NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION for the MERRITT COLLEGE CENTER FOR SCIENCE AND ALLIED HEALTH

Peralta Community College District will hold a public hearing at the Board of Trustees meeting on July 17, 2012 on the proposed Project and will review and may approve a Mitigated Negative Declaration on it. The meeting will be held at 7:00 p.m. in the District Board Room located at 333 East 8th Street, Oakland, CA 94606. The public review period for the Project begins on June 15, 2012 and ends on July 16, 2012. The public may submit written comments on the Mitigated Negative Declaration up until July 16, 2012 by 5:00 p.m. to Atheria Smith, Manager, Facilities Planning & Development, 333 East 8th Street, Oakland, CA 94606 or by emailing Atheria Smith at atheriasmith@peralta.edu.

Finding: The Project will not have a significant effect on the environment based on the Initial Study prepared according to CEQA Guidelines. Mitigations have been incorporated into the Project to reduce all potentially significant impacts to a less-than-significant level.

Project Title: Merritt College Center for Science and Allied Health

Project Location: 12500 Campus Drive, Oakland, CA 94619

Project Sponsor's Name and Address: Peralta Community College District
333 East 8th Street
Oakland, CA 94606

Project Description: The Project would consist of the construction of the Center for Science and Allied Health on a 1.84-acre vacant site located on the Merritt College campus. The Project would total approximately 110,860 gross square feet and would include four stories. Exterior wall treatment would include light tan plaster, darker-toned cementitious panels and a metal storefront window system. A perforated metal shade screen would be attached to the southern side of the building; and a 12-foot high metal screen would hide mechanical equipment located on the building roof. The building has been designed to achieve certification as a LEED Gold level.

Submittal of Public Comments: Please direct written comments to Atheria Smith, Manager, Facilities Planning & Development, 333 East 8th Street, Oakland, CA, 94606. **Written comments must be received by 5:00 p.m. on July 16, 2012.**

Anyone interested in the Project may review the Mitigated Negative Declaration, Initial Study and other pertinent material at the District office at 333 East 8th Street, Oakland, CA 94606. The Mitigated Negative Declaration and Initial Study are also available on the District website at http://web.peralta.edu.

This page intentionally left blank

MITIGATED NEGATIVE DECLARATION

PROJECT DESCRIPTION

The proposed Project would consist of the construction of the Center for Science and Allied Health on a 1.84-acre site on the Merritt College campus. The Project site is vacant and contains areas of lawn and barren earth, some ornamental landscaping, paved pathways, metal railings and metal light poles; and is surrounded by existing campus buildings and parking lots. The Center for Science and Allied Health building would contain approximately 110,866 gross square feet and would include four stories. The building would range in height from 44 to 88 feet to account for the change in site elevation of approximately 40 feet from west to east. At the building's west elevation, the building would be approximately 32 feet in height to the roof line and a 12-foot metal screen (to screen mechanical equipment) on the building roof would bring the total building height to 44 feet. At the building's east elevation, the building would be approximately 68 feet in height to the roof line and the 12-foot metal screen would bring the total building height to 80 feet.

Exterior wall treatment would include light tan plaster, darker-toned cementitious panels and a metal storefront window system. A perforated metal shade screen would be attached to the southern side of the building; and a 12-foot high metal screen would hide mechanical equipment located on the building roof. Consistent with District policy, the building has been designed to achieve certification as a LEED Gold level.

Site landscaping would include turf and other ground cover, native trees and shrubs. Two stormwater treatment areas comprising about 6,200 square feet would be incorporated into the landscaping. Hardscape elements would include concrete terraces, benches and planters, stairs and handicapped accessible ramps.

Project construction would take about 18 months and would begin in July 2013 with completion in April 2015. Construction hours would be from 7:00 a.m. to 5:00 p.m. Monday through Friday.

PROJECT LOCATION

Merritt College
12500 Campus Drive
Oakland, California 94619

PROJECT SPONSOR

Peralta Community College District
333 East 8th Street
Oakland, California 94606

FINDING

The Project will not have a significant effect on the environment based on the Initial Study prepared according to CEQA Guidelines. Mitigations have been incorporated into the Project to reduce the identified potentially significant impacts to a less-than-significant level.

POTENTIALLY SIGNIFICANT IMPACT

The attached Initial Study indicates that the Project could adversely affect the environment. The following potentially significant impacts were identified and are presented below.

MITIGATION MEASURES

In the interest of reducing the potential impact to the point where the net effect of the Project is insignificant, mitigation measures are recommended. A discussion of the potential impacts of interest and the associated mitigation measures is provided below.

AESTHETICS

Impact: There would be a significant increase in night lighting at the Project site and incremental increase in night lighting at the Merritt College campus.

Mitigation Measures

AES-1 A lighting plan shall be prepared that shows the location of all building exterior light and other outdoor site lighting. Exterior light fixtures shall be hooded and light directed downwards to prevent glare and light spillover.

AES-2 Exterior building materials shall be of non-reflective materials to the greatest extent feasible to prevent glare.

Residual Impact: Less-than-significant with implementation of the recommended mitigation measure.

AIR QUALITY

Impact: The Project would result in short-term air pollution emissions as a result of construction activities.

Mitigation Measure:

AIR-1 The Project shall comply with applicable measures listed in the 2011 BAAQMD CEQA Guidelines. The following construction mitigation measures shall be implemented:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered as may be required.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All sidewalks to be paved shall be completed as soon as possible.

5. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

6. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

7. Post a publicly visible sign with the telephone number and person to contact at Dublin Unified School District regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Bay Area Quality Management District's phone number shall also be visible to ensure compliance with applicable regulations.

Residual Impact: Less-than-significant with implementation of the recommended mitigation measure.

CULTURAL RESOURCES

Impact: Project construction activities could disturb unknown archaeological and/or paleontological resources at the Project site.

Mitigation Measure:

CUL-1 In the event archaeological or paleontological materials are discovered during Project construction, work shall be halted in the area of the find and a qualified professional archaeologist and/or paleontologist shall be contacted for further review and recommendations.

Impact: Project construction activities could disturb unknown human remains at the Project site.

CUL-2 In the event human remains are discovered during Project construction, work shall cease immediately in the area of the find and the Alameda County Coroner shall be notified within 24 hours of the discovery. If the Coroner determines that the remains are Native American, the Native American Heritage Commission (NAHC) shall be contacted to recommend appropriate disposition of the remains.

GEOLOGY AND SOILS

Impact: Strong ground shaking may be expected at the Project site during the design lifetime of the proposed Project.

Mitigation Measure:

GEO-1 The recommendations included in the *Geotechnical Study, Proposed New Allied Health Building, Merritt College Campus, 12500 Campus Drive, Oakland, CA* prepared by Jensen-Van Lienden Associates, Inc., Inc. shall be incorporated into the Project design.

Residual Impact: Less-than-significant with implementation of the recommended mitigation measure.

HYDROLOGY AND WATER QUALITY

Impact: During Project construction there is the potential for siltation and erosion impacts.

Impact: During Project construction, chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances could be utilized. An accidental release of any of these substances could degrade the water quality of surface water runoff from the site and add pollution into local waterways.

Mitigation Measure:

HYDRO-1 The District and contractors shall implement Best Management Practices (BMPs) to control erosion and sedimentation and prevent pollutants from entering the stormwater runoff during construction. BMPs may include, but are not limited to:

- Conduct grading during dry months;
- Cover disturbed areas with soil stabilizers, mulch, fiber rolls, or temporary vegetation;
- Locate construction-related equipment and processes that contain or generate pollutants in secure areas, away from storm drains and gutters;
- Prevent or contain potential leakage or spilling from sanitary facilities;
- Park, fuel, and clean all vehicles and equipment in one designated, contained area;
- Designate concrete washout areas;
- Provide inlet protection, such as filters; and
- Monitor site during rainy season to replace or adjust BMPs as needed.

Residual Impact: Less-than-significant with implementation of the recommended mitigation measure.

Impact: Project development would result in an approximate one percent cumulative increase in the peak runoff for the ten-year design event at completion of campus development identified in the 2009 Merritt College Master Plan without on-site stormwater storage, treatment and flow control facilities.

HYDRO-2 The proposed stormwater treatment areas shall be designed to attenuate flows and provide for water quality treatment. The use of engineered structural control measures compliant with Alameda County C.3 requirements (Alameda Countywide Clean Water Program) shall be designed to support mitigation of potential runoff impacts resulting from an increase in impervious surface area from the project site.

NOISE

Impact: During Project construction there is the potential for a substantial temporary increase in ambient noise levels at nearby classrooms and possibly residences located along Campus Drive.

Mitigation Measure:

NOISE-1 The District or their general contractor shall prepare a construction noise control plan that includes, but is not limited to the following:

- Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.

- Stationary noise sources shall be located as far from adjacent noise sensitive receptors, including adjacent classrooms and residences directly facing the Project site across Penn Drive, and as feasible they shall be muffled and enclosed within temporary sheds, insulation barriers or other measures.

- Impact tools (e.g., jack hammers, pavement breakers and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically-powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about ten dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of five dBA. Quieter procedures shall be used such as drilling rather that impact equipment whenever feasible.

- No extreme noise generating activities (greater than 90 dBA) shall be allowed on weekends and Federal holidays.

Residual Impact: Less-than-significant with implementation of the recommended mitigation measure.

This page intentionally left blank

ENVIRONMENTAL REVIEW - INITIAL STUDY

1. **Project Title:** Merritt College Center for Science and Allied Health

2. **Lead Agency Name and Address:** Peralta Community College District
333 East 8th Street
Oakland, California 94606

3. **Contact Person and Phone Number:** Atheria Smith, Manager
Facilities Planning & Development
510-587-7864
atheriasmith@peralta.edu

4. **Project Location:** Merritt College
12500 Campus Drive
Oakland, California 94619
APN: 37A-3141-1-11

5. **Project Sponsor's Name and Address:** Peralta Community College District
333 East 8th Street
Oakland, California 94606

6. **General Plan Designation:** Institutional

7. **Zoning Designation:** RH-4 Hillside Residential

8. **Description of Project:**

Project Location

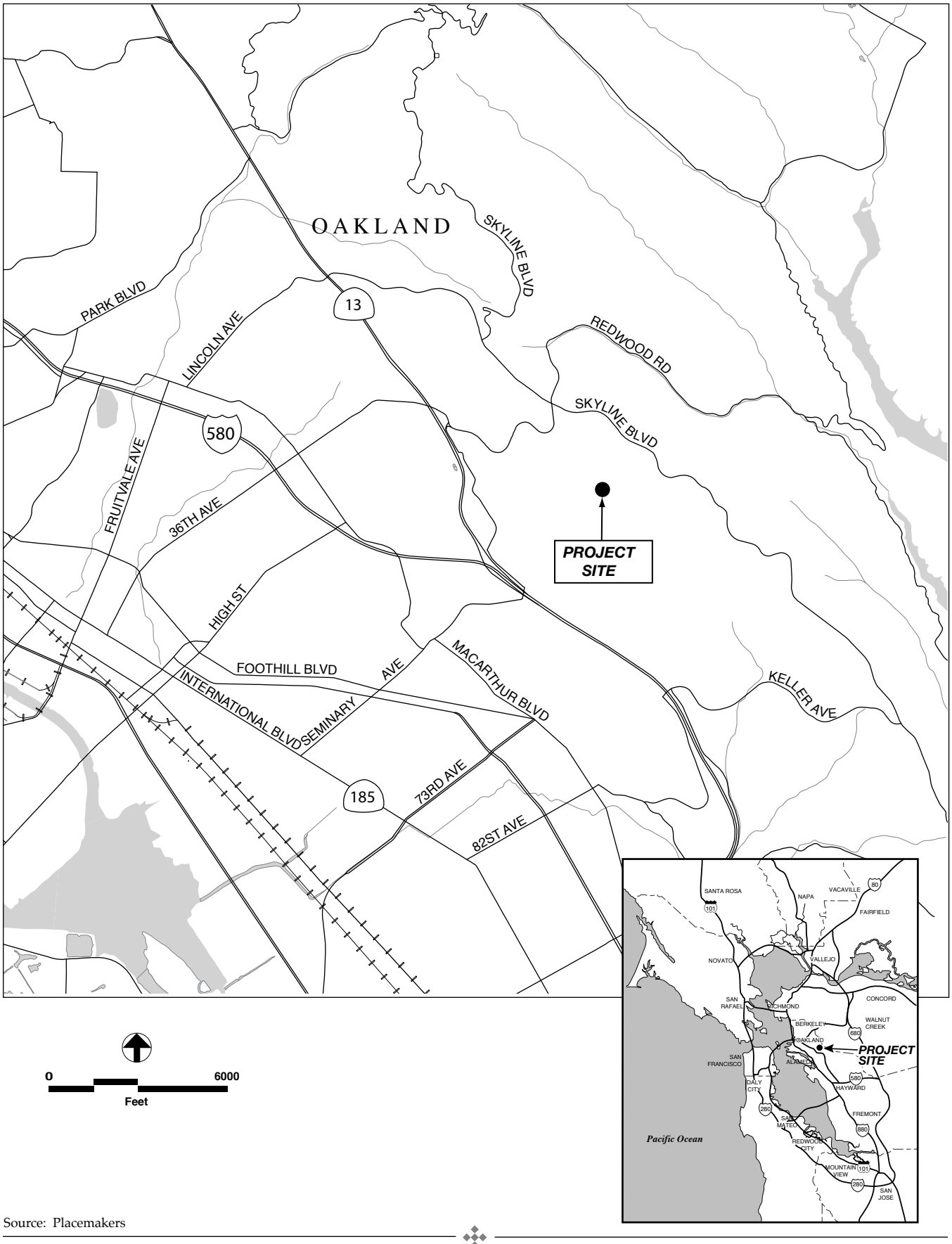
The Center for Science and Allied Health (Project) site is located on the Merritt College campus. Merritt College is located in Oakland, California. Access to the campus is from Campus Drive via Redwood Road (see **Figure 1**).

Project Site Characteristics

The Project site comprises about 1.84 acres of the 130-acre Merritt College campus. The Project site currently consists of lawn, ornamental landscaping and paved pathways, is located at the central part of the campus and is surrounded by existing campus buildings and parking lots. The upper portion of the site has an approximate 40-foot change in elevation from the lower portion of the site. **Figure 2** shows the existing campus site plan.

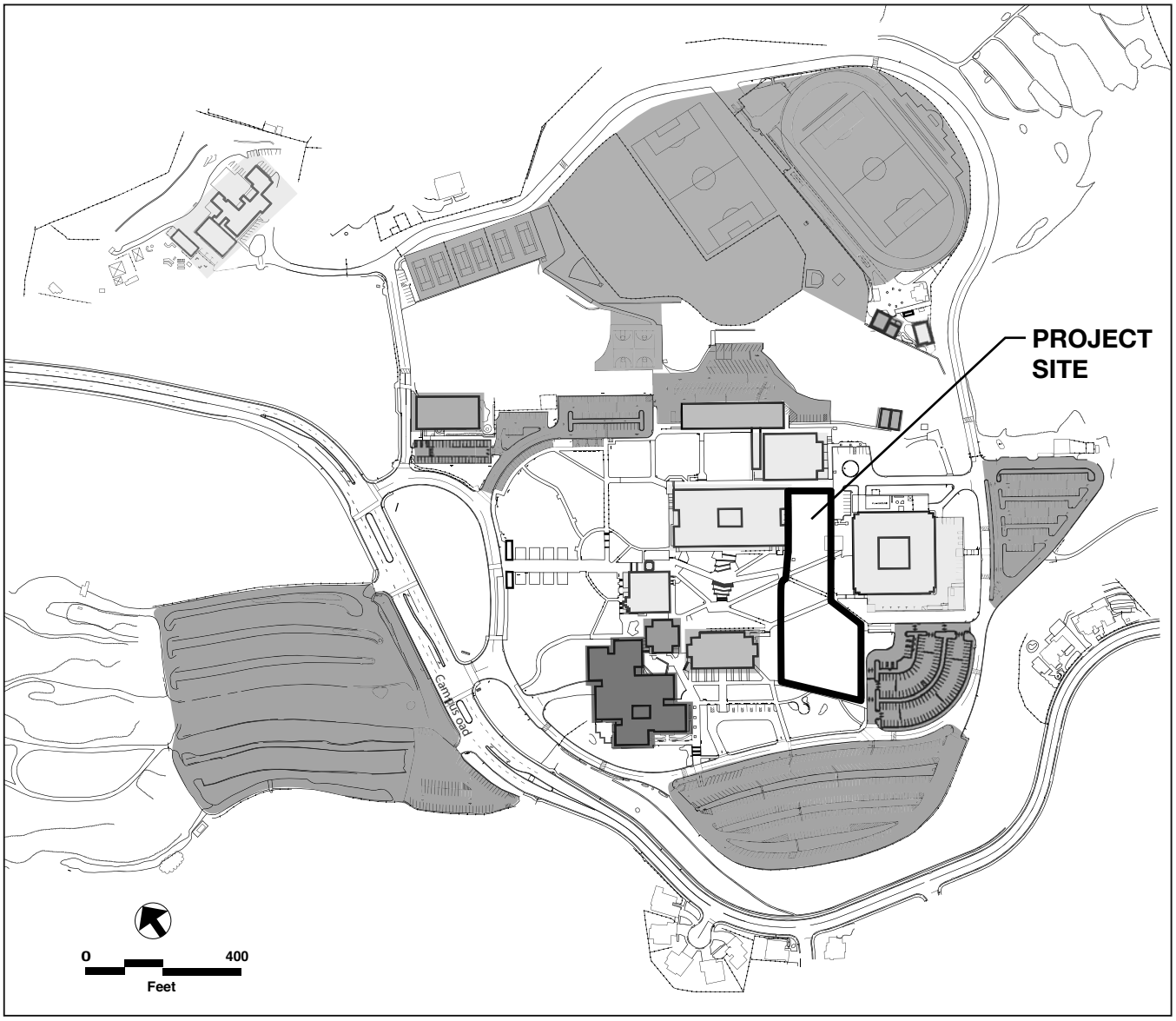
Campus Operations

The Merritt College campus is open from 8:00 a.m. to 10:00 p.m. seven days a week. In addition to daytime classes Monday through Friday, classes are offered in the evening and on weekends. The campus has ample parking and there is a bus stop at the main entrance to the campus.



Source: Placemakers

Figure 1
Project Location Map



Source: WLC Architects, Inc.; Placemakers

Figure 2
Existing Campus Site Plan

Campus Planning

The Center for Science and Allied Health is included in the Merritt College chapter of the *Peralta Community College District Facilities Master Plan* (Peralta Community College District 2009). The Merritt College chapter of the *Peralta Community College District Facilities Master Plan* (Master Plan) includes: a physical assessment of existing facilities; sustainability goals; energy conservation goals; educational needs; and proposed campus improvements. The Master Plan plans for a capacity of 10,323 students at Merritt College by 2022. The Center for Science and Allied Health is described conceptually in the Master Plan and is included in the facilities capacity of 10,323 students.

Proposed Project Characteristics

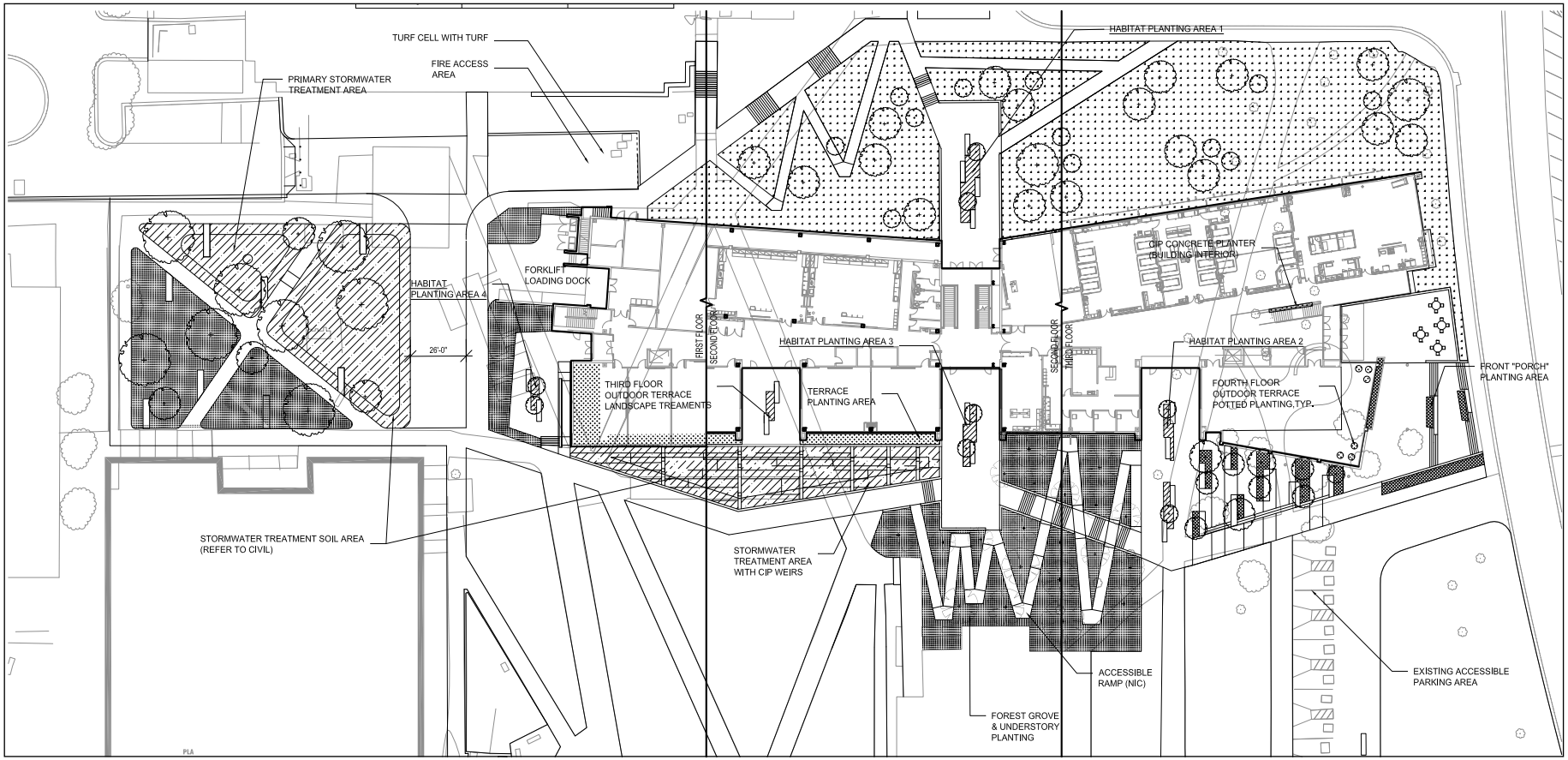
The proposed Project would consist of the construction of the Center for Science and Allied Health building which would house the following departments: Allied Health (Advanced Degree Nursing, MA/CCM Medical Assistant/Chronic Care Management, Radiologic Sciences); Physical Sciences (Chemistry, Geology/Geography, Physics/Astronomy); and Biological Sciences (Biology, Anatomy & Physiology, Microbiology). The Project would total approximately 110,866 gross square feet and would include four stories. Due to the slope of the site, the lower two stories would be partially excavated into the hill**. Figure 3** shows the Project site plan.

Exterior wall treatment would include light tan plaster, darker-toned, cementitious panels and metal storefront window system. A perforated metal shade screen would be attached to the southern side of the building; and a 12-foot high metal screen would hide mechanical equipment located on the building roof.

The building would generally align on an east-west axis, for greater predictability in performance of the architectural components. Instructional laboratory areas, driven by internal rather than external loads, are located to the south and buffer office and interaction areas from direct sun. Wall openings are limited in area, support daylight distribution and will be passively shaded by the screen system. Consistent with District policy, the building has been designed to achieve certification as a LEED Gold level.

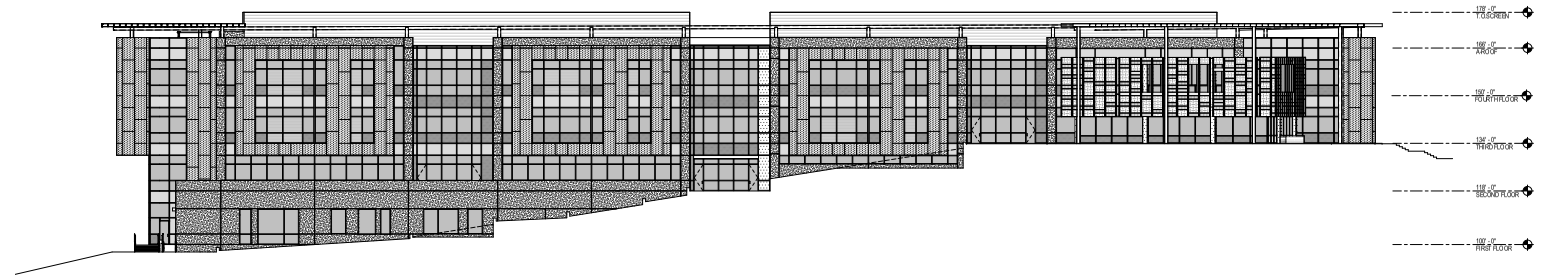
The building would have several points of entry: the main entrance would face the campus loop road to the west, with separate entries connecting the campus main quad and an existing parking lot to the south. The Center for Science and Allied Health building would range in height from 44 feet to 88 feet to account for the change in site elevation of approximately 40 feet from west to east. At the building's west elevation, the building would be approximately 32 feet in height to the roof line and a 12-foot metal screen (to screen mechanical equipment) on the building roof would bring the total building height to 44 feet. At the building's east elevation, the building would be approximately 68 feet in height to the roof line and the 12-foot metal screen would bring the total building height to 80 feet. **Figure 4** shows the exterior building elevations.

Site landscaping would include turf and other ground cover, native trees and shrubs, with projected irrigation demands to meet current target reductions in water demand. Two stormwater treatment areas



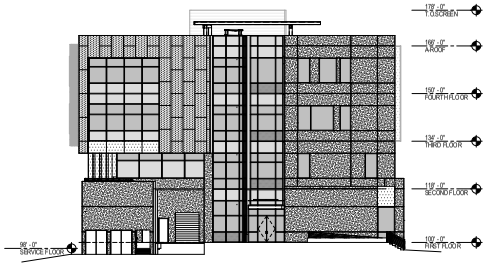
Source: Wallace Roberts & Todd, Inc and Flad Architects

Figure 3
Project Site Plan

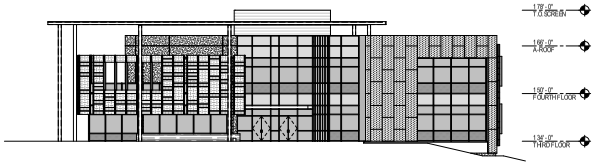


1 OVERALL NORTH EXTERIOR ELEVATION

2 OVERALL SOUTH EXTERIOR ELEVATION



4 OVERALL EAST EXTERIOR ELEVATION



3 OVERALL WEST EXTERIOR ELEVATION

Source: Flad Architects and WLC Architects, Inc.

Figure 4
Project Architectural Exterior Elevations

comprising about 6,200 square feet would be incorporated into the landscaping. Hardscape elements would include concrete terraces, benches and planters, stairs and handicapped accessible ramps.

Proposed Project Construction Activities

Project construction would take about 18 months and would begin in July 2013 with completion in April 2015. Construction hours would be from 7:00 a.m. to 5:00 p.m. Monday through Friday. Construction activities are presented in **Table 1**.

TABLE 1: PROJECT CONSTRUCTION ACTIVITIES

Activity	Duration	Construction Workers (Peak daily numbers)
Site Work	5 Months	21 workers
Earthwork	2 Months	10
Foundation	3 Months	11
Building	24 Months	57 Workers
Structural	2 Months	12
Floor Decking	5 months	10
Exterior Envelope	5 months	12
Interiors	12 months	18
Mechanical & Plumbing	16 Months	24 Workers
Elevators	11 Months	7
Fire Protection	1 Month	7
Plumbing	2 Months	5
Mechanical	3 Months	5
Electrical	11 Months	9 Workers
Site Improvements & Finishes	6 Months	8 Workers

Source: Bay Area Systems Engineering

Project construction truck trips are estimated at a total number of 600 truck trips, and a peak of five truck trips on a daily basis. Construction trucks would be utilized primarily to transport fill material and deliver building materials.

Project construction activities would require an estimated total of 250 construction workers over the entire construction period, with a peak of 57 construction workers on a daily basis. Construction workers would park on campus in designated parking areas.

The Project would prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in compliance with the requirements of the State Construction General Permit that will specify the use of appropriate best management practices (BMPs) for erosion control and spill prevention during construction and permanent post-construction stormwater management measures following construction. Best management practices would include perimeter straw waddles at all disturbed grading

areas, inlet protection at all new and existing inlets subject to potential sediment flow, rock construction entrances and designated protected concrete washout areas.

9. **Surrounding Land Uses and Setting:** The Merritt College campus is surrounded by single-family residential development to the north and south, Leona Heights Park to the west, and Leona Canyon Regional Open Space Preserve to the east. Moving farther outward from the campus, single-family residential development continues to the south/southwest, south, and south/southeast; and Redwood Regional Park is located to the north. Interstate 580 is located about 0.88 mile south of Merritt College and Skyline Boulevard is located about 0.40 mile to the north.

10. **Other public agencies whose approval is required:**

- Division of the State Architect (DSA) for disabled access, fire and life safety systems.
- San Francisco Bay Regional Water Quality Control Board for NPDES General Permit and Storm Water Pollution Prevention Plan (SWPPP).
- City of Oakland Fire Department for site access and fire hydrants/water pressure.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by the project, involving at least one impact that is a potentially significant impact as indicated by the checklist on the following pages.

☒ Aesthetics	☐ Agricultural and Forestry Resources	☒ Air Quality
☐ Biological Resources	☒ Cultural Resources	☒ Geology and Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☒ Hydrology and Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☒ Noise
☐ Population and Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities/Service Systems	☒ Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Sadiq B. Ikharo — 6-13-2012

Signature — Date

Dr. Sadiq B. Ikharo — Vice Chancellor of General Service

Printed Name — Title

EVALUATION OF ENVIRONMENTAL IMPACTS

A brief explanation is required for all answers except "No Impact" answers if these answers are adequately supported by the information sources listed in the References section for each environmental issue.

ENVIRONMENTAL ISSUES

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

Discussion

The proposed Project would result in no impacts to designated scenic highways; and less-than-significant impacts to scenic vistas and resources and the visual character of the surrounding neighborhood. The Project could generate significant light and glare impacts, however, with implementation of **Mitigation Measures AES-1** and **AES-2**, light and glare impacts associated with exterior lighting would be less than significant. A brief discussion of each environmental issue included under Section 1 is presented below.

a) Would the project have a substantial adverse effect on a scenic vista?

The proposed Project would not result in a substantial adverse effect on any scenic vista. The Project site is located on the existing Merritt College campus, which is in a predominantly residential area with open space (Leona Canyon Regional Open Space Preserve) and park (Leona Heights Park) lands abutting the easterly and westerly campus boundaries respectively.

The Leona Trail located in Leona Canyon Regional Open Space Preserve terminates at Parking Lot E on the Merritt College campus. Generally, views of the campus and Project site are not available along the trail due to topography and vegetation. Views available from the trail terminus (at Parking Lot E) looking west are of Building A and Parking Lots E and D; and views of the westerly part of the Project site are visible beyond Parking Lot D. The westerly portion of the Center for Science and Allied Health building would be visible from the Leona Trail terminus at Parking Lot E; however, the Project would be viewed within the context of existing buildings and other campus facilities. The proposed Project would result in less-than-significant impacts on scenic vistas available from the Leona Trail.

Due to intervening topography and development, the Project would not be visible from Leona Heights Park.

Residences located north of Merritt College currently have views of the campus, and some of these residences may have partial views of the Project site. The Center for Science and Allied Health building may be visible in views from some of these residences, however the building would be seem within the context of existing campus buildings and facilities. The proposed Project would not block current panoramic views of San Francisco Bay and the Oakland and San Francisco skylines presently available from residences because the Project site is at a lower elevation. The proposed Project would result in less-than-significant impacts on scenic vistas available from residences located north of the campus.

Residences located immediately south of Merritt College along Campus Drive have views of the campus and some residences have views of the Project site. Specifically, the Project site is generally not visible from residences located south/southwest of the Project site on Campus Drive because these residences are at lower elevations; and the Project site is generally visible from residences located southeast of the Project site on Campus Drive because these residences are located at higher elevations than the Project site. The District recently planted 19 canary island pine trees (*pinus canariensis*) along the southeasterly edge of Parking Lot C with the intention of screening the view of the newly installed solar structures and the light that comes from them from residences along Campus Drive. At maturity, the canary island pine tree can grow up to about 145 feet in height.

As the canary pine trees mature, they will ultimately screen some or most of the Center for Science and Allied Health building from residences located southeast of the campus along Campus Drive. Portions of the Center for Science and Allied Health building that would be visible from these residences would be seen within the context of existing campus buildings and facilities and would not obstruct background views of the hills to the north and east of the campus that are available from these residences. The proposed Project would result in less-than-significant impacts on scenic vistas available from residences located southeast of the campus along Campus Drive.

See also **Subsection 1b** below.

b) Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a scenic highway?

The proposed Project would not substantially damage scenic resources. Interstate 580, located about 0.88 mile south of Merritt College, is identified as a scenic highway in the Scenic Highways Element of the Oakland General Plan (City of Oakland 1974). The Project would not be visible from Interstate 580 due to distance, elevation, topography, intervening development and vegetation and therefore would have no adverse effect on views available from this designated scenic highway.

The portion of Skyline Boulevard located to the west of Redwood Road is designated as a scenic route by the City of Oakland (City of Oakland 1974). Skyline Boulevard is located about 0.44 mile north of the campus and while at a higher elevation than the Merritt College campus, the campus would generally not be visible from Skyline Boulevard because of trees, vegetation and residences located along the roadway. At locations where the campus is visible from Skyline Boulevard, the proposed Project would not block panoramic views of San Francisco Bay and the Oakland and San Francisco skylines available from Skyline

Boulevard because the campus is located at a significantly lower elevation than Skyline Boulevard (about 185 feet). The Project would not have an adverse effect on views available from Skyline Boulevard.

There are no historic buildings or rock outcroppings on the Project site. The Project site contains four ***trees*** The District will replace removed trees at a ratio of five to one.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The Project would not substantially degrade the existing visual character of the Project site, the Merritt College campus or the surrounding residential neighborhood. The Project site is currently vacant and consists of lawn areas, ornamental landscaping, paved pathways and areas of barren earth. The proposed Project would construct the Center for Science and Allied Health building on the vacant Project site. The building would be similar in scale to surrounding campus buildings and the proposed light earth tone colors would be compatible with other campus buildings and nearby residences. Project landscaping would enhance the building perimeter. The proposed Project would result in less-than-significant impacts to the visual character of the Project site, Merritt College campus and surrounding residential neighborhood.

See also **Subsections 1a** and **1b** above.

d) Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

The Project site is improved with paved pathways, metal railings and metal light poles. With the proposed Project, there would be a significant increase in night lighting at the Project site and an incremental increase in night lighting at the Merritt College campus. Additionally, depending on the type of building materials used on the building's exterior, there is the potential for glare. Increases in night lighting and the potential for glare at the Project site represent a potentially significant impact. With implementation of **Mitigation Measures AES-1** and **AES-2**, potentially significant light and glare impacts would be reduced to a less-than-significant level.

Mitigation Measures

AES-1 A lighting plan shall be prepared that shows the location of all building exterior light and other outdoor site lighting. Exterior light fixtures shall be hooded and light directed downwards to prevent glare and light spillover.

AES-2 Exterior building materials shall be of non-reflective materials to the greatest extent feasible to prevent glare.

References

City of Oakland. 1974. *Scenic Highways – An Element of the Oakland Comprehensive Plan*. September 1974. Available on the City of Oakland website: http://www2.oaklandnet.com/oakca/groups/ceda/documents/webcontent/dowd009021.pdf.

City of Oakland. 1996. *Open Space, Conservation & Recreation Element.* Available on the City of Oakland website: http://www.2oaklandnet.com/Government/o/PBN/OurServices/GeneralPlan/DOWD009017.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
2. AGRICULTURAL AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

There would be no impacts to agricultural and forestry resources due to the proposed Project. A brief discussion of each environmental issue included under Section 2 is presented below.

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps and prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Project site is not identified as prime farmland, unique farmland or farmland of statewide importance. The Merritt College campus is designated as Institutional under the Oakland General Plan (City of Oakland 2011). The site is an existing community college campus surrounded by residential development.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Merritt College site is zoned RH-4 Hillside Residential (City of Oakland 2011).

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The Merritt College campus does not contain any forest land. The campus is zoned RH-4 Hillside Residential (City of Oakland 2011).

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The Project site contains no forest land. See **Subsection 2c** above.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use?

The Project would not result in the conversion of any farmland or forest land for other uses. See **Subsections 2a through 2d** above.

Mitigation Measures

None required.

References

City of Oakland. 2011. *General Plan Land Use Designations Map – April 2011*. Available on the City website: http://www2.oaklandnet.com/oakca/groups/ceda/documents/imag/oak02830.pdf. Viewed on February 27, 2012.

City of Oakland. 2011. City of Oakland Zoning & Estuary Policy Plan Maps. Available on the City website: http://www2.oaklandnet.com/oakca/groups/ceda/documents/image/oak028431.pdf. Viewed on February 27, 2012.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
3. AIR QUALITY (cont.)				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

Project construction would result in temporary significant air quality impacts, however with implementation of **Mitigation Measure AIR-1** potentially significant air quality impacts would be reduced to a less-than-significant level. Operation of the proposed Project would not adversely affect air quality. A brief discussion of each environmental issue included under Section 3 is presented below.

Setting Overview

The Project site is located in Alameda County within the Northern Alameda and Western Contra Costa Counties subregion of the San Francisco Bay Area Air Basin (SFBAAB). In this area, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west.

Temperatures in this subregion have a narrow range due to the proximity of the moderating marine air. Maximum temperatures during summer average in the mid-70s, with minimums in the mid-50s. Winter highs are in the mid- to high-50s, with lows in the low- to mid-40s.

The air pollution potential is lowest for the parts of the subregion that are closest to the bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally causes elevated pollutant levels.

The air pollution potential at the northern (Richmond) and southern (Oakland, San Leandro) parts of this subregion is marginally higher than communities directly east of the Golden Gate, because of the lower frequency of strong winds.

This subregion contains a variety of industrial air pollution sources. Some industries are quite close to residential areas. The subregion is also traversed by frequently congested major freeways. Traffic and congestion, and the motor vehicle emissions they generate, are increasing.

Ambient Air Quality Standards

The federal Clean Air Act Amendments of 1970 established national ambient air quality standards (NAAQS) to which states are required to adhere. The NAAQS are intended to protect the public health and welfare. They are designed to protect those segments of the public most susceptible to respiratory distress, known as "sensitive receptors," including asthmatics, the very young, the elderly, and people weakened by other illness or disease.

The federal act also afforded individual states the option to adopt standards that are more stringent and/or include other pollutants. California had established its own air quality standards when federal standards were promulgated. Some of the California Ambient Air Quality Standards (CAAQS) are more stringent than their NAAQS counterparts.

The California Air Resources Board (CARB) is the state agency responsible for regulating air quality. The CARB's responsibilities include establishing CAAQS, emissions standards, and regulations for mobile emission sources (e.g., autos, trucks) and monitoring the efforts of county-wide and multi-county air pollution control districts, which have primary responsibility over stationary sources. The Bay Area Air Quality Management District (BAAQMD) is the regional agency responsible for air quality regulation within the San Francisco Bay Air Basin. The BAAQMD regulates air quality through its permit authority over most types of stationary emission sources and through its planning and enforcement activities.

As required by the federal Clean Air Act, criteria air pollutants were identified and ambient air quality standards were established by the federal government to protect public health and welfare. Descriptions of health-related affects associated with the criteria pollutants, are presented below.

Ozone (O_3). O_3 is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving hydrocarbons (HC) and nitrogen oxides (NO_x). O_3 is a regional air pollutant because its precursors are transported and diffused by wind concurrently with O_3 production by the photochemical reaction process. Ozone precursors are defined as chemical compounds, such as CO, methane, non-methane hydrocarbons and NO_x, which in the presence of solar radiation react with other chemical compounds to form ozone, mainly in the lower atmosphere. When inhaled, O_3 is readily delivered to terminal respiratory airways and alveolar tissue in the lungs, the major target sites for its effects. Because ozone has limited solubility in water, the upper respiratory tract is not as effective in scrubbing ozone from inhaled air as it is for more water soluble pollutants such as sulfur dioxide (SO_2). Consequently, the majority of inhaled ozone reaches the lower respiratory tract and can cause acute effects including coughing and shortness of breath. O_3 also causes eye and respiratory irritation, reduces resistance to lung infection, and may aggravate pulmonary conditions in persons with lung disease.

Carbon Monoxide (CO). CO is an odorless, invisible gas usually formed from combustion of organic substances (e.g., fuel sources). Exposure to high concentrations of CO may be lethal with death resulting from asphyxiation. Asphyxiation and sub-lethal symptoms are usually caused by poorly vented combustion appliances, idling motor vehicles in closed environments, excessive CO production, and inadequate ventilation associated with a variety of industrial occupational activities. Lower levels of CO

can impair the transport of oxygen in the bloodstream and cause fatigue, headaches, nausea, and dizziness, as well as aggravating cardiovascular disease.

Volatile Organic Compounds (VOCs). VOCs are organic chemicals that easily vaporize at room temperature. They are found in fuels, paints, coatings, consumer products, and cleaning fluids. All of these products can release organic compounds during use and to some degree when they are stored. VOCs include a wide range of individual substances such as aliphatic hydrocarbons, halogenated hydrocarbons, and oxygenated hydrocarbons such as alcohols, ethers, acids, and ketones. VOCs are emitted by a variety of sources, including gasoline and diesel engines in vehicles and construction equipment, building materials and furnishings, and consumer products. VOCs have been found to be major contributors to the production of ozone, a common air pollutant proven to be a public health hazard.

VOCs also have the potential to cause a variety of health effects. As with other pollutants, the extent and nature of the health effect will depend on many factors, including the specific chemicals, level of exposure, and length of time exposed. Health effects of VOCs may include eye, nose, and throat irritation; headaches; dizziness; loss of coordination; nausea; and damage to the liver, kidneys, and central nervous system. Some organics can cause cancer in animals and others are suspected or known to cause cancer in humans.

Particulate Matter (PM_{10} and $PM_{2.5}$). The health consequences of atmospheric particulate matter depend on its ability to penetrate respiratory defense mechanisms. In general, defense mechanisms are adequate to remove inhaled particles larger than 10 micrograms (μm) from the inhaled air stream.

PM_{10} consists of small-diameter (≤10 μm) particulate matter that is inhalable into deep lung tissue. $PM_{2.5}$ consists of particles that are respirable (≤2.5 μm) and can enter and be deposited in pulmonary tissue. Particles greater than 2.5 μm are mostly removed in the upper respiratory system. PM_{10} can include certain substances such as sulfates and nitrates that can cause lung damage directly or can contain absorbed gases and suspended droplets that may be injurious to health (e.g., benzene or other toxic contaminants). The effective toxicity of $PM_{2.5}$ particles may be greater than that of larger particles because proportions of toxic substances such as lead, mercury, zinc, and chromium increase with decreasing particle size.

In July 1997, the U.S. EPA adopted an 8-hour ozone standard and a new standard for $PM_{2.5}$. $PM_{2.5}$ is considered a better indicator than PM_{10} of health impact potential from airborne particulate matter because of its ability to penetrate deeply into human lung tissue. $PM_{2.5}$ in urban atmospheres typically contains substantial quantities of diesel particulate matter (DPM).

Lead (Pb). Lead is a highly toxic metal that produces a range of adverse health effects, particularly in young children. It can disturb the gastrointestinal system and cause anemia, kidney disease, and neuromuscular and neurological dysfunction. Present sources include lead smelters, deterioration of lead paint, battery manufacturing, and recycling facilities, while past sources include the combustion of leaded gasoline.

Nitrogen Dioxide (NO_2). NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial combustion operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Sulfur Dioxide (SO_2). SO_2 is a colorless acidic gas with a strong odor. It has potential to damage materials and it can have adverse health effects at high concentrations. It is produced by the combustion of sulfur-containing fuels, such as oil, coal, and diesel. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Regulatory Setting

Federal

The Clean Air Act (CAA) Amendment of 1977 required that the regional planning and air pollution control agencies prepare a regional Air Quality Plan to achieve all standards within the deadline specified in the CAA. The main purpose of an Air Quality Plan is to bring a region into compliance with the requirements of federal and state air quality standards. In 1982, an Air Quality Plan for the San Francisco Area Air Basin was adopted and incorporated in the original California State Implementation Plan. The 1982 Air Quality Plan described the air pollution control strategies necessary to bring the Bay Area into attainment for all of the NAAQSs by 1987.

Due to a fluctuation in the attainment status for ozone, the BAAQMD adopted an Ozone Attainment Plan in June 1999. This document has been updated in 2001 and most recently in 2005 (BAAQMD 2006).

As summarized in **Table 2,** the San Francisco Bay Area Air Basin is currently "in attainment" for the national standards for CO, NO_2, SO_2, Pb and $PM_{2.5}$. The San Francisco Bay Area ozone status for the federal 8-hour standard is "non-attainment." The national 1-hour ozone standard was revoked by the U.S. EPA on June 15, 2005. The 24-hour standard for PM_{10} is unclassified under the federal standards.

State

In 1988 California passed the California CAA (Assembly Bill 2595), which like its federal counterpart, called for designations of areas as attainment or non-attainment based on the state Ambient Air Quality Standards rather than federal standards. To bring the San Francisco Bay Area into attainment with the state standards, the BAAQMD developed the Bay Area 1991 Clean Air Plan (CAP) to provide a comprehensive strategy to reduce air pollution emissions. The BAAQMD has provided updates to this document in 1994, 1997, 2000, and 2010.

As summarized in **Table 2**, the San Francisco Bay Area Air Basin is currently "in attainment" for the state standards for CO, NO_2, SO_2, and sulfates. The current status of the San Francisco Bay Area Air Basin for 1-hour and 8-hour ozone, 24-hour and annual PM_{10}, and annual $PM_{2.5}$ standards is "non-attainment."

TABLE 2: AIR QUALITY STANDARDS ATTAINMENT STATUS FOR THE SAN FRANCISCO BAY AREA AIR BASIN

Parameter		State Standard		Federal Standard	
Ozone (O_3)	1-Hour	0.09 ppm (180 μg/m³)	**Non-Attainment**	--	No Federal Standard
	8-Hour	0.070 ppm (137μg/m³)	**Non-Attainment**	0.075 ppm	**Non-Attainment**
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m³)	Attainment	35 ppm (40 mg/m³)	Attainment
	8-Hour	9.0 ppm (10 mg/m³)	Attainment	9 ppm (10 mg/m³)	Attainment
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm (339 μg/m³)	Attainment	0.100 ppm	Unclassified
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	Attainment	0.053 ppm (100 μg/m³)	Attainment
Sulfur Dioxide (SO_2)	1-Hour	0.25 ppm (655 μg/m³)	Attainment	0.075 ppm (196 μg/m³)	Attainment
	24-Hour	0.04 ppm (105 μg/m³)	Attainment	0.14 ppm (365 μg/m³)	Attainment
	Annual Arithmetic Mean	--	No State Standard	0.030 ppm (80 μg/m³)	Attainment
Particulate Matter (PM_{10})	24-Hour	50 μg/m³	**Non-Attainment**	150 μg/m³	Unclassified
	Annual Arithmetic Mean	20 μg/m³	**Non-Attainment**	--	No Federal Standard
Particulate Matter – Fine ($PM_{2.5}$)	24-Hour	--	No State Standard	35 μg/m³	**Non-Attainment**
	Annual Arithmetic Mean	12 μg/m³	**Non-Attainment**	15 μg/m³	Attainment
Lead (Pb)	30 Day Average	1.5 μg/m³	See Note 1	--	No Federal Standard
	Calendar Quarter	--	No State Standard	1.5 μg/m³	Attainment
	Rolling 3-Month Average	--	No State Standard	0.15 μg/m³	Attainment
Sulfates	24-Hour	25 μg/m³	Attainment	--	No Federal Standard

Notes:

[1] ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure below which there are no adverse health effects determined.

[2] National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations expected October 2011.

Source: BAAQMD. "Ambient Air Quality Standards and Bay Area Attainment Status." http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm. Accessed February 2012.

Toxic Air Contaminants. Toxic air contaminants (TACs) are pollutants that are associated with acute, chronic, or carcinogenic effects but for which no NAAQS or CAAQS has been established; or, in the case of carcinogens, for which no ambient air quality standard is appropriate.

Ambient Air Quality Monitoring. The BAAQMD operates a regional monitoring network that measures the ambient concentrations of six criteria air pollutants: O_3, CO, Particulate Matter (PM_{10} and $PM_{2.5}$), Pb, NO_2, and SO_2. The BAAQMD also established a monitoring system for toxic constituents including VOCs, metals and other inorganic compounds. Existing and probable future levels of air quality within the Project site vicinity can be best inferred from ambient air quality measurements conducted by the BAAQMD, and reported by the CARB, at the monitoring station located in Oakland, Alameda County, California. **Table 3** presents a summary of monitoring data for the three most recent years reported by the BAAQMD and the CARB for non-attainment pollutants (O_3, PM_{10}, $PM_{2.5}$).

TABLE 3: AMBIENT AIR QUALITY MONITORING SUMMARY (2007-2009)[a]
(Days Standards Were Exceeded and Maximum Concentrations Observed)

Pollutant / Standard	2008	2009	2010
Ozone (O_3)			
1-Hr. > 0.09 ppm (S)	0	0	1
8-Hr. > 0.07 ppm (S)	0	0	0
8-Hr. > 0.08 ppm (F)	0	0	0
Max. Measured 1-Hr. Conc. (ppm)	0.086	0.092	0.097
Max. Measured 8-Hr. Conc. (ppm)	0.064	0.062	0.058
Particulate Matter (PM_{10})			
24-Hr. > 50 µg/m³ (S)	0[b]	0[b]	0
24-Hr. > 150 µg/m³ (F)	0[b]	0[b]	0
Max. Measured 24-Hr. Conc. (µg/m³)	44[b]	34[b]	43
Fine Particulates ($PM_{2.5}$)			
24-Hr. > 35 µg/m³ (F)	0	1	0
Max. Measured 24-Hr. Conc. (µg/m³)	30.1	36.3	25.2

Notes:
[a] 2008-2010 are the three most recent years of monitoring data published by BAAQMD at the writing of this document.
[b] PM10 monitoring was not conducted at the Oakland monitoring locations. These data reflects the Berkeley station located approximately 10-miles north of the proposed Project.
--- = No data available
(F) = Federal Clean Air Standard
(S) = State Clean Air Standard

Source: BAAQMD – Oakland Monitoring Station, BAAQMD Annual Air Quality Reports. http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx

Method of Analysis

This air quality analysis was conducted in March 2012, in accordance with the 2011 BAAQMD CEQA Guidelines. Following completion of the analysis, but prior to publication of this Mitigated Negative Declaration/Initial Study, BAAQMD issued a statement on April 13, 2012 stating that as a result of an Alameda County Superior Court decision on March 5, 2012, BAAQMD is no longer recommending the use of their 2011 CEQA Guidelines (http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx). This decision was based on the finding that BAAQMD had failed to comply with CEQA when adopting the 2011 thresholds of significance (Thresholds). The court did not determine whether the Thresholds were valid on the merits, but found that the adoption of the Thresholds was a project under CEQA. The statement from BAAQMD concludes that lead agencies will need to determine appropriate thresholds of significance based on substantial evidence in the record.

The 2011 BAAQMD CEQA Guidelines provide more stringent Thresholds and provide Thresholds for impacts not previously evaluated in the 1999 BAAQMD CEQA Guidelines, as shown in **Table 4**. The District has chosen to undertake a more conservative analysis and apply the 2011 BAAQMD CEQA Guidelines to the proposed Project.

TABLE 4: COMPARISON OF 1999 AND 2011 BAAQMD CEQA GUIDELINE THRESHOLDS

	1999 CEQA Guideline Thresholds	2011 CEQA Guideline Thresholds
Operational ROG	80 lb/day	54 lb/day
Operational NOx	80 lb/day	54 lb/day
Operational PM10	80 lb/day	82 lb/day
Operational PM2.5	--	54 lb/day
Operational CO	Based on vehicle traffic	9.0 ppm (8-hr), 20.0 ppm (1-hr)
Construction ROG	--	54 lb/day
Construction NOx	--	54 lb/day
Construction PM10	BMPs	82 lb/day (exhaust), BMPs for dust
Construction PM2.5	--	54 lb/day (exhaust), BMPs for dust
Toxic Air Contaminants	Cancer Risk > 10 in one million Hazard Index > 1.0	Cancer Risk > 10 in one million, Hazard Index > 1.0, Ambient PM2.5 increase >0.3 ug/m3
Greenhouse Gases	--	Compliance with Qualified Greenhouse Gas Reduction Strategy OR 1,100 MT of CO2e/yr OR 4.6 MT CO2e /SP/yr (residents + employees)

Construction

Emission levels for construction activities vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers. In accordance with 2011 BAAQMD methodology (BAAQMD 2011a), to determine the potential impacts Project construction may have on air quality, the CARB-approved Urban Emissions Model (URBEMIS) 2007 Version 9.2.4 was used. URBEMIS is a computer program that can be used to estimate emissions associated with land

development projects. **Appendix A** includes the results of the URBEMIS estimates. Construction impacts were assessed through comparison with BAAQMD screening levels (based on Project size) and emissions estimates developed using URBEMIS 2007 Version 9.2.4.

Operation

Operational emissions are from mobile, area (e.g., consumer product use, landscaping equipment) and stationary sources. Operational impacts were assessed through comparison with BAAQMD screening levels.

The 2011 BAAQMD CEQA Guidelines (BAAQMD 2011b) state that a stationary source facility consists of a single emission source with an identified emission point, such as a stack at a facility. Based on the definition of stationary sources provided by the BAAQMD, the proposed Project is not considered a stationary source facility.

a) Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

The proposed Project would not conflict with or obstruct implementation of the BAAQMD Clean Air Plan. An air quality plan describes air pollution control strategies to be implemented by a city, county, or region classified as a non-attainment area. The main purpose of an air quality plan is to bring the area into compliance with the requirements of federal and state air quality standards. To bring the San Francisco Bay Area region into attainment, the BAAQMD developed the 2010 Clean Air Plan (BAAQMD 2010). BAAQMD's 2010 Clean Air Plan intends to:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Provide a control strategy to reduce ozone, particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2010-2012 timeframe.

The attainment status of the San Francisco Bay Area Air Basin with respect to state and federal standards is presented in **Table 2** above. Because the proposed Project would not violate air quality standards or exceed emissions thresholds with implementation of **Mitigation Measure 3.1** as discussed in **Subsection b** below, and is consistent with current air quality management policies, the proposed Project would not conflict with the BAAQMD's 2010 Clean Air Plan, and therefore would have a less-than-significant impact with mitigation.

b) Would the proposed Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

The proposed Project could violate air quality standards or contribute substantially to an existing or projected air quality violation during Project construction activities, which is considered a potentially

significant impact. However, with implementation of **Mitigation Measure AIR-1**, potentially significant air quality impacts would be reduced to a less-than-significant level. During Project operation, no air quality standards would be violated. The 2011 BAAQMD CEQA Guidelines provide thresholds of significance for project impacts, including criteria pollutants, local CO, risks and hazards for new sources and receptors, TACs, and odors. In addition to the thresholds, the 2011 BAAQMD Guidelines identify screening criteria to provide lead agencies and project applicants with a conservative indication of whether a proposed project could result in potentially significant air quality impacts. If the screening criteria are met by a proposed project, then the Lead Agency or applicant would not need to perform a detailed air quality assessment of their project's air pollutant emissions. **Table 5** presents the thresholds of significance developed by the BAAQMD. Screening criteria are discussed below.

Construction-Related Emissions. The 2011 BAAQMD CEQA Guidelines provide screening criteria which provide the Lead Agency with a conservative indication of whether a proposed project would result in the generation of construction-related criteria air pollutants and/or precursors that exceed the thresholds of significance. If a project meets all three screening criteria, it is not considered to generate significant construction-related criteria air pollutants and/or precursors. The construction-related emissions screening criteria are as follows:

1. The project is below the applicable screening level size (277,000 square feet and 3,012 students for a junior college);
2. All *Basic Construction Mitigation Measures* would be included in the project design and implemented during construction;
3. Construction-related activities would not include any of the following:
    a. Demolition;
    b. Simultaneous occurrence of more than two construction phases;
    c. Simultaneous construction of more than one land use type;
    d. Extensive site preparation; or
    e. Extensive material transport.

The proposed Project would meet Emission Screening Criterion 1 – the project building is 110,866 gross square feet and would not increase student enrollment; and Emission Screening Criterion 2 – the Project would implement **Mitigation Measure AIR-1**, which would include all Basic Construction Mitigation Measures; however, because the construction site is greater than one acre, the Project would not meet Emission Screening Criterion 3d. Therefore, further evaluation is necessary to verify that the BAAQMD thresholds of significance would be met. This evaluation is presented below.

Emissions from construction activities associated with the Project would occur over a short term (about eighteen months). **Table 5** shows the estimated construction emissions from URBEMIS calculations and compares them with the 2011 BAAQMD CEQA Guidelines thresholds of significance. The URBEMIS calculations account for the proposed construction timeline discussed in the Project Description (see

TABLE 5: BAAQMD ADOPTED PROJECT-LEVEL AIR QUALITY CEQA THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
ROG[a]	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust only)	82	15
$PM_{2.5}$	54 (exhaust only)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
Risk and Hazards – New Source (Individual Project)	Same as Operational Thresholds[b]	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m³ annual average **Zone of Influence:** 1,000-foot radius from fence line of source or receptor	
Risk and Hazards – New Receptor (Individual Project)	Same as Operational Thresholds[b]	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m³ annual average **Zone of Influence:** 1,000-foot radius from fence line of source or receptor	
Risk and Hazards – New Source (Cumulative Thresholds)	Same as Operational Thresholds[c]	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m³ annual average (from all local sources) **Zone of Influence:** 1,000-foot radius from fence line of source or receptor	
Risk and Hazards – New Receptor (Cumulative Thresholds)	Same as Operational Thresholds[c]	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m³ annual average (from all local sources) **Zone of Influence**: 1,000-foot radius from fence line of source or receptor	

TABLE 5: BAAQMD ADOPTED PROJECT-LEVEL AIR QUALITY CEQA THRESHOLDS OF SIGNIFICANCE (Continued)

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous materials located near receptors or receptors located near stored or used acutely hazardous materials considered significant	
Odors	None	Complaint History—5 confirmed complaints per year averaged over three years	

Notes:

lb/day = pounds per day
MT = metric tons
ppm = parts per million
ROG[a] = reactive organic gases
NO_x = Oxides of nitrogen
SP = service population
TBP = toxic best practices
tons/day = tons per day
tpy = tons per year
yr= year
$\mu g/m^3$ = micrograms per cubic meter

[a] In this evaluation, ROG is equivalent to VOC

[b] NO_x are primarily composed of NO and NO_2. NO_2 is the primary NO_x of concern to human health.

[c] BAAQMD recommends that for construction projects that are less than one year duration, Lead Agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year.

Source: BAAQMD CEQA Guidelines, May, 2011

Table 1) and utilize the model's default construction equipment assumptions for the construction activities discussed in the Project Description. Based on the maximum daily traffic of five trucks per day, it was assumed that the Project would include importing of approximately 2,795 cubic yards of soil for earthwork. As shown in **Table 6**, emissions from construction equipment would be less than significant based on the 2011 BAAQMD Guidelines. With implementation of **Mitigation Measure AIR-1**, the Project would be in compliance with BAAQMD best management practices (BMPs) for dust control.

Operational-Related Emissions. Operational emissions associated with the operation of the proposed Project (i.e., following the completion of construction through the lifetime of the proposed Project) are discussed below.

Criteria Air Pollutants and Precursors. The 2011 BAAQMD CEQA Guidelines provide screening values based on size and land use and are provided in Table 3-1 of the Guidelines. The screening thresholds for criteria air pollutants and precursors for junior colleges, as stated in the 2011 BAAQMD CEQA Guidelines, are 152,000 square feet or 2,865 students. The proposed Project would include 110,866 square feet of new classroom space. School facilities capacity would not be affected. Therefore, the Project would be below the BAAQMD screening thresholds and would result in less-than-significant criteria air pollutant and precursor emissions.

Carbon Monoxide (CO). Local ambient air quality is most affected by CO emissions from motor vehicles. CO is a contaminant of great concern because it is the pollutant created in greatest abundance by motor vehicles creating pockets of high CO concentrations called "hot spots" in areas of vehicular

TABLE 6: PROJECT CONSTRUCTION AIR EMISSIONS

	ROG	NOx	PM_{10} (exhaust)	PM_{10} (dust)	$PM_{2.5}$ (exhaust)	$PM_{2.5}$ (dust)
Estimated Proposed Project Unmitigated Maximum (lbs/day)	38.40	44.10	2.21	9.27	2.03	1.94
Reduction from Mitigation Measures (lbs/day)	0	0	0	8.56	0	0
Estimated Proposed Project Mitigated Maximum (lbs/day)	38.40	44.10	2.21	0.71	2.03	0.16
2011 BAAQMD Guidelines' Significance Criteria (lbs/day)	**54**	**54**	**82**	**BMPs**	**54**	**BMPs**
Exceed Significance Threshold?	NO	NO	NO	NA	NO	NA

Notes:
BMPs = Best Management Practices
NA = Not Applicable

Source: ARCADIS (see Appendix A)

congestion. These pockets have the potential to exceed the state 1-hour standard of 20 ppm of CO and/or the 8-hour standard of 9.0 ppm (CAAQS).

CO transport is limited; it disperses with distance from the source under normal meteorological conditions. Under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels, adversely affecting the health of local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes.

The screening criteria for local CO impacts are as follows:

1. *The proposed Project is consistent with applicable congestion management programs established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management plans.*

2. *The proposed Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.*

3. *The proposed Project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (i.e., tunnel, bridge underpass, natural or urban street canyon, below-grade roadway).*

Because the overall facility's capacity of Merritt College would not change as a result of the proposed Project, the traffic associated with the facility's operation would not increase compared to baseline conditions. The proposed Project would be consistent with the Alameda County Traffic Management Program which aims to maintain or improve transportation service levels (Alameda County 2009). Based on the screening criteria, the proposed Project would have no impact on local CO emissions.

Local Community Risk and Hazard Impacts. TACs are defined in the 2011 BAAQMD CEQA Guidelines as airborne pollutants that may pose a present or potential hazard to human health. Quantitative analysis of TACs was performed, and the risk is discussed in **Subsection d** below. As discussed in **Subsection d** below, the proposed Project is not expected to expose the public to significant levels of TACs.

c) Would the proposed Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?

The proposed Project would not result in a cumulatively considerable net increase in any criteria pollutants. With mitigation (see **Subsection b** above), the Project would reduce temporary construction impacts to less than significant. Project operations would result in a less-than-significant impact. Since the proposed Project would result in less-than-significant impacts with implementation of **Mitigation Measure AIR-1**, as described above, the proposed Project would not result in a cumulatively considerable impact.

d) Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

The proposed Project could expose sensitive receptors to substantial pollutant concentrations during construction activities; however, with implementation of **Mitigation Measure AIR-1**, potentially significant air quality impacts would be reduced to a less-than-significant level.

Land uses or facilities that include members of the population that are particularly sensitive to the effects of air pollutants, such as children the elderly, and people with illness (located in residential developments, schools, children's day care centers, hospitals, and convalescent homes) are considered to be sensitive receptors. The proposed Project represents a modification to the existing Merritt College campus. A preschool is present within the Merritt College Campus and constitutes a sensitive receptor. Additionally, residences are located approximately 450 feet north of the construction area, and would also constitute sensitive receptors. Project construction has the potential to generate significant air pollutants, however, as discussed in **Subsection 3b** above, with the implementation of **Mitigation Measure AIR-1**, the criteria pollutant emissions from construction would be less than significant.

Siting a New Source. When siting a new source of TACs, the following are considered to identify impacts to existing or future proposed receptors:

- the extent to which the new source would increase risk levels, hazard index, and/or PM2.5 concentrations at nearby receptors,
- whether the source would be permitted or non-permitted by the BAAQMD, and
- whether the project would implement Best Available Control Technology for Toxics (T-BACT), as determined by BAAQMD.

Construction Emissions. A screening-level health risk assessment consistent with BAAQMD's Recommended Methods for Screening and Modeling Local Risks and Hazards (BAAQMD 2011b) was conducted to evaluate the potential impacts from construction emissions emanating from the proposed Project. Construction emissions analyzed included diesel particulate matter (DPM) from construction equipment exhaust and PM2.5 fugitive dust from vehicle movement on the unpaved construction site. Implementation of **Mitigation Measure AIR-1** was included in the evaluation. The SCREEN3 model was used to estimate air concentrations associated with construction activities. SCREEN3 was designed as a screening version of the Industrial Source Complex (ISC) model and represents a worst-case estimate of air impacts. Air concentrations at the adjacent Merritt College Laboratory Center (preschool) and the nearest residential property located approximately 100 meters to the northeast were evaluated and compared to the health-based significance thresholds discussed above. As presented in **Appendix A**, emissions associated with construction activities would be below all health-related significance thresholds. Therefore, with mitigation, Project construction emissions would be less than significant.

Operations. Operation of the proposed Project would not generate TACs.

e) Would the proposed Project create objectionable odors affecting a substantial number of people?

During Project construction, odors associated with the operation of diesel equipment would be temporary and limited to the immediate area of the construction activity and are considered to be less than significant. There would be no objectionable odors upon completion of the Project.

Mitigation Measures

AIR-1 The Project shall comply with applicable measures listed in the 2011 BAAQMD CEQA Guidelines. The following construction mitigation measures shall be implemented:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All sidewalks to be paved shall be completed as soon as possible.
5. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
6. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
7. Post a publicly visible sign with the telephone number and person to contact at Peralta School District regarding dust complaints. This person shall respond and take corrective

action within 48 hours. The Bay Area Quality Management District's phone number shall also be visible to ensure compliance with applicable regulations.

References

Bay Area Air Quality Management District (BAAQMD). 2006. Bay Area 2005 Ozone Strategy. Adopted January 4, 2006. http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Bay-Area-Ozone-Strategy/2005-Bay-Area-Ozone-Strategy.aspx

_____. 2010. Bay Area 2010 Clean Air Plan (CAP). Adopted September 15, 2010. http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx

_____. 2011a. Recommended Methods for Screening and Modeling Local Risks and Hazards. May. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20Modeling%20Approach.ashx?la=en

_____. 2011b. California Environmental Quality Act (CEQA) Air Quality Guidelines. May. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
4. BIOLOGICAL RESOURCES. 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 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 or US 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 or ordinance?	☐	☐	☐	☒

4. BIOLOGICAL RESOURCES (cont.)	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion

There would be no impacts to biological resources due to the proposed Project. A brief discussion of each environmental issue included under Section 4 is presented below.

a) Would the project 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 or U.S. Fish and Wildlife Service?

The proposed Project would not have a substantial adverse effect on any species identified as candidate, sensitive or special status by the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) or local plans, policies and regulations. The 1.84-acre Project site contains paved pathways, grass areas, some ornamental landscaping (including four trees), and patches of bare earth, and is surrounded by campus development.

b) Would the project 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 Project site does not contain riparian habitat or sensitive natural communities. See **Subsection 4a** above.

c) Would the project 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?

The Project site does not contain federally protected wetlands. See **Subsections 4a** and 4**b** above.

d) Would the project 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?

The Project would not interfere with the movement of native resident or migratory fish or wildlife species. The Project site is located on the existing Merritt College campus.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Project is the new Center of Science and Allied Health located on the Merritt College campus and consequently is not subject to City of Oakland policies or ordinances. The project does not contain biological resources (see **Subsections 4a through 4d** above). The Project would remove up to four existing trees and would replace removed trees at a ratio of five to one.

f) Would the project 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 Project site is not within the boundaries of any conservation plan, and would not conflict with any habitat conservation plan or natural community conservation plans (City of Oakland 1996).

Mitigation Measures

None required.

References

City of Oakland. 1996. *Open Space, Conservation and Recreation (OSCAR) Element*. Available on the City's website: http://www.2oaklandnet.com/Government/o/PBN/OurServices/GeneralPlan/DOWD009017.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

There are no known archaeological or paleontological resources or human remains present at the Project site. If unknown archaeological resources or human remains were discovered during Project construction activities, implementation of **Mitigation Measures CUL-1** and **CUL-2** would reduce potentially significant impacts to a less than significant level. A brief discussion of each environmental issue included under Section 5 is presented below.

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

There are no historic resources as defined in Section 15064.5 on the Merritt College campus. The college campus was constructed between 1968 and 1978. The Project site is vacant with minimal improvements consisting of some ornamental landscaping, paved pathways, railings and light poles.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

There are no archaeological resources known to be present at the Project site. The campus site has undergone significant ground disturbance due to the construction of buildings and other campus facilities. Although the Project site is essentially vacant, disturbance has occurred resulting from the construction of paved pathways, installation of outdoor lighting and railings, and planting of trees. Campus records do not show any documented reports of disturbance of cultural resources at the Project site or campus in general. It is highly unlikely that unknown archaeological resources would be disturbed on the Project site. However, in the event archaeological resources were to be discovered during Project construction, implementation of **Mitigation Measure-CUL-1** would reduce potentially significant impacts to unknown archaeological resources to a less-than-significant level.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic formation?

There are no paleontological resources known to be present at the Project site. As discussed under **Subsection 5b** above, the Project site has undergone site disturbance during campus construction, and it is highly unlikely paleontological resources are present onsite. However, in the event paleontological resources were to be discovered during Project construction, implementation of **Mitigation Measure-CUL-1** would reduce potentially significant impacts to unknown paleontological resources to a less-than-significant level.

d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

The Project would not disturb any known human remains. The campus site underwent extensive disturbance during the construction of buildings and other campus facilities. No human remains were discovered during construction activities; and it is highly unlikely that human remains are present on the Project site. However, in the event human remains were to be discovered during Project construction, implementation of **Mitigation Measure-CUL-2** would reduce potentially significant impacts to unknown human remains to a less-than-significant level.

Mitigation Measures

CUL-1 In the event archaeological or paleontological materials are discovered during Project construction, work shall be halted in the area of the find and a qualified professional archaeologist and/or paleontologist shall be contacted for further review and recommendations.

CUL-2 In the event human remains are discovered during Project construction, work shall cease immediately in the area of the find and the Alameda County Coroner shall be notified within 24 hours of the discovery. If the Coroner determines that the remains are Native American, the Native American Heritage Commission (NAHC) shall be contacted to recommend appropriate disposition of the remains.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
6. GEOLOGY AND SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a know fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit of soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

This section is based on the *Geohazards Report Proposed Allied Health Building – Merritt College Campus 12500 Campus Drive –Oakland, CA* (2009a) and the *Geotechnical Study Proposed New Allied Health Building Merrit College Campus 12500 Campus Drive – Oakland, CA* (2009b) prepared by Jensen-Van Lienden Associates, Inc. The proposed Project site is subject to ground shaking during seismic events. This condition represents a potentially significant impact, however **Mitigation Measure-GEO-1** would reduce potentially significant impacts to a less-than-significant level. A brief discussion of each environmental issue included under Section 6 is presented below.

a) Would the project expose people or structures to potential substantial adverse affects, including the risk of loss, injury, or death?

(i) The Project site is not located within an Alquist-Priolo Earthquake Rupture Zone. No fault traces have been mapped on the site. The closest active fault is the Hayward fault located about 0.81 mile to the northeast of the Project site.

(ii) The Project site is within the San Francisco Bay Area, which is considered to be an active seismic region due to the presence of several active faults. The closest active fault is the Hayward fault (located 0.81 mile northeast of the Project site) which is capable of generating earthquake ground motion of significant strength to cause damage at the Project site. This is considered a potentially significant impact. Implementation of **Mitigation Measure GEO-1** would reduce potentially significant seismic impacts to a less-than-significant level.

(iii) The Project site is not located within a mapped Hazard Zone. Test borings indicate thin upper layers of sandy soil and zones of fractured, weathered bedrock. The sandy soils are dense and above the water table, and therefore, not vulnerable to liquefactions.

(iv) The Project site is gradually sloping and has generally uniform subsurface conditions. Landsliding during an earthquake is unlikely.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Site development would cause soil disturbance which may result in soil erosion. This is a potentially significant impact. See **Section 9 Hydrology and Water Quality** for a discussion of soil erosion impacts and recommended mitigation measures.

c) Would the project be located on a geologic unit of soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or-offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

The Project site is not located within a Seismic Hazard Zone identified as susceptible to liquefaction hazards during a major seismic event, thus the potential for liquefaction and subsidence is not considered a potentially significant impact. The site slopes are gradual and the subsurface profile is strong, therefore the potential for lateral spreading and landsliding is unlikely.

d) Would the project be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial risks to life or property?

Up to three feet of fill overlays bedrock at the Project site. The site does not contain expansive soils.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Merritt College is connected to the City of Oakland sewer system and would not utilize any septic tanks or other alternative wastewater disposal systems.

Mitigation Measure

GEO-1 The recommendations included in the *Geotechnical Study Proposed New Allied Health Building Merritt College Campus 12500 Campus Drive – Oakland, CA* prepared by Jensen-Van Lienden Associates, Inc. shall be incorporated into the Project design.

References

Jensen-Van Lienden Associates, Inc. 2009a. *Geologic Hazards Report Proposed Allied Health Building – Merritt College Campus 12500 Campus Drive – Oakland, CA*. October 26, 2009.

Jensen-Van Lienden Associates, Inc. 2009b. *Geotechnical Study Proposed New Allied Health Building Merritt College Campus 12500 Campus Drive – Oakland, CA*. October 26, 2009.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
7. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion

Project construction would result in less than significant greenhouse gas emissions and impacts to climate change. Operation of the Project would not adversely affect air quality. A brief discussion of each environmental issue included under Section 7 is presented below.

Overview

Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of greenhouse gases (GHGs) contribute to global warming or global climate change and have a broader, global impact. Global warming is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the earth's atmosphere. The principal GHGs contributing to global warming are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. These gases allow visible and ultraviolet light from the sun to pass through the atmosphere, but they prevent heat from escaping back into space. Global climate change has the potential to impact sea level, water supply, agricultural resources, and natural wildlife habitats.

Anthropogenic (human generated) greenhouse gases are primarily produced through the use of stationary and mobile engines running on fossil fuels (for example: coal, gasoline, diesel, natural gas, etc.). GHG emissions can be reduced through the use of alternative fuels and reduced reliance on fossil fuel energy and transportation.

In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (BAAQMD 2011). California produced 474 million gross metric tons (MMT) of CO_2 equivalent (CO_2e)[1] averaged over the period from 2002 to 2004. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2002 to 2004, accounting for 38 percent of total GHG emissions in the state. This sector was followed by the electric power sector (including both in-state and out-of-state sources; 18 percent) and the industrial sector (21 percent) (BAAQMD 2011).

Regulatory Setting

Federal Regulations

Supreme Court Ruling. The United States Environmental Protection Agency (U.S. EPA) is the Federal agency responsible for implementing the Clean Air Act (CAA). The U.S. Supreme Court ruled in its decision in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120), issued on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs.

U.S. EPA Actions. On September 22, 2009, the U.S. EPA issued the Mandatory Reporting Rule will require facilities generating more than 25,000 metric tons of CO_2 per year to report GHG emissions (U.S. EPA 2010a). An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

On May 13, 2010, the U.S. EPA issued a final rule that establishes a common sense approach to addressing greenhouse gas emissions from stationary sources under the CAA permitting programs ("Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule"; U.S. EPA 2010b). This final rule sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain PSD and Title V permits. Facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters— power plants, refineries, and cement production facilities. The rule establishes a schedule that will initially focus CAA permitting programs on the largest sources with the most CAA permitting exposure. The rule then

[1] CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 23 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in CO_2e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

expands to cover the largest sources of GHG that may not have been previously covered by the CAA for other pollutants. Finally, it describes EPA plans for any additional steps in this process.

The tailoring rule is divided into two steps. During the first step, only facilities that are currently subject to PSD or Title V permitting programs would be subject to permitting requirements for their GHG emissions. For these projects, only GHG increases of 75,000 tpy or more of total GHG, on a CO_2e basis, would need to evaluate Best Available Control Technology (BACT) for their GHG emissions. During the first step, no sources would be subject to Clean Air Act permitting requirements due solely to GHG emissions. In the second phase (2011 – 2013), PSD and Title V permitting requirements will cover for the first time, new construction projects that emit GHG emissions of at least 100,000 tpy even if they do not exceed the permitting thresholds for any other pollutant. Modifications at existing facilities that increase GHG emissions by at least 75,000 tpy will be subject to permitting requirements, even if they do not significantly increase emissions of any other pollutant.

State Regulations

California Assembly Bill No. 32 (AB-32), also known as the Global Warming Solutions Act, was passed on August 31, 2006. AB 32 requires the reduction of statewide GHG emissions to 1990 levels by 2020. Regulating CO_2, which is the major greenhouse gas contributor to global warming, has been the main focus for achieving the 1990 levels. The required reductions equate to approximately 30 percent reductions from expected 2020 "business as usual" GHG emissions. The reductions will be accomplished through an enforceable statewide cap beginning in 2012, which is detailed in the CARB's Climate Change Scoping Plan (CARB 2008).

Further GHG regulations on the state level include:

- SB 1078 (2002) requires that retail sellers of electricity must provide at least 20 percent of their supply from renewable energy sources by 2017. SB 107 (2006) changed the target date from 2017 to 2010. Executive Order S-14-08 (2008) increases the state's Renewable Energy Standard to 33 percent by 2020.

- SB 97 (2007) identifies climate change as a prominent environmental issue that requires analysis under CEQA.

- Executive Order S-3-05 (2005) established GHG reduction targets of 2000 level by 2010, 1990 level by 2020 and to 80 percent below 1990 level by 2050. In response, the California Climate Action Team was developed including members from various state agencies and commissions.

- Executive Order S-13-08 (2008) directed the Governor's Office of Planning and Research (OPR) to provide land use planning and guidance related to sea level rise and other climate change impacts by May 30, 2009, and requires the California Resources Agency to prepare the first California Sea Level Rise Assessment Report by December 1, 2010.

- Executive Order S-1-07 (2007) proclaimed transportation emissions to be responsible for 40 percent of statewide GHG emissions. The executive order established a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 20 percent by 2020.

Regional Regulations

The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin (BAAQMD web site September 2010, http://www.baaqmd.gov/Divisions/Planning-and-Research/Climate-Protection-Program.aspx). The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

In addition to the BAAQMD climate protection program, Alameda County has taken many steps towards sustainability and climate change leadership. Policies include the Climate Action Plan for Government Services and Operations Resolution (adopted 2010), Green Building Ordinance for Commercial and Residential (adopted 2009), Cool Counties Declaration (adopted 2007), and the Climate Change Leadership Resolution (adopted 2006).

Method of Analysis

As discussed in Method of Analysis under **Section 3 Air Quality**, the District has chosen to undertake a more conservative air quality analysis and apply the 2011 BAAQMD CEQA Guidelines to the proposed Project. Thus, the proposed Project was compared with applicable screening criteria identified in the 2011 BAAQMD CEQA Guidelines to determine potential impacts from GHG emissions. URBEMIS was used to estimate construction emissions.

a) Would the proposed Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Based on the BAAQMD CEQA Guidelines, the proposed Project would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. The 2011 BAAQMD Guidelines provide thresholds of significance for project impacts from GHG emissions. **Table 7** presents the thresholds of significance developed by the BAAQMD.

Construction. As stated in the 2011 BAAQMD CEQA Guidelines, the BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. The 2011 BAAQMD CEQA Guidelines recommend that the Lead Agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-related GHG emission impacts in relation to meeting AB 32 GHG reduction goals. BAAQMD recommends using URBEMIS to calculate construction-related GHG emissions for construction of proposed land use projects. Additionally, BAAQMD recommends the incorporation of feasible best management practices (BMPs) to reduce GHG emissions during construction.

TABLE 7: BAAQMD PROJECT-LEVEL GHG CEQA THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
GHGs - Projects other than Stationary Sources	None	Compliance with Qualified Greenhouse Gas Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e /SP/yr (residents + employees)	
GHGs - Stationary Sources	None	10,000 MT/yr	

Notes:

CO2e = carbon dioxide equivalent MT = metric tons
SP = service population yr = year

Source: BAAQMD Guidelines 2011

Using URBEMIS (as discussed in **Section 3 Air Quality**), the estimated maximum daily CO_2 emissions from the proposed Project would be 6,350 lbs/day. Based on the construction schedule provided in the Project Description, the proposed Project would have an estimated GHG total of 481 metric tons of CO_2. GHG emissions from construction would be slightly reduced below the calculated levels through the implementation of the *Basic Construction Mitigation Measures* (identified in **Mitigation Measure AIR-1**), which include limits on idling time and proper maintenance of construction equipment. While the construction of the proposed Project would constitute an increase in GHG emissions, the quantity of emissions (less than 40 percent of the BAAQMD annual operational emissions threshold) would be expected to generate a less-than-significant impact.

Operation. The screening criterion for greenhouse gas emissions for junior college operations, as stated in the 2011 BAAQMD CEQA Guidelines, is 28,000 square feet. As the proposed Project would occupy 110,866 square feet of classroom space, the proposed Project would exceed the screening threshold and would therefore require additional analysis. The greenhouse gas emissions from the proposed Project would be a result of building usage only (i.e. energy requirements for lighting, heating/cooling, landscaping, waste and wastewater, etc), as the capacity of Merritt College would be unaffected from that discussed in the Master Plan. Additionally, as discussed in the Project Description, the proposed Project has been designed to achieve certification for the LEED Gold level which is specifically designed to reduce greenhouse gas emissions and other environmental impacts. BAAQMD has developed BAAQMD's Greenhouse Gas Model (BGM) to estimate operational greenhouse gas emissions from land development projects. Using BGM, the estimated maximum daily GHG emissions from operation of the proposed Project would be 857 metric tons per year. The largest percentage of GHG emissions from the proposed Project would be from electricity usage (59%), followed by natural gas (28%), solid waste (10%). Water/wastewater and landscaping also provided small contributions. The significance threshold is 1,100 metric tons per year for non-stationary source projects, and therefore, the proposed Project would be less-than-significant.

b) Would the proposed Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As discussed in **Subsection 7a** above, the proposed Project would have a less-than-significant impact on climate change. The proposed Project would not conflict with applicable plans, programs, policies and regulations discussed in the **Regulatory Setting** above.

References

Bay Area Air Quality Management District (BAAQMD). 2011a. *California Environmental Quality Act (CEQA) Air Quality Guidelines*. May.

California Air Pollution Controls Officers Association (CAPCOA). 2010. *Quantifying Greenhouse Gas Mitigation Measures.* August.

California Air Resources Board (CARB). 2008. *AB 32 Climate Change Scoping Plan*. December.

City of Oakland. 2011. *Draft Energy and Climate Action Plan*. March.

United States Environmental Protection Agency (U.S. EPA). 2010a. *Greenhouse Gas Reporting Program.* http://epa.gov/climatechange/emissions/ghgrulemaking.html. Accessed 22 September 2010.

_____. 2010b. *Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Fact Sheet*. http://www.epa.gov/nsr/

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
8. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
8. HAZARDS AND HAZARDOUS MATERIALS (cont.)				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion

The Project site is vacant land with minimal improvements consisting of paved pathways, metal railings, metal light poles and some ornamental plantings. The site does not contain known hazardous materials and would not require the transport of hazardous materials or generate hazardous air emissions. A brief discussion of each environmental issue included under Section 8 is presented below.

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The Project site contains minimal development consisting of several paved pathways, metal railings and metal light poles. The Project would not emit hazardous emissions. The proposed Project would include science labs that would be equipped with proper containment and storage for hazardous materials. All hazardous material storage and handling will conform to California Occupational Safety and Health Administration hazardous material handling guidelines. Pursuant to the proper storage and use of chemicals in the science labs, the presence of hazardous materials at the Project is considered a less-than-significant impact.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

See **Subsection 8a** above.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The nearest school is Skyline High School located about 0.52 mile northeast of the Project site. See **Subsection 8a** above.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The Project site is not included on the Department of Toxic Substance Control's site cleanup list (DTSC 2012) as per Government Code Section 65962.5.

e) Would the project be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Merritt College is not within two miles of a public airport and is not included in any airport land use plan. The nearest airport is Oakland International Airport located about 4.8 miles southwest of the campus. (Google Earth 2012)

f) Would the project be within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Merritt College is not located within the vicinity of a private airstrip (Google Earth 2012).

g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Prior to the occupancy of the Center for Science and Allied Health, emergency response and evacuation procedures for the building will be adopted by the District.

h) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Merritt College is within an urbanized area and fire protection service is provided by the Oakland Fire Department. The Merritt College Campus is located within the Wildfire Prevention Assessment District (City of Oakland 2012). The Leona Canyon Regional Open Space Preserve (Preserve) is located adjacent to the easterly boundary of the campus. The Preserve is considered a wildland and is under the jurisdiction of the East Bay Regional Park District (EBRPD). EBRPD has a comprehensive fire and fuels management program to prevent and control wildland fires on the Preserve. Merritt College and EBRPD have an agreement to manage their shared boundary concerning brush control and the removal of broom and other non-native brush. This agreement is currently up for renewal (Gomes 2012). Wildland fires started on the Preserve would be fought by EBRPD fire crews with support from CalFire which has ultimate responsibility for wildland fires in the state. Potential impacts associated with the exposure of the Project to wildland fires is considered a less-than-significant impact.

Mitigation Measures

None required.

References

Department of Toxic Substance Control. 2012. *DTSC's Hazardous Waste and Substances Site List (Cortese List)*. www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm. Viewed on April 10, 2012.

Gomes, Janet, Park Supervisor, Anthony Chabot Park and Leona Canyon Regional Open Space Preserve, East Bay Regional Park District. Personal communication April 14, 2012.

Google Earth. Viewed on April 10, 2012.

City of Oakland. 2012. *Wildfire Prevention District Map*. http://www.oaklandnet.com/wildfirePrevention.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?)	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?	☐	☒	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HYDROLOGY AND WATER QUALITY (cont.)				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

Project construction activities could result in temporary water quality impacts associated with soil disturbance and accidental release of chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, land other substances. This is considered a potentially significant water quality impact. With implementation of **Mitigation Measure-HYDRO-1**, potentially significant water quality impacts would be reduced to a less-than-significant level. Development of the proposed Project in combination with buildout of the Master Plan could result in a one percent increase in peak runoff for the ten-year design event. Implementation of **Mitigation Measure-HYDRO-2** would reduce the proposed Project's contribution to this increase to a less-than-significant level. A discussion of each environmental issue included under Section 9 is presented below.

a) Would the project violate any water quality standards or waste discharge requirements?

The proposed Project is not anticipated to violate any water quality standards or waste discharge requirements with implementation of **Mitigation Measures-HYDRO-1** and **HYDRO-2**. As part of Section 402 of the Clean Water Act, the U.S. EPA has established regulations under the National Pollution Discharge Elimination System (NPDES) stormwater program to control stormwater discharges, including those associated with construction activities. The State Water Resource Control Board (SWRCB) implements the NPDES program in California.

The State NPDES stormwater permitting program regulates stormwater quality from construction sites. The State Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) and the use of appropriate best management practices (BMPs) for erosion control and spill prevention during construction and permanent post-construction stormwater management measures following construction. Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the Construction General Permit (CGP) for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). This permit went into effect July 1, 2010 and replaces Order No. 99-08-DWQ.

The Project site comprises 1.84 acres, therefore, the District or its contractors would be required to file a Notice of Intent with the RWQCB indicating compliance with the General Permit or prepare a SWPPP.

As discussed in the Project Description, a SWPPP will be prepared for the Project. Project development would require grading and excavation over the entire 1.84 acre site. Construction activities would include the use of gasoline and diesel-powered heavy equipment, such as bulldozers, excavators, dump trucks, backhoes, pick-up trucks and air compressors. Chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances could be utilized during construction. An accidental release of any of these substances could degrade the water quality of surface water runoff from the site and add pollution into local waterways. On-site portable toilets could leak or tip over and spill, releasing sanitary waste, bacteria, solids, nutrients, and pathogens. Project construction activity could result in potentially significant water quality impacts. Implementation of **Mitigation Measure HYDRO-1** would reduce the potential for water quality impacts to below a level of significance.

In February, 2003, the Regional Water Quality Control Board (RWQCB) for the San Francisco Bay Region added Provision "C.3" to the NPDES permit governing municipal storm drain systems. Requirements for new development and re-development are defined in Section C.3 of the Municipal Regional Permit (MRP). The Alameda Countywide Clean Water Program under the new (December 2009) Municipal Regional Stormwater NPDES Permit (Order R2-2009-0074, NPDES Permit No. CAS612008) requires post-construction controls to protect water quality for projects creating or replacing 10,000 square feet of impervious surface. Controls include treatment controls, source controls, site design, and hydromodification management. Treatment controls remove pollutants from storm water before it reaches the public storm water drains or creeks. The measures may include bio-retention areas, vegetated swales, harvesting and reuse, infiltration trenches, and evapotranspiration. Additional requirements for low impact development go into effect December 1, 2011. Source controls, such as enclosed trash areas and covered car wash areas that are connected to the sanitary sewer system keep pollution away from storm water drains. Site design features may include reducing impervious areas, increasing landscaped areas between impervious areas to treat storm water. Hydromodification Management ensures that after development is completed operational runoff flow durations (volume and rate) match those of pre-project runoff (Alameda Countywide Clean Water Program 2012).

The proposed Project would replace most of the 1.84-acre site with impervious surface. Because the Project would result in more than 10,000 square feet of impervious surface, it would be required to include controls to address C.3 requirements of the MRP. The Project site plan shows the location of two stormwater treatment areas, however, information on these facilities is unknown at this time and it therefore, cannot be determined if the proposed stormwater treatment areas meet C.3 requirements. This is considered a potentially significant impact, however, with implementation of **Mitigation Measure-HYDRO-2**, potentially significant impacts associated with water quality and stormwater runoff would be reduced to a less-than-significant level.

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?)

The Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge that would result in a net deficit in aquifer volume or a lowering of the local groundwater table. Total impervious surface are on the campus would be increased by approximately 1.84 acres with the proposed Project, however this increase is not considered significant.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?

The original storm drain system for the campus was designed to convey stormwater from the campus to prevent localized flooding/inundation and was installed prior to current requirements for local on-site drainage area stormwater quantity (hydrograph modification) and stormwater quality (C.3 NPDES provisions) control devices. The local drainage area for the Merritt College campus is located at the top of Horseshoe Creek Canyon where the vast majority of the campus and surrounding areas drain into. The remainder of the local drainage area drains down the western hillside (see **Appendix B**).

If heavy precipitation were to occur during Project construction, there is the potential for some siltation to occur within and/or directly adjacent to the Project site. This is considered a potentially significant impact. With implementation of **Mitigation Measure HYDRO-1**, potential siltation and erosion impacts would be reduced to a less-than-significant level. See also **Subsection 9a** above.

d) Would the project substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?

Project development would result in significant alterations to the Project site which currently contains paved pathways, metal railings, metal light poles and some ornamental planting. A hydrologic analysis for the buildout of the Master Plan was prepared by ARCADIS and is included in **Appendix B**. This analysis concluded there would be an approximate one percent cumulative increase in the peak runoff for the ten-year design event (which includes Project-related peak runoff) at completion of Master Plan development without on-site stormwater storage, treatment and flow control facilities. This one percent increase in peak runoff is considered a potentially significant impact, however, with implementation of **Mitigation Measure HYDRO-2** the proposed Project's contribution to this increase would be less than significant.

e) Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

During Project construction, grading and excavation activities would result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. Soil stockpiles and excavated areas

on the Project site would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in water courses at or away from the Project site. The accumulation of sediment could result in blockage of flows, potentially resulting in increased localized ponding or flooding. There is the potential for chemical releases during construction activity. Once released, substances such as fuels, oils, paints, and solvents could be transported to nearby surface waterways and/or groundwater in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters, which is considered a potentially significant impact. Implementation of **Mitigation Measure HYDRO-1** would reduce potentially significant water quality impacts caused by construction activities to a less-than-significant level.

The Project would increase impervious surface at the Project site, developing an essentially vacant site with a new building. Of the estimated one percent increase in peak stormwater runoff for the ten-year design storm event with buildout of the Master Plan, about 40 percent, or 1.3 cfs, of this increase is attributable to the proposed Project. The Project site plan shows two stormwater treatment areas on site, however, due to incomplete information on their design and operation, it cannot be determined if the Project meets C.3 requirements. Therefore, the estimated increase in Project-generated peak stormwater runoff is a potentially significant impact. Implementation of **Mitigation Measure HYDRO-2** would reduce stormwater runoff impacts to a less-than-significant level.

f) Would the project otherwise substantially degrade water quality?

Project construction activity could result in potentially significant water quality impacts. Implementation of standard erosion control techniques prior to and during Project construction activities, as described in **Mitigation Measure HYDRO-1** would reduce the potential for water quality impacts to less than significant. See also **Subsections 9a**, **9c**, **9d**, and **9e** above.

Development of the Project in conjunction with the buildout of the Master Plan and future development projects in the Oakland area would incrementally contribute to a temporary construction-related cumulative increase in the water quality impacts. Construction related activities that require grading and vegetation removal would increase runoff, causing greater erosion and downstream siltation. Implementation of **Mitigation Measures HYDRO-1** and **HYDRO-2**, and compliance with State and Alameda County requirements would reduce the Project's incremental contribution to cumulative water quality impacts to a less-than-significant level.

g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide flood insurance to communities complying with FEMA regulations that limit development in floodplains. FEMA issues flood insurance rate maps for communities participating in the NFIP. These maps delineate flood hazard zones for each project site. Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It requires:

- Avoidance of incompatible floodplain development;
- Consistency with the standards and criteria of the NFIP; and
- Restoration and preservation of natural and beneficial floodplain values.

The proposed Project site (and the entire Merritt College campus) is not within a 100-year flood hazard area (ABAG 2012a). There is no housing proposed on the Project site.

h) Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

The proposed Project would not place buildings in the 100-year flood hazard area or adversely affect nearby flood areas.

i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The Merritt College campus is not within an area subject to flooding or inundation (ABAG 2012b). The Project would not expose people or structures to a significant risk due to flooding.

j) Would the project expose the site to inundation by seiche, tsunami, or mudflow?

A seiche is a standing-wave oscillation of the surface of water in an enclosed or semi-enclosed basin (such as a lake, bay, or harbor) that is initiated by landslides, earthquakes, or other geologic phenomena, and continues after cessation of the originating force. A tsunami is a sea wave produced by any large scale, short duration disruption of the ocean floor, principally by a shallow submarine earthquake, but also by submarine earth movement, subsidence, or volcanic eruption. The Merritt College campus is not within a location that poses a risk for seiche or tsunami (ABAG 2012c). The project site and surrounding campus is located on flat to gently sloping lands and would not be subject to mudflow.

Mitigation Measure

HYDRO-1 The District and contractors shall implement Best Management Practices (BMPs) to control erosion and sedimentation and prevent pollutants from entering the stormwater runoff during construction. BMPs may include, but are not limited to:

- Conduct grading during dry months;
- Cover disturbed areas with soil stabilizers, mulch, fiber rolls, or temporary vegetation;
- Locate construction-related equipment and processes that contain or generate pollutants in secure areas, away from storm drains and gutters;
- Prevent or contain potential leakage or spilling from sanitary facilities;
- Park, fuel, and clean all vehicles and equipment in one designated, contained area;
- Designate concrete washout areas;
- Provide inlet protection, such as filters; and
- Monitor site during rainy season to replace or adjust BMPs as needed.

HYDRO-2 The proposed stormwater treatment areas shall be designed to attenuate flows and provide for water quality treatment. The use of engineered structural control measures compliant with Alameda County C.3 requirements (Alameda Countywide Clean Water Program) shall be designed to support mitigation of potential runoff impacts resulting from an increase in impervious surface area from the project site.

References

Alameda Countywide Clean Water Program. 2012. *Development Related Issues.* http://www.cleanwaterprogram.org.

Association of Bay Area Governments (ABAG). 2012a. *FEMA Flood Zone Mapping.* http://www.abag.ca.gov/website/FloodZone.

_____. 2012b. *Dam Failure Inundation Map.* http://www.abag.ca.gov/website/DamInundation.

_____. 2012c. *Tsunami Inundation Map for Coastal Evacuation*. http://www.abag.ca.gov/website/Tsunami.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
10. LAND USE PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion

The proposed Project would have no significant land use impacts. A brief discussion of each environmental issue included under Section 10 is presented below.

a) Would the project physically divide an established community?

The proposed Project would not physically divide the existing residential areas surrounding the Merritt College campus. The Project would construct a new building on a vacant site on the campus. The Project would not expand the size of the existing campus.

b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The District is exempt from the City of Oakland's land use regulations; and therefore is not subject to the City's land use plans and policies. However, the proposed Project would be consistent with the *Oakland*

General Plan, which designates the Merritt College campus as Institutional, and the construction of the Center of Science and Allied Health is consistent with this land use designation (City of Oakland 2011).

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The Project site is located in the Oakland hills. The Project would not conflict with any habitat conservation or natural community conservation plans (City of Oakland 1996).

Mitigation Measures

None required.

References

City of Oakland. 2011. *General Plan Designations*. http://www2.oaklandnet.com/oakca1/groups/cdea/documents/image/oak028530.pdf.

City of Oakland. 1996. *Open Space, Conservation and Recreation (OSCAR) Element*. http://www2.oaklandnet.com/Government/o/PBN/OurServices/GeneralPlan/DOWD009017.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
11. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

The proposed Project would not affect any known mineral resources. A brief discussion of each environmental issue included under Section 11 is presented below.

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The Project site is located on the Merritt College campus and is surrounded by residential development and open space. The college campus is zoned RH4 Hillside Residential. The *Oakland General Plan* does not identify the Merritt College campus or surrounding area as containing known mineral resources that are of value to the region and the residents of the state (City of Oakland 1996).

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

The Project site is not identified as a locally-important mineral resource recovery site. See **Subsection 11a** above.

Mitigation Measures

None required.

References

City of Oakland. 1996. *Open Space, Conservation and Recreation (OSCAR) Element.* http://www2.oaklandnet.com/Government/o/PBN/OurServices/GeneralPlan/DOWD009017.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
12. NOISE. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan, specific plan, noise ordinance or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

Project operations would result in less than significant operational noise impacts. The Project could result in short-term significant noise impacts during construction activities. **Mitigation Measure-NOISE-1** would reduce potentially significant construction noise impacts to a less-than-significant level. A brief discussion of each environmental issue topic included under Section 12 is presented below.

a) Would the project expose persons to or generation of noise levels in excess of standards established in the local general plan, specific plan, noise ordinance or applicable standards of other agencies?

The proposed Project is governed by the State of California, and is not subject to the City of Oakland's Noise Ordinance and General Plan. A 12-foot high metal screen would be installed around the mechanical equipment located on the building's roof to screen the mechanical equipment from view and provide a sound barrier for noise emissions. Therefore, noise generated by the building's mechanical equipment is not expected to result in significant noise impacts that could adversely affect nearby classrooms, located within about 50 feet, and nearby residences, located within about 580 feet of the Project site. The building generator would be located alongside the building and would be completely enclosed.

The Project would not result in an increase in student enrollment, consequently there would not be an increase in noise associated with traffic.

b) Would the project expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Project construction activities would occur within the immediate vicinity of classrooms. According to Federal Transit Administration (FTA) guidelines, a vibration level of 65 VdB[2] is the threshold of perceptibility for humans (Federal Transit Administration 2006a). Based on the levels and methodology published by FTA, construction trucks could generate perceptible ground vibration at a distance of 130 feet and a vibratory roller could generate perceptible ground vibration at a distance of 240 feet (Federal Transit Administration 2006b). During grading and excavation, the construction period when vibration source levels would be greatest due to the use of bulldozers, trucks, vibrating compactors and backhoes; vibration would be perceptible and possibly annoying. Vibration may be perceptible at nearby classrooms. Due to distance, it is unlikely that vibration would be perceptible to the closest residences which are located about 580 feet south of the Project site.

c) Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The operation of the Center of Science and Allied Health would not significantly increase the ambient noise level at the Project site. See **Subsection 12a** above.

d) Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The proposed Project could result in temporary significant noise impacts during construction activities. During Project construction, nearby classrooms and possibly residences located along Campus Drive would be exposed to significant temporary construction noise impacts. However, with implementation of

[2] VdB-Vibration velocity level in units of decibels referenced to a velocity of one micro-inch per second.

Mitigation Measure-NOISE-1, significant construction noise impacts would be reduced to a less-than-significant level.

e) Would the project be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The Project site is not within an airport land use plan or within two miles of a public airport. The nearest airport is Oakland International Airport located about 4.8 miles southwest of the Merritt College campus.

f) Would the project be located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The Project site is not within the vicinity of any private airstrips.

Mitigation Measure

NOISE-1 The District or their general contractor shall prepare a construction noise control plan that includes, but is not limited to the following:

- Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.
- Stationary noise sources shall be located as far from adjacent noise sensitive receptors, including adjacent classrooms and residences directly facing the Project site across Penn Drive, and as feasible they shall be muffled and enclosed within temporary sheds, insulation barriers or other measures.
- Impact tools (e.g., jack hammers, pavement breakers and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically-powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about ten dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of five dBA. Quieter procedures shall be used such as drilling rather that impact equipment whenever feasible.
- No extreme noise generating activities (greater than 90 dBA) shall be allowed on weekends and Federal holidays.

References

Federal Transit Administration. 2006a. *Transit Noise and Vibration Impact Assessment, Chapter 8 Vibration Impact Criteria.* May 2006. Available at the Federal Transit Administration website: http//www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf.

Federal Transit Administration. 2006b. *Transit Noise and Vibration Impact Assessment, Chapter 12 Noise and Vibration During Construction.* May 2006. Available at the Federal Transit Administration website: http//www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
13. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

The proposed Project would not affect population and housing. A brief discussion of each environmental issue included under Section 13 is presented below.

a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed Project would not increase student enrollment capacity at Merritt College. Therefore, the Project would not induce population growth due to new families moving to the Oakland to attend classes at Merritt College.

b) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

The Project would not displace existing housing.

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The Project is the construction of the Center of Science and Allied Health on a vacant site on the Merritt College campus. The Project would not displace any people and would not require the construction of replacement housing.

Mitigation Measures

None required.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
14. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

Discussion

The proposed Project would not adversely affect public services. A brief discussion of each environmental issue included under Section 14 is presented below.

a) Fire protection?

The Center of Science and Allied Health would include a sprinkler system, emergency exits and directional signage in compliance with the State Fire Marshall. Fire protection service is provided by the Oakland Fire Department. Merritt College is located in Fire District 4 and is served by Fire Station 21, located at 13150 Skyline Boulevard and Fire Station 23, located at 7100 Foothill Boulevard (Oakland Fire Department 2012). The college is located within the Wildfire Prevention Assessment District and is subject to the vegetation management requirements to prevent urban wildfires in the Oakland Hills. The Project would not affect the capacity of the Oakland Fire Department to provide fire protection and emergency response services to the Merritt College campus and surrounding area.

b) Police protection?

Police protection services to Merritt College are provided by the Alameda County Sheriff's Department Peralta Police Services. Peralta Police Services is based at the main station located at the District's office at 333 East 8th Street in Oakland. Four deputies are assigned to patrol the Peralta campuses Monday through Friday. The deputies meet every day at the main station and then travel to their assigned campus. The Center of Science and Allied Health would not adversely affect the ability of the Sheriff's Department to provide police protection services to the campus (Bridges 2012). On weekends and swing shift hours the Merritt College campus is patrolled by a private security company.

c) Schools?

The Project would not affect K-12 school facilities in Oakland.

d) Parks?

The Project would not adversely affect the use of local and regional park facilities.

e) Other public facilities?

The proposed Project would not adversely affect other public facilities.

Mitigation Measures

None required.

References

Oakland Fire Department. 2012. Htpp://www.oaklandnet.com/wildfireprevention.

Bridges, Tony, Deputy, Alameda County Sheriff's Department. Personal communication April 13, 2012.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
15. RECREATION. Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

The proposed Project would not affect recreation facilities. A brief discussion of each environmental issue included under Section 15 is presented below.

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The Project would not cause an increase in use of existing neighborhood and regional parks.

b) Would the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

The proposed Project does not include the construction of any recreational facilities.

Mitigation Measures

None required.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
16. TRANSPORTATION/CIRCULATION. Would the proposal result in:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion

The proposed Project would not adversely affect transportation and circulation. A brief discussion of each environmental issue included under Section 16 is presented below.

a) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

The Project would not conflict with any applicable City of Oakland transportation and circulation plans, policies or ordinances. The proposed Project would not result in an increase in student enrollment and therefore would not increase traffic on campus.

During Project construction activities, the peak daily number of construction truck trips is estimated at five, and the peak number of construction workers is estimated at 57. Construction workers would park at designated areas on the campus; construction personnel would not park on surrounding neighborhood streets. Construction-related traffic leaving the Project site may coincide with the PM commute peak hour (typically from 4PM-6PM). However, construction traffic would be a temporary condition and is not considered a significant traffic impact.

b) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

As discussed under **Subsection 16a** above, the proposed Project would not generate an increase in traffic, and therefore would not conflict with applicable congestion management programs.

c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The Project would not affect air traffic patterns.

d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Project would not create any circulation hazards at the campus. Access and egress from the Merritt College would not be affected.

e) Would the project result in inadequate emergency access?

The Project would continue to provide adequate emergency services access. The Project would not affect site emergency access.

f) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The proposed Project would not conflict with any adopted policies, plans or programs associated with public transit, bicycle or pedestrian facilities.

Mitigation Measures

None required.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
17. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

The Project would meet applicable wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board. See **Subsection 17b** below.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The proposed Project would not adversely affect the capacity of existing wastewater treatment facilities serving Merritt College. The Project would not result in an increase wastewater generation at the campus because student enrollment would not be affected. Project-related wastewater generation would be similar to existing conditions.

c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The proposed Project would not require the construction of new storm water drainage facilities or expansion of existing facilities off campus. The Project would result in a slight increase in storm water runoff from the site, about 1.3 cfs. With implementation of **Mitigation Measure HYDRO-2**, potential impacts on existing City of Oakland storm drains would be reduced to a less-than-significant level. See **Section 9 Hydrology and Water Quality**, **Subsection 9c** and **9e** for a discussion of Project site drainage.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The proposed Project would have sufficient water supplies available from existing entitlements. The Project would not affect student enrollment capacity, therefore water consumption would be similar to existing conditions.

e) Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project's projected demand in addition to the provider's existing commitments?

The proposed Project would not result in an increase in wastewater generation. The Project would not affect student enrollment, therefore wastewater generation would be similar to existing conditions.

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?)

Construction material waste would be recycled to the greatest extent possible. Remaining construction material waste would be transported to an appropriate landfill. Project operations would not result in an increase in solid waste.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

The Project would comply with federal, state and local statutes and regulations related to solid waste.

Mitigation Measures

None required.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
18. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☐	☒
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Project construction activities could result in temporary significant water quality impacts associated with soil disturbance and accidental release of chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, and other substances, but would be reduced to a less-than-significant level with implementation of **Mitigation Measures-HYDRO-1** and **HYDRO-2**. Project construction activities could adversely affect cultural resources, but with implementation of **Mitigation Measures-CUL-1** and **CUL-2**, these impacts would be reduced to a less-than-significant level.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

The proposed Project would not result in significant cumulative impacts.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

The proposed Project would result in the following potentially significant impacts: light and glare, air quality (during construction), cultural resources, geologic hazards, hydrology and water quality, and noise (during construction). With implementation of **Mitigation Measures- AES-1, AES-2, AIR-1, CUL-1, CUL-2, GEO-1, HYDRO-1, HYDRO-2** and **NOISE-1**, potentially significant impacts would be reduced to a less-than-significant level.

AGENCY DISTRIBUTION LIST

Scott Miller, Interim Planning Director, City of Oakland
Plan & Zoning Div., Suite 2114
250 Frank H. Ogawa Plaza
Oakland, CA 94612

Janet Gomes, Park Supervisor
EBRPD
P.O. Box 5381
Oakland, CA 94605-0381

BAAQMD
District Office
939 Ellis Street
San Francisco, CA 94109

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

State Clearinghouse
1400 Tenth Street, Suite 222
Sacramento, CA 95814

Alameda County Clerk
1106 Madison Street
Oakland, CA 94607

This page intentionally left blank

APPENDIX A
URBEMIS REPORT

This page intentionally left blank

3/7/2012 1:16:11 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\amhale\AppData\Roaming\Urbemis\Version9a\Projects\Merritt.urb924

Project Name: Merritt College

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

3/7/2012 1:16:11 PM

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (tons/year unmitigated)	0.22	1.64	1.51	0.00	0.21	0.08	0.29	0.04	0.08	0.12	267.07
2013 TOTALS (tons/year mitigated)	0.22	1.64	1.51	0.00	0.02	0.08	0.10	0.00	0.08	0.08	267.07
Percent Reduction	0.00	0.00	0.00	0.00	91.22	0.00	64.78	89.99	0.00	32.50	0.00
2014 TOTALS (tons/year unmitigated)	1.34	1.06	1.34	0.00	0.00	0.07	0.07	0.00	0.06	0.06	214.46
2014 TOTALS (tons/year mitigated)	1.34	1.06	1.34	0.00	0.00	0.07	0.07	0.00	0.06	0.06	214.46
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.14	0.19	0.30	0.00	0.00	0.00	233.12
TOTALS (tons/year, mitigated)	0.14	0.19	0.30	0.00	0.00	0.00	233.12
Percent Reduction	0.00	0.00	0.00	NaN	NaN	NaN	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.13	0.00	0.01	0.00	0.00	0.00	1.40

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.27	0.19	0.31	0.00	0.00	0.00	234.52

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

3/7/2012 1:16:11 PM

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	0.22	1.64	1.51	0.00	0.21	0.08	0.29	0.04	0.08	0.12	267.07
Fine Grading 05/01/2013-07/01/2013	0.06	0.50	0.28	0.00	0.20	0.02	0.23	0.04	0.02	0.06	60.34
Fine Grading Dust	0.00	0.00	0.00	0.00	0.20	0.00	0.20	0.04	0.00	0.04	0.00
Fine Grading Off Road Diesel	0.06	0.45	0.24	0.00	0.00	0.02	0.02	0.00	0.02	0.02	49.44
Fine Grading On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.66
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25
Building 05/15/2013-09/30/2014	0.10	0.68	0.95	0.00	0.00	0.04	0.04	0.00	0.04	0.04	147.68
Building Off Road Diesel	0.08	0.60	0.37	0.00	0.00	0.04	0.04	0.00	0.03	0.03	73.70
Building Vendor Trips	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.65
Building Worker Trips	0.02	0.03	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.32
Trenching 06/01/2013-09/01/2013	0.06	0.46	0.29	0.00	0.00	0.02	0.02	0.00	0.02	0.02	59.05
Trenching Off Road Diesel	0.06	0.46	0.26	0.00	0.00	0.02	0.02	0.00	0.02	0.02	55.73
Trenching Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.32

2014	1.34	1.06	1.34	0.00	0.00	0.07	0.07	0.00	0.06	0.06	214.46
Building 05/15/2013-09/30/2014	0.11	0.74	1.06	0.00	0.00	0.04	0.04	0.00	0.04	0.04	174.57
Building Off Road Diesel	0.09	0.65	0.43	0.00	0.00	0.04	0.04	0.00	0.03	0.03	87.11
Building Vendor Trips	0.00	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.32
Building Worker Trips	0.02	0.03	0.57	0.00	0.00	0.00	0.01	0.00	0.00	0.00	70.14
Asphalt 07/01/2014-09/30/2014	0.05	0.32	0.27	0.00	0.00	0.03	0.03	0.00	0.02	0.02	38.49
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.05	0.31	0.22	0.00	0.00	0.03	0.03	0.00	0.02	0.02	32.31
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
Paving Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90
Coating 07/01/2014-09/30/2014	1.18	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
Architectural Coating	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41

Phase Assumptions

Phase: Fine Grading 5/1/2013 - 7/1/2013 - Site Work - Earthwork & Foundations

Total Acres Disturbed: 1.84

Maximum Daily Acreage Disturbed: 0.46

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 97.73

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2013 - 9/1/2013 - Default Paving Description

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 7/1/2014 - 9/30/2014 - Site Improvements and Finishes - Paving

Acres to be Paved: 0.46

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/15/2013 - 9/30/2014 - Building - Building/M&P/Electrical

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2014 - 9/30/2014 - Site Improvements and Finishes - Arch Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

3/7/2012 1:16:11 PM

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	0.22	1.64	1.51	0.00	0.02	0.08	0.10	0.00	0.08	0.08	267.07
Fine Grading 05/01/2013-07/01/2013	0.06	0.50	0.28	0.00	0.01	0.02	0.04	0.00	0.02	0.02	60.34
Fine Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.06	0.45	0.24	0.00	0.00	0.02	0.02	0.00	0.02	0.02	49.44
Fine Grading On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.66
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25
Building 05/15/2013-09/30/2014	0.10	0.68	0.95	0.00	0.00	0.04	0.04	0.00	0.04	0.04	147.68
Building Off Road Diesel	0.08	0.60	0.37	0.00	0.00	0.04	0.04	0.00	0.03	0.03	73.70
Building Vendor Trips	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.65
Building Worker Trips	0.02	0.03	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.32
Trenching 06/01/2013-09/01/2013	0.06	0.46	0.29	0.00	0.00	0.02	0.02	0.00	0.02	0.02	59.05
Trenching Off Road Diesel	0.06	0.46	0.26	0.00	0.00	0.02	0.02	0.00	0.02	0.02	55.73
Trenching Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.32

2014	1.34	1.06	1.34	0.00	0.00	0.07	0.07	0.00	0.06	0.06	214.46
Building 05/15/2013-09/30/2014	0.11	0.74	1.06	0.00	0.00	0.04	0.04	0.00	0.04	0.04	174.57
Building Off Road Diesel	0.09	0.65	0.43	0.00	0.00	0.04	0.04	0.00	0.03	0.03	87.11
Building Vendor Trips	0.00	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.32
Building Worker Trips	0.02	0.03	0.57	0.00	0.00	0.00	0.01	0.00	0.00	0.00	70.14
Asphalt 07/01/2014-09/30/2014	0.05	0.32	0.27	0.00	0.00	0.03	0.03	0.00	0.02	0.02	38.49
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.05	0.31	0.22	0.00	0.00	0.03	0.03	0.00	0.02	0.02	32.31
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
Paving Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90
Coating 07/01/2014-09/30/2014	1.18	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
Architectural Coating	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 5/1/2013 - 7/1/2013 - Site Work - Earthwork & Foundations

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

3/7/2012 1:16:11 PM

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.01	0.19	0.16	0.00	0.00	0.00	232.87
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.12						
TOTALS (tons/year, unmitigated)	0.14	0.19	0.30	0.00	0.00	0.00	233.12

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.01	0.19	0.16	0.00	0.00	0.00	232.87
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.12						
TOTALS (tons/year, mitigated)	0.14	0.19	0.30	0.00	0.00	0.00	233.12

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

3/7/2012 1:16:11 PM

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	0.13	0.00	0.01	0.00	0.00	0.00	1.40
TOTALS (tons/year, unmitigated)	0.13	0.00	0.01	0.00	0.00	0.00	1.40

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		0.01	1000 sq ft	110.00	1.10	8.20
					1.10	8.20

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.5	0.6	99.2	0.2
Light Truck < 3750 lbs	12.3	0.8	96.8	2.4
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0

3/7/2012 1:16:11 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Lite-Heavy Truck 8501-10,000 lbs	0.8	0.0	75.0	25.0
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.3	0.0	15.4	84.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.7	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	55.2	44.8	0.0
School Bus	0.0	0.0	0.0	0.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

Operational Changes to Defaults

3/7/2012 1:15:28 PM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\amhale\AppData\Roaming\Urbemis\Version9a\Projects\Merritt.urb924

Project Name: Merritt College

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

3/7/2012 1:15:28 PM

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (lbs/day unmitigated)	5.67	45.10	33.04	0.01	9.27	2.21	11.48	1.94	2.03	3.98	6,349.77
2013 TOTALS (lbs/day mitigated)	5.67	45.10	33.04	0.01	0.71	2.21	2.92	0.16	2.03	2.19	6,349.77
2014 TOTALS (lbs/day unmitigated)	38.40	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39
2014 TOTALS (lbs/day mitigated)	38.40	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.84	1.08	2.44	0.00	0.01	0.01	1,278.81
TOTALS (lbs/day, mitigated)	0.84	1.08	2.44	0.00	0.01	0.01	1,278.81
Percent Reduction	0.00	0.00	0.00	NaN	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.03	0.01	0.07	0.00	0.01	0.00	8.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.87	1.09	2.51	0.00	0.02	0.01	1,286.83

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

3/7/2012 1:15:28 PM

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 5/1/2013-5/14/2013 Active Days: 10	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 5/15/2013-5/31/2013 Active Days: 13	3.92	30.94	24.17	0.01	9.26	1.53	10.79	1.94	1.41	3.35	4,532.99
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

3/7/2012 1:15:28 PM

Time Slice 6/3/2013-7/1/2013 Active Days: 21	5.67	**45.10**	**33.04**	**0.01**	**9.27**	**2.21**	**11.48**	**1.94**	**2.03**	**3.98**	**6,349.77**
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 7/2/2013-8/30/2013 Active Days: 44	2.95	22.46	20.35	0.01	0.05	1.15	1.20	0.02	1.06	1.07	3,606.86
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

Time Slice 9/2/2013-12/31/2013 Active Days: 87	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Time Slice 1/1/2014-6/30/2014 Active Days: 129	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42
Time Slice 7/1/2014-9/30/2014 Active Days: 66	**38.40**	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39
Asphalt 07/01/2014-09/30/2014	1.57	9.65	8.22	0.00	0.01	0.77	0.78	0.00	0.71	0.72	1,166.38
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.51	9.54	6.74	0.00	0.00	0.77	0.77	0.00	0.71	0.71	979.23
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.32
Paving Worker Trips	0.04	0.08	1.46	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.83
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42
Coating 07/01/2014-09/30/2014	35.71	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58
Architectural Coating	35.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58

Phase Assumptions

Phase: Fine Grading 5/1/2013 - 7/1/2013 - Site Work - Earthwork & Foundations

Total Acres Disturbed: 1.84

Maximum Daily Acreage Disturbed: 0.46

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 97.73

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2013 - 9/1/2013 - Default Paving Description

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 7/1/2014 - 9/30/2014 - Site Improvements and Finishes - Paving

Acres to be Paved: 0.46

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/15/2013 - 9/30/2014 - Building - Building/M&P/Electrical

Off-Road Equipment:

3/7/2012 1:15:28 PM

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2014 - 9/30/2014 - Site Improvements and Finishes - Arch Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 5/1/2013-5/14/2013 Active Days: 10	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

Time Slice 5/15/2013-5/31/2013 Active Days: 13	3.92	30.94	24.17	0.01	0.70	1.53	2.23	0.16	1.41	1.56	4,532.99
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 6/3/2013-7/1/2013 Active Days: 21	5.67	**45.10**	**33.04**	**0.01**	0.71	**2.21**	2.92	0.16	**2.03**	2.19	**6,349.77**
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

Time Slice 7/2/2013-8/30/2013 Active Days: 44	2.95	22.46	20.35	0.01	0.05	1.15	1.20	0.02	1.06	1.07	3,606.86
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 9/2/2013-12/31/2013 Active Days: 87	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Time Slice 1/1/2014-6/30/2014 Active Days: 129	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42

Time Slice 7/1/2014-9/30/2014 Active Days: 66	**38.40**	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39
Asphalt 07/01/2014-09/30/2014	1.57	9.65	8.22	0.00	0.01	0.77	0.78	0.00	0.71	0.72	1,166.38
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.51	9.54	6.74	0.00	0.00	0.77	0.77	0.00	0.71	0.71	979.23
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.32
Paving Worker Trips	0.04	0.08	1.46	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.83
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42
Coating 07/01/2014-09/30/2014	35.71	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58
Architectural Coating	35.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 5/1/2013 - 7/1/2013 - Site Work - Earthwork & Foundations

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

3/7/2012 1:15:28 PM

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.08	1.06	0.89	0.00	0.00	0.00	1,276.00
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	0.64						
TOTALS (lbs/day, unmitigated)	0.84	1.08	2.44	0.00	0.01	0.01	1,278.81

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.08	1.06	0.89	0.00	0.00	0.00	1,276.00
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	0.64						
TOTALS (lbs/day, mitigated)	0.84	1.08	2.44	0.00	0.01	0.01	1,278.81

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

3/7/2012 1:15:28 PM

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	1.03	0.01	0.07	0.00	0.01	0.00	8.02
TOTALS (lbs/day, unmitigated)	1.03	0.01	0.07	0.00	0.01	0.00	8.02

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		0.01	1000 sq ft	110.00	1.10	8.20
					1.10	8.20

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.5	0.6	99.2	0.2
Light Truck < 3750 lbs	12.3	0.8	96.8	2.4
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0

3/7/2012 1:15:28 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Lite-Heavy Truck 8501-10,000 lbs	0.8	0.0	75.0	25.0
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.3	0.0	15.4	84.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.7	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	55.2	44.8	0.0
School Bus	0.0	0.0	0.0	0.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

Operational Changes to Defaults

3/7/2012 1:15:51 PM

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Users\amhale\AppData\Roaming\Urbemis\Version9a\Projects\Merritt.urb924

Project Name: Merritt College

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

3/7/2012 1:15:51 PM

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (lbs/day unmitigated)	5.67	45.10	33.04	0.01	9.27	2.21	11.48	1.94	2.03	3.98	6,349.77
2013 TOTALS (lbs/day mitigated)	5.67	45.10	33.04	0.01	0.71	2.21	2.92	0.16	2.03	2.19	6,349.77
2014 TOTALS (lbs/day unmitigated)	38.40	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39
2014 TOTALS (lbs/day mitigated)	38.40	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.72	1.06	0.89	0.00	0.00	0.00	1,276.00
TOTALS (lbs/day, mitigated)	0.72	1.06	0.89	0.00	0.00	0.00	1,276.00
Percent Reduction	0.00	0.00	0.00	NaN	NaN	NaN	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.01	0.01	0.08	0.00	0.01	0.00	6.94

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.73	1.07	0.97	0.00	0.01	0.00	1,282.94

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

3/7/2012 1:15:51 PM

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 5/1/2013-5/14/2013 Active Days: 10	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 5/15/2013-5/31/2013 Active Days: 13	3.92	30.94	24.17	0.01	9.26	1.53	10.79	1.94	1.41	3.35	4,532.99
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

3/7/2012 1:15:51 PM

Time Slice 6/3/2013-7/1/2013 Active Days: 21	5.67	**45.10**	**33.04**	**0.01**	**9.27**	**2.21**	**11.48**	**1.94**	**2.03**	**3.98**	**6,349.77**
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	9.22	1.06	10.28	1.93	0.98	2.90	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	9.20	0.00	9.20	1.92	0.00	1.92	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 7/2/2013-8/30/2013 Active Days: 44	2.95	22.46	20.35	0.01	0.05	1.15	1.20	0.02	1.06	1.07	3,606.86
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

Time Slice 9/2/2013-12/31/2013 Active Days: 87	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Time Slice 1/1/2014-6/30/2014 Active Days: 129	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42
Time Slice 7/1/2014-9/30/2014 Active Days: 66	**38.40**	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39
Asphalt 07/01/2014-09/30/2014	1.57	9.65	8.22	0.00	0.01	0.77	0.78	0.00	0.71	0.72	1,166.38
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.51	9.54	6.74	0.00	0.00	0.77	0.77	0.00	0.71	0.71	979.23
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.32
Paving Worker Trips	0.04	0.08	1.46	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.83
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42
Coating 07/01/2014-09/30/2014	35.71	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58
Architectural Coating	35.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58

Phase Assumptions

Phase: Fine Grading 5/1/2013 - 7/1/2013 - Site Work - Earthwork & Foundations

Total Acres Disturbed: 1.84

Maximum Daily Acreage Disturbed: 0.46

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 97.73

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2013 - 9/1/2013 - Default Paving Description

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 7/1/2014 - 9/30/2014 - Site Improvements and Finishes - Paving

Acres to be Paved: 0.46

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/15/2013 - 9/30/2014 - Building - Building/M&P/Electrical

Off-Road Equipment:

3/7/2012 1:15:52 PM

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2014 - 9/30/2014 - Site Improvements and Finishes - Arch Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 5/1/2013-5/14/2013 Active Days: 10	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

Time Slice 5/15/2013-5/31/2013 Active Days: 13	3.92	30.94	24.17	0.01	0.70	1.53	2.23	0.16	1.41	1.56	4,532.99
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 6/3/2013-7/1/2013 Active Days: 21	5.67	**45.10**	**33.04**	**0.01**	0.71	**2.21**	2.92	0.16	**2.03**	2.19	**6,349.77**
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Fine Grading 05/01/2013-07/01/2013	2.72	22.64	12.69	0.00	0.66	1.06	1.72	0.14	0.98	1.12	2,742.91
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	2.55	20.56	11.10	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,247.32
Fine Grading On Road Diesel	0.14	2.03	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	393.45
Fine Grading Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14

Time Slice 7/2/2013-8/30/2013 Active Days: 44	2.95	22.46	20.35	0.01	0.05	1.15	1.20	0.02	1.06	1.07	3,606.86
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Trenching 06/01/2013-09/01/2013	1.74	14.17	8.88	0.00	0.00	0.68	0.68	0.00	0.63	0.63	1,816.78
Trenching Off Road Diesel	1.72	14.12	7.97	0.00	0.00	0.68	0.68	0.00	0.62	0.62	1,714.64
Trenching Worker Trips	0.03	0.05	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.14
Time Slice 9/2/2013-12/31/2013 Active Days: 87	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building 05/15/2013-09/30/2014	1.21	8.29	11.48	0.01	0.04	0.47	0.51	0.01	0.43	0.45	1,790.07
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39	893.39
Building Vendor Trips	0.05	0.66	0.60	0.00	0.01	0.02	0.03	0.00	0.02	0.03	177.60
Building Worker Trips	0.20	0.35	6.40	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.08
Time Slice 1/1/2014-6/30/2014 Active Days: 129	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42

Time Slice 7/1/2014-9/30/2014 Active Days: 66	**38.40**	17.27	19.40	0.01	0.05	1.19	1.24	0.02	1.09	1.11	2,999.39
Asphalt 07/01/2014-09/30/2014	1.57	9.65	8.22	0.00	0.01	0.77	0.78	0.00	0.71	0.72	1,166.38
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.51	9.54	6.74	0.00	0.00	0.77	0.77	0.00	0.71	0.71	979.23
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.32
Paving Worker Trips	0.04	0.08	1.46	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.83
Building 05/15/2013-09/30/2014	1.11	7.60	10.83	0.01	0.04	0.41	0.45	0.01	0.37	0.39	1,790.43
Building Off Road Diesel	0.88	6.70	4.39	0.00	0.00	0.37	0.37	0.00	0.34	0.34	893.39
Building Vendor Trips	0.05	0.59	0.56	0.00	0.01	0.02	0.03	0.00	0.02	0.02	177.62
Building Worker Trips	0.18	0.31	5.88	0.01	0.04	0.02	0.05	0.01	0.01	0.03	719.42
Coating 07/01/2014-09/30/2014	35.71	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58
Architectural Coating	35.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.58

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 5/1/2013 - 7/1/2013 - Site Work - Earthwork & Foundations

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

3/7/2012 1:15:52 PM

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.08	1.06	0.89	0.00	0.00	0.00	1,276.00
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	0.64						
TOTALS (lbs/day, unmitigated)	0.72	1.06	0.89	0.00	0.00	0.00	1,276.00

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.08	1.06	0.89	0.00	0.00	0.00	1,276.00
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	0.64						
TOTALS (lbs/day, mitigated)	0.72	1.06	0.89	0.00	0.00	0.00	1,276.00

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Junior college (2 yrs)	0.01	0.01	0.08	0.00	0.01	0.00	6.94
TOTALS (lbs/day, unmitigated)	0.01	0.01	0.08	0.00	0.01	0.00	6.94

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Junior college (2 yrs)		0.01	1000 sq ft	110.00	1.10	8.20
					1.10	8.20

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.5	0.6	99.2	0.2
Light Truck < 3750 lbs	12.3	0.8	96.8	2.4
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0

3/7/2012 1:15:52 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Lite-Heavy Truck 8501-10,000 lbs	0.8	0.0	75.0	25.0
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.3	0.0	15.4	84.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.7	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	55.2	44.8	0.0
School Bus	0.0	0.0	0.0	0.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Junior college (2 yrs)				5.0	2.5	92.5

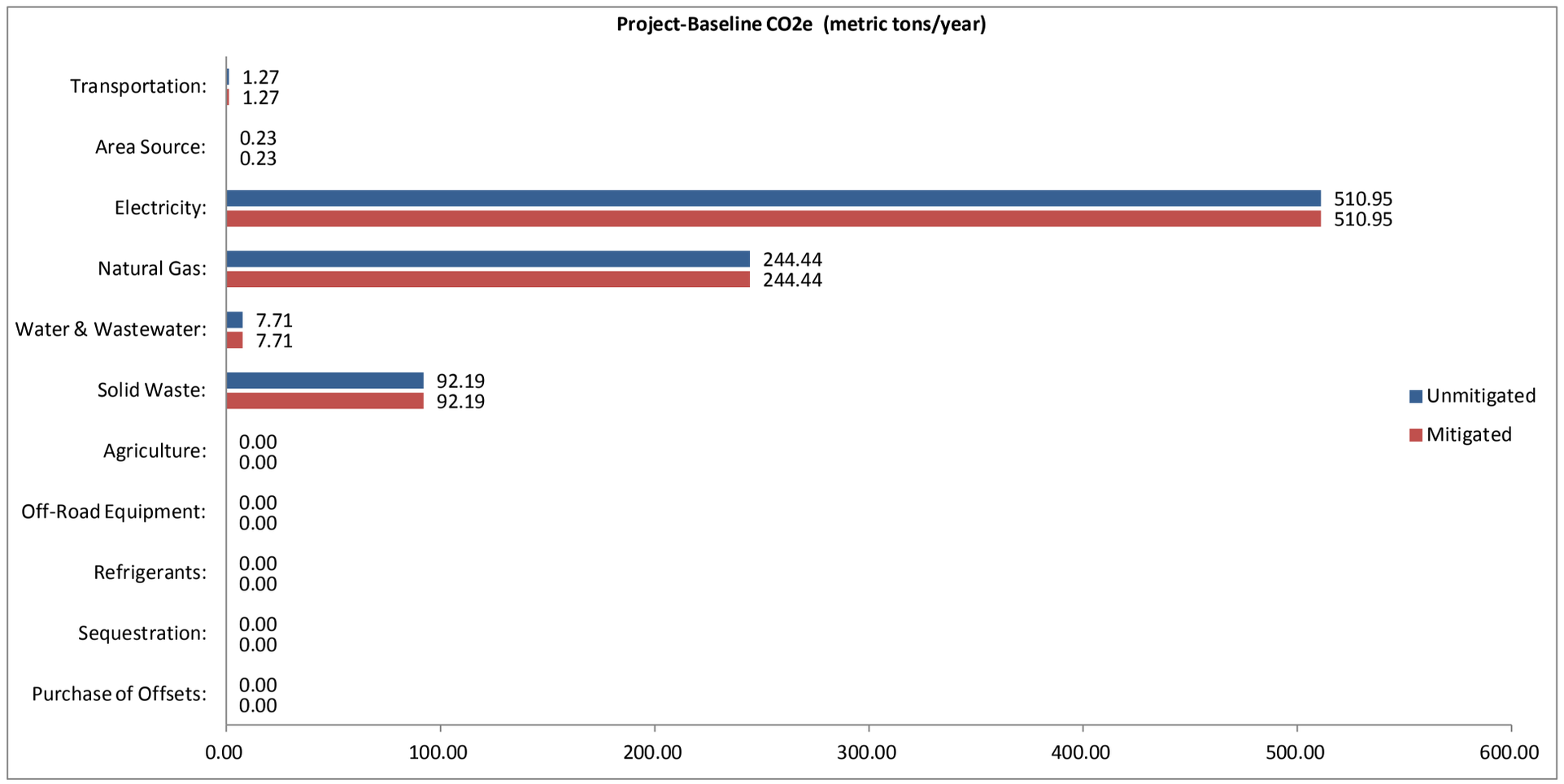
Operational Changes to Defaults

Summary Results

Project Name: Merritt College
Project and Baseline Years: 2013 N/A

Results	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Transportation:	1.27	1.27
Area Source:	0.23	0.23
Electricity:	510.95	510.95
Natural Gas:	244.44	244.44
Water & Wastewater:	7.71	7.71
Solid Waste:	92.19	92.19
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	856.79	856.79

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				1.27	0.15%
Area Source:	0.23	0.00	0.00	0.23	0.03%
Electricity:	510.14	0.00	0.00	510.95	59.64%
Natural Gas:	243.81	0.02	0.00	244.44	28.53%
Water & Wastewater:	7.70	0.00	0.00	7.71	0.90%
Solid Waste:	0.67	4.36	N/A	92.19	10.76%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				856.79	100.00%

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS.
After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley"
regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]).
Finally, CO2e is adjusted to account for th low carbon fuels rule.

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				1.27	0.15%
Area Source:	0.23	0.00	0.00	0.23	0.03%
Electricity:	510.14	0.00	0.00	510.95	59.64%
Natural Gas:	243.81	0.02	0.00	244.44	28.53%
Water & Wastewater:	7.70	0.00	0.00	7.71	0.90%
Solid Waste:	0.67	4.36	N/A	92.19	10.76%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				856.79	100.00%

Mitigation Measures Selected:

Transportation: Go to the following tab: Transp. Detail Mit for a list of the transportation mitigation measures selected (in URBEMIS)

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.

SCREENING HEALTH RISK ANALYSIS
MERRITT COLLEGE CONSTRUCTION ACTIVITIES

Receptor Location	Distance (m)	Unit Emissions (ug/m^3/ ($g/s/m^2$)) (1)	Construction Area (m^2) (2)	Annual Emissions (tons/yr) (3)	Annual Emissions (g/s)	PM2.5 Annual Concentration (ug/m^3) (4)	DPM Slope Factor $(mg/kg\text{-}day)^{-1}$ (5)	DPM REL $(ug/m3)^{-1}$ (5)	DBR (L/kg-day)	EF (day/yr)	ED (yr)	AT (days)	ASF	Cancer Risk	Noncancer HI
Preschool	50	5.51E+06	7284	0.07	0.0020179	1.53E-01	1.1	5	581	250	2	25550	3	5.73E-06	3.05E-02
Residential	100	2.81E+06	7284	0.07	0.0020179	7.78E-02	1.1	5	301	350	2	25550	10	7.06E-06	1.56E-02

Notes:
1. From conducted SCREEN3 modeling
2. Area for entire construction site
3. PM2.5 concentration averaged over 2 years
4. Accounts for adjustment from hourly air concentration to annual average air concentration
5. From OEHHA toxicity database
6. Exposure factors for preschool receptor consistent with 2-4 year old child.
7. Exposure factors for residential receptor consistent with BAAQMD recommendations for short-term exposure of residences.

ASF = Age sensitivity factor
AT = Averaging time
DBR = Daily breathing rate
DPM = Diesel particulate matter
ED = Exposure Duration
EF = Exposure Frequency
g/s = grams per second
HI = Noncancer Hazard Index
L/kg-day = liters per kilogram day
m = meters
mg/kg-day = miligrams per kilogram day
REL = Noncancer reference exposure limit
SF = Cancer slope factor
ug/m3 = micrograms per cubic meter
yr = years

APPENDIX B
HYDROLOGIC ANALYSIS

This page intentionally left blank

ARCADIS U.S., Inc.
2000 Powell Street
Suite 700
Emeryville
California 94608
Tel 510 652 4500
Fax 510 652 4906

MEMO

To:
Patricia Jeffery, AICP
1500 Park Avenue, Loft 310
Emeryville, CA 94608

Copies:

From:
Lucas W. Paz, PhD, CPESC
William Beaman, PE

Date:
April 18, 2012

ARCADIS Project No.:
EM010045.0000.00002

Subject:
Merritt College Master Plan Hydrologic Analysis, Oakland, California

---

INTRODUCTION

The Merritt College Campus ("the campus") is situated on an approximately 130-acre property within a 206-acre local drainage area in the Oakland Hills at the base of the Hillcrest Estates residential development that fronts the west side of Skyline Boulevard. The local storm drainage system that serves this area conveys up-gradient storm flows through the campus as well as run-off from the campus itself. The local drainage area includes all sub-watersheds that contain a portion of campus property. According to the Merritt College Facilities Master Plan ("the master plan," WLC Architects, 2009) and as suggested by original campus improvement plans (Reynolds and Chamberlain-Wurster, Bernardi, and Emmons Joint Venture, 1971), the system appears to have been originally designed to handle the 10-year design storm event. The original storm drain system was designed to convey stormwater from the campus to prevent localized flooding/inundation and was installed prior to current new development requirements for local on-site drainage area stormwater quantity (hydrograph modification) and stormwater quality (C.3 NPDES provisions) control devices. The local drainage area is located at the top of Horseshoe Creek Canyon, where the vast majority of the campus and surrounding areas drain into. The remainder of the local drainage area drains down the western hillside.

TOPOGRAPHY, DRAINAGE AREAS, AND CAPACITIES OF EXISTING FACILITIES

The City of Oakland ("the City") provided storm drainage and sewer facility maps of Campus Drive on Panels 157, 158, and 175 (Attachment 1). From these maps, it was observed that there is only one high-capacity outfall to the north of the campus (Horseshoe Creek Outfall) and three outfalls that collect discharge from Campus Drive to the west of the campus. Areas to the east and north of campus are up-gradient and; therefore, are assumed to drain into the campus area (see Figure 1). The northern outfall discharges into a concrete-lined segment of Horseshoe Creek from a manhole in Campus Drive opposite the northern campus driveway; this outfall collects flow from a 42" reinforced concrete pipe (RCP) from the campus, a 12" RCP from the northern campus driveway, and a 21" RCP in Campus Drive that collects flow from Parking Lot B and Campus Drive along the southern portion of the campus. Based on the facility maps and aerial photos, it was determined that the conduit that follows High Knoll Drive is the low point on Campus Drive and would ultimately collect what the other two conduits in Skypoint Court and Viewcrest Drive do not. In addition, aerial photography confirmed that a concrete ditch that lines the slope below Lot C discharges to the catch basin at the end of the High Knoll Drive conduit. Lot B, the only part of campus across Campus Drive, has a crest at its center that divides run-off between the Horseshoe Creek outfall and an outfall in Skypoint Court (see Figure 1).

Drainage areas at Merritt College were based on local drainage area topography, storm drainage maps, and discussion of campus storm drainage in the master plan. From these sources, four primary sub-watersheds were determined:

Building R – 4.39 Acres

This sub-watershed drains the roof and vicinity of Building R and a portion of the Perimeter Roadway. This system discharges to a catch basin near the southern campus driveway near Campus Road. Flows captured by this catch basin are ultimately conveyed to the manhole in Campus Drive opposite the northern campus driveway that collects all flows from the Main Campus Area and discharges them to Horseshoe Creek.

Lot C – 6.11 Acres

This sub-watershed drains the immediate vicinity of Parking Lot C and portions of its down-gradient slope, all of which discharge to ditches and conduits that ultimately lead to a City catch basin opposite High Knoll Drive.

Lot B West – 2.14 Acres

This sub-watershed drains the western portion of the former Parking Lot B. As most of former Parking Lot B is gravel and topography indicates that the majority of the western portion slopes north away from

Campus Drive, it is assumed that a majority of the run-off drains down the hillside, while the other portion that is still operational drains to the storm drainage system in Campus Drive that discharges to Skypoint Court.

Main Campus Area – 193.06 Acres

This sub-watershed drains the entire Merritt College campus and upstream watershed excluding the immediate vicinity of Building R and Lot C. City drainage maps indicate that the Hillcrest Estates residential area above the campus does not contain dedicated drainage conduits. Therefore, it was assumed that all run-off from this area drains over land and is eventually collected by the storm drain system on campus. A 42" RCP drains the upstream residential area and the eastern portion of the Main Campus Area. The eastern portion of campus where most facilities are located is served by a pipe that eventually joins with the 42" RCP prior to discharge to the Horseshoe Creek Outfall.

HYDRAULIC CAPACITY CALCULATIONS

Capacities for conduits were determined using the Manning's equation for determining discharge in cubic feet per second (cfs) (see Table 1). All pipes were assumed to be RCP, which is consistent with what is specified on the City drainage maps when specified, which has a typical Manning's roughness of 0.013 (Chow 1956). The following capacities were determined for the pertinent outfalls (Viewcrest Drive does not collect run-off from the local drainage area):

Main Outfalls:
Horseshoe Creek Outfall: 537.24 cfs
(Collects Main Campus and Building R)
Skypoint Court Conduit: 8.00 cfs
(Collects Lot B West)
High Knoll Drive Conduit: 33.81 cfs
(Collects Lot C)

Tributary pipes to the Horseshoe Creek Outfall:
From Main Campus and Hillcrest Estates: 159.51 cfs
From Lot B: 27.49 cfs
From Northern Campus Driveway: 5.05 cfs

HYDROLOGIC CALCULATIONS

The 1989 and 2003 editions Alameda County Hydrology and Hydraulics Manual ("the manual") were used as the basis for analyzing hydrology at Merritt College and its surrounding watershed. Both editions were used because the 2003 edition was provided by the City of Oakland with no attachments; however, the 1989 edition was provided by Alameda County. Distinctions between the two editions will be made when they differ in nomenclature or include additional specifications. Per the guidance in the manual, the modified rational method for calculating peak discharge flows was used to calculate run-off during a design storm with a 10-year return frequency. The modified rational method can apply to watersheds with

an area up to 320 acres according to the manual. Calculations for existing and proposed conditions can be found on Tables 2 and 3 respectively.

The 10-year design flow rate was calculated using the Alameda County Public Works Agency Modified Rational Formula that incorporates rainfall intensity, drainage area, and a modified runoff coefficient.

RAINFALL INTENSITY

The rainfall intensity is dependent on the following: the mean annual precipitation (MAP) at the local drainage area, which was determined to be 25 inches from the isopluvial map on Attachment 4; the storm frequency factor (Kj); and the storm duration (T) based on the time of concentration.

The time of concentration (Tc) is the sum of the roof to gutter time, the gutter time, and the conduit time for run-off to travel from a distant point on the watershed to the point of concentration. The roof to gutter time was conservatively assumed to be 5 minutes for all watersheds. The gutter time and conduit times are based on a calculated velocity and length of travel. The gutter time velocity was determined by applying the average gutter slope (conservatively assumed to be 0.05 ft/ft for all watersheds) to the chart on Attachment 3 with the assumption that the cross section of flow would be limited to the Top of Curb line. The conduit time velocity was determined by the Manning's calculations for flow for an "average pipe" in the watershed with a slope of 0.03 and a conservative diameter to determine the Time of Concentration (see Tables 2 and 3).

MODIFIED RUN-OFF COEFFICIENT

This factor is the only component of the Alameda County modified rational method formula that is impacted by the proposed campus build-out as described in the master plan. ARCADIS delineated the pervious areas (e.g. areas that are not covered by pavement, buildings, concrete, hardscape, etc.) on campus for both existing and proposed conditions based on master plan figures (pages 15 and 57) and 2011 aerial photos. As a conservative assumption, solar panels were considered to be impervious area. Elements of the provided current Allied Health Building plans (BKF Engineers, 2010) were incorporated into the delineations for the proposed conditions.

The run-off coefficient values provided in the 2003 edition of the manual are categorized by hydrologic soil groups. The hydrologic soil group for the entire local drainage area was determined to be "D," or least pervious, based on soil maps obtained from the Natural Resources Conservation Service (USDA Web Soil Survey). Values were assigned based on Table 2 of the 2003 manual. Pervious areas were identified with a base coefficient of 0.3, impervious areas were identified with a base coefficient of 0.9, and the residential areas of Hillcrest Estates were identified with a base coefficient of 0.43 based on the "Older

Residential ¼ Ac. (800-11050 SF lots)" land use description that is consistent with conditions observed on aerial photographs.

The slope and intensity modifiers were applied to a weighted average of the base C values weighted by area of varying land use types. For the slope modifier, the average slope for each watershed was determined by subtracting the ground elevation at the point of concentration from the ground elevation at the most distant point in the watershed, and then dividing that quantity by the flow distance between those two points (see Tables 2 and 3).

RESULTS AND POTENTIAL MITIGATION

Based on the above calculations, the results of which are summarized in Table 4, the existing system would have capacity at each outfall (Horseshoe Creek, Skypoint Court, and High Knoll Drive) to accommodate the peak runoff for the 10-year design event from both the existing and proposed conditions, particularly at the Horseshoe Creek Outfall. However, the capacity of the 42" RCP inflow to the Horseshoe Creek Outfall manhole would potentially surcharge during peak runoff for the 10-year design event under both existing and proposed conditions. This conduit drains the entire Hillcrest Estates area and almost all of the Main Campus Area. This 42" pipe has a capacity of 159.5 cfs, but the existing conditions peak run-off for the 10-year design storm event would still be approximately 250 cfs for the area that it drains alone (approximately 180 acres). Upsizing this facility would be beneficial to support the effective operation of the campus storm drainage system. It should be noted that based on the site topography data and the available electronic files (sewer and storm drain maps) provided by the City, the drainage areas were conservatively estimated. The maps provided by the City have been confirmed to not show all existing minor storm drainage facilities.

The hydraulic calculations indicate that the future build-out of the campus as proposed in the master plan would add approximately 3.3 cfs to the existing peak run-off flow for the 10-year design event. It was conservatively assumed that all future improvements on the property would not include on-site stormwater storage, treatment and flow control facilities. Improvement Plans for the Allied Health Building include bio-retention areas as part of the building design that could be designed to attenuate flows and provide for stormwater quality treatment. The use of such engineered structural control measures that are compliant with Alameda County C.3 requirements (Alameda Countywide Clean Water Program, 2006) can be designed to support mitigation of potential run-off impacts that result from expanded impervious area proposed on campus. In addition, strategic implementation of detention facilities such as large pipes or small basins positioned on the upstream portions of the campus can be designed to manage peak run-off to the extent that it improves upon the existing system capacity.

REFERENCES

1959. Ven Te Chow. Open Channel Hydraulics. p. 110.

1971. Reynolds and Chamberlain-Wurster, Bernardi, and Emmons Joint Venture. Plumbing Site Plans.

1989. Alameda County Flood Control and Water Conservation District. Hydrology and Hydraulics Criteria Summary. August 7.

1999-2002. City of Oakland, California. Sanitary Sewer and Storm Conduit Maps.

2003. Alameda County Public Works Agency. Hydrology and Hydraulics Manual. May 8. Obtained from City of Oakland.

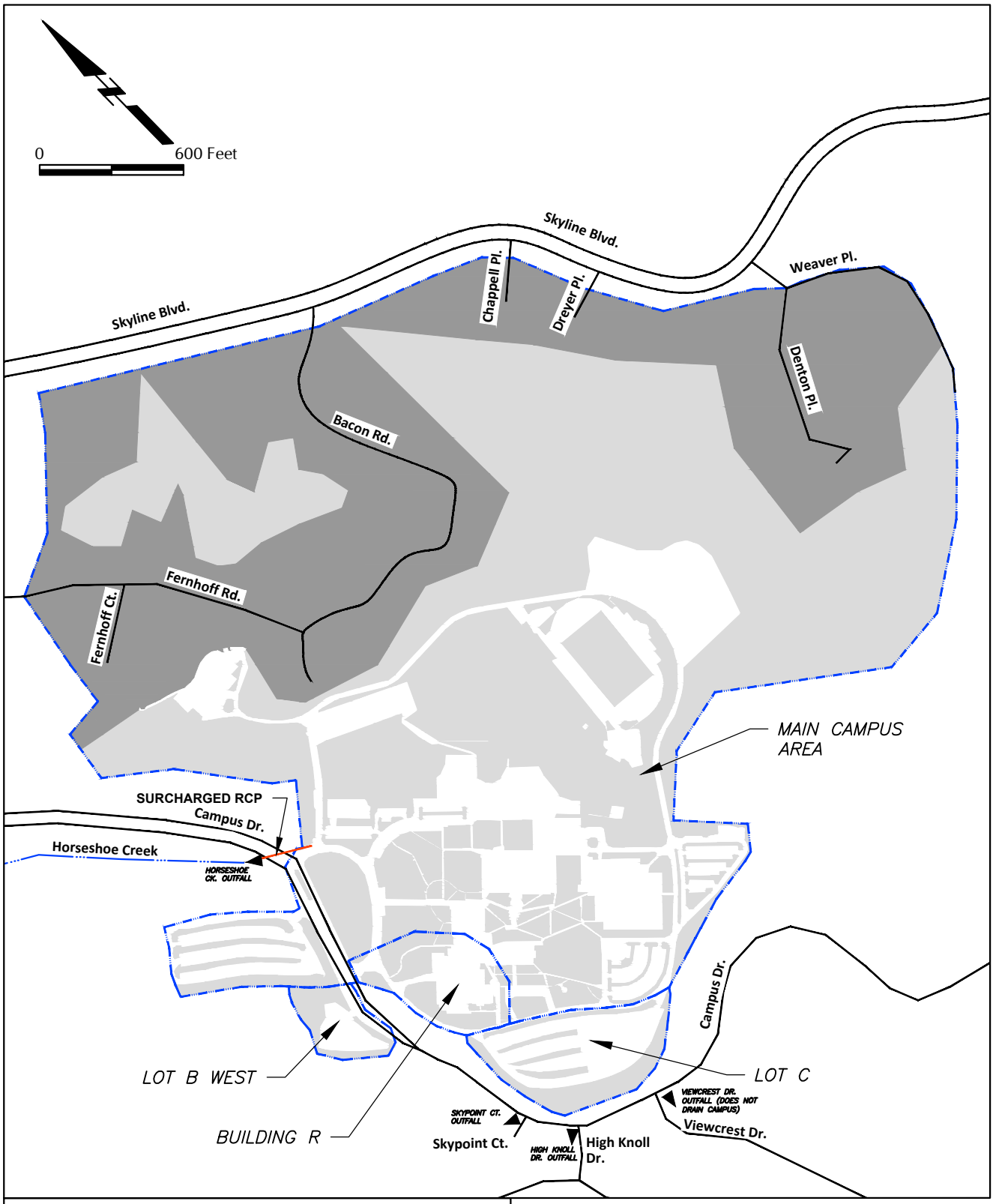
2006. Alameda Countywide Clean Water Program. C.3 Stormwater Technical Guidance: A handbook for developer, builders and project applicants. August 31.

2009. WLC Architects. Merritt College Facilities Master Plan. March 6.

2010. BKF Engineers and Flad Architects. Center for Science and Allied Health Grading and Utility Plans.

2012. USDA Natural Resources Conservation Service. Web Soil Survey, Oakland, California. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

FIGURES



LEGEND

- LOCAL DRAINAGE AREA OUTFALL
- ROADWAY
- WATERSHED BOUNDARY
- PERVIOUS AREA
- IMPERVIOUS AREA
- RESIDENTIAL AREA

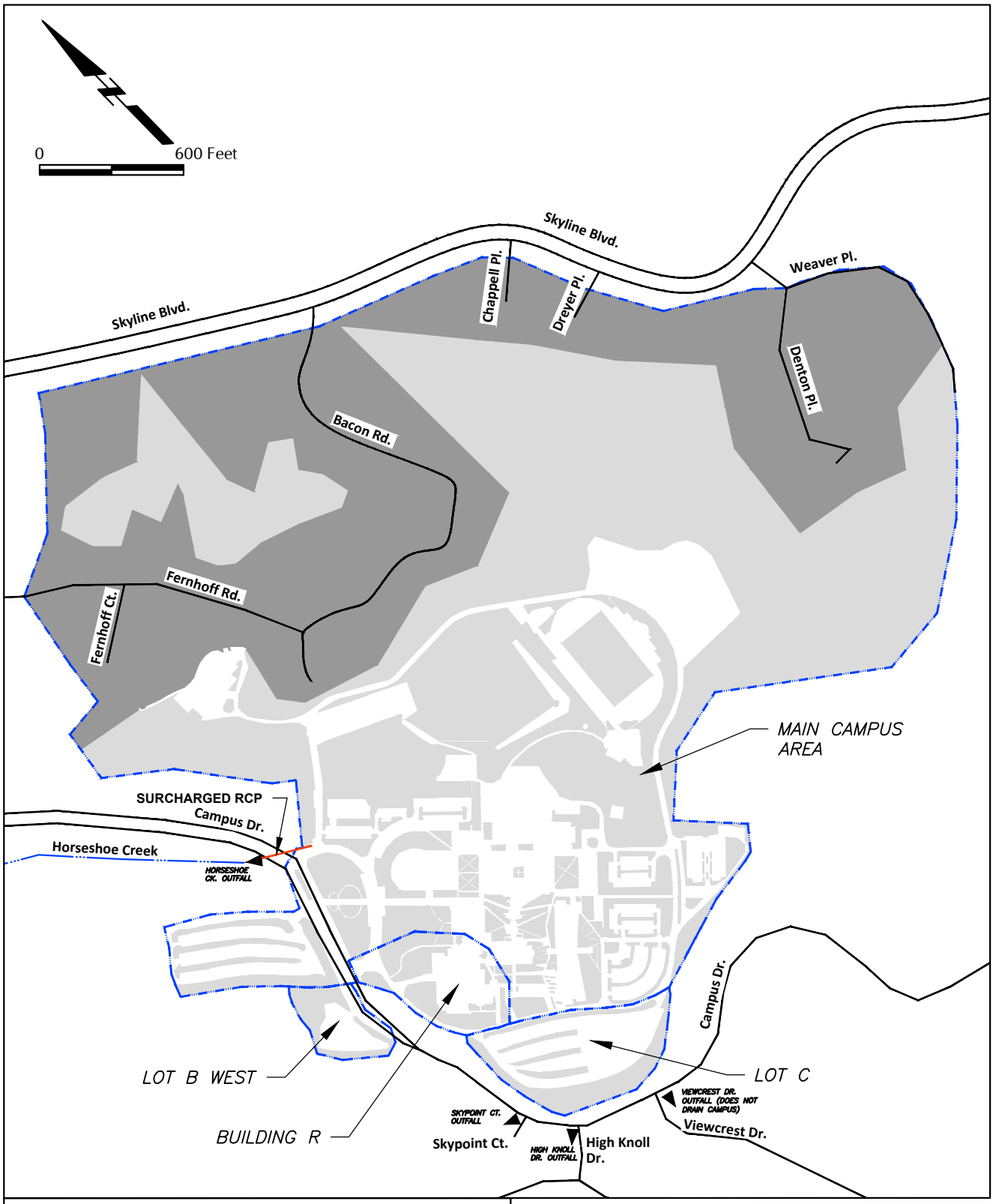
PLACEMAKERS, INC.
OAKLAND, CALIFORNIA

MERRITT COLLEGE DRAINAGE ANALYSIS

SITE MAP
EXISTING CONDITIONS

ARCADIS

FIGURE
1



LEGEND

- LOCAL DRAINAGE AREA OUTFALL
- ROADWAY
- WATERSHED BOUNDARY
- PERVIOUS AREA
- IMPERVIOUS AREA
- RESIDENTIAL AREA

PLACEMAKERS, INC.
OAKLAND, CALIFORNIA

MERRITT COLLEGE DRAINAGE ANALYSIS

SITE MAP
PROPOSED CONDITIONS

ARCADIS

FIGURE
2

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
H:\PROJECTS\X - ACV\Merritt College\Area calcs.dwg LAYOUT: 2 SAVED: 4/18/2012 12:17 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: LFR STANDARD.CTB PLOTTED: 4/18/2012 12:18 PM BY: OBERBAUER, PAUL
XREFS: IMAGES: PROJECTNAME: ---
aerial.png
parcel.png

ARCADIS

TABLES

TABLE 1: EXISTING STORM DRAIN FACILITY CAPACITIES

Conduit Properties

	Conduit	Diameter (in)	Length (ft)	Upstream Invert Elevation	Downstream Invert Elevation	Slope (ft/ft)	Assumed Material	Manning's n[1]	Depth Full (100%)	A (sf)	P (ft)	R (ft)	Q (cfs)
	Horseshoe Creek Outfall	42	313	826.00	737.23	0.284	Concrete	0.013	42	9.621	10.996	0.875	**537.24**
Tributary conduits to Horseshoe Creek Outfall	From Main Campus and Hillcrest Estates	42	190	830.75	826.00	0.025	Concrete	0.013	42	9.621	10.996	0.875	**159.51**
	From Lot B	21	222.8	853.9	847.23	0.030	Concrete	0.013	21	2.405	5.498	0.438	**27.49**
	From Northern Campus Driveway	12	100	852	850	0.020	Concrete	0.013	12	0.785	3.142	0.250	**5.05**
	High Knoll Drive Conduit	24	45	843.95	842.95	0.022	Concrete	0.013	24	3.142	6.283	0.500	**33.81**
	Skypoint Court Conduit	15	116	849.16	847.39	0.015	Concrete	0.013	15	1.227	3.927	0.313	**8.00**

$$Q = A * 1.486/n * R^{2/3} * S^{1/2}$$

Q = Discharge (cfs)
A = Cross-sectional Area of Flow (sq. ft.)
n = Coefficient of Roughness
R = Hydraulic Radius (ft.) – Cross sectional area / wetted perimeter
S = Slope of Pipe (ft./ft.)

Notes:
1. Manning's n value was obtained from *Open Channel Hydraulics* by Ven Te Chow, p. 110 Material Description: "Concrete with bends - Normal"

TABLE 2: PEAK RUNOFF FLOW - EXISTING CONDITIONS

Flow

$$Q = i\,(C'A) \qquad (1)$$

Variables

Q	Design Runoff Flow Rate (cfs)
Ij	Rainfall Intensity (in/hr)
C'	Modified Runoff Coefficient
A	Drainage Area (acres)

Time of Concentration Tc

Variables

Tc	Time of Concentration (min)
Trg	Roof to Gutter Time - Based on conservative assumption of 5 minutes per Hydrology Manual
Tg	Gutter Flow Time - Flow to first inlet
Tcon	Conduit Time - Flow from inlet to point of interest

$$Tc = L / (60\,V)$$

Velocity of Conduit Flow for Time of Concentration Calculations

	"Average Conduit" Properties								
Watershed	**Diameter (in)**	**Slope (ft/ft)**	**Assumed Material**	**Manning's n[1]**	**Depth Full (100%)**	**A (sf)**	**P (ft)**	**R (ft)**	**Velocity (ft/s)**
Building R	12	0.025	Concrete	0.013	12	0.785	3.142	0.250	**7.19**
Lot C	15	0.025	Concrete	0.013	15	1.227	3.927	0.313	**8.35**
Lot B West	12	0.025	Concrete	0.013	12	0.785	3.142	0.250	**7.19**
Main Campus Area	42	0.025	Concrete	0.013	42	9.621	10.996	0.875	**16.58**

*Manning's equation without area factor provides the velocity

Time of Concentration Calculations

Watershed	**Trg[2]**	**Average Gutter Slope (ft/ft)**	**Length of Gutter Flow (ft)**	**Velocity of Gutter Flow[3] (ft/sec)**	**Tg**	**Average Conduit Slope (ft/ft)**	**Length of Conduit Flow (ft)**	**Velocity of Conduit Flow (ft/sec)**	**Tcon**	**Tc**	**Rounded Tc**
Building R	5	0.025	300	7.9	0.63	0.025	700	7.19	1.62	7.3	**8**
Lot C	5	0.025	200	7.9	0.42	0.025	100	8.35	0.20	5.6	**6**
Lot B West	5	0.025	500	7.9	1.05	0.025	700	7.19	1.62	7.7	**8**
Main Campus Area	5	0.025	1000	7.9	2.11	0.025	2000	16.58	2.01	9.1	**10**

TABLE 2 (cont.): PEAK RUNOFF FLOW - EXISTING CONDITIONS

Rainfall Intensity

$$Ij = (0.33 + 0.091144 \times MAP) \times \left(0.249 + 0.1006 \times K_j\right) \times T_i^{-0.56253} \quad (3)$$

Variables

Ij	rainfall intensity (in/hr) for a 10 year storm return frequency
MAP	Mean Annual Precipitation (inches) - 25 inches at project location
Ti	Storm Duration (hr) - (Tc/60)
Kj	Storm Return Frequency Factor for Return Frequency j
Tc	Time of Concentration (min)

Recurrence Interval (yrs)	5	10	15	25	100
Frequency Factor, Kj	0.719	1.339	1.684	2.108	3.211

Table 1: *Frequency factors of selected recurrence intervals*

Watershed	Tc	T	MAP[4]	Kj[5]	Ij
Building R	8	0.133	25	1.339	**3.11**
Lot C	6	0.100	25	1.339	**3.66**
Lot B West	8	0.133	25	1.339	**3.11**
Main Campus Area	10	0.167	25	1.339	**2.74**

Area

Watershed	Impervious Area[6]	Pervious Area[6]	Older Residential Area[6]	A
Building R	2.49	1.90	0.00	**4.39**
Lot C	3.71	2.40	0.00	**6.11**
Lot B West	1.17	0.97	0.00	**2.14**
Main Campus Area	33.70	90.28	69.08	**193.06**

TABLE 2 (cont.): PEAK RUNOFF FLOW - EXISTING CONDITIONS

Modified Runoff Coefficient $C' = C + Cs + Ci$ (4)

Variables

C'	Modified Runoff Coefficient
C	Base Weighted Runoff Coefficient (weighted average based on land use
Cs	Slope Adjustment Factor (based on average slope S, for C>=0.8, Cs=0)
Ci	Rainfall Intensity Factor (based on rainfall intensity I, for C+Cs>=0.8, Ci=
S	Average Slope in Drainage Area (percent)

Land Use Description	Percent Impervious	C by Soil Group A	B	C	D
Undeveloped land, Parks Golf Courses	0%	0.15	0.20	0.25	0.30
Older Residential 1/8 Ac. (5000—7900 SF lots)	24%	0.33	0.37	0.41	0.44
1980 and Newer Residential 1/8 Ac.	50%	0.53	0.55	0.58	0.60
Older Residential 1/4 Ac. (8000—11050 SF lots)	22%	0.32	0.35	0.39	0.43
1980 and Newer Residential 1/4 Ac.	40%	0.45	0.48	0.51	0.54
Residential Zero Lot Line 3600 SF lots	75%	0.71	0.73	0.74	0.75
Residential Duets 4500 SF lots	69%	0.67	0.68	0.70	0.71
Commercial / Industrial *	85%	0.79	0.80	0.80	0.81
Townhouse	68%	0.66	0.68	0.69	0.71
Apartment	89%	0.82	0.82	0.83	0.83
Rural Housing	11%	0.23	0.28	0.32	0.37
Freeway	100%	0.90	0.90	0.90	0.90

Table 2: *Runoff coefficients, C, for particular land uses and corresponding impervious area.*

$$Cs = \frac{(0.8 - C)[\ln(S - 1)]S^{0.5}}{56}, \text{ for } C \geq 0.8,\ Cs = 0 \quad (5)$$

$$Ci = [0.8 - (C + Cs)] \times \left[1 - \frac{1}{\frac{1}{e^{i}} + \ln(i + 1)}\right], \text{ for } C + Cs \geq 0.8,\ Ci = 0 \quad (6)$$

Watershed	Base Weighted Runoff Coefficient: Hydrologic Soil Group[7]	Impervious C[8]	Pervious C[8]	Older Residential (1/4 acre) C[8]	Area Weighted Average C	Average Slope: Elevation at Distant Point (ft)	Elevation at Point of Concentration (ft)	Distance Between Points (ft)	S	Cs	Ij	Ci	C'
Building R	D	0.9	0.3	0.43	0.64	915	879	656	5.5	0.0100	3.11	0.0470	**0.70**
Lot C	D	0.9	0.3	0.43	0.66	907	884	682	3.4	0.0039	3.66	0.0476	**0.72**
Lot B West	D	0.9	0.3	0.43	0.63	896	881	933	1.6	-0.0019	3.11	0.0543	**0.68**
Main Campus Area	D	0.9	0.3	0.43	0.45	1168	865	4330	7.0	0.0295	2.74	0.0886	**0.57**

10-yr Peak Flow $Q = i\,(C'A)$ (1)

Watershed	C'	I	A	Q (cfs)
Building R	0.70	3.11	4.39	**9.53**
Lot C	0.72	3.66	6.11	**15.99**
Lot B West	0.68	3.11	2.14	**4.53**
Main Campus Area	0.57	2.74	193.06	**301.45**

Notes:
* All calculations are based on the current available Alameda County Hydrology Manual (June 2003, "the manual")
1. Manning's n value was obtained from *Open Channel Hydraulics* by Ven Te Chow, p. 110 Material Description: "Concrete with bends - Normal"
2. Refer to Figure 5 Roof to Gutter Time Chart (Attachment 2 of this document)
3. Refer to Figure 6 Gutter Flow Chart (Attachment 3 of this document)
4. Refer to isopluvial map in the manual (Attachment 4 of this document)
5. Refer to Table 1 on page 7 of the 2003 manual (shown above)
6. Refer to attached Figure 1 for delineated areas
7. Soil group data obtained from USDA Natural Resource Conservation Service (NRCS)
8. Refer to Table 2 on page 8 of the 2003 manual (shown above)

TABLE 3: PEAK RUNOFF FLOW - PROPOSED CONDITIONS

Flow

$$Q = i\,(C'A) \qquad (1)$$

Variables

Q	Design Runoff Flow Rate (cfs)
Ij	Rainfall Intensity (in/hr)
C'	Modified Runoff Coefficient
A	Drainage Area (acres)

Time of Concentration Tc

Variables

Tc	Time of Concentration (min)
Trg	Roof to Gutter Time - Based on conservative assumption of 5 minutes per Hydrology Manual
Tg	Gutter Flow Time - Flow to first inlet
Tcon	Conduit Time - Flow from inlet to point of interest

$$Tc = L / (60\,V)$$

Velocity of Conduit Flow for Time of Concentration Calculations

	"Average Conduit" Properties								
Watershed	**Diameter (in)**	**Slope (ft/ft)**	**Assumed Material**	**Manning's n[1]**	**Depth Full (100%)**	**A (sf)**	**P (ft)**	**R (ft)**	**Velocity (ft/s)**
Building R	12	0.025	Concrete	0.013	12	0.785	3.142	0.250	**7.19**
Lot C	15	0.025	Concrete	0.013	15	1.227	3.927	0.313	**8.35**
Lot B West	12	0.025	Concrete	0.013	12	0.785	3.142	0.250	**7.19**
Main Campus Area	42	0.025	Concrete	0.013	42	9.621	10.996	0.875	**16.58**

*Manning's equation without area factor provides the velocity

Time of Concentration Calculations

Watershed	**Trg[2]**	**Average Gutter Slope (ft/ft)**	**Length of Gutter Flow (ft)**	**Velocity of Gutter Flow[3] (ft/sec)**	**Tg**	**Average Conduit Slope (ft/ft)**	**Length of Conduit Flow (ft)**	**Velocity of Conduit Flow (ft/sec)**	**Tcon**	**Tc**	**Rounded Tc**
Building R	5	0.025	300	7.9	0.63	0.025	700	7.19	1.62	7.3	**8**
Lot C	5	0.025	200	7.9	0.42	0.025	100	8.35	0.20	5.6	**6**
Lot B West	5	0.025	500	7.9	1.05	0.025	700	7.19	1.62	7.7	**8**
Main Campus Area	5	0.025	1000	7.9	2.11	0.025	2000	16.58	2.01	9.1	**10**

TABLE 3 (cont.): PEAK RUNOFF FLOW - PROPOSED CONDITIONS

Rainfall Intensity

$$I_j = (0.33 + 0.091144 \times MAP) \times \left(0.249 + 0.1006 \times K_j\right) \times T_i^{-0.56253} \quad (3)$$

Variables

Ij	rainfall intensity (in/hr) for a 10 year storm return frequency
MAP	Mean Annual Precipitation (inches) - 25 inches at project location
Ti	Storm Duration (hr) - (Tc/60)
Kj	Storm Return Frequency Factor for Return Frequency j
Tc	Time of Concentration (min)

Recurrence Interval (yrs)	5	10	15	25	100
Frequency Factor, Kj	0.719	1.339	1.684	2.108	3.211

Table 1: *Frequency factors of selected recurrence intervals*

Watershed	Tc	T	MAP[4]	Kj[5]	Ij
Building R	8	0.133	25	1.339	**3.11**
Lot C	6	0.100	25	1.339	**3.66**
Lot B West	8	0.133	25	1.339	**3.11**
Main Campus Area	10	0.167	25	1.339	**2.74**

Area

Watershed	Impervious Area[6]	Pervious Area[6]	Older Residential Area[6]	A
Building R	2.49	1.90	0.00	**4.39**
Lot C	3.71	2.40	0.00	**6.11**
Lot B West	1.17	0.97	0.00	**2.14**
Main Campus Area	36.70	87.28	69.08	**193.06**

TABLE 3 (cont.): PEAK RUNOFF FLOW - PROPOSED CONDITIONS

Modified Runoff Coefficient $C' = C + Cs + Ci$ (4)

Variables

C'	Modified Runoff Coefficient
C	Base Weighted Runoff Coefficient (weighted average based on land use)
Cs	Slope Adjustment Factor (based on average slope S, for C>=0.8, Cs=0)
Ci	Rainfall Intensity Factor (based on rainfall intensity I, for C+Cs>=0.8, Ci=0)
S	Average Slope in Drainage Area (percent)

Land Use Description	Percent Impervious	C by Soil Group A	B	C	D
Undeveloped land, Parks Golf Courses	0%	0.15	0.20	0.25	0.30
Older Residential 1/8 Ac. (5000—7900 SF lots)	24%	0.33	0.37	0.41	0.44
1980 and Newer Residential 1/8 Ac.	50%	0.53	0.55	0.58	0.60
Older Residential 1/4 Ac. (8000—11050 SF lots)	22%	0.32	0.35	0.39	0.43
1980 and Newer Residential 1/4 Ac.	40%	0.45	0.48	0.51	0.54
Residential Zero Lot Line 3600 SF lots	75%	0.71	0.73	0.74	0.75
Residential Duets 4500 SF lots	69%	0.67	0.68	0.70	0.71
Commercial / Industrial *	85%	0.79	0.80	0.80	0.81
Townhouse	68%	0.66	0.68	0.69	0.71
Apartment	89%	0.82	0.82	0.83	0.83
Rural Housing	11%	0.23	0.28	0.32	0.37
Freeway	100%	0.90	0.90	0.90	0.90

Table 2: *Runoff coefficients, C, for particular land uses and corresponding impervious area.*

$$Cs = \frac{(0.8 - C)[\ln(S - 1)]S^{0.5}}{56}, \text{ for } C \geq 0.8,\ Cs=0 \quad (5)$$

$$Ci = [0.8 - (C + Cs)] \times \left[1 - \frac{1}{\frac{1}{e^{i}} + \ln(i + 1)}\right], \text{ for } C+Cs \geq 0.8,\ Ci=0 \quad (6)$$

Watershed	Base Weighted Runoff Coefficient: Hydrologic Soil Group[7]	Impervious C[8]	Pervious C[8]	Older Residential (1/4 acre) C[8]	Area Weighted Average C	Average Slope: Elevation at Distant Point (ft)	Elevation at Point of Concentration (ft)	Distance Between Points (ft)	S	Cs	Ij	Ci	C'
Building R	D	0.9	0.3	0.43	0.64	915	879	656	5.5	0.0100	3.11	0.0470	**0.70**
Lot C	D	0.9	0.3	0.43	0.66	907	884	682	3.4	0.0039	3.66	0.0476	**0.72**
Lot B West	D	0.9	0.3	0.43	0.63	896	881	933	1.6	-0.0019	3.11	0.0543	**0.68**
Main Campus Area	D	0.9	0.3	0.43	0.46	1168	865	4330	7.0	0.0287	2.74	0.0862	**0.58**

10-yr Peak Flow $Q = i\,(C'A)$ (1)

Watershed	C'	I	A	Q (cfs)
Building R	0.70	3.11	4.39	**9.53**
Lot C	0.72	3.66	6.11	**15.99**
Lot B West	0.68	3.11	2.14	**4.53**
Main Campus Area	0.58	2.74	193.06	**304.72**

Notes:
* All calculations are based on the current available Alameda County Hydrology Manual (June 2003, "the manual")
1. Manning's n value was obtained from *Open Channel Hydraulics* by Ven Te Chow, p. 110 Material Description: "Concrete with bends - Normal"
2. Refer to Figure 5 Roof to Gutter Time Chart (Attachment 2 of this document)
3. Refer to Figure 6 Gutter Flow Chart (Attachment 3 of this document)
4. Refer to isopluvial map in the manual (Attachment 4 of this document)
5. Refer to Table 1 on page 7 of the 2003 manual (shown above)
6. Refer to attached Figure 2 for delineated areas
7. Soil group data obtained from USDA Natural Resource Conservation Service (NRCS)
8. Refer to Table 2 on page 8 of the 2003 manual (shown above)

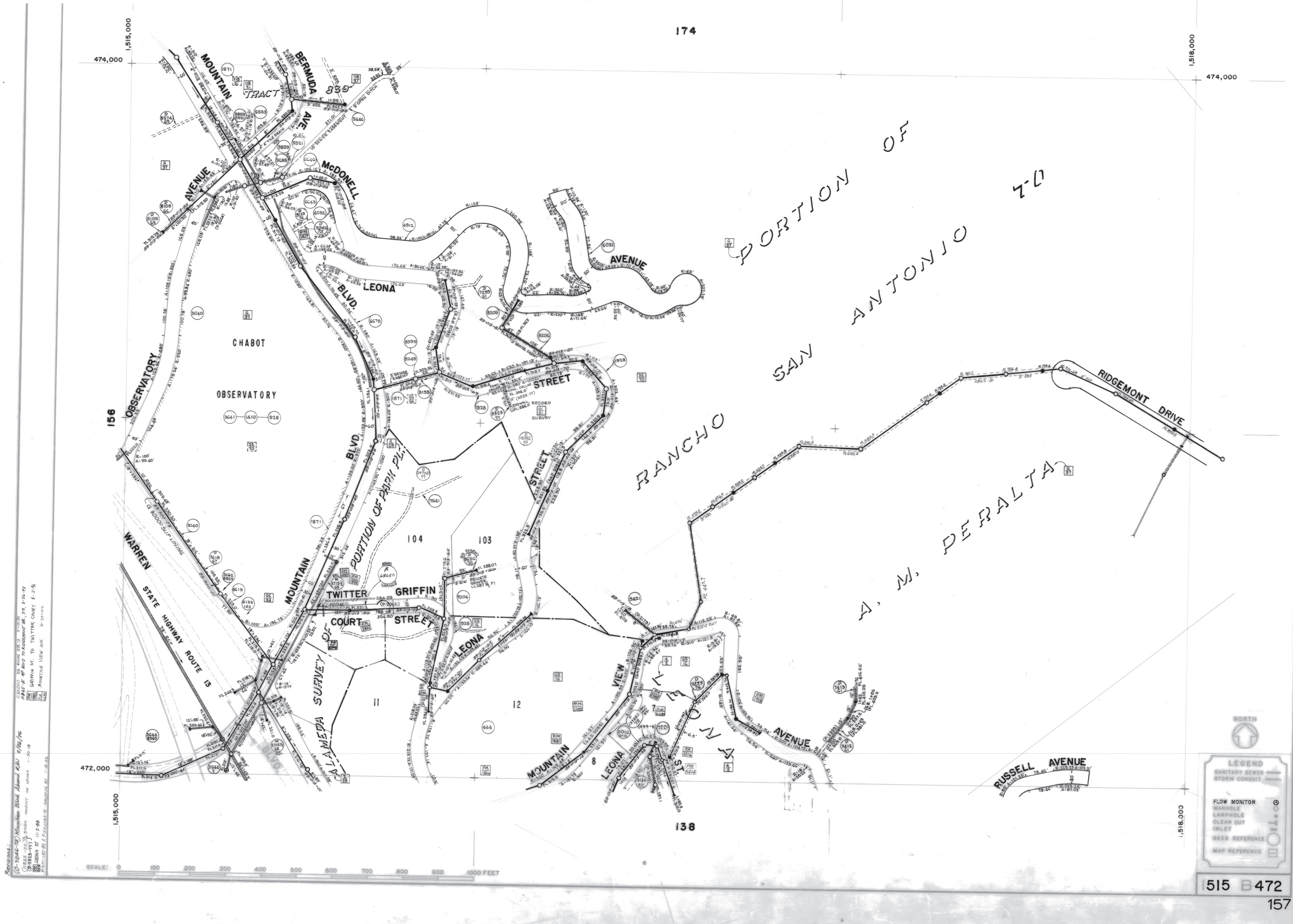
TABLE 4: SUMMARY COMPARISON OF EXISTING AND PROPOSED CONDITIONS

	EXISTING CONDITIONS (ac)			PROPOSED CONDITIONS (ac)			DIFFERENCE (ac)					
Watershed	**Impervious Area**	**Pervious Area**	**Older Residential Area**	**Impervious Area**	**Pervious Area**	**Older Residential Area**	**Impervious Area**	**Pervious Area**	**Older Residential Area**	**Existing Conditions Peak 10-yr Flow (cfs)**	**Proposed Conditions Peak 10-yr Flow (cfs)**	**Difference (cfs)**
Building R	2.49	1.90	0.00	2.49	1.90	0.00	0.00	0.00	0.00	9.53	9.53	0.00
Lot C	3.71	2.40	0.00	3.71	2.40	0.00	0.00	0.00	0.00	15.99	15.99	0.00
Lot B West	1.17	0.97	0.00	1.17	0.97	0.00	0.00	0.00	0.00	4.53	4.53	0.00
Main Campus Area	33.70	90.28	69.08	36.70	87.28	69.08	**3.00**	**-3.00**	0.00	301.45	304.72	**3.27**

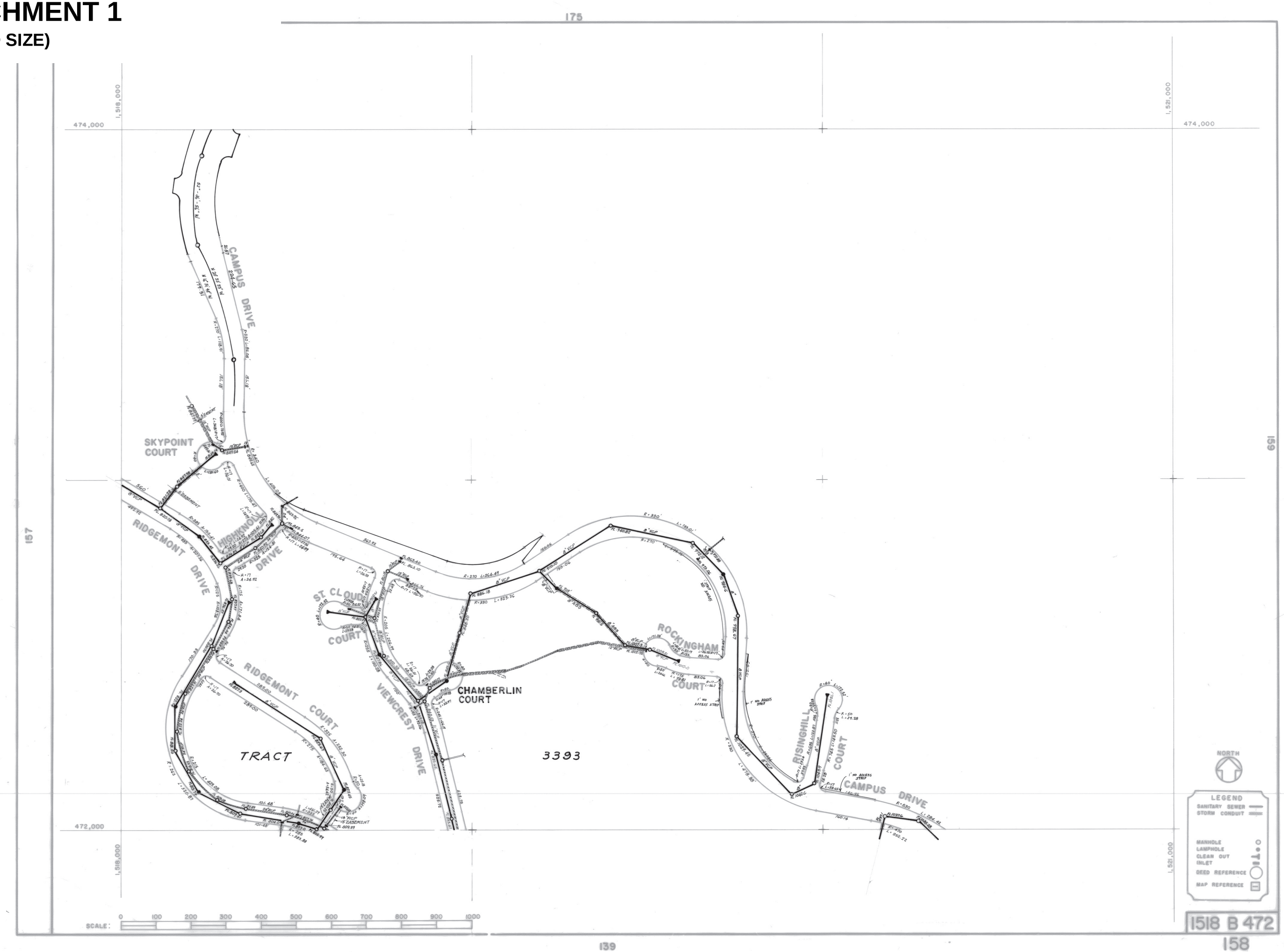
ARCADIS

ATTACHMENTS

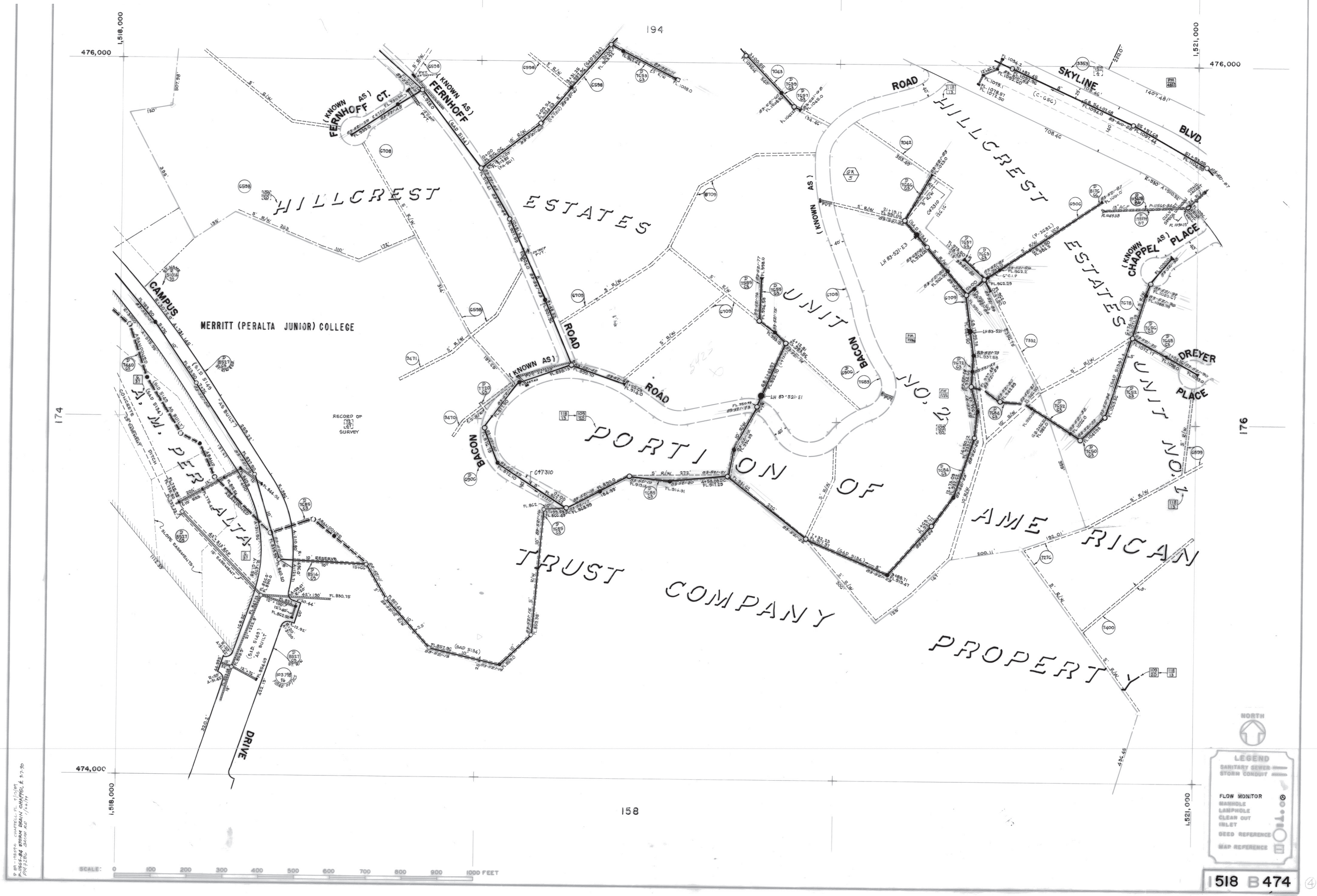
ATTACHMENT 1
(REDUCED SIZE)



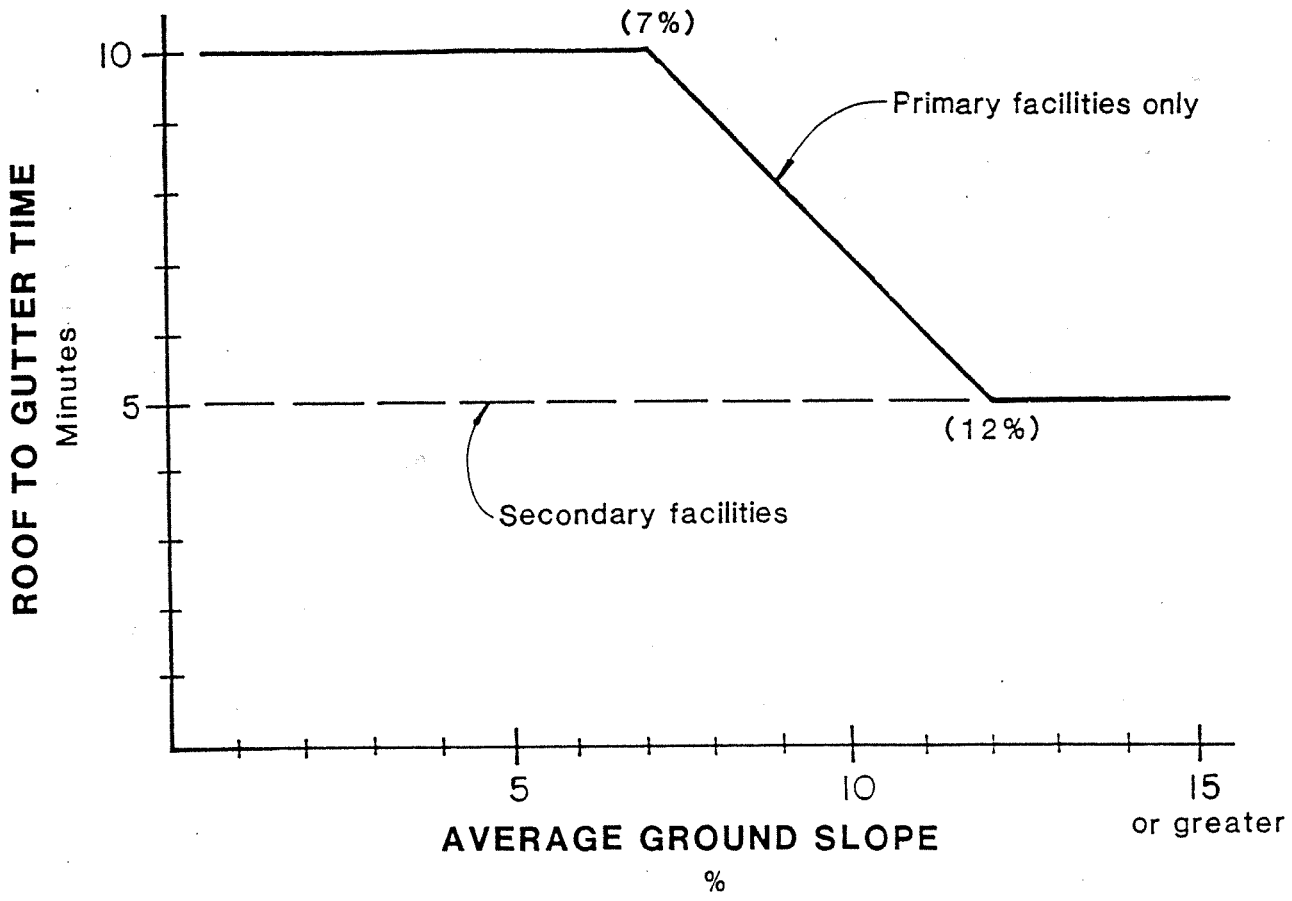
ATTACHMENT 1
(REDUCED SIZE)



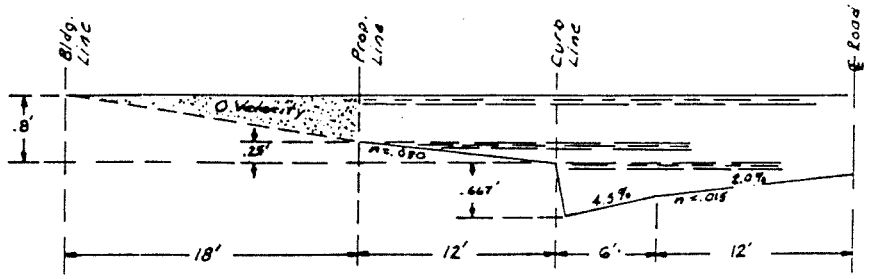
ATTACHMENT 1
(REDUCED SIZE)

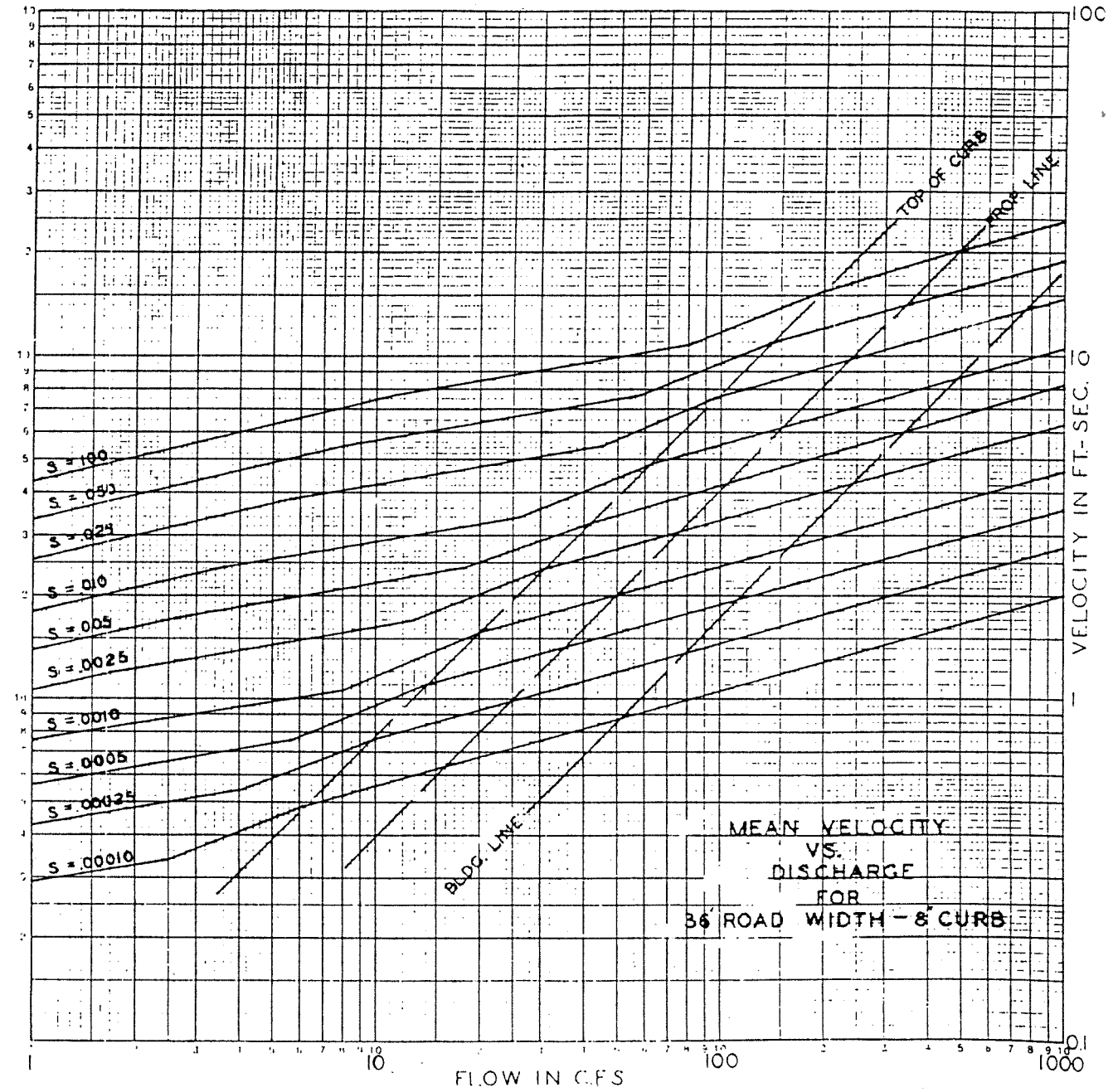


Attachment 2



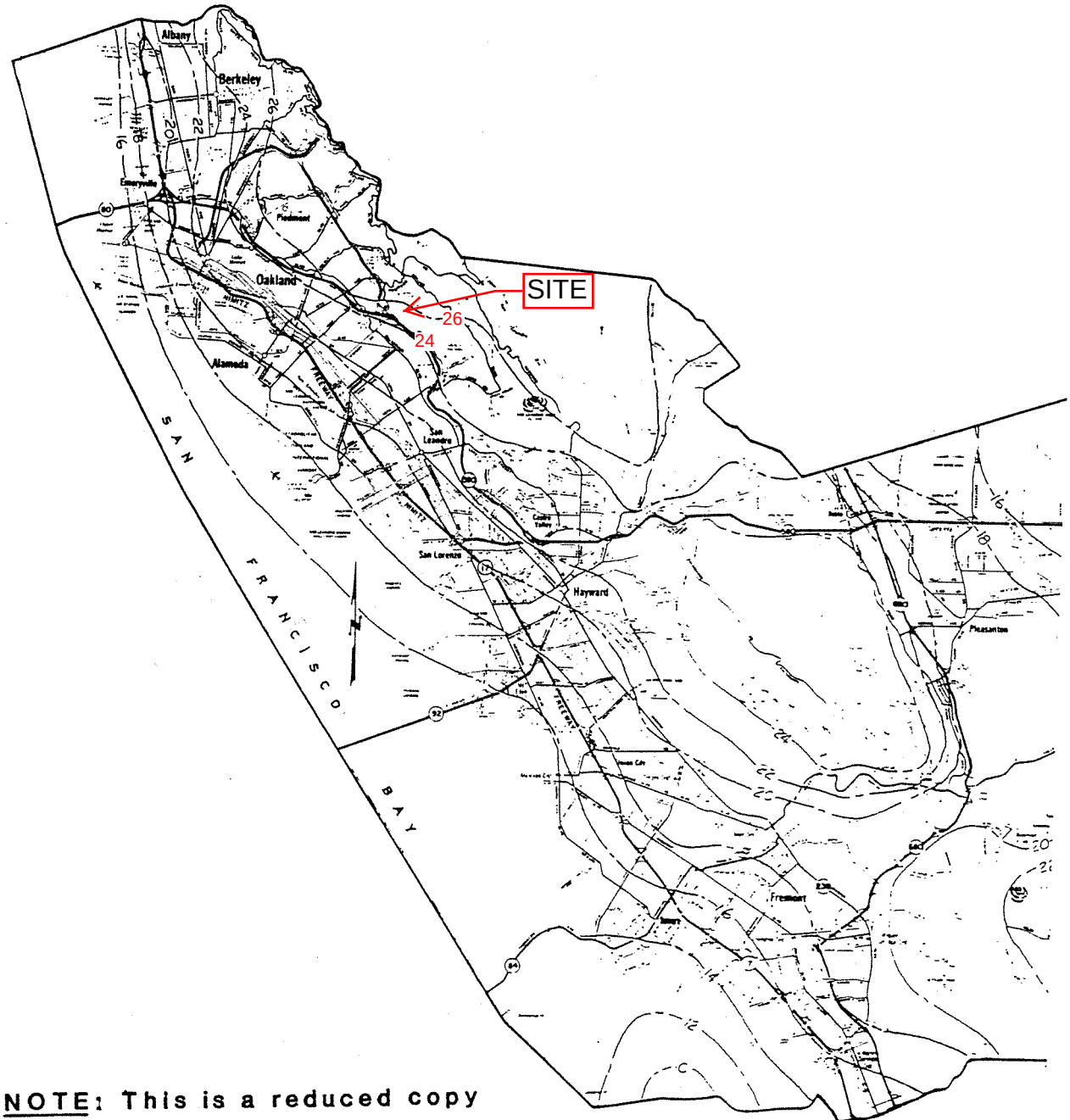
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	**ROOF TO GUTTER TIME CHART**	DATE: **FEBRUARY 1987** **FIGURE 5**





ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	**GUTTER FLOW CHART**	DATE: FEBRUARY 1987 **FIGURE 6**

Attachment 4



NOTE: This is a reduced copy of drawing MA-180, available at District offices.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	**MEAN ANNUAL PRECIPITATION**	DATE: FEBRUARY 1987 **FIGURE 9**