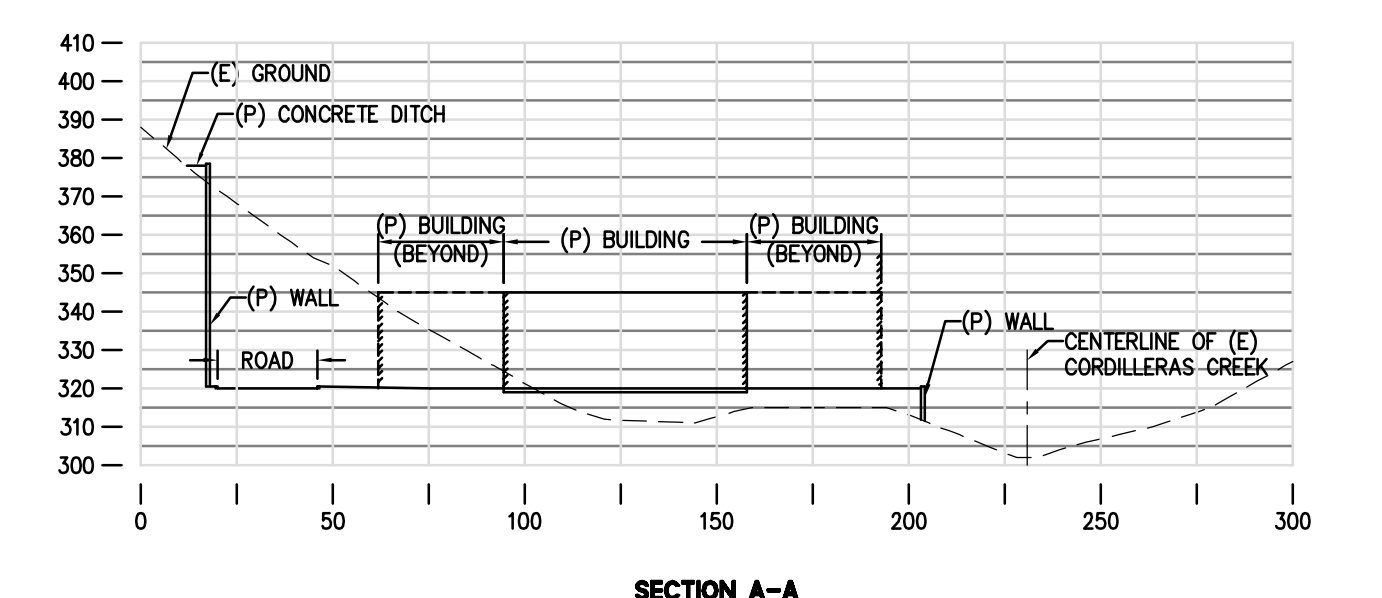
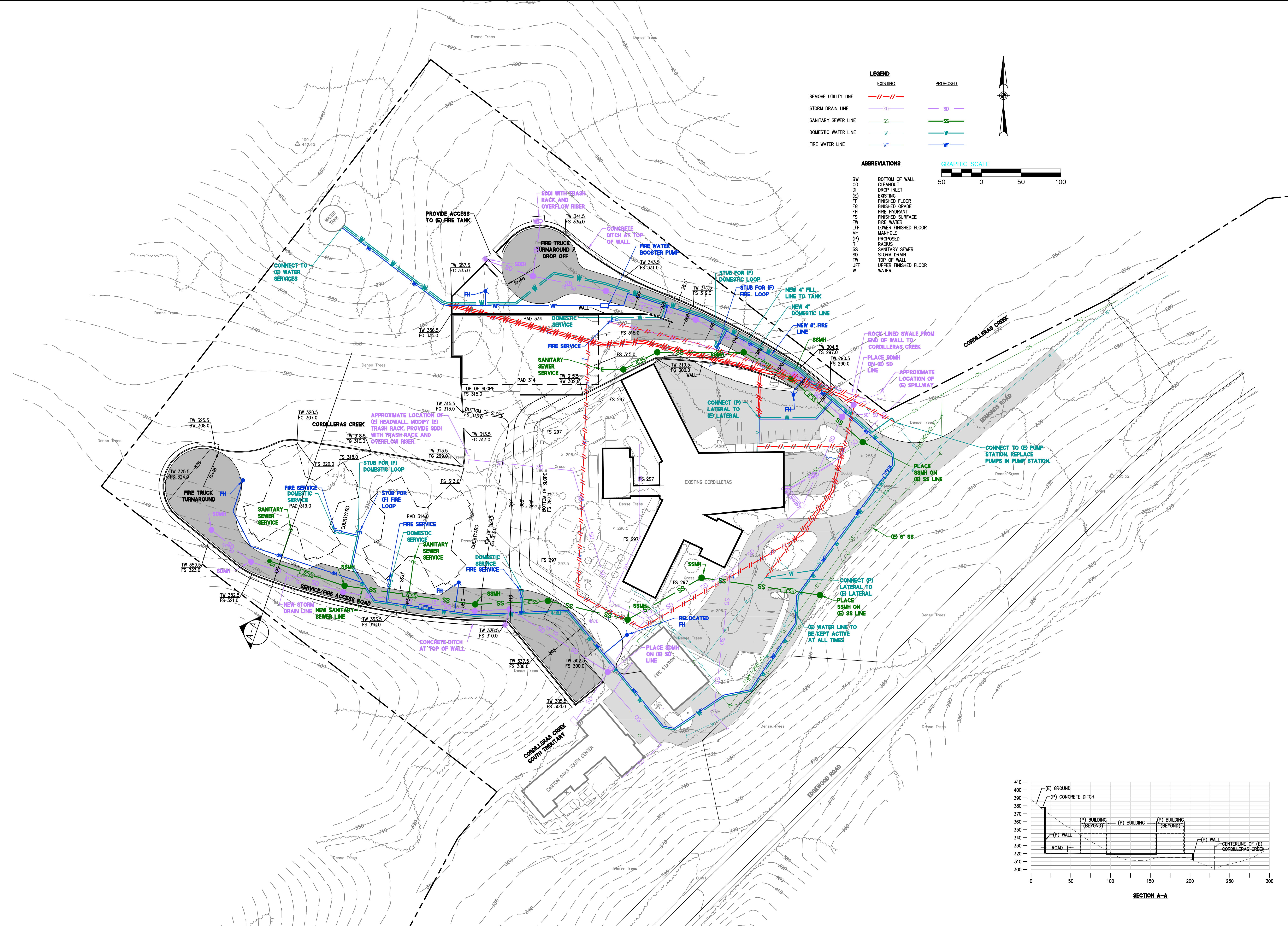
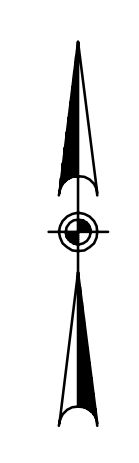
Site Utilities Diagram

LEGEND

	EXISTING	PROPOSED
REMOVE UTILITY LINE	---/---/---	
STORM DRAIN LINE	SD	SD
SANITARY SEWER LINE	SS	SS
DOMESTIC WATER LINE	W	W
FIRE WATER LINE	WF	WF

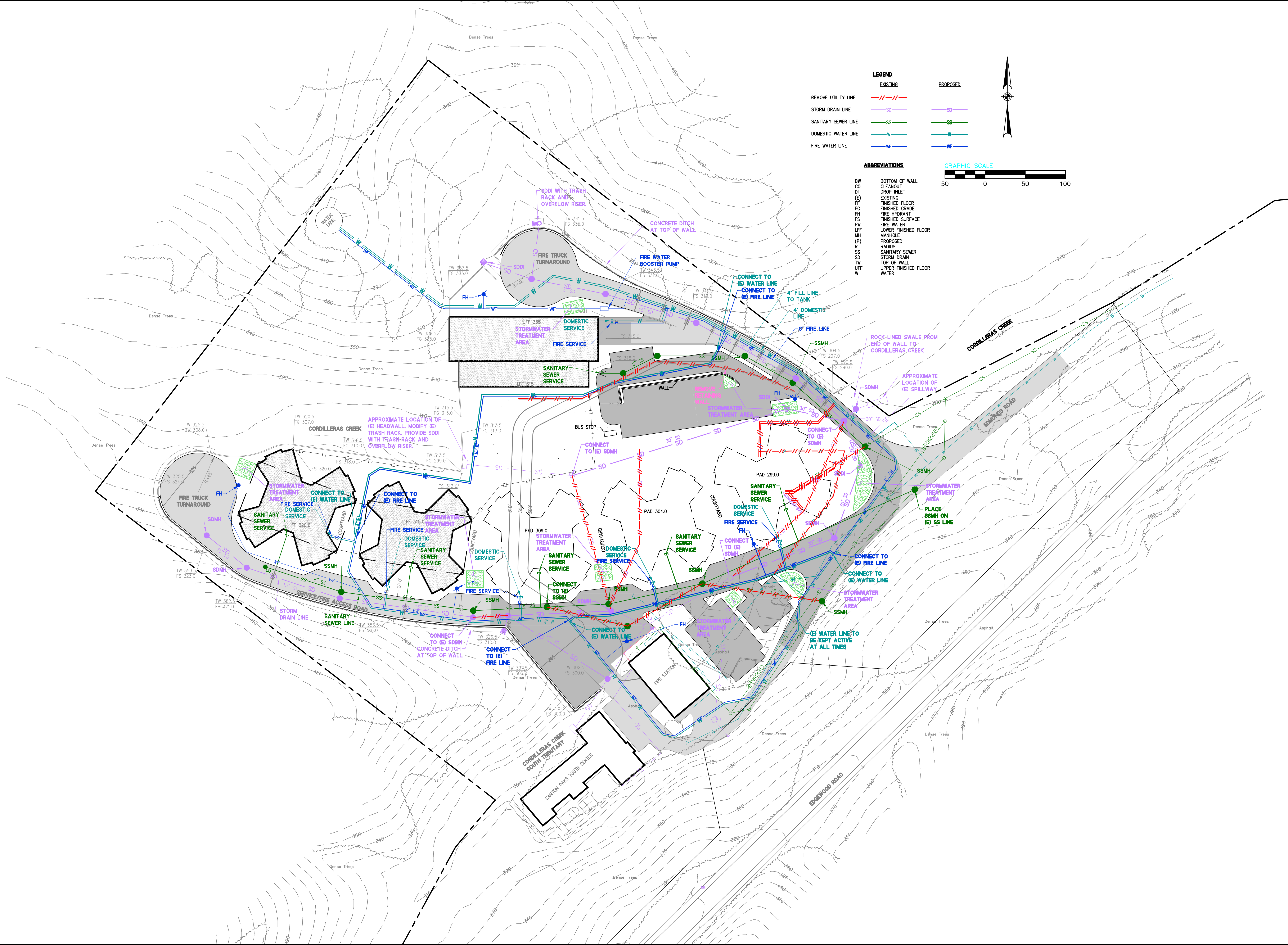
ABBREVIATIONS

BW	BOTTOM OF WALL
CO	CLEANOUT
DI	DROP INLET
(E)	EXISTING
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FS	FINISHED SURFACE
FW	FIRE WATER
LFF	LOWER FINISHED FLOOR
MH	MANHOLE
(P)	PROPOSED
R	RADIUS
SS	SANITARY SEWER
SD	STORM DRAIN
TW	TOP OF WALL
UFF	UPPER FINISHED FLOOR
W	WATER



DRAWING NAME: K:\Eng\140052\DWG\EXHIBITS\Fees\Bility-Phase1\ng\CORPLAN-PH01A.dwg (PHASE01A-COLOR)
 PLOT TIME: 10-23-14 12:20pm
 PLOTTED BY: lamm

DRAWING NAME: K:\Eng\4140052\DWG\EXHIBIT\SY\Faces\blt\lty\Proc\img\CMPREL\AN-PH02A.dwg (PHASE02A-COLOR)
 PLOT TIME: 10-23-14 12:31pm
 PLOTTED BY: lamm



LEGEND

	EXISTING	PROPOSED
REMOVE UTILITY LINE	---/---/---	
STORM DRAIN LINE	SD	SD
SANITARY SEWER LINE	SS	SS
DOMESTIC WATER LINE	W	W
FIRE WATER LINE	WF	WF

ABBREVIATIONS

BW	BOTTOM OF WALL
CO	CLEANOUT
DI	DROP INLET
(E)	EXISTING
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FS	FINISHED SURFACE
FW	FIRE WATER
LFF	LOWER FINISHED FLOOR
MH	MANHOLE
(P)	PROPOSED
R	RADIUS
SS	SANITARY SEWER
SD	STORM DRAIN
TW	TOP OF WALL
UFF	UPPER FINISHED FLOOR
W	WATER



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
(BHRIS) 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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Financial Analysis Summary	5
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Conclusion	6
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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.

	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Total with Added ARF
Number of Facilities	4	1	1	6	6
Beds per Facility	16	16	37	N/A	N/A
Total Beds	64	16	37	117	135
Total Days	23,360	5,840	13,505	42,705	49,275
Occupancy Rate	95%	95%	95%	95%	95%
Occupied Days	22,192	5,548	12,830	40,570	46,811
Total Staffing FTEs	105.20	18.95	21.00	145.15	155.37
Staff FTE per Bed	1.64	1.18	0.57	1.24	1.15
Total Expenses	\$11,671,094	\$2,355,531	\$2,168,670	\$16,195,295	\$17,250,324
Less On-Campus Revenue	-\$5,200,837	\$1,062,072	-\$477,219	-\$6,740,128	-\$6,972,288
Less Off-Campus Revenue	-\$1,300,271	-\$262,428	-\$44,245	-\$1,606,944	-\$1,606,944
Savings from Avoiding Purchase of Other Beds				-\$601,265	-\$1,147,396
New Project Net BHRS Costs				\$7,246,959	\$7,523,696
Current Net BHRS Costs				\$7,505,208	\$8,051,339
Decrease in Costs				-\$258,249	-\$527,643
New Project Net BHRS Cost per Day				\$178.63	\$160.72
Current Net Cost per Day				\$185.00	\$198.46
Decrease in Cost per Day				-\$6.37	-\$37.73

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 BHRM Campus	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Added ARF Floor	Total with Added ARF
A. Facilities and Bed Days						
Number of Facilities (1)	4	1	1	6	1	6
Beds per Facility	16	16	37		18	
Total Beds	64	16	37	117	18	135
Total Days	23,360	5,840	13,505	42,705	6,570	49,275
Occupancy Rate	95%	95%	95%		95%	
Occupied Days	22,192	5,548	12,830	40,570	6,242	46,811
B. Staffing FTEs per Facility						
Direct Service	22.20	15.60	16.60	54.40	8.08	62.48
Environ Services & Administration	4.10	3.35	4.40	11.85	2.14	13.99
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 BHRM.						

Section 1. New BHRS Campus (cont'd)	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Added ARF Floor	Total with Added ARF
E. Total Campus Expenses						
Salaries	\$5,044,000	\$919,000	\$993,400	\$6,956,400	\$483,276	\$7,439,676
Benefits	\$1,854,920	\$337,960	\$365,321	\$2,558,200	\$177,724	\$2,735,924
Services & Supplies	\$2,811,092	\$702,773	\$445,550	\$3,959,415	\$216,754	\$4,176,169
Corp Alloc and OP Income	\$1,310,852	\$264,564	\$243,577	\$1,818,992	\$118,497	\$1,937,489
Subtotal	\$11,020,863	\$2,224,297	\$2,047,847	\$15,293,007	\$996,250	\$16,289,257
Facility Operating Costs	\$650,231	\$131,234	\$120,823	\$902,287	\$58,779	\$961,066
Total	\$11,671,094	\$2,355,531	\$2,168,670	\$16,195,295	\$1,055,029	\$17,250,324
Expenses per Day	\$525.91	\$424.57	\$169.03	\$399.20	\$169.03	\$368.51
F. Campus Revenues, Non-County						
SSI Room & Board Revenue	\$656,640	\$164,160	\$410,400	\$1,231,200	\$199,654	\$1,430,854
State TB Revenue	\$96,720			\$96,720		\$96,720
VA Revenue	\$496,836			\$496,836		\$496,836
Medi-Cal FMAP	\$3,950,642	\$897,912	\$66,819	\$4,915,372	\$32,506	\$4,947,878
Non-County Revenue	\$5,200,837	\$1,062,072	\$477,219	\$6,740,128	\$232,160	\$6,972,288
G. Net Campus Costs (4)						
Non-County Revenue	\$5,200,837	\$1,062,072	\$477,219	\$6,740,128	\$232,160	\$6,972,288
Campus Expenses	\$11,671,094	\$2,355,531	\$2,168,670	\$16,195,295	\$1,055,029	\$17,250,324
Net Campus Costs	\$6,470,257	\$1,293,459	\$1,691,451	\$9,455,167	\$822,868	\$10,278,036

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	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Added ARF Floor	Total with Added ARF
A. Current Costs						
Currently Purchased Beds	12	0	0	12	6	18
Occupancy Rate	95%	95%	95%		95%	
Bed Days	4,161	0	0	4,161	2,081	6,242
Average Cost per Day	\$232.00	\$232.00	\$87.50		\$87.50	
Total Cost (5)(6)	\$965,352	\$0	\$0	\$965,352	\$182,044	\$1,147,396
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			\$965,352		
ARF Off Campus Payments			-\$364,088	-\$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					\$965,352
ARF Off Campus Savings					\$182,044	\$182,044
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)	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Added ARF Floor	Total with Added ARF
BHRS Community-Based (including the Suites)				\$1,275,016		\$1,275,016
BHRS Crisis Residential				\$160,778		\$160,778
BHRS Psychiatric Inpatient				\$4,203,211		\$4,203,211
BHRS Residential				\$324,156		\$324,156
BHRS Shelter-Based Outpatient				\$674		\$674
BHRS Skilled Nursing Facility				\$27,027		\$27,027
SMMC Psychiatric Emergency Services				\$436,914		\$436,914
BHRS 2 Year Medi-Cal Unbillable Cost						
Total				\$6,427,776		\$6,427,776
Federal Medical Assistance Percentage (FMAP %)				50%		50%
Annual Medi-Cal Revenue Offset if Facilities Less than 17 Beds				\$1,606,944		\$1,606,944
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	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Added ARF Floor	Total with Added ARF
Current Beds	68	0	49	117	0	117
Occupancy Rate	95%	95%	95%		95%	
Current Occupied Bed Days	23,579	0	16,991	40,570	0	40,570
Projected Bed Days	22,192	5,548	12,830	40,570	6,242	46,811
Change in Bed Days	-1,387	5,548	-4,161	0	6,242	6,242
Current Staffing FTEs	60.94	0.00	25.16	86.10	0.00	86.10
Staff FTE per Bed	0.90	0.00	0.51	0.74	0.00	0.74
Current Telecare Costs	\$5,892,708		\$2,320,002	\$8,212,710		\$8,212,710
Current County Operating Costs				\$485,209		\$485,209
Current Off-Campus Bed Costs related to Replacement Project				\$601,265		\$1,147,396
Total Current Costs				\$9,299,184		\$9,845,315
Current Revenue Offsets						
SSI Room & Board Revenue				\$1,200,420		\$1,200,420
State TB				\$96,720		\$96,720
VA Revenue				\$496,836		\$496,836
Total Revenue Offsets				\$1,793,976		\$1,793,976
Current Net BHRS Costs				\$7,505,208		\$8,051,339

Section 5. Cost Analysis**A. New Project Summary**

	117 Bed Total	Total with Added ARF
Medi-Cal Federal Financial Participation for Campus Services	\$4,915,372	\$4,947,878
Medi-Cal Federal Financial Participation for Off-Campus Services	\$1,606,944	\$1,606,944
SSI Room & Board Revenue	\$1,231,200	\$1,430,854
State TB Revenue	\$96,720	\$96,720
VA Revenue	\$496,836	\$496,836
Total Revenue	\$8,347,071	\$8,579,232

BHRS Campus Costs	\$16,195,295	\$17,250,324
BHRS Off-Campus Savings related to Replacement Project	-\$601,265	-\$1,147,396
Total Expenses	\$15,594,030	\$16,102,928

Net BHRS Costs	\$7,246,959	\$7,523,696
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B. BHRS Current and Projected Net Operating Cost Comparison (9)

New Project Net BHRS Costs	\$7,246,959	\$7,523,696
Current Net BHRS Costs	\$7,505,208	\$8,051,339
Decrease in Net BHRS Costs	-\$258,249	-\$527,643

New Project Net BHRS Costs per Day	\$178.63	\$160.72
Current Net BHRS Costs per Day	\$185.00	\$198.46
Decrease in Net BHRS Costs per Day (10)	-\$6.37	-\$37.73
Decrease in Net BHRS Costs per Day	-3%	-19%

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 is a \$500,000+ difference between the two options.